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# **Building and Running an Open edX Course**

*Release*

March 31, 2016



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### Read Me

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The edX *Building and Running an edX Course* guide is created using [RST](#) files and [Sphinx](#). You, the user community, can help update and revise this documentation project on GitHub:

[https://github.com/edx/edx-documentation/tree/master/en\\_us/open\\_edx\\_course\\_authors/source](https://github.com/edx/edx-documentation/tree/master/en_us/open_edx_course_authors/source)

To suggest a revision, fork the project, make changes in your fork, and submit a pull request back to the original project: this is known as the [GitHub Flow](#).

All pull requests need approval from edX. For more information, contact edX at [docs@edx.org](mailto:docs@edx.org).



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## Preface

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Course teams, researchers, developers, students: the edX community includes groups with a range of reasons for using the platform and objectives to accomplish. To help members of each group learn about what edX offers, reach goals, and solve problems, edX provides a variety of information resources.

To help you find what you need, browse the edX offerings in these categories:

- *Resources for Course Teams*
- *Resources for Researchers*
- *Resources for Developers*
- *Resources for Students*

All members of the edX community are encouraged to make use of any of the resources described in this preface.

## 2.1 System Status

For system-related notifications from the edX operations team, including outages and the status of error reports. On [Twitter](#), you can follow @edxstatus.

Current system status and the uptime percentages for edX servers, along with the Twitter feed, are published on the [edX Status](#) web page.

## 2.2 Resources for Course Teams

Course teams include faculty, instructional designers, course staff, discussion moderators, and others who contribute to the creation and delivery of courses on [edx.org](#) or edX Edge.

### 2.2.1 edX101: Overview of Creating a Course

The [edX101](#) course was built in Studio and is available for enrollment on [edx.org](#). This course takes one to two hours to complete, and is designed to provide a high-level overview of the course creation and delivery process. It also highlights the extensive capabilities of the edX platform.

### 2.2.2 Documentation

Documentation for course teams is available on the docs.edx.org web page.

- [Building and Running an edX Course](#) is a comprehensive guide with concepts and procedures to help you build a course in edX Studio, and then use the Learning Management System (LMS) to run a course.

When you are working in edX Studio, you can access relevant sections of this guide by clicking **Help** on any page.

- [Using edX Insights](#) describes the metrics, visualizations, and downloadable .csv files that course teams can use to gain information about student background and activity.
- [edX Course Staff Release Notes](#) summarize the changes in each new version of the edX Studio and LMS software.
- [Creating a Peer Assessment](#) describes features for students to provide peer- and self- evaluations of responses to a question. Note that this new feature is in limited release.
- [edX Open Learning XML Guide](#) provides guidelines for building edX courses with Open Learning XML (OLX). Note that this guide is currently an alpha version.

These guides open in your web browser. The left side of each page includes a **Search docs** field and links to that guide's contents. To open or save a PDF version, click **v: latest** at the lower left of the page, then click **PDF**.

### 2.2.3 Email

To receive and share information by email, course team members can:

- Sign up to receive monthly [newsletters](#).
- Sign up to receive [release](#) notes for every release.
- Join the [openedx-studio](#) Google group to ask questions and participate in discussions with peers at other edX partner organizations and edX staffers.

### 2.2.4 Wikis and Web Sites

The edX product team maintains the [Open edX Product](#) wiki, which includes the [Open edX Public Product Roadmap](#).

The [edX Author Support](#) site hosts discussions that are monitored by edX staffers.

## 2.3 Resources for Researchers

Data for the courses on edx.org and edX Edge is available to the “data czars” at our partner institutions, and then used by database experts, statisticians, educational investigators, and others for educational research.

### 2.3.1 Documentation

The [edX Research Guide](#) is available on the docs.edx.org web page.

This guide opens in your web browser, with a **Search docs** field and links to that guide's contents on the left side of each page. To open or save a PDF version, click **v: latest** at the lower left of the page, and then click **PDF**.

### 2.3.2 Email

To receive and share information by email, researchers can join the [openedx-analytics](#) Google group to ask questions and participate in discussions with peers at other edX partner organizations and edX staffers.

### 2.3.3 Wiki

The edX Analytics team maintains the [Open edX Analytics](#) wiki, which includes links to periodic release notes, the Open edX Public Product Roadmap, and other resources for researchers.

## 2.4 Resources for Developers

Software engineers, system administrators, and translators work on extending and localizing the code for the edX platform.

### 2.4.1 Documentation

Documentation for developers is available on the [docs.edx.org](#) web page.

- The [edX Platform Developer's Guide](#) collects information directly from edX platform python docstrings. The topics in this guide include guidelines for contributing to Open edX, options for extending the Open edX platform, using the edX public sandboxes, instrumenting analytics, and testing.
- [Installing, Configuring, and Running the edX Platform](#) provides procedures for getting an edX developer stack (Devstack) and production stack (Fullstack) operational.
- [XBlock](#): Open edX courseware components provides preliminary documentation on the XBlock component architecture for building courses.
- [edX Open Learning XML Guide](#) provides guidelines for building edX courses with Open Learning XML (OLX). Note that this guide is currently an alpha version.
- [edX Data Analytics API](#) provides tools for building applications to view and analyze student activity in your course.
- [edX Enrollment API](#) provides tools for building applications to view user and course enrollment information, and to enroll users in courses.
- [edX Platform API](#) provides tools for building applications to view course information and videos.

### 2.4.2 GitHub

These are the main edX repositories on GitHub.

- The [edx/edx-platform](#) repo contains the code for the edX platform.
- The [edx/edx-analytics-dashboard](#) repo contains the code for edX Insights.
- The [edx/configuration](#) repo contains scripts to set up and operate the edX platform.

Additional repositories are used for other projects. Our contributor agreement, contributor guidelines and coding conventions, and other resources are available in these repositories.

### 2.4.3 Email and IRC

To receive and share information by email, developers can join these Google groups to ask questions and participate in discussions with peers and edX staffers.

- For conversations about the code in Open edX, join [edx-code](#).
- For conversations about running Open edX, join [openedx-ops](#).
- For conversations about globalization and translation, join [openedx-translation](#).

Additional Google groups are occasionally formed for individual projects.

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**Note:** Please do not report security issues in public. If you have a concern, please email [security@edx.org](mailto:security@edx.org).

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EdX engineers often monitor the Freenode [#edx-code](#) IRC channel.

### 2.4.4 Wikis and Web Sites

The [code.edx.org](#) web site is an entry point for new contributors.

The edX Engineering team maintains the [Open Source Home](#) wiki, which provides insights into the plans, projects, and questions that the edX Open Source team is working on with the community.

The pull request [dashboard](#) is a visualization of the count and age of the pull requests (PRs) assigned to teams at edX. Click the bars in this chart to get more information about the PRs.

## 2.5 Resources for Students

### 2.5.1 Documentation

The [edX Guide for Students](#) is available on the [docs.edx.org](#) web page. Because students are not currently guided to this resource through the courseware, we encourage course staff to provide links to students as needed in course updates or discussions.

### 2.5.2 In a Course

All edX courses have a discussion forum where you can ask questions and interact with other students and with the course team: click **Discussion**. Many courses also offer a wiki for additional resources and materials: click **Wiki**.

Other resources might also be available, such as a course-specific Facebook page or Twitter feed, or opportunities for Google Hangouts. Be sure to check the **Course Info** page for your course as well as the **Discussion** and **Wiki** pages.

From time to time, the course team might send email messages to all students. While you can opt out of these messages, doing so means that you can miss important or time-sensitive information. To change your preferences for course email, click **edX** or **edX edge** at the top of any page. On your dashboard of current courses, locate the course and then click **Email Settings**.

### 2.5.3 From edX

To help you get started with the edX learning experience, edX offers a course (of course!). You can find the edX [Demo](#) course on the edX web site. EdX also maintains a list of [frequently](#) asked questions and answers.



If you still have questions or suggestions, you can get help from the edX support team: click **Contact** at the bottom of any edX web page or send an email message to [info@edx.org](mailto:info@edx.org).

For opportunities to meet others who are interested in edX courses, check the edX Global Community [meetup](#) group.



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**Change Log**

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**3.1 February 2015**

Date	Change
24 Feb 2015	Initial release of document for the Open edX Birch release.



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## Getting Started

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### 4.1 edX Browser Support

The edX Platform runs on the following browsers:

- Internet Explorer
- Chrome
- Safari
- Firefox

The edX Platform is routinely tested and verified on the current and previous version of each of these browsers. We generally encourage the use of and fully support only the latest version.

This information is updated as new major operating system and browser versions are released. All point releases are supported unless noted; occasional exceptions are based on specific bug fixes or feature updates.

#### 4.1.1 edX Learning Management System

The following table shows operating system and browser support for the edX Learning Management System, which students and course staff use to interact with course content.

	Chrome	Safari	Firefox	IE 9	IE 10
Windows 8	Yes	N/A	Yes	Yes	Yes
Mac OSX Mavericks or Yosemite	Yes	Yes	Yes	N/A	N/A

#### 4.1.2 edX Studio

The following table shows operating system and browser support for edX Studio, which staff use to build a course.

	Chrome	Safari	Firefox	IE 9	IE 10
Windows 8	Yes	N/A	Yes	Provisional	Provisional
Mac OSX Mavericks or Yosemite	Yes	Yes	Yes	N/A	N/A

#### 4.1.3 edX Insights

The following table shows operating system and browser support for edX Insights, which staff use to review and download data about their courses and students.

	Chrome	Safari	Firefox	IE 9	IE 10
Windows 8	Yes	N/A	Yes	Provisional	Provisional
Mac OSX Mavericks or Yosemite	Yes	Yes	Yes	N/A	N/A

## 4.2 Getting Started with Studio

### 4.2.1 Overview

This chapter describes the tools you use to build an edX course, and how to create your first course:

- *What is Studio?*
- *Create Your First Course*

### 4.2.2 What is Studio?

Studio is the edX tool you use to build your courses.

You use Studio to create course content, problems, videos, and other resources for students.

With Studio, you can also manage your schedule and course team, set grading policies, publish your course, and more.

You use Studio directly through your browser. You do not need any additional software.

### 4.2.3 Create Your First Course

When you receive notice that you can create courses, log in to Studio.

You see the following page, which is your **My Courses** dashboard:

## My Courses

[+ New Course](#)

### Welcome, MikeSmith!

You currently aren't associated with any Studio Courses.

#### Are you staff on an existing Studio course?

You will need to be added to the course in Studio by the course creator. Please get in touch with the course creator or administrator for the specific course you are helping to author.

#### Create Your First Course

Your new course is just a click away!

[+ Create Your First Course](#)

#### Need help?

If you are new to Studio and having trouble getting started, there are a few things that may be of help:

[Get started by reading Studio's Documentation](#)

[Request help with Studio](#)

1. Click **Create Your First Course**.
2. Enter course information as needed and click **Create**.

## Create a New Course

**Course Name \***

The public display name for your course.

**Organization \***

The name of the organization sponsoring the course. **Note: This is part of your course URL, so no spaces or special characters are allowed. This cannot be changed, but you can set a different display name in Advanced Settings later.**

**Course Number \***

The unique number that identifies your course within your organization. **Note: This is part of your course URL, so no spaces or special characters are allowed and it cannot be changed.**

**Course Run \***

The term in which your course will run. **Note: This is part of your course URL, so no spaces or special characters are allowed and it cannot be changed.**

**Note:** Enter new course information carefully. This information becomes part of the URL for your course. Because this information becomes part of your course URL, the total number of characters in the following three fields must be 65 or fewer.

- For **Course Name**, enter the title of your course. For example, the name may be “Sets, Maps and Symmetry Groups”. Use title capitalization for the course title.
- For **Organization**, enter the name of your institution. Do not include whitespace or special characters.
- For **Course Number**, enter both a subject abbreviation and a number. For example, for public health course number 207, enter **PH207**. For math course 101x, enter **Math101x**. Do not include whitespace or special characters in the course number.

3. Click **Save**.

Your new course opens to the **Course Outline** page. Because you haven’t created any content yet, this page is empty.

In your browser’s address bar, notice that the URL of your course includes the course organization, number, and course run.

The rest of this documentation describes how you now build and run your course.

## 4.3 Guidelines for Creating Accessible Content

EdX strives to create an innovative, online-learning platform that promotes accessibility for everyone, including learners with disabilities. We intend for these guidelines to help the course teams understand the importance of considering accessibility when designing courses and provide guidance so that they can serve the widest possible audience. *Accessibility* in online instruction refers to the degree to which information and activities are available to all students equally, regardless of physical or other disabilities.

Our guidance is based on international standards and principles for web accessibility (W3C WCAG 2.0) and universal design (usable by all, to the greatest extent possible, without the need for adaptation or specialized design). Instructors who build courses based on these principles promote the opportunity to create an inclusive experience that considers the diverse set of learning styles and needs of all learners—including learners with disabilities, learners who speak English as a second language, learners with technical issues such as low bandwidth internet or no access to audio, and learners with age-related capability issues. For purposes of these guidelines, we have assumed that end users will be equipped with the appropriate adaptive technology and compatible software.

Occasionally, unanticipated accessibility barriers will arise. To supplement the accessibility you can achieve within the edX platform, we recommend that you engage the resources available at your institution to support learners with disabilities. Most institutions offer disability support services and information technology resources that provide accessibility advice and support. These professionals are trained in making disability accommodation decisions and can advise you on what accommodations may be appropriate in light of the goals of the course and the inherent instructional methodologies employed.

As technology and accessibility improvements are constantly emerging, we plan to update these guidelines periodically.

See the following sections for more information:

- *Supporting Learners with Diverse Needs*
- *Accessibility Best Practices*
- *Conclusion*

### 4.3.1 Supporting Learners with Diverse Needs

Almost one-fifth of the world's population has some kind of disability. Online courses can reduce many barriers to education for these learners by providing access to courses from any location, at any time, and through the use of assistive technologies.

EdX is dedicated to creating a platform that is not only itself accessible, but also enables course creators to create accessible content. If you encounter platform issues that you believe may affect your ability to provide accessible course content, please contact us at [accessibility@edx.org](mailto:accessibility@edx.org). We also welcome your comments and questions.

In the following sections, we outline guidelines for creating and delivering course content that allows students to use built-in accessibility functionality (such as magnification and zoom features), assistive technologies, and alternative formats. These practices consider learners such as the following:

- Blind learners who use a screen reader, which reads page text aloud, or a Braille display device, which renders page text in Braille.
- Low-vision learners who use screen magnification software to enlarge text and other onscreen content.
- Learners with vision impairments, such as difficulty seeing in low-light conditions, who modify their browser or operating system to change background colors and text settings to make text easier to read.
- Learners with learning disabilities, such as dyslexia, who use text-to-speech technology that reads page content aloud.
- Physically disabled learners who use switching devices, voice recognition software, or eye-gaze activated technology instead of a standard mouse or keyboard to control their computer.
- Learners who modify their operating system settings to make the mouse or keyboard easier to use.
- Learners with hearing impairments who cannot access audio content and need the equivalent information in an alternative format, such as captions or a transcript.

We highly recommend that you implement the best practices shared with you in this document and other widely available resources (some of which are referred to herein). As mentioned above, if you cannot easily address these



barriers, we recommend that you consult with any disability-related resources at your institution (Disability Services, Assistive Technology, or Accessibility). While your ability to support students in the MOOC context may be different from supporting on-campus students, we encourage you to develop a plan to respond to students who inform you of accessibility barriers to learning. However, given the large numbers of learners enrolling in many of the courses, you will quickly see how important it is to address accessibility concerns when creating a course.

### **4.3.2 Accessibility Best Practices**

- *Best Practices for Universal Design for Learning*
- *Best Practices for Readability*
- *Best Practices for Accessible PDFs*
- *Best Practices for Custom Content Types*
- *Best Practices for Describing Images*
- *Best Practices for Accessible Media*
- *Best Practices for HTML Markup*

#### **Best Practices for Universal Design for Learning**

Universal Design for Learning focuses on delivering courses in a format so that as many of your learners as possible can successfully interact with the learning resources and activities you provide them, without compromising on pedagogic rigor and quality.

The principles of Universal Design for Learning can be summarized as:

1. Present information and content in different ways.
2. Differentiate the ways that students can express what they know.
3. Stimulate interest and motivation for learning.

Instructors can apply these principles in course design by:

- Designing resources and activities that can be accessed by learners in different ways (for example, providing text that allows a student to enlarge it or change color, a diagram with an equivalent text description, or a video with audio and text captions).
- Providing multiple ways for learners to engage with information and demonstrate their knowledge. This is particularly important when developing exercises and assessments.
- Identifying activities that require specific sensory or physical capability, such as activities that require color identification, for which accommodating the specific accessibility needs of students will be difficult or impossible. In these cases, consider whether there is a pedagogical justification for these requirements. If there is a justification, consider communicating these requirements to prospective students in the course description and establish a plan for responding to students who encounter barriers that can be addressed without fundamental alteration. If there is no justification for the requirements, we recommend that you modify the learning activities to be more flexible and broadly accessible.

#### **Resources**

- Delivering Accessible Digital Learning (JISC Techdis) provides a useful overview of an inclusive approach to course design: <http://www.jisctechdis.ac.uk/techdis/resources/accessiblecontent>
- The National Center on Universal Design for Learning provides a helpful overview on Universal Design for Learning: <http://www.udlcenter.org/implementation/postsecondary>

### Best Practices for Readability

EdX courses have a global and diverse audience. Learners will be better positioned to access the concepts of your content if it is written in clear, straightforward language and the content is well structured. Use appropriate terminology to your subject area, but keep it as clear and unambiguous as possible to help learners who:

- Are not native English speakers; or
- Have a disability that affects reading, such as dyslexia or a visual impairment.

To produce content that is more readable by all students:

- Make the names of elements such as course sections, subsections, units, components, and discussion topics descriptive and easy to skim by putting the important information first in the name. These names are used in navigation menus, page headings, and section headings and are signposts that help learners navigate your course and read course content. “Front-loading” menus and headings particularly helps screen reader users, who can more quickly assess the relevance of a link or heading.
- When creating written learning resources, break text into sections by using HTML elements, such as headings, paragraphs, and lists. Long blocks of unbroken text are a barrier to most readers. Segmented content is more inviting and is easier to navigate and search. See *Best Practices for HTML Markup* for guidance on creating accessible HTML.
- Avoid jargon. If unfamiliar words or phrases are relevant to the subject, explain them when they are first used, and include a glossary with your course materials. When using an abbreviation or acronym, write out the phrase the first time it appears: for example, “National Aeronautics and Space Administration (NASA).”
- Use link text that clearly explains the link destination (for example, “Review the Course Syllabus”). Avoid using constructs like “You can review the Course Syllabus here.” For links that point to documents rather than web pages, include the document type in the link (e.g., “Course Syllabus (PDF)").

### Resources

- The Center for Plain Language provides detailed resources on writing clearly and concisely, in language appropriate for your content and target audience: <http://centerforplainlanguage.org/about-plain-language/checklist/>

### Best Practices for Accessible PDFs

PDF is a common format for course materials, including textbooks supplied by publishers. However, converting materials to PDFs can create accessibility barriers, particularly for learners with visual impairments. To improve the accessibility of your PDFs, review the guidance below about preparing documents for conversion, using Adobe Acrobat Professional, and working with third-party suppliers.

### Converting Microsoft Office documents to PDF

The teaching materials that you will convert to PDFs may use different formats—for example, your syllabus may be in Word, your presentation slides in PowerPoint, and your textbooks in publisher-supplied PDF. Use the tools available in the applicable software to create well-structured source documents. This early step helps minimize issues that may be difficult or impossible to address later in the conversion process.

### Preparing Word documents

- Keep formatting simple. Use headings, paragraphs, lists, images, and captions, and tables for tabular data. Don’t add unnecessary indents, rules, columns, blank lines, and typographic variation. The simpler the formatting, the easier it will be to make an accessible PDF document.

- Use styles for formatting your text, such as Normal, Heading 1, and Heading 2, rather than manually formatting text using bold and indents. Add alternative text to images (see *Best Practices for Describing Images*) using Word's picture formatting options.

### **Preparing PowerPoint documents**

- To help make your content accessible and comprehensible to learners who use screen reading software, start in Outline view and include all of your content as text. Add design elements and images after completing the outline, and use PowerPoint's picture formatting options to include detailed descriptions of images that convey information. Avoid adding animations or transitions, as they will not be saved with the PDF format.
- Use the Home > Drawing > Arrange > Selection Pane option to view the reading order of objects on each slide. If the reading order is not logical, reorder the objects.
- Use the Home > Slides > Reset option to give each slide a unique and informative title. The title can be hidden if preferred.
- Identify column headers for any data table using PowerPoint's table formatting options (Tables > Table Options > Header Row), and ensure that each header contains informative text describing the data in that column.

### **Preparing Excel spreadsheets**

- Use a unique and informative title for each worksheet tab.
- Include text alternatives for images (see *Best Practices for Describing Images*) using Excel's picture formatting options.
- Identify column headers using Excel's table formatting options (Table > Table Options > Header Row), and include in each header cell informative text describing the data in that column.
- Do not use blank cells for formatting.
- Use descriptive link text rather than URLs in data cells.

### **Converting Word, PowerPoint, and Excel documents to PDF**

To generate PDFs from Microsoft Office documents, use the **Save as PDF** option. Make sure the **Document Structure Tags for Accessibility** option is selected (consult your software documentation for more details). Note that PDFs generated from Windows versions of Office will be more accessible than those generated from Mac OS.

### **Working with third-party supplied PDFs**

When you control the creation of a PDF, you have greater control over the document's accessibility. If you use PDFs provided by third parties, including textbooks supplied by publishers, the document's accessibility may be unknown.

#### **Asking the right questions about accessible PDFs**

Where possible, ask the supplier of the PDF if the PDF is accessible. If it isn't, ask whether the supplier can provide an accessible version. Questions to ask include:

- Can screen readers read the document text?
- Do images in the document include text descriptions?
- Are all tables, charts, and math provided in an accessible format?
- Does all media include text equivalents?
- Does the document have navigational aids, such as a table of contents, index, headings, and bookmarks?

### Updating PDFs for accessibility

You may need to update your existing teaching materials in PDF format to improve accessibility. This might include PDFs that were:

- Created by scanning a hard-copy document;
- Generated from a document that was not created with accessibility in mind; or
- Generated by a process that does not preserve source accessibility information.

In such cases, you need special software, such as Adobe Acrobat Professional, to enhance the accessibility of the PDF. PDFs that are created from scanned documents require a preliminary Optical Character Recognition (OCR) step to generate a text version of the document. The procedure checks documents for accessibility barriers, adds properties and tags for document structure, sets the document's language, and adds alternative text for images.

### Resources

- Microsoft provides detailed guidance on generating accessible PDFs from Microsoft Office applications, including Word, Excel, and PowerPoint: <http://office.microsoft.com/en-gb/word-help/create-accessible-pdfs-HA102478227.aspx>
- Adobe provides a detailed accessibility PDF repair workflow using Acrobat XI: <http://www.adobe.com/content/dam/Adobe/en/accessibility/products/acrobat/pdfs/acrobat-xi-pdf-accessibility-repair-workflow.pdf>
- Adobe Accessibility (Adobe) is a comprehensive collection of resources on PDF authoring and repair, using Adobe's products: <http://www.adobe.com/accessibility.html>
- PDF Accessibility (University of Washington) provides a step-by-step guide to creating accessible PDFs from different sources and using different applications: <http://www.washington.edu/accessibility/pdf/>
- PDF Accessibility (WebAIM) provides a detailed and illustrated guide on creating accessible PDFs: <http://webaim.org/techniques/acrobat/>
- The National Center of Disability and Access to Education has a collection of one- page “cheat sheets” on accessible document authoring: <http://ncdae.org/resources/cheatsheets/>
- The Accessible Digital Office Document (ADOD) Project provides guidance on creating accessible Office documents: <http://adod.idrc.ocad.ca/>

### Best Practices for Custom Content Types

Using different content types can significantly add to the learning experience. We discuss below how to design several custom content types to be accessible to students with disabilities.

#### Information graphics (charts, diagrams, illustrations)

Although images can be helpful for communicating concepts and information, they present challenges for people with visual impairments. For example, a chart that requires color perception or a diagram with tiny labels and annotations will likely be difficult to comprehend for learners with color blindness or low vision. All images present a barrier to learners who are blind.

The following are best practices for making information graphics accessible to visually impaired students:

- Avoid using only color to distinguish important features of the image. For example, on a line graph, use a different symbol as well as color to distinguish the data elements.
- Whenever possible, use an image format, such as SVG, that supports scaling. Consider providing a high-resolution version of complex graphics that have small but essential details.

- Provide a text alternative that describes the information in the graphic. For charts and graphs, a text alternative could be a table displaying the same data. See *Best Practices for Describing Images* for details about providing text alternatives for images.

## **Math content**

Math in online courses has been challenging to deliver in a way that is accessible to people with vision impairments. Instructors frequently create images of equations rather than including text equations. Math images cannot be modified by people who need a high-contrast display and cannot be read by screen reader software. EdX uses MathJax to render math content in a format that is clear, readable, and accessible to people who use screen readers. MathJax works together with math notation, like LaTeX and MathML, to render mathematical equations as text instead of images. We recommend that you use MathJax to display your math content. You can learn more about using MathJax in the MathJax documentation on accessibility (see the link in “Resources” below). We will update these guidelines as improvements to MathJax are developed.

## **Simulations and interactive modules**

Simulations, including animated or gamified content, can enhance the learning experience. In particular, they benefit learners who may have difficulty acquiring knowledge from reading and processing textual content alone. However, simulations can also present some groups of learners with difficulties. To minimize barriers, consider the intended learning outcome of the simulation. Is it to reinforce understanding that can also come from textual content or a video lecture, or is it to convey new knowledge that other course resources can’t cover? Providing alternative resources will help mitigate the impact of any barriers.

Although you can design simulations to avoid many accessibility barriers, some barriers, particularly in simulations supplied by third parties, may be difficult or impossible to address for technical or pedagogic reasons. Understanding the nature of these barriers can help you provide workarounds for learners who are affected. Keep in mind that attempted workarounds for simulations supplied by third parties may require the supplier’s consent if copyrighted material is involved.

Consider the following questions when creating simulations, keeping in mind that as the course instructor, you enjoy considerable freedom in selecting course objectives and outcomes. Additionally, if the visual components of a simulation are so central to your course design, providing alternate text description and other accommodations may not be practical or feasible:

- Does the simulation require vision to understand? If so, provide text describing the concepts that the simulation conveys.
- Is the mouse necessary to operate the simulation? If so, provide text describing the concepts that the simulation conveys.
- Does the simulation include flashing or flickering content that could trigger seizures? If so and this content is critical to the nature of the simulation:
  - do not require learners to use the simulation for a required assessment activity; and
  - provide a warning that the simulation contains flickering or flashing content.

As best practices continue to emerge in this area, we will update these guidelines.

## **Online exercises and assessments**

For activities and assessments, consider difficulties students may have in completing an activity and consider using multiple assessment options, keeping in mind that some of the end users have disabilities. Focus on activities that allow students to complete the activity and submit their work without difficulties.

Some students take longer to read information and input responses, such as students with visual or mobility impairments and students who need time to comprehend the information. If an exercise has a time limit, consider whether it's long enough to allow students to respond. Advanced planning may help cut down on the number of students requesting time extensions.

Some online exercise question types may be difficult for students who have vision or mobility impairments. For example:

- Exercises requiring fine hand-eye coordination, such as image mapped input or drag and drop exercises, may present difficulties to students who have limited mobility. Consider alternatives that do not require fine motor skills, unless, of course, such skills are necessary for effective participation in the course. For example, for a drag-and-drop exercise mapping atoms to compounds, provide a checkbox or multiple-choice exercise.
- Highly visual stimuli, such as word clouds, may not be accessible to students who have visual impairments. Provide a text alternative that conveys the same information, such as an ordered list of words in the word cloud.

### Third-party content

When including links to third-party content in your course, be mindful as to the accessibility of such third party resources, which may not be readily accessible to learners with disabilities. We recommend that you test any links prior to sharing them with users.

You can use the eReader tool or *Adding Files to a Course* to incorporate third-party textbooks and other publications in PDF format into your course. You can also incorporate such materials into your course in HTML format. See *Best Practices for Accessible PDFs* for guidance on working with third-party supplied PDFs, and *Best Practices for HTML Markup* for guidance on creating accessible HTML.

### Resources

- Effective Practices for Description of Science Content within Digital Talking Books, from the National Center for Accessible Media, provides best practices for describing graphs, charts, diagrams, and illustrations: [http://ncam.wgbh.org/experience\\_learn/educational\\_media/stemdx](http://ncam.wgbh.org/experience_learn/educational_media/stemdx)
- The University of Washington's DO-IT project provides guidance on creating accessible math content: <http://www.washington.edu/doit/Faculty/articles?465>
- AccessSTEM provides guidance on creating accessible science, technology, engineering and math educational content: <http://www.washington.edu/doit/Stem/>
- The National Center on Educational Outcomes (NCEO) provides Principles and Characteristics of Inclusive Assessment and Accountability Systems: <http://www.ceed.umn.edu/nceo/onlinepubs/Synthesis40.html>
- MathJax provides guidance on creating accessible pages with the display engine: <http://www.mathjax.org/resources/articles-and-presentations/accessible-pages-with-mathjax/>

### Best Practices for Describing Images

Pictures, diagrams, maps, charts, and icons can present information very effectively. However, some visually impaired students, including people who use screen reader software, need text alternatives to understand the information conveyed by these images. The text alternative for an image depends on the image's context and purpose, and may not be a straight description of the image's visual characteristics.

Use the following guidelines when you include images in your course:

- Provide a short text description that conveys the purpose of the image, unless the image conveys a concept or is the only source for the information it presents, in which case a long text description is appropriate. Note that you don't need to provide a long description if the information appears elsewhere on the page. For example, you don't need to describe a chart if the same data appears as text in a data table.

- For a representative image, such as a photograph of Ponte Vecchio, a short description could be “Photo of Ponte Vecchio.” If the photograph’s purpose is to provide detailed information about the location, the long description should be more specific: “Photo of Ponte Vecchio showing its three stone arches and the Arno River.”
  - For a chart, diagram, or illustration, the short description might be “Diagram of Ponte Vecchio.” The long description should include the details conveyed visually, such as dimensions and materials used.
  - For a map, a short description might be “Map showing location of Ponte Vecchio.” If the map is intended to provide directions to the bridge, the long description should provide text directions.
  - For icons, the short description should be the equivalent to the information that the icon provides. For example, for a Course Syllabus link containing a PDF icon, the text equivalent for the icon would be “PDF,” which would be read as “Course Syllabus PDF.”
  - For an image that serves primarily as a link to another web page, the short description should describe the link’s destination, not the image. For example, an image of a question mark that serves as a link to a Help page should be described as “help,” not “question mark.”
  - Images that don’t provide information don’t need text descriptions. For example, a PDF icon that is followed by link text reading “Course Syllabus (PDF)” does not need a description. Another example is a banner graphic whose function is purely aesthetic.
- Include the short description in the alt attribute of the HTML image element, as follows (see *Add an Image to an HTML Component* for more information about adding images):

```

```

- Include an empty alt attribute for non-informative images. When image elements do not include an alt attribute, screen reader software may skip the image, announce the image filename, or, in the case of a linked image, announce the link URL. An empty alt attribute tells screen reader software to skip the image.

```

```

- Consider using a caption to display long descriptions so that the information is available to all users. In the following example, the image element includes the short description as the alt attribute and the paragraph element includes the long description.

```
<p>Photo of Ponte Vecchio showing its three stone arches and the Arno river</p>
```

- Alternatively, provide long descriptions by creating an additional unit or downloadable file that contains the descriptive text and providing a link to the unit or file below the image.

```
 <p><a href="description.html">Description of Ponte Vecchio Diagram</a></p>
```

## Resources

- A decision tree for choosing appropriate alternative text for images (Dey Alexander): <http://www.4syllables.com.au/2010/12/text-alternatives-decision-tree/>
- General guidance on appropriate use of alternative text for images (WebAim): <http://webaim.org/techniques/alttext/>
- HTML5: A more detailed description of techniques for providing useful alternative text for images: <http://dev.w3.org/html5/alt-techniques/>
- The DIAGRAM Center, established by the US Department of Education (Office of Special Education Programs), provides guidance on ways to make it easier, faster, and more cost effective to create and use accessible images: <http://www.diagramcenter.org/webinars.html>



### Best Practices for Accessible Media

Media-based course materials help convey concepts and bring course information to life. We require all edX courses to use videos with interactive, screen-reader- accessible transcripts. This built-in universal design mechanism helps enhance your course’s accessibility. When you create your course, you need to factor in time and resources for creating these transcripts.

#### Audio transcription

Audio transcripts are essential for presenting audible content to students who can’t hear and are helpful to students who are not native English speakers. Synchronized transcripts allow students who can’t hear to follow along with the video and navigate to a specific section of the video by clicking the transcript text. Additionally, all students can use transcripts of media-based learning materials for study and review.

A transcript starts with a text version of the video’s spoken content. If you created your video using a script, you have a great start on creating the transcript. Just review the recorded video and update the script as needed. Otherwise, you’ll need to transcribe the video yourself or engage someone to do it. There are many companies that will create timed video transcripts (i.e., transcripts that synchronize the text with the video using time codes) for a fee.

The edX platform supports the use of transcripts in .srt format. When you integrate a video file into the platform, you should also upload the .srt file of the timed transcript for such video. See [Working with Video Components](#) for details on how to add timed transcripts.

#### Video description

When creating video segments, consider how to convey information to learners who can’t see. For many topics, you can fully cover concepts in the spoken presentation. If practical, you might also describe visual information, for example, by speaking as you are writing on a tablet.

#### Downloadable transcripts

For both audio and video transcripts, consider including a text file that students can download and review using tools such as word processing, screen reader, or literacy software. The downloadable transcript should be text only, without time codes.

#### Resources

- Accessible Digital Media Guidelines provides detailed advice on creating online video and audio with accessibility in mind: [http://ncam.wgbh.org/invent\\_build/web\\_multimedia/accessible-digital-media-guide](http://ncam.wgbh.org/invent_build/web_multimedia/accessible-digital-media-guide)

### Best Practices for HTML Markup

HTML is the best format for creating accessible content. It is well supported and adaptable across browsers and devices, the information in the markup helps assistive technologies, such as screen reader software, provide information and functionality to people with vision impairments.

To make it easier for our course teams to create content with good HTML markup, we are working to make all templates in edX Studio conform to the best practices set forth below. In the interim, we recommend that you manually add the appropriate HTML tagging. Depending on the type of component you are adding to your course in edX Studio, the raw HTML data will be available either automatically or by selecting the “Advanced Editor” or “HTML” views.

Keep the following guidelines in mind when you create HTML content:



- Use HTML to describe your content’s *meaning* rather than its *appearance*. A phrase marked as a level 1 heading (<h1>) clearly indicates the topic of the page, while a phrase marked as bold text (<bold> or <strong>) may be a heading or may just be text that the instructor wants to emphasize. A group of items marked up as a list are related in the code, without relying on visual cues such as bullets and indents. Coding meaning into content is particularly useful for students using screen readers, which, for example, can read through headings or announce the number of items in a list.
- Use HTML heading levels in sequential order to represent the structure of the document. Well-structured headings help students navigate a page and find what they are looking for.
- Use HTML list elements to group related items and make content easier to skim and read. HTML offers three kinds of lists:
  1. Unordered lists, where each item is marked with a bullet.
  2. Ordered lists, where each item is listed with a number.
  3. Definition lists, where each item is represented using term and description pairs (like a dictionary).
- Use table elements to mark up data sets—that is, information that works best in a grid format—with descriptive rows and columns. Mark up row and column headers using the <th> element so screen readers can effectively describe the content in the table.

## Resources

- Creating Semantic Structure provides guidance on reflecting the semantic structure of a web page in the underlying markup (WebAIM): <http://webaim.org/techniques/semanticstructure/>
- Creating Accessible Tables provides specific guidance on creating data tables with the appropriate semantic structure so that screen readers can correctly present the information (WebAIM): <http://webaim.org/techniques/tables/data>

### 4.3.3 Conclusion

At edX, the heart of our mission is to provide global access to higher-level learning with only a computer and the Internet. We have designed a platform that enables course creators to reach thousands of learners, some of whom will lack the typical backgrounds and resources of resident students taking traditional courses on college campuses. We hope that these guidelines prove useful to you as you work with your institution’s disability support services and information technology resources to comply with applicable accessibility laws. As we are all on this learning venture together, we encourage you to share your thoughts with us at [accessibility@edx.org](mailto:accessibility@edx.org).

## 4.4 Glossary

A - C - D - E - F - G - H - I - L - M - N - P - R - S - T - V - W - XYZ

### 4.4.1 A

#### A/B Test

See *Content Experiment*.

#### About Page

The course page that provides potential students with a course summary, prerequisites, a course video and image, and important dates.

See *Providing a Course Overview* for more information.

### Advanced Editor

An XML-only editor in a Problem component that allows you to create and edit any type of problem. For more information, see [The Advanced Editor](#).

### Assignment Type

The category of graded student work, such as homework, exams, and exercises.

For more information, see [Establishing a Grading Policy](#).

## 4.4.2 C

### Certificate

A document issued to an enrolled student who successfully completes a course. Not all edX courses offer certificates, and not all students enroll as certificate candidates.

### Checkbox Problem

A problem that prompts the student to select one or more options from a list of possible answers. For more information, see [Checkbox Problem](#).

### Chemical Equation Response Problem

A problem that allows the student to enter chemical equations as answers. For more information, see [Chemical Equation Problem](#).

### Circuit Schematic Builder Problem

A problem that allows the student to construct a schematic answer (such as an electronics circuit) on an interactive grid.

See [Circuit Schematic Builder Problem](#) for more information.

### Cohort

A group of students who participate in a class together. Students who are in the same cohort group can communicate and share experiences in private discussions.

Cohorts are an optional feature of courses on the edX platform. For information about how you enable the cohort feature, set up cohort groups, and assign students to them, see [Using Cohorts in your Courses](#).

### Component

The part of a unit that contains your actual course content. A unit can contain one or more components. For more information, see [Developing Course Components](#).

### Content Experiment

You can define alternative course content to be delivered to different, randomly assigned groups of students. Also known as A/B or split testing, you use content experiments to compare the performance of students who have been exposed to different versions of the content. For more information, see [Creating Content Experiments](#).

### Content-Specific Discussion Topic

A category within the course discussion that appears at a defined point in the course to encourage questions and conversations. To add a content-specific discussion topic to your course, you add a discussion component to a unit. Students cannot contribute to a content-specific discussion topic until the release date of the section that contains it.

For more information, see [Working with Discussion Components](#) and [Creating Discussion Topics for Your Course](#).

**Course Accordion**

The left-hand navigation bar in the courseware that shows the sections and subsections for a course. The word “accordion” is intended to evoke the folding and unfolding of an accordion, because when you click a section, the section expands to show subsections.

**Course Catalog**

The page that lists all courses offered in the edX learning management system.

**Course Handouts**

Course handouts are files you make available to students in the Course Info page.

See [Add Course Handouts](#) for more information.

**Course Info Page**

The page that opens first every time students access your course. You can post announcements on the Course Info page. The Course Handouts sidebar appears in the right pane of this page.

**Course Run**

The term in which your course takes place. You set the course run when you create your course. For more information, see [Create a New Course](#).

**Courseware**

The page where students access the primary instructional materials for your course. Sections, subsections, units, and components are all accessed from the Courseware page.

**Course-Wide Discussion Topic**

Optional categories that you create to guide how students find and share information in the course discussion. Examples of course-wide discussion topics include Announcements and Frequently Asked Questions. Students can contribute to these topics as soon as your course starts.

For more information, see [Creating Discussion Topics for Your Course](#).

**Custom Response Problem**

A custom response problem evaluates text responses from students using an embedded Python script. These problems are also called “write-your-own-grader” problems. For more information, see [Write-Your-Own-Grader Problem](#).

### 4.4.3 D

**Data Czar**

A data czar is the single representative at a partner institution who is responsible for receiving course data from edX, and transferring it securely to researchers and other interested parties after it is received.

See the [edX Research Guide](#).

**Discussion**

The set of topics defined to promote course-wide or unit-specific dialog. Students use the discussion topics to communicate with each other and the course staff in threaded exchanges.

See [Managing Course Discussions](#) for more information.

**Discussion Component**

Discussion topics that course staff add directly to units. For example, a Video component can be followed by a Discussion component so that students can discuss the video content without having to leave the page. When you add a discussion component to a unit, you create a content-specific discussion topic.

See *Working with Discussion Components* for more information.

### Dropdown Problem

A problem that asks students to choose from a collection of answer options, presented as a drop-down list. For more information, see *Dropdown Problem*.

## 4.4.4 E

### edX101

edX's online course about how to create online courses. The intended audience is faculty and university administrators. It is also the first course ever to have been developed entirely using edX Studio.

### edX Edge

A less restricted site than edX.org. While only consortium members can create and post content on edX.org, any users with course creator permissions can create courses with Studio on studio.edge.edx.org, then view the courses on the learning management system at edge.edx.org.

### edX Studio

The edX tool you use to build your courses.

See *What is Studio?* for more information.

### Exercises

Practice or practical problems interspersed in edX course content to keep the learner engaged. Exercises are also an important measure of teaching effectiveness and learner comprehension.

## 4.4.5 F

### Forum

See *Discussion*.

## 4.4.6 G

### Grade Range

Thresholds that specify how numerical scores are associated with grades, and the score required to pass a course.

See *Set the Grade Range* for more information.

### Grading Rubric

List of the items that a student's response should cover in an open response assessment.

See *Rubric* for more information.

## 4.4.7 H

### HTML Component

The component where you add and format text for your course. An HTML component can contain text, lists, links and images.

See *Working with HTML Components* for more information.

## 4.4.8 I

### Image Mapped Input Problem

A problem that presents an image and accepts clicks on the image as an answer.

See *Image Mapped Input Problem* for more information.

### Import

A tool in edX Studio that loads a new course into your existing course. When you use the Import tool, Studio replaces all of your existing course content with the content from the imported course.

See *Import a Course* for more information.

## 4.4.9 L

### LaTeX

A document markup language and document preparation system for the TeX typesetting program.

In edX Studio, you can *Import LaTeX Code into an HTML Component*.

You can also create a *Problem Written in LaTeX*.

### Learning Management System (LMS)

The platform that students use to view courses, and that course staff members use to manage enrollment and staff privileges, moderate discussions, and access data while the course is running.

### Live Mode

A view that allows course staff to review all public units as students see them, regardless of the release dates of the section and subsection that contain the units.

See *View Your Live Course* for more information.

## 4.4.10 M

### Math Expression Input Problem

A problem that requires students to enter a mathematical expression as text, such as  $e=mc^2$ .

See Math Response Formatting for Students for more information.

### MathJax

A LaTeX-like language you use to write equations. Studio uses MathJax to render text input such as  $x^2$  and  $\sqrt{x^2-4}$  as “beautiful math.”

See *A Brief Introduction to MathJax in Studio* for more information.

### Multiple Choice Problem

A problem that asks students to select one answer from a list of options.

See *Multiple Choice Problem* for more information.

### 4.4.11 N

#### Numerical Input Problem

A problem that asks students to enter numbers or specific and relatively simple mathematical expressions.

See *Numerical Input* for more information.

### 4.4.12 P

#### Pages

Pages organize course materials into categories that students select in the learning management system. Pages provide access to the courseware and to tools and uploaded files that supplement the course. Each page appears in your course's navigation bar.

See *Adding Pages to a Course* for more information.

#### Preview Mode

A view that allows you to see all the units of your course as students see them, regardless of the unit status and regardless of whether the release dates have passed.

See *Preview Course Content* for more information.

#### Problem Component

A component that allows you to add interactive, automatically graded exercises to your course content. You can create many different types of problems.

See *Working with Problem Components* for more information.

#### Progress Page

The page in the learning management system that shows students their scores on graded assignments in the course.

### 4.4.13 Q

#### Question

A question is a type of contribution that you can make to a course discussion topic to surface an issue that the course staff or other students can resolve.

See *Managing Course Discussions* for more information.

### 4.4.14 R

#### Rubric

List of the items that a student's response should cover in an open response assessment.

See *Rubric* for more information.

## 4.4.15 S

### Section

The topmost category in your course. A section can represent a time period in your course or another organizing principle.

See *Developing Course Sections* for more information.

### Short Course Description

The description of your course that appears on the edX [Course List](#) page.

See *Describe Your Course* for more information.

### Simple Editor

The graphical user interface in a Problem component that contains formatting buttons and is available for some problem types. For more information, see *The Studio View of a Problem*.

### Split Test

See *Content Experiment*.

### Subsection

A division that represents a topic in your course, or another organizing principle. Subsections are found inside sections and contain units. Subsections can also be called “lessons.”

See *Developing Course Subsections* for more information.

## 4.4.16 T

### Text Input Problem

A problem that asks the student to enter a line of text, which is then checked against a specified expected answer.

See *Text Input Problem* for more information.

### Transcript

A printed version of the content of a video. You can make video transcripts available to students.

See *Working with Video Components* for more information.

## 4.4.17 V

### Video Component

A component that you can use to add recorded videos to your course.

See *Working with Video Components* for more information.

## 4.4.18 W

### Wiki

The page in each edX course that allows students as well as course staff to add, modify, or delete content.

Students can use the wiki to share links, notes, and other helpful information with each other.

#### 4.4.19 XYZ

##### **XBlock**

EdX's component architecture for writing courseware components.

Third parties can create components as web applications that can run within the edX learning management system.



---

## Setting up Your Course

---

Use the chapters in this section to create and build your course.

For information on how to develop your course content in the Studio Outline page, see *Developing Your Course*.

### 5.1 Creating a New Course

#### 5.1.1 Overview

This chapter describes how to create and set up your course:

- *Create a New Course*
- *Edit Your Course*
- *Use the Course Checklist*
- *Add Course Team Members*

Another way to create a course is to re-run an existing course. See *Re-running a Course*.

You can also *Export a Course* and *Import a Course* through Studio. You can do this when you need to edit the course in XML.

#### 5.1.2 Create a New Course

1. Log in to Studio.
2. Click **New Course**.
3. Enter course information as needed and click **Create**.

---

**Note:** Enter new course information carefully. This information becomes part of the URL for your course. To change the URL after the course is created, you must contact edX through the Help site (<http://help.edge.edx.org>). Additionally, because this information becomes part of your course URL, the total number of characters in the following four fields must be 65 or fewer.

---

### Create a New Course

**Course Name \***

The public display name for your course.

**Organization \***

The name of the organization sponsoring the course. **Note:** This is part of your course URL, so no spaces or special characters are allowed. This cannot be changed, but you can set a different display name in Advanced Settings later.

**Course Number \***

The unique number that identifies your course within your organization. **Note:** This is part of your course URL, so no spaces or special characters are allowed and it cannot be changed.

**Course Run \***

The term in which your course will run. **Note:** This is part of your course URL, so no spaces or special characters are allowed and it cannot be changed.

[CREATE](#) [CANCEL](#)

- For **Course Name**, enter the title of your course. For example, the name may be “Sets, Maps, and Symmetry Groups”. Use title capitalization for the course title.
- For **Organization**, enter the identifier for your university. For example, enter HarvardX or MITx. Do not include spaces or special characters.

4. Click **Save**.

The page refreshes to show the empty **Outline** for your new course. The course identifier appears in the browser address bar as the final part of the URL in the format `{key type}:{org}+{course}+{run}`. For example, `course-v1:edX+DemoX+Demo_2014`.

---

**Note:** This course ID format applies to all courses created after January 14, 2015. Older courses can have course IDs in the format `{org}/{course}/{run}`. For example, `MITx/6.002x/2012_Fall`.

---

### 5.1.3 Edit Your Course

After you create a course, the course opens in Studio automatically and you can begin editing.

When you return to Studio later, the Studio **My Courses** dashboard page lists the courses that you create along with any courses for which you have course staff privileges.

**Welcome, MikeSmith!**

Here are all of the courses you currently have access to in Studio:

Introduction

UNH / 101 / 2014\_Fall

**Need help?**

If you are new to Studio and having trouble getting started, there are a few things that may be of help:

[Get started by reading Studio's Documentation](#)

[Request help with Studio](#)

To open a course, click the course name. The Studio **Course Outline** page appears.

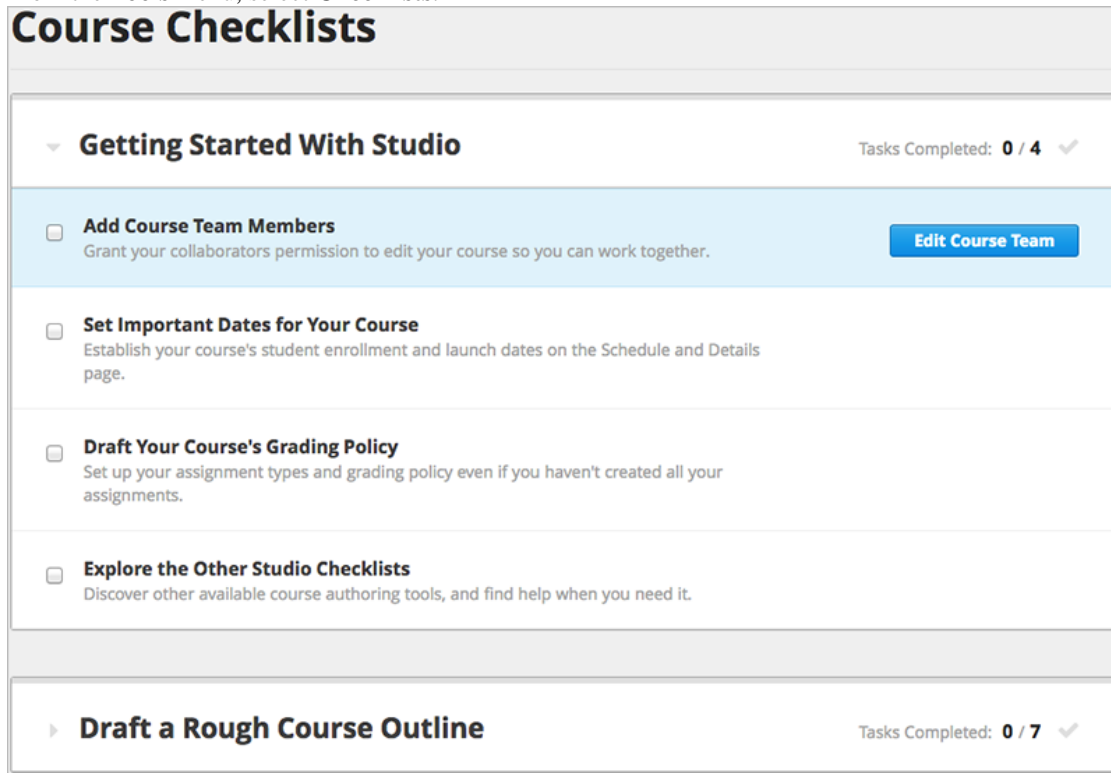
### 5.1.4 Use the Course Checklist

You can use a Course Checklist within Studio to help you work through the tasks of building a course.

Categories of tasks in the Course Checklist include:

- Getting Started with Studio
- Draft a Rough Course Outline
- Explore edX's Support Tools
- Draft Your Course About Page

From the **Tools** menu, select **Checklists**.



As shown above for the **Add Course Team Members** task, if you hover over a task, a button is displayed that takes you to the page to complete that task.

You can expand and collapse sections of this page as needed.

You can check tasks as you complete them. Studio saves your changes automatically. Other course staff can see your changes.

### 5.1.5 Add Course Team Members

Course team members are users who help you build your course.

Only a team member with Admin access can add or remove course team members, or grant Admin access to other team members.

Other course team members can edit the course and perform all tasks except adding and removing other new team members and granting Admin access.

---

**Note:** Any course team member can delete content created by other team members.

---

All course team members must be registered with Studio and have an active account.

To add a course team member:

1. Ensure you have Admin access.
2. Ensure that the new team member has registered with Studio.
3. From the **Settings** menu, select **Course Team**.
4. Click **Add a New Team Member**.
5. Enter the new team member's email address, then click **ADD USER**.

You can also assign privileged roles to users when you work in the LMS. Regardless of where the role is assigned, these administrative team members can work on your course in both the LMS and in Studio. For more information on assigning roles while you run your course, see [Staffing](#).

## 5.2 Providing a Course Overview

### 5.2.1 Overview

Prospective students need to know specific information about your course, including what the course covers, how much time they should plan to spend on the course each week, and whether the course requires any prior skills and knowledge. You specify all of this information in Studio.

For more information, see the following topics:

- [Describe Your Course](#)
- [Add a Course Image](#)
- [Add a Course Introduction Video](#)
- [Set Course Time Requirements](#)
- [Set Course Prerequisites](#)
- [Set Important Dates for Your Course](#)

Most of this information appears on the course About page, sometimes called the course summary page. The following image shows a typical About page.



## Justice

Justice is an introduction to moral and political philosophy, including discussion of contemporary dilemmas and controversies.

### About this Course

**\*Note - This is an Archived course\***

This is a past/archived course. At this time, you can only explore this course in a self-paced fashion. Certain features of this course may not be active, but many people enjoy watching the videos and working with the materials. Make sure to check for reruns of this course.




School:	<a href="#">HarvardX</a>
Course Code:	ER22.1x
Classes Start:	8 Apr 2014
Course Length:	12 weeks
Estimated effort:	From 2:00 hours a week to a lifetime

#### Prerequisites:

None

[Enroll in ER22.1x](#)

Students see the course About page before they enroll in the course. After a student enrolls in the course, students can see information about your course on the Student Dashboard.




MITx

Course Started - Mar 05, 2014

## 6.00.2x Introduction to Computational Thinking and Data Science

[View Course](#)

[Email Settings](#) [Unregister](#)



MITx

Course Starts - Apr 08, 2014

## 6.SFMx Street Fighting Mathematics

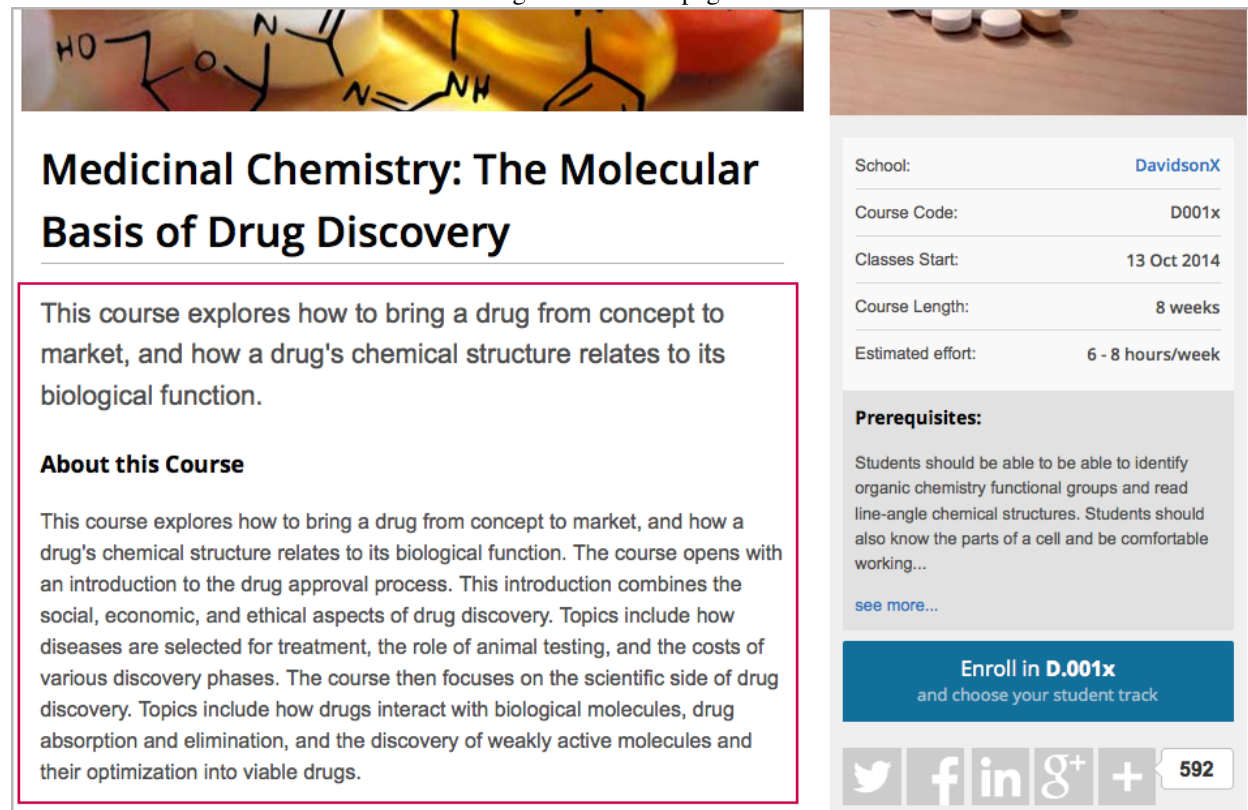
[Email Settings](#) [Unregister](#)

**Note:** If your course will be available on edX.org, you must work with your edX program manager to prepare the content for your About page, including the course overview, image, and video. For more information, see the [About page lesson](#) in edX101.

## 5.2.2 Describe Your Course

You describe your course in a course overview. The overview contains important information for students who may be interested in taking your course. It introduces the main idea of the course and describes the topics or concepts that the course covers. The overview can also describe the skills and knowledge your students need to be able to succeed in your course, as well as provide information about course requirements and staff.

The course overview is outlined in the following course About page.



The screenshot shows a course overview page. At the top is a header image with chemical structures and pills. Below the image is the course title: **Medicinal Chemistry: The Molecular Basis of Drug Discovery**. A red box highlights the main description: "This course explores how to bring a drug from concept to market, and how a drug's chemical structure relates to its biological function." Below this is a section titled "About this Course" with a detailed paragraph about the course content. To the right of the main text is a sidebar with course details: School (DavidsonX), Course Code (D001x), Classes Start (13 Oct 2014), Course Length (8 weeks), and Estimated effort (6 - 8 hours/week). Below these details is a "Prerequisites" section stating that students should be able to identify organic chemistry functional groups and read line-angle chemical structures. At the bottom of the sidebar is a blue button that says "Enroll in D.001x and choose your student track". At the very bottom of the page are social media icons for Twitter, Facebook, LinkedIn, Google+, and a plus sign, along with a count of 592.

You use HTML to enter the course overview in Studio. The **Course Overview** field in Studio contains a boilerplate that includes placeholders.

To enter the course overview, follow these steps.

1. From the **Settings** menu, select **Schedule & Details**.
2. Scroll down to the **Introducing Your Course** section, then locate the **Course Overview** field.

## Introducing Your Course

Information for prospective students

---

### Course Overview

```

1 <section class="about">
2   <h2>About This Course</h2>
3   <p>Include your long course description here. The long course description should contain 150-400 words.
4   </p>
5   <p>This is paragraph 2 of the long course description. Add more paragraphs as needed. Make sure to
6   enclose them in paragraph tags.</p>
7 </section>
8 <section class="prerequisites">
9   <h2>Prerequisites</h2>
10  <p>Add information about course prerequisites here.</p>
11 </section>
12
13 <section class="course-staff">
14   <h2>Course Staff</h2>
15   <article class="teacher">
16     <div class="teacher-image">
17       
19     </div>
20     <h3>Staff Member #1</h3>
  
```

Introductions, prerequisites, FAQs that are used on [your course summary page](#) (formatted in HTML)

3. Replace the placeholders in the boilerplate text to create your course overview. Studio automatically saves your changes.

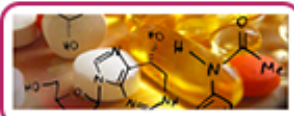
**Note:** Do not edit HTML tags in the boilerplate. These tags align the content on the course About page.

4. Below the **Course Overview** field, click **your course summary page** to see how the description will appear to students. A sample About page opens in a new window.

When you make changes, note that you may have to wait a moment for the content to auto-save before the changes appear on the page.

### 5.2.3 Add a Course Image

You provide a course image that identifies your course. The course image that you add in Studio appears on the student dashboard. On Edge, the course image also appears on the course About page.



DavidsonX

Course Starts - Mar 10, 2014

## 001x Medicinal Chemistry

► Challenge Yourself!

Take this course as an ID-verified student.

[Unregister](#)

The course image must be a minimum of 660 pixels in width by 240 pixels in height, and in .jpg or .png format.

To add a course image, follow these steps.

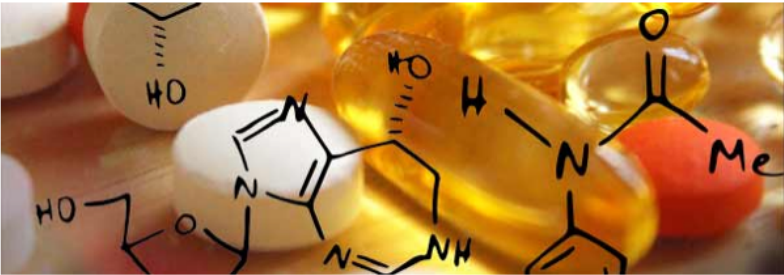
1. From the **Settings** menu, select **Schedule & Details**.
2. Scroll down to the **Course Image** section.
3. To select an image from your computer, click **Upload Course Image**, then follow the prompts to find and upload your image.



4. View your dashboard to see how the image will appear to students.

### 5.2.4 Add a Course Introduction Video


To excite and entice potential students to enroll, each course can have a course introduction video. The video should reveal some of the personality the instructors bring to the course.



## Medicinal Chemistry: The Molecular Basis of Drug Discovery

This course explores how to bring a drug from concept to market, and how a drug's chemical structure relates to its biological function.

Watch the Course Intro Video



School:	DavidsonX
Course Code:	D001x
Classes Start:	13 Oct 2014
Course Length:	8 weeks
Estimated effort:	6 - 8 hours/week

The video should answer these key questions.

- Who is teaching the course?
- What university or college is the course affiliated with?
- What topics and concepts does your course cover?
- Why should a learner enroll in your course?

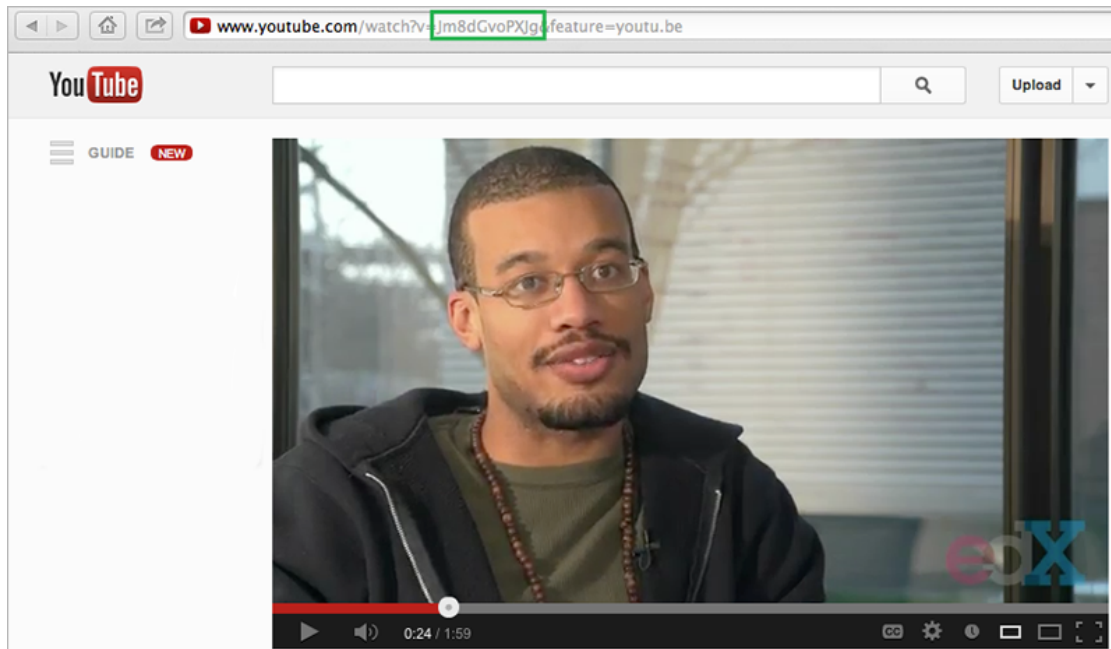
The video should deliver your message as concisely as possible and have a run time of less than 2 minutes.

Ensure your course introduction video follows the same *Compression Specifications* and *Video Formats* guidelines as course content videos.

To add a course introduction video:

1. Upload the course video to YouTube. Make note of the code that appears between **watch?v =** and **&feature** in the URL. This code appears in the box below.





2. From the **Settings** menu, select **Schedule & Details**.
3. Scroll down to the **Course Introduction Video** section.
4. In the field below the video box, enter the YouTube video ID (the code you copied in step 1). When you add the code, the video automatically loads in the video box. Studio automatically saves your changes.

### 5.2.5 Set Course Time Requirements

To specify the number of hours that you expect students to spend on the course each week, follow these steps.

1. From the **Settings** menu, select **Schedule & Details**.
2. Scroll down to the **Requirements** section.
3. In the **Hours of Effort per Week** field, enter the number of hours you expect students to work on this course each week.
4. View your course About page to see how the requirements will appear to students.

### 5.2.6 Set Course Prerequisites

You might want to make sure that your students have a specific set of skills and knowledge before they take your course. In addition to suggesting general requirements in your course overview, you can require students to *complete specific prerequisite courses*, or *take an entrance exam*, or both.

#### Specify Prerequisite Courses

You can require that your students pass a particular edX course before they enroll in your course. Students see information about course prerequisites on the course About page.



## EDX101

edX LEARNING SERIES

### Overview of Creating an edX Course

A quick course designed to help you explore all of the different steps that go into planning and building an edX course. Perfect for instructors or institutional leadership interested in building a MOOC on edX.

**About this Course**

This course is designed to show faculty, instructors and organizational leadership how to create a course on edX. The course will cover the strategy behind getting the word out about a course, creating course content that is interactive, engaging, and accessible, and delivering a finished course.

**WAYS TO TAKE THIS EDX COURSE:**

Watch the Course Intro Video



Course Number **edX101**

Classes Start **Dec 01, 2014**

Prerequisites **edX DemoX.1**

You must successfully complete edX DemoX.1 before you begin this course.

[Access Courseware](#)







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If students have not completed the prerequisite course, they can enroll in your course and then see your course on the Student Dashboard. However, unlike with other courses, the Student Dashboard does not provide a link to the courseware. The Student Dashboard includes a link to the About page for the prerequisite course. Students can enroll in the prerequisite course from the About page.

### CURRENT COURSES




edX

## edX101 Overview of Creating an edX Course

Course Started - Dec 01, 2014 at 00:00 UTC

[Unenroll](#)

You must successfully complete **edX DemoX.1** before you begin this course.



edX

## CA.204 La Tierra Centroamericana

Course Started - Jan 01, 2015 at 00:00 UTC

[View Course](#)

[Unenroll](#)

To specify a prerequisite course, you must be a course author in both the current course and in the prerequisite course.

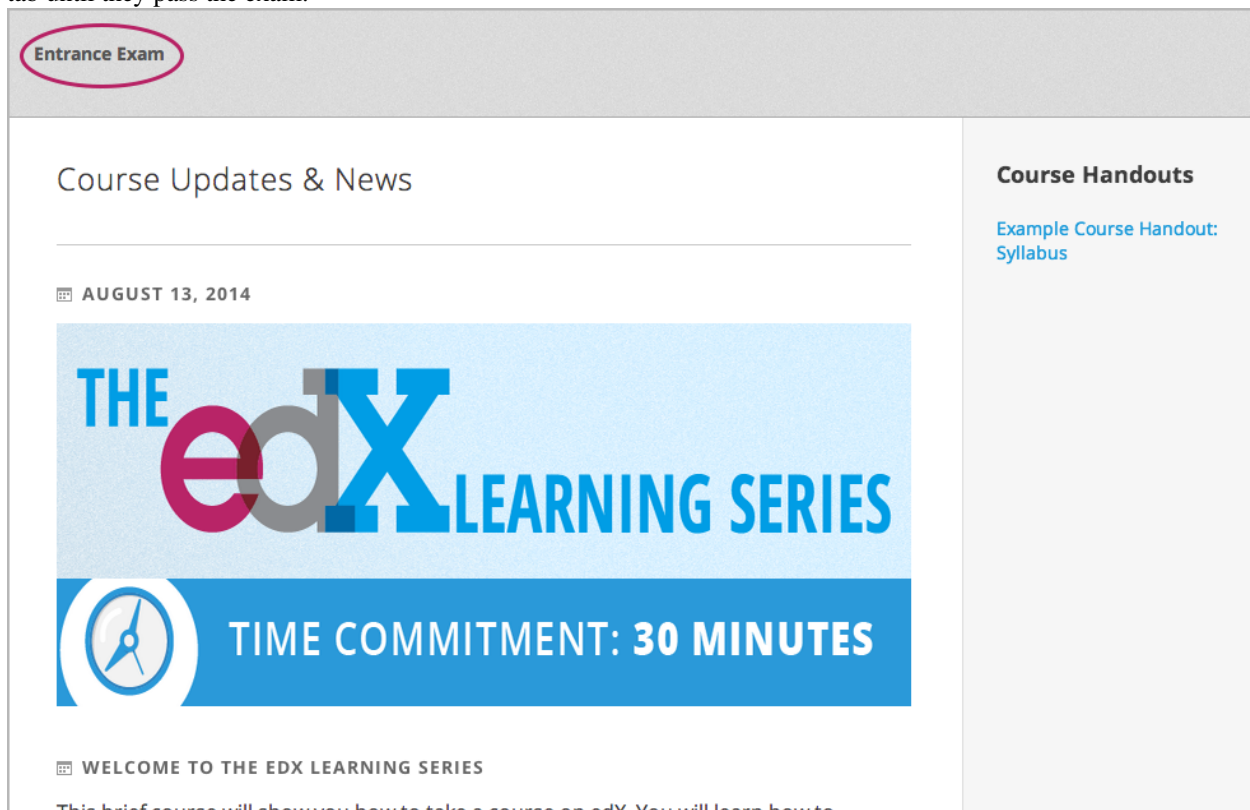
1. In Studio, open your course.
2. On the **Settings** menu, select **Schedule & Details**.

3. On the **Schedule & Details** page, scroll to the **Requirements** section.
4. Under **Prerequisite Course**, click the drop-down list to select a course.
5. At the bottom of the page, select **Save Changes**.

**Note:** Currently, you can specify only one prerequisite course.

## Require an Entrance Exam

You can require your students to pass an entrance exam before they access your course materials. If you include an entrance exam, students who enroll in your course see only the **Course Updates & News** page and an **Entrance Exam** tab until they pass the exam.



After students pass the exam, they can access all released materials in your course.

To require an entrance exam, follow these steps.

1. In Studio, open your course.
2. On the **Settings** menu, select **Schedule & Details**.
3. On the **Schedule & Details** page, scroll to the **Requirements** section.
4. Select the **Require students to pass an exam before accessing course materials** check box.
5. At the bottom of the page, select **Save Changes**.

After you save your changes, Studio automatically creates an **Entrance Exam** section in your course outline. To add content to your entrance exam, go to the course outline.

### Best Practices for Entrance Exams

We strongly recommend that you follow several guidelines to help you and your students have a positive experience with entrance exams.

- Make sure that your beta testers include the entrance exam when they test your other course content.
- Make sure that you mention the entrance exam in the course description on your course About page. Otherwise, students will not know about the entrance exam before they enroll in your course and try to access course content.
- Add an announcement at the top of the **Course Updates & News** page that contains information and instructions for students who need to take the exam. When students first try to access content in a course that has an entrance exam, they see the **Course Updates & News** page. We suggest that you include the following information.
  - To begin the course entrance exam, students click the **Entrance Exam** tab on the left side of the screen.
  - After students complete the entrance exam, they have to click the **Entrance Exam** tab again or refresh the page in their browser. When the page refreshes, students can see all currently available course content.

The screenshot shows the Courseware interface. The top navigation bar includes 'Courseware', 'Course Info', 'Discussion', 'Wiki', and 'Progress'. The left sidebar shows a list of course content items under the 'Entrance Exam' section. The items are: 'Introduction', 'Week 1: Experiencing Course Content', 'Week 2: Being Social', 'Week 3: Completing a Course', 'Optional: Example Problem Types', and 'Optional: edX Mobile App'. The 'Optional: edX Mobile App' item is highlighted with a pink box. The main content area shows a question titled 'WORLDWIDE STUDENTS (1/1 point)' with the text 'As of December 2014, how many countries around the world had at least one edX student?'. The answer '193' is entered in a text box and is marked correct with a green checkmark. Below the question is a 'Check' button and a 'Show Answer' button. The next question is 'STUDENT COUNTRIES (1/1 point)' with the text 'Which two countries have the largest number of edX students?'.

### Create an Entrance Exam from the Course Outline

You create your course entrance exam from the course outline in Studio. Creating entrance exam content is just like creating other course content. For more information, see [Creating Course Content](#).

### Adjust Scores in the Entrance Exam

If you find an error in the exam after students have taken it, and corrections to the exam are unavoidable, you have several options to rescore the exam for individual students. These options are available on the Instructor Dashboard.

On the Instructor Dashboard, click **Student Admin**, and then scroll to the **Entrance Exam Grade Adjustment** section. The following options are available.

- **Reset Student Attempts:** Reset the value for one particular student's attempts back to zero so that the student can begin work over again. For more information, see [Reset Student Attempts for a Problem](#).
- **Rescore Student Submission:** Rescore the responses that a student has submitted. For more information, see [Rescore Student Submissions for a Problem](#).
- **Delete Student State for Problem:** Delete a student's entire history for the exam from the database. For more information, see [Delete Student State for a Problem](#).

Another option on the Instructor Dashboard is **Show Background Task History for Student**. If you reset student attempts, rescore student submissions, or delete student state, the operation runs in the background. If you want to see a record of all the operations that have run for the entrance exam, select **Show Background Task History for Student**.

## 5.2.7 Set Important Dates for Your Course

You must set dates and times for enrollment and for the course.

1. In Studio, from the **Settings** menu, select **Schedule and Details**.
2. Follow the on-screen text to enter the course and enrollment schedule.

## Course Schedule

Course Start Date	Course Start Time (EST)
12/31/2029	19:00
First day the course begins	
Course End Date	Course End Time (EST)
MM/DD/YYYY	HH:MM
Last day your course is active	
Enrollment Start Date	Enrollment Start Time (EST)
MM/DD/YYYY	HH:MM
First day students can enroll	
Enrollment End Date	Enrollment End Time (EST)
MM/DD/YYYY	HH:MM
Last day students can enroll	

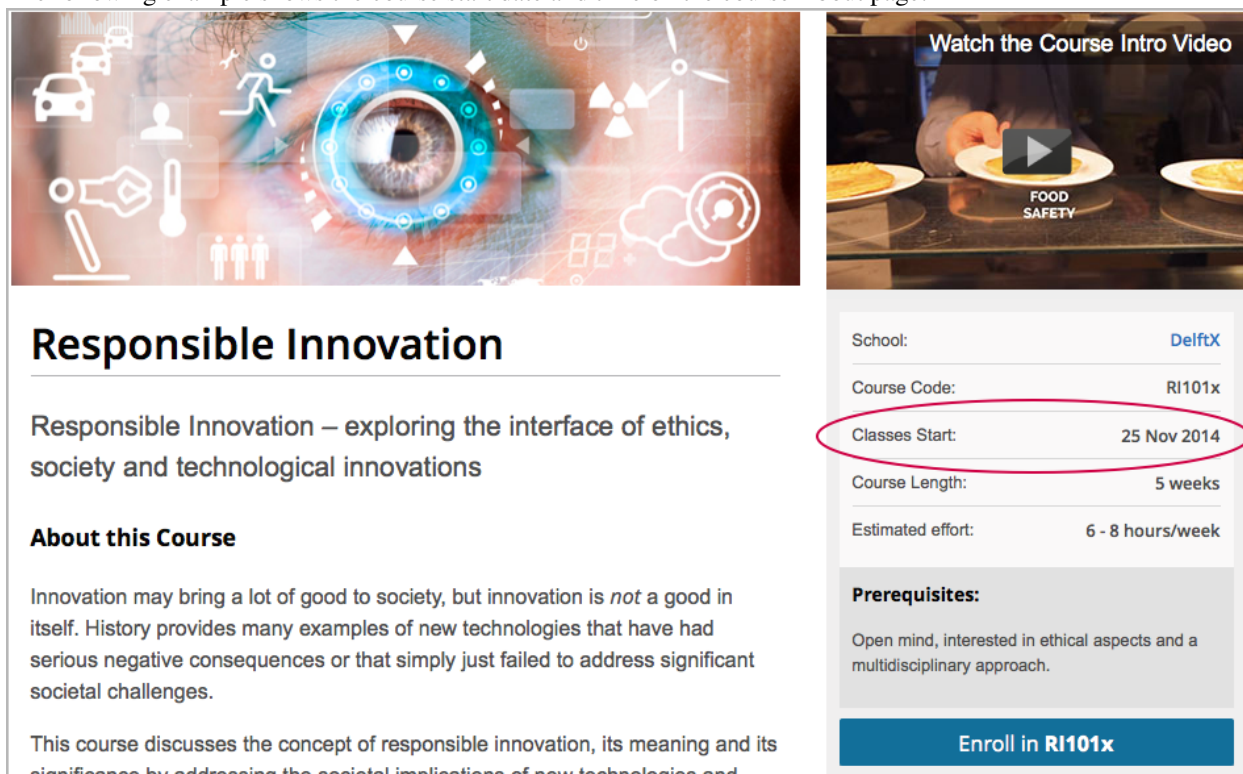
**Note:** The **Time** fields on this page, and the times that students see, use Universal Coordinated Time (UTC).

### The Course Start Date

**Note:** The default course start date is set far into the future, to **01/01/2030**. This is to ensure that your course does not start before you intend it to. You must change the course start date to the date you want students to begin using the course.

Students see the course start date and time on their **Current Courses** dashboards and on the course About page. Students can see some parts of the course before the course start date. For example, students can see your **Course Info** page and course-wide discussion topics as soon as they enroll in your course. For more information about course-wide discussion topics, see *Create Course-Wide Discussion Topics*.

The following example shows the course start date and time on the course About page:



**Responsible Innovation**

Responsible Innovation – exploring the interface of ethics, society and technological innovations

**About this Course**

Innovation may bring a lot of good to society, but innovation is *not* a good in itself. History provides many examples of new technologies that have had serious negative consequences or that simply just failed to address significant societal challenges.

This course discusses the concept of responsible innovation, its meaning and its significance by addressing the societal implications of new technologies and

**Watch the Course Intro Video**

School: DelftX

Course Code: RI101x

Classes Start: 25 Nov 2014

Course Length: 5 weeks

Estimated effort: 6 - 8 hours/week

**Prerequisites:**

Open mind, interested in ethical aspects and a multidisciplinary approach.

**Enroll in RI101x**

In the dashboard, students see the start dates and times for each of their courses, as in the following examples.



## CURRENT COURSES



edX

Course Started - Oct 15, 2014 at 08:00 UTC

## MT101 Europe in the Twenty-First Century

View Course

[Unenroll](#)

edX

Course Starts - Feb 05, 2015 at 05:00 UTC

## DemoX edX Demonstration Course

View Course

[Unenroll](#)

**Note:** If you do not specify a start time for your course, students see the default start time, 00:00 Coordinated Universal Time (UTC).

## Set the Advertised Start Date

You can set an advertised start date for your course that is different than the course start date you set in the **Schedule and Details** page. You may want to do this if there is uncertainty about the exact start date. For example, you could advertise the start date as **Spring, 2014**.

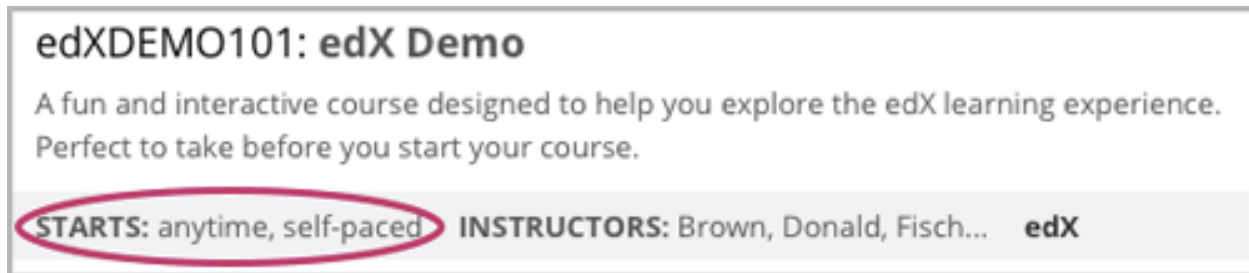
To set an advertised start date:

1. From the **Settings** menu, select **Advanced Settings**.
2. Find the **Course Advertised Start Date** policy key. The default value is **null**.
3. Enter the value you want to display as the advertised start date. You can use any string, enclosed in double quotation marks. If you format the string as a date (for example, as 02/01/2014), the value is parsed and presented to students as a date.

<b>Course Advertised Start Date</b>	"anytime, self-paced"
Enter the date you want to advertise as the course start date, if this date is different from the set start date. To advertise the set start date, enter null.	

4. Click **Save Changes** at the bottom of the page.

The start date shown on the dashboard is now the value of the **Course Advertised Start Date** policy key:



**edXDEMO101: edX Demo**

A fun and interactive course designed to help you explore the edX learning experience. Perfect to take before you start your course.

**STARTS:** anytime, self-paced **INSTRUCTORS:** Brown, Donald, Fisch... **edX**

If you do not change the default course start date (01/01/2030), and the **Course Advertised Start Date** policy value is `null`, then the student dashboard does not list a start date for the course. Students just see that the course has not yet started.

### The Course End Date

The course end date is the date after which students can no longer earn credit toward certificates. Students who have earned certificates can view them after the course end date.

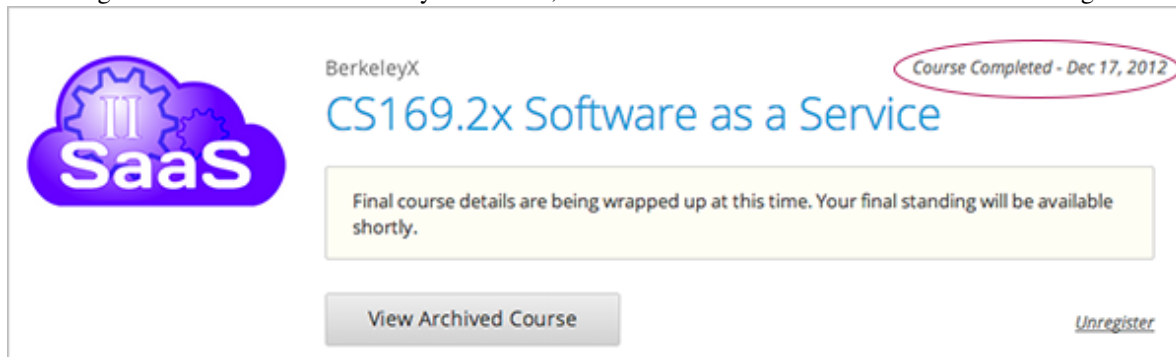
---

**Important:** If you do not set a course end date, students will not be able to access earned certificates.

---

After grades and certificates are finalized, students see the course end date on their personal **Current Courses** dashboards, as shown in the following examples.

- If grades and certificates are not yet finalized, students can see the course end date and a message:



BerkeleyX

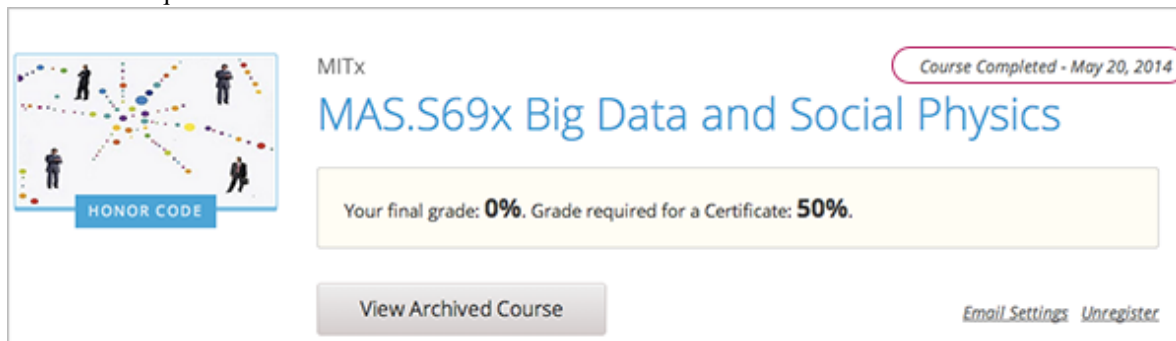
**CS169.2x Software as a Service**

Course Completed - Dec 17, 2012

Final course details are being wrapped up at this time. Your final standing will be available shortly.

[View Archived Course](#) [Unregister](#)

- When grades and certificates are finalized, students who have not earned a certificate see their score and the score required to earn a certificate:



MITx

**MAS.S69x Big Data and Social Physics**

Course Completed - May 20, 2014

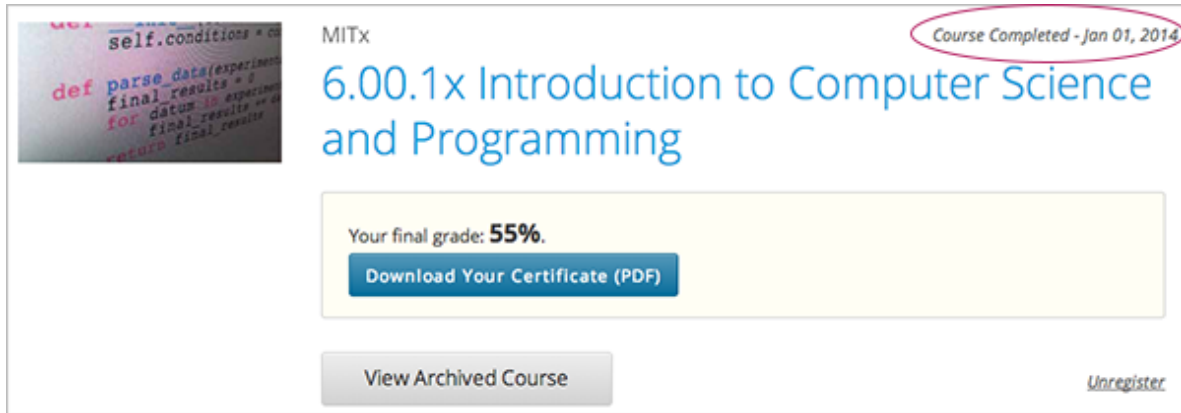
HONOR CODE

Your final grade: **0%**. Grade required for a Certificate: **50%**.

[View Archived Course](#) [Email Settings](#) [Unregister](#)

- Students whose final score is equal to or higher than the required score can click **Download Certificate** to get their certificates as PDFs:





## 5.3 Adding Files to a Course

To use images in your course content, or to use other documents such as a syllabus, you must upload the files to the **Files and Uploads** page, then link to the uploaded files from a component in your course.

### 5.3.1 Overview

You can manage your uploaded course files on the **Files and Uploads** page under the **Content** menu in Studio.

- *Upload a File*
- *Use File URLs to Reference Uploaded Files*
- *Sort Files*
- *Filter Files*
- *Find Files*
- *Lock a File*
- *Delete a File*

### 5.3.2 Upload a File

You can upload files that you want students to access in the course. After you upload a file, you can link to it from a component, from a course update, or in the course handouts, using the generated URLs on the **Files and Uploads** page. Students can see a file only if you create a link to it.

**Note:** When URLs are generated for uploaded files, the file name becomes part of the URL and is visible to students when they access the file. You should avoid using file names that contain information about the file contents that should not be shared, for example, `Answerkey.pdf`.

**Warning:** For PDF and image files, edX recommends that you use standard compression tools to reduce the file size before you add them to your course.

If you have files that are larger than 50 MB after compression and need them for your course, contact your edX program manager.

Furthermore, do not add video or audio files, or large data sets that are to be used by students. You should use YouTube or another hosting service to host multimedia files for your course. For information about storing large data sets for student use, contact your edX program manager.

To upload files:

1. From the **Content** menu, select **Files & Uploads**.
2. Click **Upload New File**.
3. In the **Upload New File** dialog box, click **Choose File**.
4. In the **Open** dialog box, select one or more files to upload, then click **Open**.

---

**Note:** If you upload a file that has the same name as an existing course file, the original file is overwritten without warning.

---

5. To upload additional files, click **Load Another File** and repeat the previous step.
6. To close the dialog box, click the **X** in the top right corner.

You see the new files on the **Files & Uploads** page.

### 5.3.3 Use File URLs to Reference Uploaded Files

After you upload a file, you can link to it from a component, from a course update, or in the course handouts, using the generated URLs on the **Files and Uploads** page. On the **Files & Uploads** page, the **URL** column lists the Studio URL and web URL for each file.

- To link to the file or image from within a course (that is, from a component, a course update, or a course handout), use the Studio URL. You cannot use the web URL to link to a file or image from within your course.
- To provide a link to the file or image from outside the course, use the web URL.

---

**Note:** If you lock a file, the web URL no longer works for external access to the file, unless the person accessing the URL is enrolled in and logged in to the course.

---

To copy a URL from the file list, double click the URL in the **URL** column so that the value is selected, then copy it.

### 5.3.4 Sort Files

On the **Files & Uploads** page, by default, files are sorted by the **Date Added** column, with the most recently added files at the top.

You can sort your files by any column that has a blue column header. For example, to sort the list by name, click the **Name** column header.

Change the sort order by clicking a sortable column header. The direction of the arrow in the column header indicates whether the order is ascending or descending. Each time you click the column header, the sort order reverses.

The current sort order is shown at the top of the file list, and the active sort column header is underlined.

### 5.3.5 Filter Files

You can filter the list of files by type so that only a selected type of file is visible. The list remains in the current sort order.

Type	File Types Include
Images	.gif, .ico, .jpg, .jpeg, .png, .tif, or .tiff
Documents	.pdf, .txt, Microsoft Office and Open Office documents, presentations, or spreadsheets
Other	Files not included in the other types, such as .html, .js, or .json

To filter the list of files by type:

1. On the **Files & Uploads** page, click the **Type** column header.
2. In the dropdown list, select the type of file that you want to view.

The list refreshes to show only the type of file you selected, and the column header changes to reflect the type of file that you have filtered by.

To reset the list and view files of all types, click **Show All** in the **Type** dropdown list.

### 5.3.6 Find Files

The **Files & Uploads** page lists up to 50 files. If your course has more than 50 files, additional files are listed on other pages.

The range of the files listed on the page, and the total number of files, are shown at the top of the page.

You can navigate through the pages in these ways:

- Use the < and > buttons at the top and bottom of the list to navigate to the previous and next pages.
- At the bottom of the page, you can edit the first number in the page range. Click the number to place your cursor in the field, then enter the page number you want to jump to.



### 5.3.7 Lock a File

By default, anyone can access a file you upload if they know the URL, even people not enrolled in your class.

To ensure that those not in your class cannot view the file, click the lock icon.

---

**Note:** If you lock a file, the web URL no longer works for external access to the file, unless the person accessing the URL is enrolled in and logged in to the course.

---

### 5.3.8 Delete a File

To delete a file, click the x icon next to the file. You are prompted to confirm the deletion.

**Warning:** If you delete a file that has been linked from a course component, those links will be broken. Before deleting files that are used in a course, make sure you update the links to those files in the course.

## 5.4 Adding Course Updates and Handouts

You add course updates and handouts in Studio.

Students see the course updates and handouts in the **Course Info** tab in your course:

The screenshot shows the Studio interface with the **Course Info** tab selected. The main content area is titled "Course Updates & News" and displays a welcome message dated September 30, 2013. The message describes the self-paced course and provides instructions on how to navigate the course. To the right, the "Course Handouts" panel is visible, listing various resources such as "Overview of Creating an Online Course", "edX101 - June 2013 Archive", and "Printable, searchable version of edX101". A cartoon illustration of three people is also present, with a speech bubble that reads: "She's my first choice, but you're my third. You do the math!" Below the cartoon, a caption reads: "Check out the Stable Marriage Problem homework assignment, added September 30!"

### 5.4.1 Add a Course Update

You add updates to notify students of exams, changes in the course schedule, or anything else of a more urgent nature.

To add a course update:

1. From the **Content** menu, select **Updates**.
2. Click **New Update**.
3. Enter your update in the HTML editor that opens.

---

**Note:** You must enter the update in HTML. The *visual editor* is not supported for course handouts.

---

4. Click **Save**.

### 5.4.2 Add Course Handouts

You can add course handouts that are visible to students on the **Course Info** page. To add an uploaded file to the course handouts, you will need its URL.

---

**Note:** You must *add files to a course* before you can add them as course handouts.

---

1. From the **Content** menu, select **Updates**.
2. In the **Course Handouts** panel, click **Edit**.

3. Edit the HTML to add links to the files you uploaded. See [Add a Link in an HTML Component](#) for more information.
4. Click **Save**.

## 5.5 Adding Pages to a Course

### 5.5.1 Overview

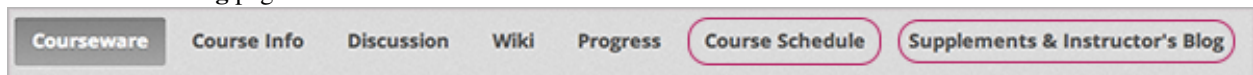
By default, your course has the following pages:

- Courseware
- Course Info
- Discussion
- Wiki
- Progress

You cannot rename, reorder, or remove these pages.

You can add pages to your course. Each page appears in your course's navigation bar.

For example, the following navigation bar includes the default pages as well as the **Course Schedule** and **Supplements & Instructor's Blog** pages.



You can create other pages for the grading policy, course slides, or any other purpose. More examples of pages you can add are:

- A Google calendar, by embedding the code for it.
- A dynamic HTML calendar, using the template in [Code for Dynamic HTML Schedule](#).
- An instant hangout. See [Google Instant Hangout Tool](#) for more information.

See:




- [Add a Page](#)
- [Show or Hide the Course Wiki Page](#)
- [Reorder Pages](#)
- [Delete a Page](#)
- [Code for Dynamic HTML Schedule](#)

### 5.5.2 Add a Page

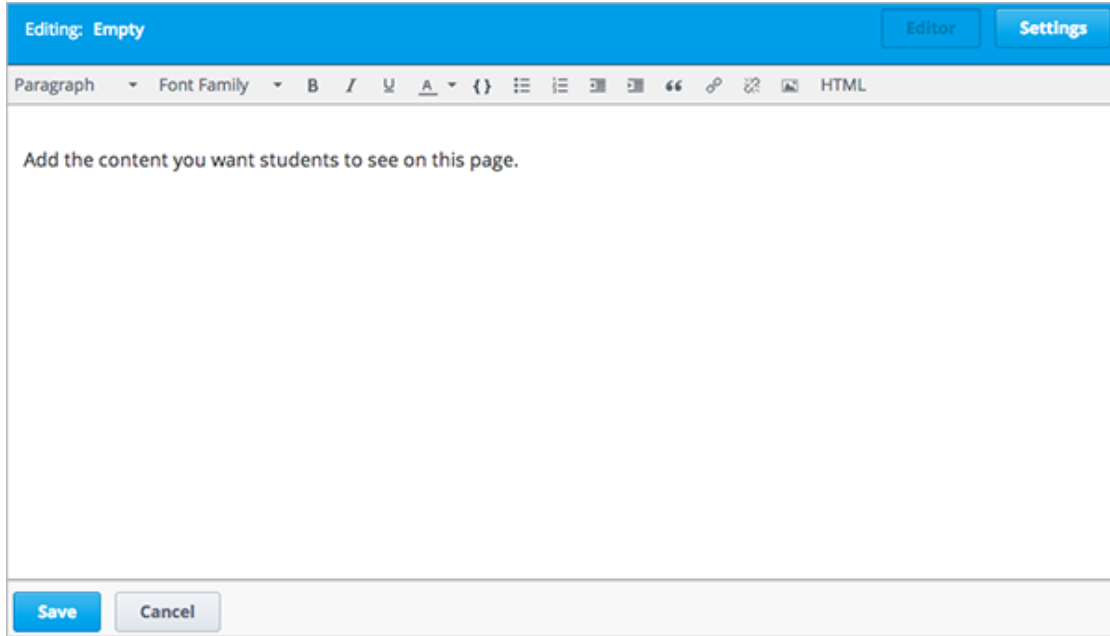
1. In Studio, from the **Content** menu, select **Pages**.

Pages		
Courseware		
Course Info		
Discussion		⋮
Wiki		⋮
Progress		⋮

2. Click **Add a New Page**. A page with the title **Empty** is added to the list:

Pages		
Courseware		
Course Info		
Discussion		⋮
Wiki		⋮
Progress		⋮
Empty	 Edit 	⋮

3. Click **Edit**. The HTML editor opens.



4. Enter text for your page. See *Options for Editing HTML Components* for more information about using the editor.
5. Click **Settings** to edit the **Display Name**. The display name is the name of the page visible to students in the course.
6. Click **Save**.

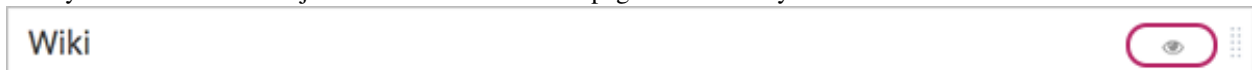
The new page is immediately available to students, if the course has started.

### 5.5.3 Show or Hide the Course Wiki Page

By default, your course includes a Wiki page. Students and course staff can use the Wiki to post content and comment on others' content.

If you do not want to use the Wiki in your course, you can hide the page.

The eye icon in the Wiki object indicates that the Wiki page is visible in your course:



Click the eye icon to hide the Wiki page. The icon changes:



Click it again to make the Wiki page visible.

**Note:** Content remains in the Wiki when you hide the page. For example, if a student bookmarks a Wiki topic, then you hide the Wiki page, the student can still use the bookmark to access that Wiki topic. All content that was previously posted in the Wiki remains available after you hide the Wiki page, and any students logged in to edX can access the content if they know the URL.

## 5.5.4 Reorder Pages

You can reorder pages in your course by dragging and dropping the pages to different locations.

To move a page, hover over the element handle on the right side of the page row until the mouse pointer changes to a four-headed arrow. Then, click and drag the page to the location that you want.

---

**Note:** You cannot reorder the Courseware, Course Info, Discussion, Wiki, and Progress pages that your course includes by default

---

## 5.5.5 Delete a Page

To delete a page that you previously added, click the trash can icon in the row for the page. You are prompted to confirm the deletion.

## 5.5.6 Code for Dynamic HTML Schedule

You can use the following code in a page to provide a dynamic HTML schedule in your course.

```
<div class= "syllabus">

<table style="width: 100%">
  <col width="10%">
  <col width="15%">
  <col width="10%">
  <col width="30%">
  <col width="10%">
  <col width="15%">
  <col width="10%">

<!-- Headings -->
  <thead>
    <td class="day"> Wk of </td>
    <td class="topic"> Topic </td>
    <td class="reading"> Read </td>
    <td class="video"> Lecture Sequence </td>
    <td class="slides"> Slides </td>
    <td class="assignment"> HW/Q </td>
    <td class="due"> Due </td>
  </thead>

<!-- Week 1 Row 1 -->
  <tr class="first">
    <td class="day">10/22</td>
    <td class="topic">Topic 1</td>
    <td class="reading">Ch. 1</td>
    <td class="video"><a href="#">L1: Title</a></td>
    <td class="slides"><a href="#">L1</a></td>
    <td class="assignment"><a href="#">HW 1</a></td>
    <td class="due">11/04</td>
  </tr>

<!-- Week 1 Row 2 -->
  <tr>
```



```

        <td class="day"> </td>
        <td class="topic"></td>
        <td class="reading"></td>
        <td class="video"><a href="#">L2: Title</a></td>
        <td class="slides"><a href="#">L2</a></td>
        <td class="assignment"> </td>
        <td class="due"> </td>
    </tr>

    <tr> <td class="week_separator" colspan=7> <hr/> </td> </tr>

<!-- Week 2 Row 1 -->
    <tr>
        <td class="day">10/29</td>
        <td class="topic">Topic 2</td>
        <td class="reading">Ch. 2</td>
        <td class="video"> <a href="#">L3: Title<a></td>
        <td class="slides"><a href="#">L3</a></td>
        <td class="assignment"><a href="#">Quiz 1</a></td>
        <td class="due">11/11</td>
    </tr>

<!-- Week 2 Row 2 -->
    <tr>
        <td class="day"></td>
        <td class="topic"></td>
        <td class="reading"></td>
        <td class="video"><a href="#">L4: Title</a></td>
        <td class="slides"><a href="#">L4</a> </td>
        <td class="assignment"></td>
        <td class="due"></td>
    </tr>
    <tr> <td class="week_separator" colspan=7> <hr/> </td> </tr>

<!-- Week 3 Row 1 -->
    <tr>
        <td class="day">11/05</td>
        <td class="topic">Topic 3</td>
        <td class="reading">Ch. 3</td>
        <td class="video"><a href="#">L5: Title</a></td>
        <td class="slides"><a href="#">L5 </a></td>
        <td class="assignment"><a href="#">HW 2</a></td>
        <td class="due">11/18 </td>
    </tr>

<!-- Week 3 Row 2 -->
    <tr>
        <td class="day"> </td>
        <td class="topic"> </td>
        <td class="reading"></td>
        <td class="video"><a href="#">L6: Title</a></td>
        <td class="slides"><a href="#">L6 </a></td>
        <td class="video"></td>
        <td class="assignment"></td>
        <td class="due"></td>
    </tr>
    <tr> <td class="week_separator" colspan=7> <hr/> </td> </tr>

```

```

<!-- Week 4 Row 1 -->
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 11/12 | Topic 4 | Ch. 4 | L7: Title | L7: Title | Quiz 2 | 11/25 |


<!-- Week 4 Row 2 -->
|  |  |  | L8: Title | L8: Title |  |  |
| week_separator | | | | | | |


<!-- Week 5 Row 1 -->
| 11/19 | Topic 5 | Ch. 5 | L9: Title | L9: Title | HW 3 | 12/02 |


<!-- Week 5 Row 2 -->
|  |  |  | L10: Title | L10: Title |  |  |
| week_separator | | | | | | |


<!-- Week 6 Row 1 -->
| 11/26 | Topic 6 | Ch. 6 | L11: Title | L11: Title | HW 4 | 12/09 |


<!-- Week 6 Row 2 -->

```

```

<tr>
  <td class="day"> </td>
  <td class="topic"> </td>
  <td class="reading"></td>
  <td class="video"><!--<a href="#">L12: Title</a-->L12: Title</td>
  <td class="slides"><!--<a href="#">L12</a-->L12</td>
  <td class="assignment"></td>
  <td class="due"> </td>
</tr>

</table>
</div>

```

## 5.6 Adding Textbooks

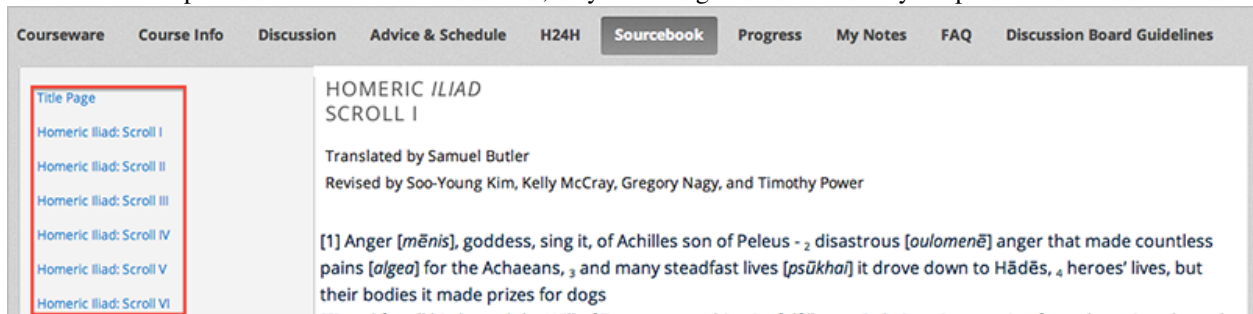
You can add PDF textbooks for your course.

**Note:** Do not use image files (for example, .PNG files) as textbooks for your course, as they are not accessible to screen readers. Review the [Best Practices for Accessible PDFs](#) for more information.

Each textbook that you add is displayed to students as a tab in the course navigation bar.

It's recommended that you upload a separate PDF file for each chapter of your textbook.

When students open the textbook tab in the course, they can navigate the textbook by chapter:



To add a textbook:

1. From the **Content** menu, select **Textbooks**.
2. Click **New Textbook**. The following screen opens:

The screenshot shows a form for adding a chapter to a course. At the top, there is a field for 'Textbook Name \*' with the value 'Introduction to Cookie Baking'. Below this is a small text prompt: 'provide the title/name of the text book as you would like your students to see it'. The form is divided into two columns. The left column has a 'Chapter Name \*' field with the value 'Chapter 1' and a small text prompt below it: 'provide the title/name of the chapter that will be used in navigating'. The right column has a 'Chapter Asset \*' field with the value 'path/to/introductionToCookieBaking-CH1.pdf' and a small text prompt below it: 'upload a PDF file or provide the path to a Studio asset file'. Above the 'Chapter Asset \*' field is a blue button labeled 'Upload PDF'. To the right of the 'Chapter Asset \*' field is a blue circular icon with a white 'x'. Below the two columns is a large blue button labeled '+ Add a Chapter'. At the bottom of the form are two buttons: 'SAVE' (blue) and 'CANCEL' (grey).

3. Enter the **Textbook Name**.
4. Enter the first **Chapter Name**.
5. To upload a PDF file from your computer, click **Upload PDF**. Follow the prompts to upload your file.
6. To add more chapters, click **+Add a Chapter** and repeat steps 3 and 4.
7. Click **Save**.

## 5.7 Establishing a Grading Policy

### 5.7.1 Overview

Establishing a grading policy takes several steps. You must:

1. *Set the Grade Range*
2. *Set the Grace Period*
3. *Configure the Assignment Types*
4. *Graded Subsections*
5. *The Student View of Grades*

---

**Important:** Any changes to the course grading policy, to graded subsections, or to graded components after a course begins will affect the student experience in the course and analysis of its data.

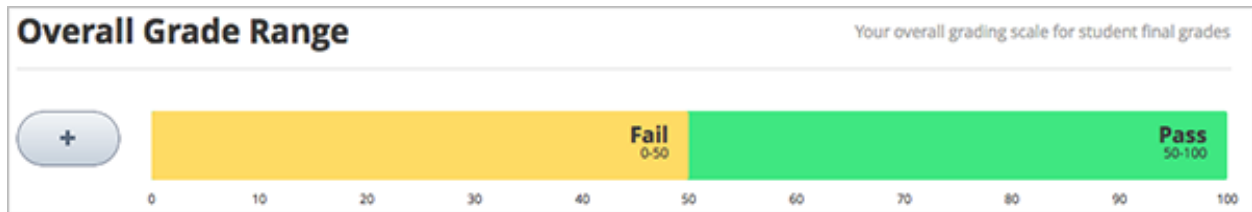
---

### 5.7.2 Set the Grade Range

You must set the grade range for the course. For example, your course can be pass/fail, or can have letter grades A through F.

To set the grade range, from the **Settings** menu, select **Grading**.

The control for the grade range is at the top of the Grading page.

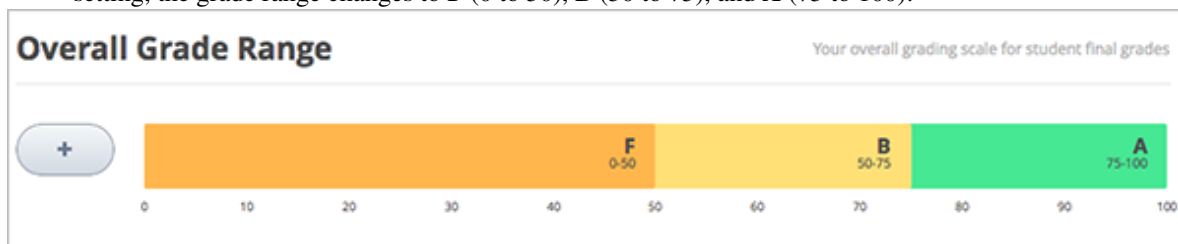


The above example shows that you have a pass/fail grade range, with a score of 50 as the cutoff. This is the default setting used when you create a course.

You use the grade range control to change these settings:

- To add a grade in the range, click the + icon.

A new grade is added to the range between the existing grades. For example, if you add a grade in the default setting, the grade range changes to **F** (0 to 50), **B** (50 to 75), and **A** (75 to 100):



- To change the score range, move the cursor over the line dividing two grades and then click and drag the line left or right.

You can see the range numbers of the two grades adjacent to the line change. Release the mouse button when the line is where you want it.

- To change the name of the grade, double-click the current name of the grade to select it, and then start typing the name of the new grade. For example, if the original name of the grade is “Pass”, you can double-click “Pass” and then type “Excellent” to replace the name.

You cannot change **F** or **Fail**.

- To remove a grade, move the cursor so that it is over the grade.

A **remove** link appears above the grade. Click the link.

You cannot remove F or A.

After you make any changes to the grade range, you must click **Save Changes** at the bottom of the page.

## Grade Ranges and Certificates

If you plan for your course to offer certificates, note that a student will qualify for a certificate by earning any grade over the F, or Fail, threshold. This is true regardless of how many grade levels you add in the grade range.

### 5.7.3 Set the Grace Period

You can set a grace period that extends homework due dates for your students.

---

**Note:** The grace period applies to the whole course; you cannot set a grace period for individual assignments.

---

In the Grading page, under **Grading Rules & Policies**, enter a value in the **Grace Period on Deadline** field. Enter the value in Hours:Minutes format.

### 5.7.4 Configure the Assignment Types

You must create assignment types for your course and determine the weight of the student's total grade for each assignment type.

For example, you may have:

- 10 homework assignments, worth a total of 50% of the grade;
- A midterm exam, worth a total of 20% of the grade;
- A final exam, worth 30% of the grade.

By default, a new course you create has four assignment types:

- Homework
- Lab
- Midterm Exam
- Final Exam

You can use these assignment types, modify or remove them, and create new assignment types.

To create a new assignment type, in the bottom of the Grading page, click **New Assignment Type**, then configure the fields described below.

#### Assignment Type Fields

You configure the following fields for each assignment type:

- **Assignment Type Name:**

The general category of the assignment. This name will be visible to students.

---

**Note:** All assignments of a particular type count the same toward the weight of that category. As a result, a homework assignment that contains 10 problems is worth the same percentage of a student's grade as a homework assignment that contains 20 problems.

---

- **Abbreviation:**

This is the short name that appears next to an assignment on a student's **Progress** tab.

- **Weight of Total Grade:**

The assignments of this type together account for the percent value set in **Weight of Total Grade**.

The total weight of all assignment types must equal 100.

---

**Note:** Do not include the percent sign (%) in this field.

---

- **Total Number:**

The number of assignments of this type that you plan to include in your course.

- **Number of Droppable**

The number of assignments of this type that the grader will drop. The grader will drop the lowest-scored assignments first.

### 5.7.5 Graded Subsections

After you configure assignment types, as you are organizing your course, you set the assignment type for subsections that contain problems that are to be graded.

Each subsection that contains problems to be graded can include only one assignment type.

---

**Note:** You can only set assignment types and due dates at the subsection level. You cannot set assignment types or due dates for entire sections or for individual units within subsections. Additionally, you can designate a subsection as one, and only one, of the assignment types you configured.

---

See *Developing Course Subsections* for general instructions on configuring a subsection.

See *Set the Assignment Type and Due Date for a Subsection* for instructions on designating a subsection as a graded assignment.

Within a graded subsection, you create problems of the type designated for that subsection. You cannot mix problems of different assignment types in the same subsection.

For example, if you want to create a homework assignment and a lab for a specific topic, create two subsections. Set one subsection as the Homework assignment type and the other as the Lab assignment type. Both subsections can contain other content as well as the actual homework or lab problems.

---

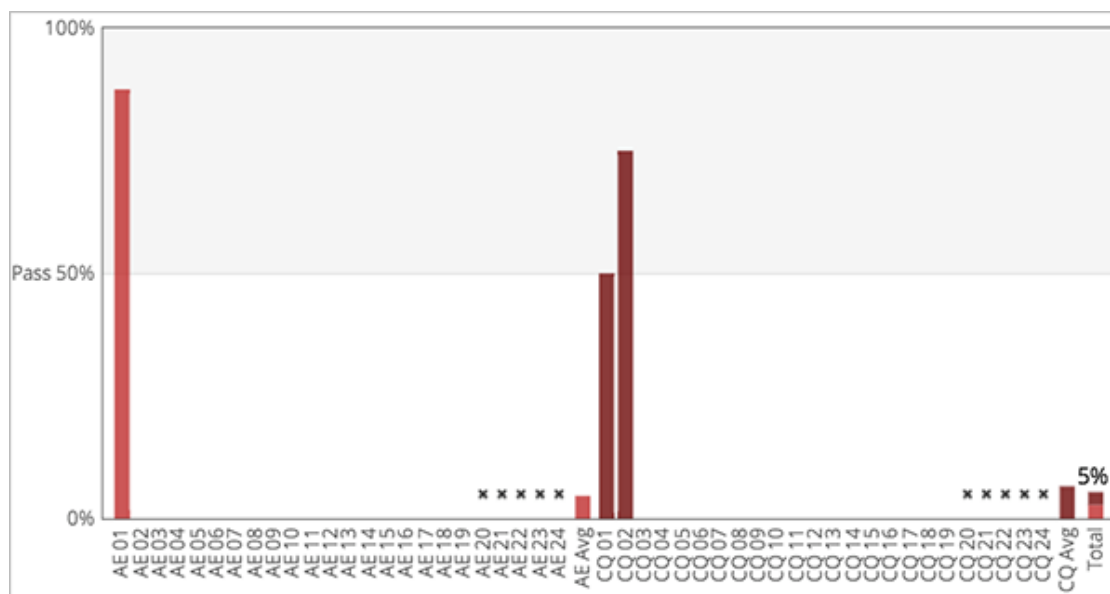
**Note:** You can create problems in Studio without specifying that the subsection is an assignment type. However, such problems do not count toward a student's grade.

---

See *Working with Problem Components* for instructions on creating problems.

### 5.7.6 The Student View of Grades

After a grading policy is in place, students can view both their problem scores and the percent completed and current grade in the **Progress** tab for the course.



Each item in the X axis of the chart is for a graded subsection. Graded problems in units are not broken out in the chart; the score from each problem in the subsection is added to that vertical bar.

Graded subsections are grouped in the chart by assignment type rather than listed in chronological order. For example, all homework exercises are grouped together, followed by labs, then exams.

**Note:** The **x** for an assignment in the Progress tab indicates that the grade for that assignment is currently dropped. You configure how many assignments are dropped when you [Configure the Assignment Types](#).

## 5.8 Re-running a Course

Another way to create a course in Studio is to re-run an existing course. When you select the course re-run option, most, but not all, of the original course content is duplicated to the new course. The original course is not changed in any way.



Type of Content	Duplicated to New Course?
Course start date	No. Set to midnight on January 1, 2030 (UTC).
All other course dates	Yes. You will need to update all release dates and due dates.
Course structure (sections, subsections, units) and state (published, hidden)	Yes.
Individual problems and other components	Yes.
Files uploaded to the course, including videos and textbooks	Yes.
Pages added to the course	Yes, including all page content and the defined page order.
Course Updates	Yes.
Advanced Settings	Yes.
Grading policy	Yes.
Student enrollment data	No.
Course team privileges, including admins, discussion moderators, beta testers	No. Only the user who created the new course has access to it.
Manually created cohort groups	No.
Student answers, progress, and grading data	No.
Certificates	No.
Discussion posts, responses, comments, and other data	No.
Wiki contributions	No.

See *Use Re-Run to Create a Course* and *Update the New Course*.

## 5.8.1 Use Re-Run to Create a Course

Before you re-run a course:

- For a course that is hosted on the [edge.edx.org](https://edge.edx.org) site, verify that you have permission to create courses in Studio. See *Use Studio on Edge*.
- For a course that is hosted on the [edx.org](https://edx.org) site, contact your Program Manager. Your Program Manager will create the new course using the re-run feature, and then work with you to complete the steps to *update the new course*.

To re-run a course, you must have course creation privileges in Studio and you must be a member of the course team for the course you want to re-run.

To re-run a course:

1. Log in to Studio. Your dashboard lists the courses that you have access to as a staff member.
2. Move your cursor over each row in the list of courses. The **Re-Run Course** and **View Live** options appear for each course.

**Welcome, staff!**

Here are all of the courses you currently have access to in Studio:

edX Demonstration Course

edX / Open\_DemoX / edx\_demo\_course

Re-run Course

View Live

3. Locate the course you want to re-run and click **Re-Run Course**. The **Create a re-run of a course** page opens with values already supplied in the **Course Name**, **Organization**, and **Course Number** fields.

**Course Name \***

edX Demonstration Course

The public display name for the new course. (This name is often the same as the original course name.)

**Organization \***

edX

The name of the organization sponsoring the new course. (This name is often the same as the original organization name.)

Note: No spaces or special characters are allowed.

**Course Number \***

Open\_DemoX

The unique number that identifies the new course within the organization. (This number is often the same as the original course number.)

Note: No spaces or special characters are allowed.

**Course Run \***

e.g. 2014\_T1

The term in which the new course will run. (This value is often different than the original course run value.)

Note: No spaces or special characters are allowed.

CREATE RE-RUN CANCEL

4. Supply a **Course Run** to indicate when the new course will be offered.

Together, the course number, the organization, and the course run are used to create the URL for the new course. The combination of these three values must be unique for the new course. In addition, the total number of characters used for the name, organization, number, and run must be 65 or fewer.

5. Click **Create Re-Run**. Your **My Courses** dashboard opens with a status message about the course creation process.

Duplication of the course structure and content takes several minutes. You can work in other parts of Studio or in the LMS, or on other web sites, while the process runs. The new course appears on your **My Courses** dashboard in Studio when configuration is complete.

### 5.8.2 Update the New Course

When you create a course by re-running another course, you should carefully review the settings and content of the new course. To assure a quality experience for students, be sure to test the course thoroughly before the course start date. See *Testing Your Course Content* and *Beta Testing a Course*.

At a minimum, you will need to make these changes to prepare the new course for release:

- Add course staff members, including discussion admins, moderators, and community TAs. See *Add Course Team Members* or *Staffing*.
- Update course-wide dates, including course and enrollment start and end dates. See *Set Important Dates for Your Course*.
- Change the release dates of course sections, subsections, and units. See *Release Dates*.

- Change the due dates of subsections that are part of your grading policy. See [Set the Assignment Type and Due Date for a Subsection](#).
- Delete or edit posts on the **Course Updates** page in Studio. See [Add a Course Update](#).
- Review the files on the **Files & Uploads** page. To update a file that contains references to course-related dates, you will need to:
  1. Locate the source file.
  2. Change course-related dates in the file.
  3. Upload the revised version of the file.

---

**Note:** If you use the same file name when you upload a revised file, links to that file in course components and course handouts will continue to work correctly. If you rename a file and then upload it, you must also update all links to the original file name. See [Add Course Handouts](#) or [Add a Link to a File](#).

---

- Review the staff biographies and other information on the course summary page and make needed updates. See [Providing a Course Overview](#).
- Create initial posts for discussion topics and an “introduce yourself” post. See [Managing Course Discussions](#).
- Add initial wiki articles.

You can use the [course checklists](#) to work through the course and verify that it is ready for release. You can also refer to the [Course Launching Activities](#) chapter for tools and ideas that help you prepare the course for launch.

## 5.9 Exporting and Importing a Course

You can [Export a Course](#) and [Import a Course](#) through Studio.

To duplicate an existing course for a new run, course creators can use the course re-run option. See [Re-running a Course](#).

### 5.9.1 Export a Course

There are several reasons you may want to export your course:

- To save your work
- To edit the XML in your course directly
- To create a backup copy of your course, which you can import if you want to revert the course back to a previous state
- To share with another instructor for another class
- To create a copy of your course that you can later import into another course instance and customize

When you export your course, Studio creates a **.tar.gz** file that includes the following course data:

- Course content (all Sections, Subsections, and Units)
- Course structure
- Individual problems
- Pages

- Course assets
- Course settings

The following data is not exported with your course:

- User data
- Course team data
- Discussion data
- Certificates

To export a course:

1. From the **Tools** menu, select **Export**.
2. Click **Export Course Content**.

When the export completes you can then access the .tar.gz file on your computer.

### 5.9.2 Import a Course

**Warning:** Content of the imported course replaces all the content of this course. **You cannot undo a course import.** We recommend that you first export the current course, so you have a backup copy of it.

There are several reasons you may want to import a course. For example:

- To load a course you developed outside of Studio.
- To run a new version of a course that was not created in Studio.

The course that you import must be in a .tar.gz file (that is, a .tar file compressed with GNU Zip). This .tar.gz file must contain a course.xml file in a course data directory. The tar.gz file must have the same name as the course data directory. It may also contain other files.

If your course uses legacy layout structures, you may not be able to edit the course in Studio, although it will probably appear correctly on Edge. To make sure that your course is completely editable, ensure that all of your material is embedded in a unit.

The import process has five stages. During the first two stages, you must stay on the Course Import page. You can leave this page after the Unpacking stage has completed. We recommend, however, that you don't make important changes to your course until the import operation has completed.

To import a course:

1. From the **Tools** menu, select **Import**.
2. Click **Choose a File to Import**.
3. Locate the file that you want, and then click **Open**.
4. Click **Replace my course with the one above**.

---

## Developing Your Course

---

Use the chapters in this section to understand how to develop your course content in the Studio Outline page.

For information on building specific course component types, see *Creating Course Content*.

For information on creating exercises and tools, see *Creating Exercises and Tools*.

For information on creating content libraries from which you can randomly draw content for randomized assignments, see *Working with Content Libraries*.

### 6.1 Getting Started with Course Content Development

When you are done *setting up your course*, you are ready to build your course content.

This chapter provides an outline of the steps involved in developing your course content, with links to more details. See:

- *Understanding Course Building Blocks*
- *Creating New Course Content*
- *Making Course Content Visible to Students*
- *Revising Content*

#### 6.1.1 Understanding Course Building Blocks

Before you begin, you should understand the building blocks of an edX course.

- *The course outline* is the container for all of your course content. The outline contains one or more sections.
- *Course sections* are at the top level of your course and typically represent a time period. A section contains one or more subsections.
- *Course subsections* are parts of a section, and usually represent a topic or other organizing principle. A subsection contains one or more units.
- *Course units* are lessons in a subsection that students view as single pages. A unit contains one or more components.
- *Course components* are objects within units that contain your actual course content.

## 6.1.2 Creating New Course Content

Once you understand the way edX courses are structured, you can start organizing your content and entering it into Studio.

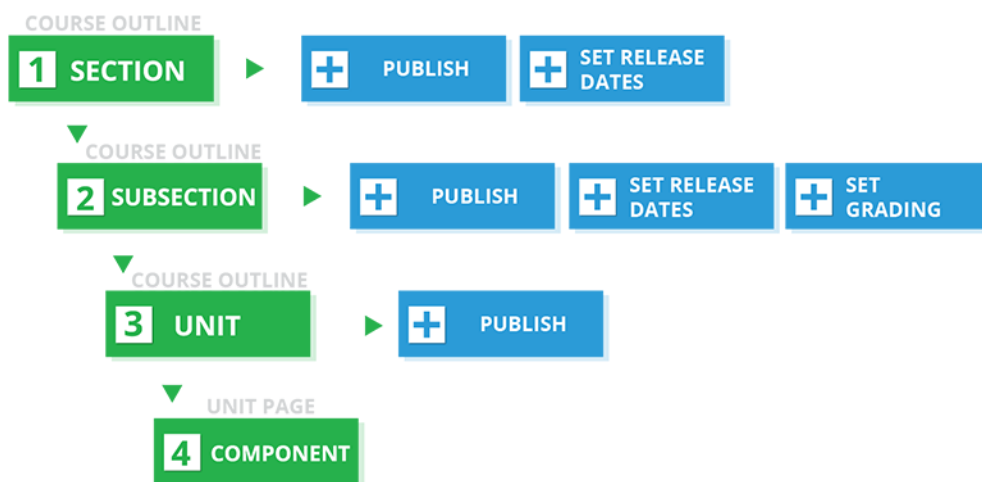
You create *sections*, *subsections*, and *units* in the *course outline*.

For graded subsections, you also *set the assignment type and due date*.

You *create components* in the unit page.

In addition, you *control content visibility* by setting release dates on the outline and publishing units.

The following diagram summarizes the content creation workflow:



It is recommended that you *test course content* throughout the creation process.

## 6.1.3 Making Course Content Visible to Students

When you create your content, you'll also specify if and when students will be able to see it. Content visibility depends on several factors:

- The *course start date*
- The release dates of the *section* and *subsection*
- The *publishing status* of the unit
- The *Hide content from students* setting
- The use of *Content Groups*

For more information, see *Controlling Content Visibility*.

## 6.1.4 Making Course Content Searchable

Learners can search course text in *HTML components* and video transcripts by using the **Search** box in the upper-left corner of the **Courseware** tab.

Before learners can search your course, Studio must index the content. Studio indexes all new course content automatically when you *publish* the content.

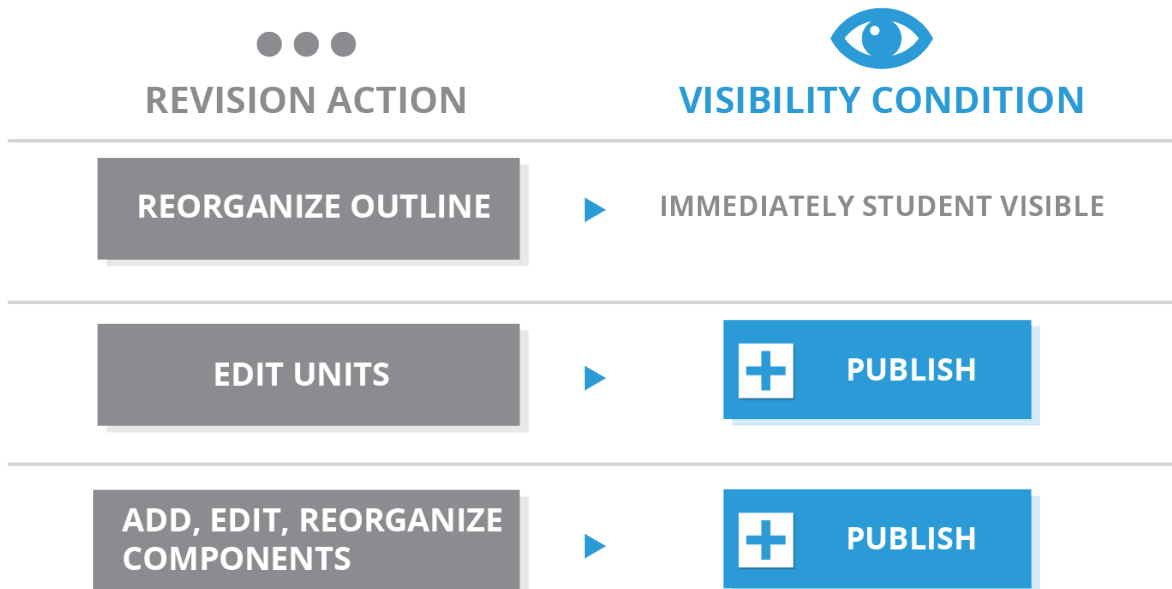
If necessary, you can manually reindex all of the content in your course at any time. Typically, you would only manually reindex your course content if learners see unexpected search results. To reindex your course content, select **Reindex Content** in the upper-right corner of the **Course Outline** page. Reindexing usually takes less than 30 seconds.

### 6.1.5 Revising Content

You can revise your course content at any time.

- When you *reorganize sections, subsections, and units* in the outline, the new order is immediately visible to students if the section and subsection are released.
- When you *edit a unit*, or *components* within a unit, you must *publish* those changes to make them visible to students.

The following diagram summarizes the content revision workflow and content visibility:



It is recommended that you *test course content* during the revision process.

## 6.2 Developing Your Course Outline

As you develop your course, you work primarily in the edX Studio course outline. This chapter includes the following information about working with the course outline:

- *Open the Course Outline*
- *Example of a Developed Course in the Outline*
- *View the Course Organization as a Student*
- *Navigate the Course Outline*
- *Add Content in the Course Outline*

- *Modify Settings for Objects in the Course Outline*
- *Publish Content from the Course Outline*
- *Reorganize the Course Outline*
- *Delete Content in the Course Outline*

See the following chapters for information about working with the course building blocks in the course outline:

- *Developing Course Sections*
- *Developing Course Subsections*
- *Developing Course Units*
- *Developing Course Components*

### 6.2.1 Open the Course Outline

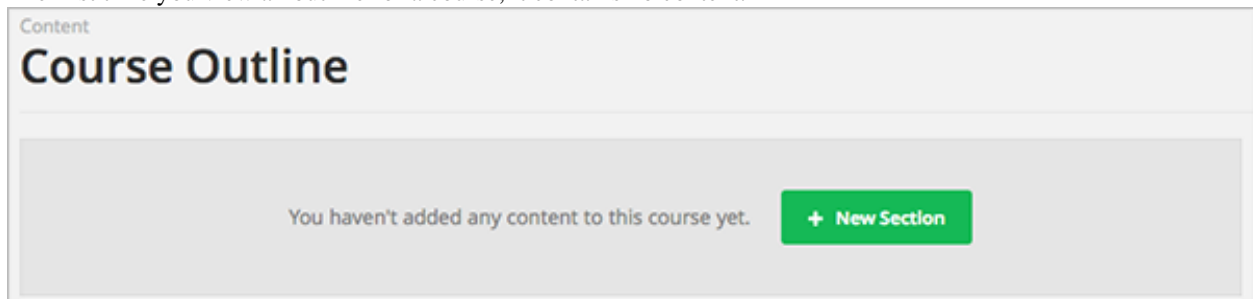
To view the course outline:

1. Log in to edX Studio.
2. In the **My Courses** page, select the course you want to develop.

The course outline opens by default when you open a course.

When working in a course, to open the outline, from the **Content** menu, select **Outline**.

The first time you view an outline for a course, it contains no content.

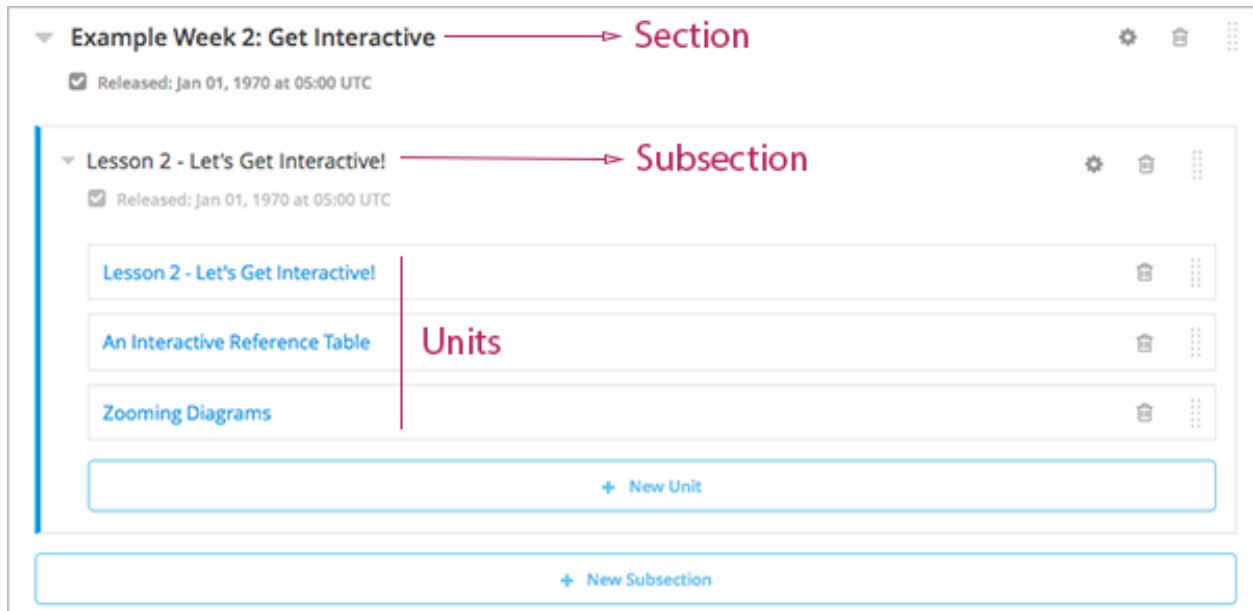


You must *create the first section*.

### 6.2.2 Example of a Developed Course in the Outline

The following example shows a sample course in the outline, with indications for sections, subsections, and units. As you develop your course, it will begin to look like this example:





As this example shows, the course is organized into the following levels:

1. *Sections*
2. *Subsections*
3. *Units*

*Components* are not shown in the outline. You add or access components by clicking on the units that contain them.

Use the links above for more information and instructions on working with each type of object in the course. The rest of this chapter provides more detail about the course outline.

### 6.2.3 View the Course Organization as a Student

The content you see in the outline in Studio is displayed to students in the Courseware tab in the LMS. The following image shows how a student sees your course content:

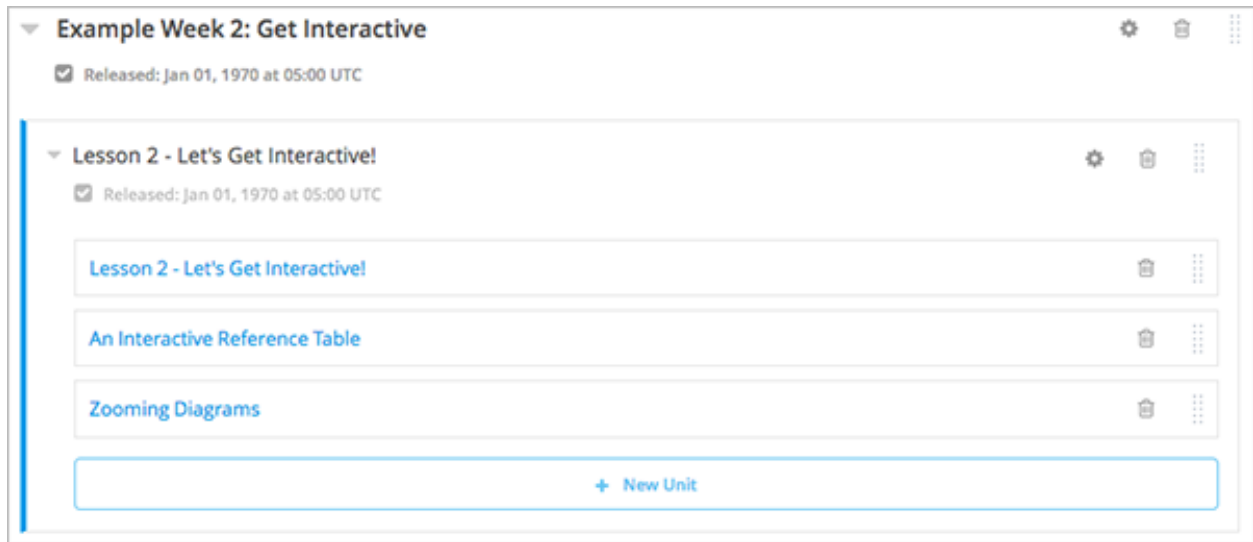
The screenshot displays the Open edX course interface. On the left, the 'Sections' sidebar shows a hierarchy: Week 1 (Entrance Survey), Week 2, Week 3 (expanded), Week 4, Week 5 - Exam 1, and Week 5. Under Week 3, the 'Subsections' list includes: Weekly Overview, Goals and Objectives, Lecture 6: Mendel (62 minutes), Lecture 7: Rediscovery of Mendel and Advances by TH Morgan (68 minutes), Deep Dives, Problem Set 3: Genetics (due Jul 08, 2014 at 14:00 UTC), Resource Boxes, and Cerego Memory Set 3. The main content area is titled 'Units' and features a video player for 'MEIOSIS AND THE RELATIONSHIP TO PUNNETT SQUARES'. The video shows a diagram of a cell with a pair of homologous chromosomes (one red, one blue) labeled 'Aa'. It illustrates the process of meiosis, including the separation of chromosomes into four daughter cells, each containing one of the two alleles (A or a). A Punnett square is also shown, illustrating the possible combinations of alleles (AA, Aa, Aa, aa) resulting from the cross. The video player includes a progress bar (0:00 / 5:42), a speed control (1.0x), and download options for the video and transcript.

### 6.2.4 Navigate the Course Outline

In Studio, you navigate the course outline by expanding and collapsing sections and subsections. Use the drop-down icon next to a section or subsection name to expand or collapse its contents:

The screenshot shows the course outline in Studio. The 'Introduction' section is expanded, showing its release date (Jan 01, 1970 at 05:00 UTC). Below it, the 'Demo Course Overview' subsection is collapsed, also showing its release date. A '+ New Subsection' button is visible at the bottom of the outline.

When you expand a subsection, all units in the subsection are visible:

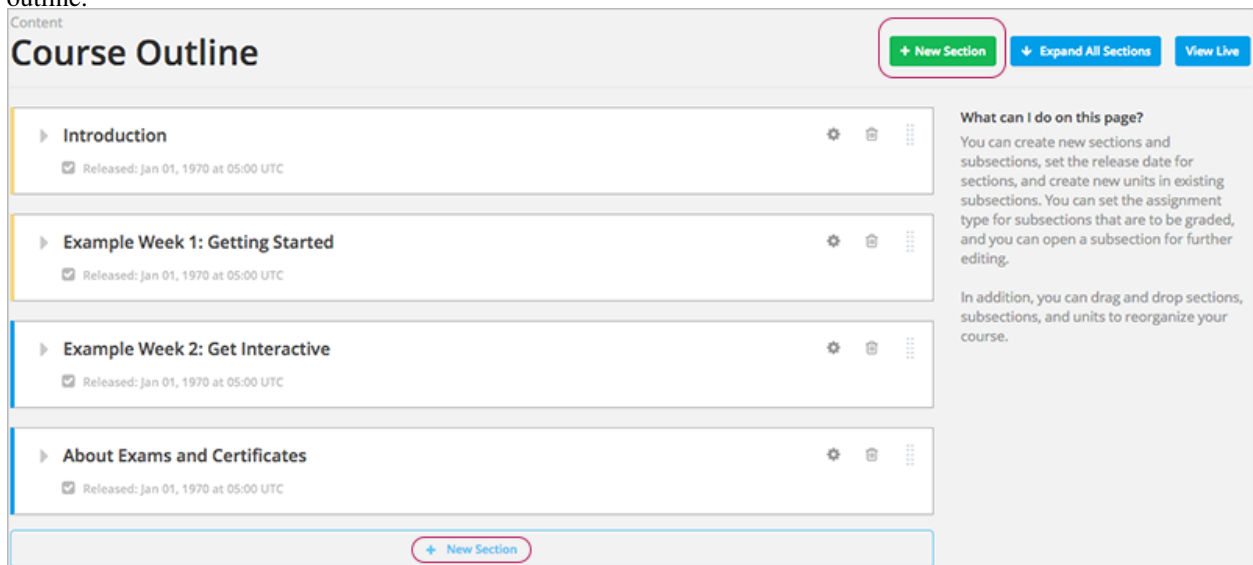


Click the name of a unit to open the *unit page*.

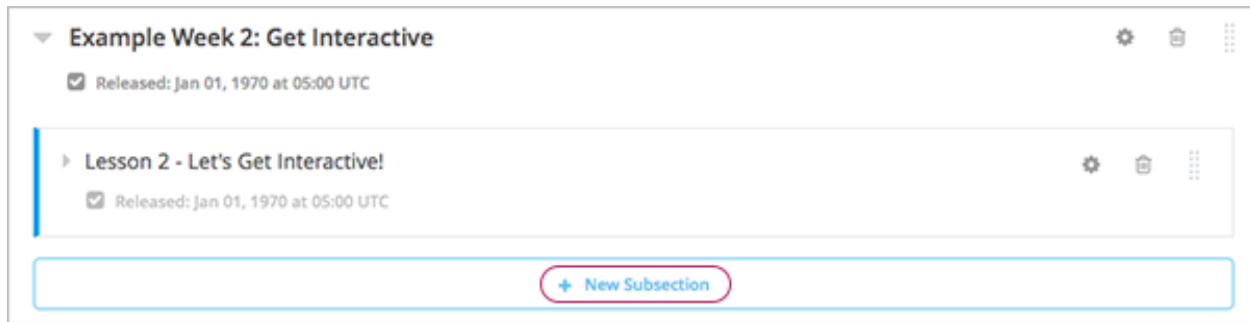
## 6.2.5 Add Content in the Course Outline

You add sections, subsections, and units directly in the outline.

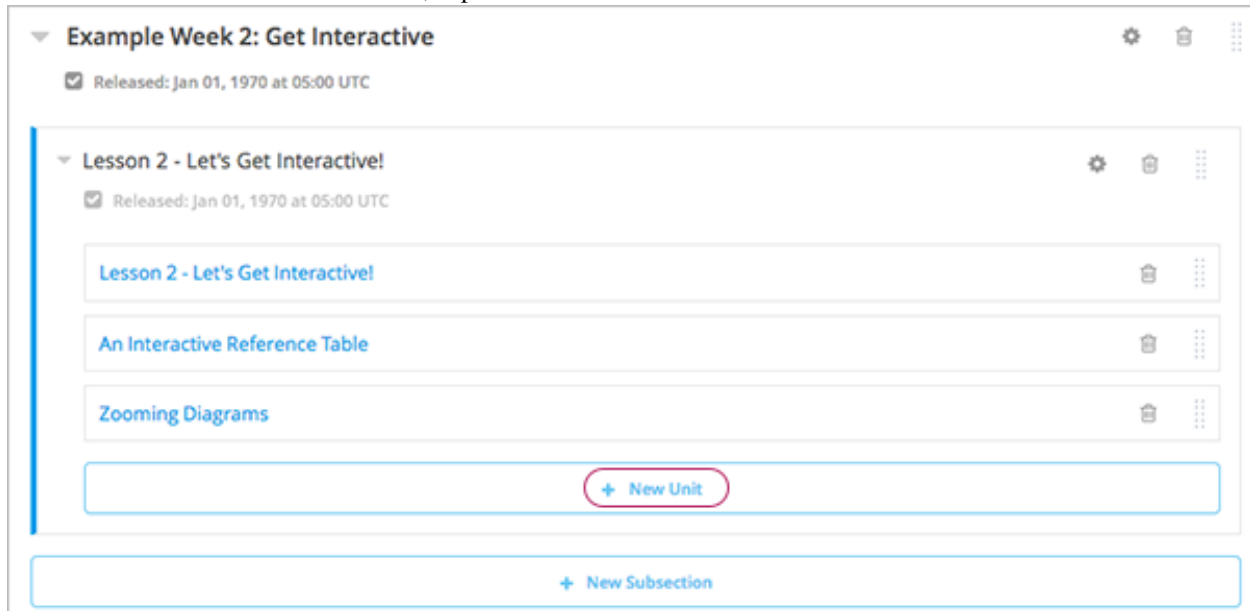
To add a section to the end of the outline, click **New Section** at the top of the outline page or at the bottom of the outline:



To add a subsection to the end of the section, expand the section and click **New Subsection**:



To add a unit to the end of a subsection, expand the subsection and click **New Unit**:



The *unit* page opens.

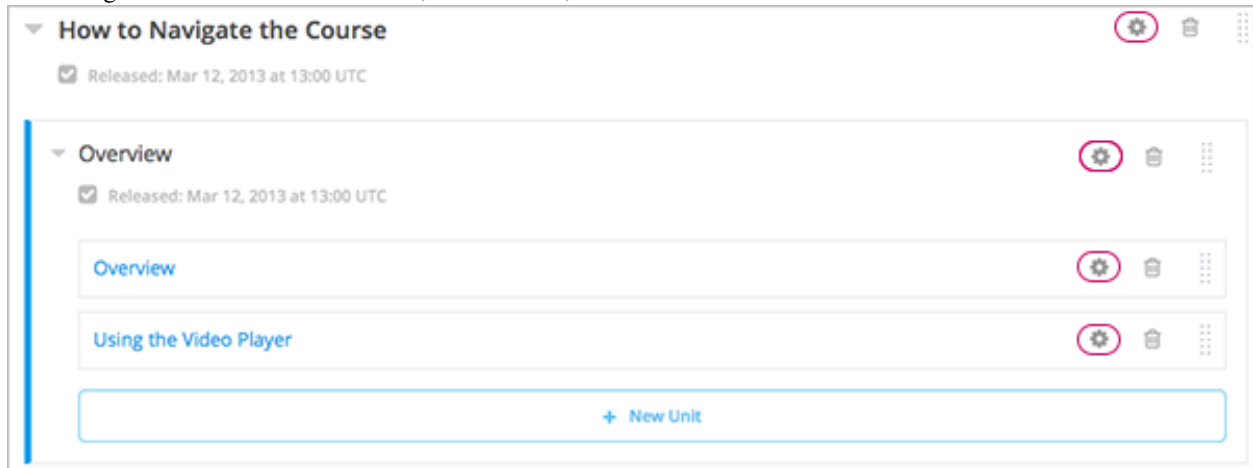
**Note:** If you want to require an entrance exam for your course, you also create the exam in the course outline. Before you can create an exam, you must set your course to require an entrance exam in Studio. For more information, see [Require an Entrance Exam](#).

### 6.2.6 Modify Settings for Objects in the Course Outline

You modify settings for sections, subsections, and units in the course outline. Specifically, you can complete the following tasks:

- *Set a Section Release Date*
- *Hide a Section from Students*
- *Set a Subsection Release Date*
- *Set the Assignment Type and Due Date for a Subsection*
- *Hide a Subsection from Students*
- *Hide a Unit from Students*

To modify settings for a section, subsection, or unit, click the settings icon for that object. In the following example, the settings icon is circled for a section, a subsection, and two units:

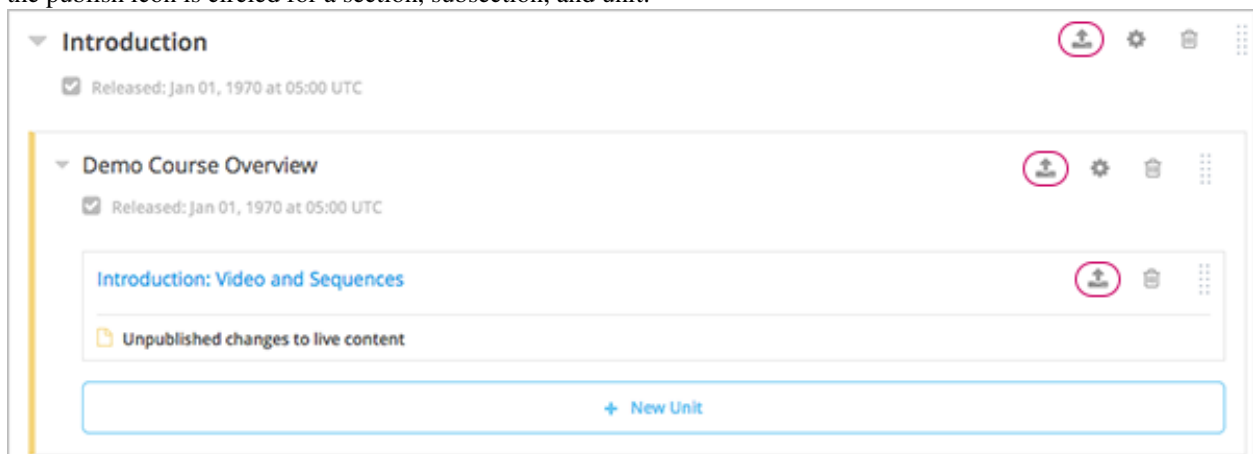


For more information, see the links above.

## 6.2.7 Publish Content from the Course Outline

You can publish new and changed units for an entire section or subsection. You can also publish individual units.

To publish new and changed units, click the publish icon for a section, subsection, or unit. In the following example, the publish icon is circled for a section, subsection, and unit:



**Note:** The publish icon only appears when there is new or changed content within the object.

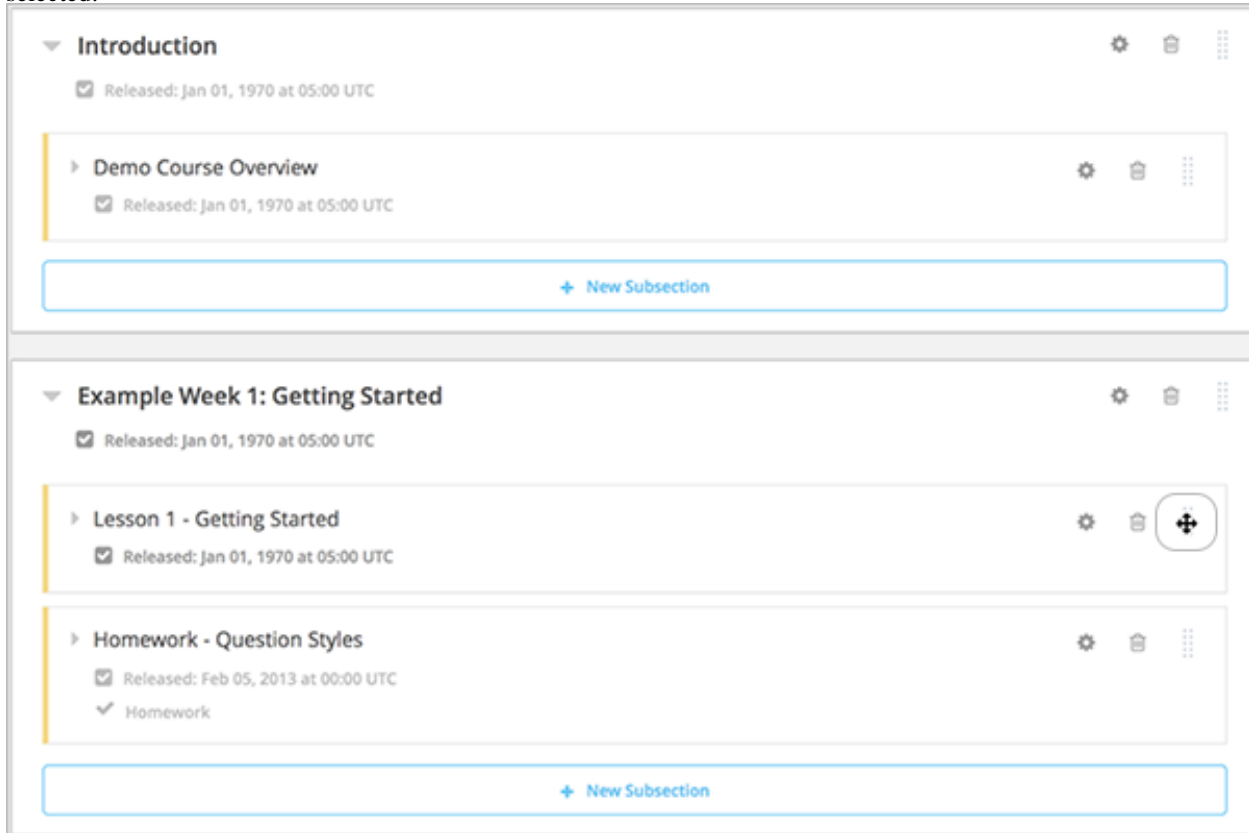
For more information, see:

- *Unit Publishing Status*
- *Publish all Units in a Section*
- *Publish all Units in a Subsection*
- *Publish a Unit*

### 6.2.8 Reorganize the Course Outline

You can reorganize your course content by dragging and dropping sections, subsections, and units to new locations in the outline.

To move a section, subsection, or unit, hover over the handle on the right of the object's box until the cursor changes to a four-headed arrow. For example, in the image below, the handle for the subsection Lesson 1 - Getting Started is selected:



Then, click and drag the object to the location that you want.

If you expanded the section or subsection you are moving the object to, when you move the object, a blue line indicates where the object will land when you release the mouse button. For example, in the image below, the subsection Lesson 1 - Getting Started is being moved to the end of the section Introduction:

**Introduction** ⚙️ 🗑️ ⋮

☑ Released: Jan 01, 1970 at 05:00 UTC

▶ **Demo Course Overview** ⚙️ 🗑️ ⋮

☑ Released: Jan 01, 1970 at 05:00 UTC

▶ **Lesson 1 - Getting Started** ⚙️ 🗑️ ⋮

☑ Released: Jan 01, 1970 at 05:00 UTC + New Subsection

---

**Example Week 1: Getting Started** ⚙️ 🗑️ ⋮

☑ Released: Jan 01, 1970 at 05:00 UTC

▶ **Homework - Question Styles** ⚙️ 🗑️ ⋮

☑ Released: Feb 05, 2013 at 00:00 UTC

✓ Homework

+ New Subsection

If you did not expand the section or subsection you are moving the object to, the outline of that section or subsection turns blue when you have moved the object to a valid location. You can then release the mouse button. For example, in the image below, the subsection Lesson 1 - Getting Started is being moved to the collapsed section Introduction:

▶ **Introduction** ⚙️ 🗑️ ⋮

▶ Lesson 1 - Getting Started ⚙️ 🗑️ ⋮

☑ Released: Jan 01, 1970 at 05:00 UTC

---

**Example Week 1: Getting Started** ⚙️ 🗑️ ⋮

☑ Released: Jan 01, 1970 at 05:00 UTC

▶ **Homework - Question Styles** ⚙️ 🗑️ ⋮

☑ Released: Feb 05, 2013 at 00:00 UTC

✓ Homework

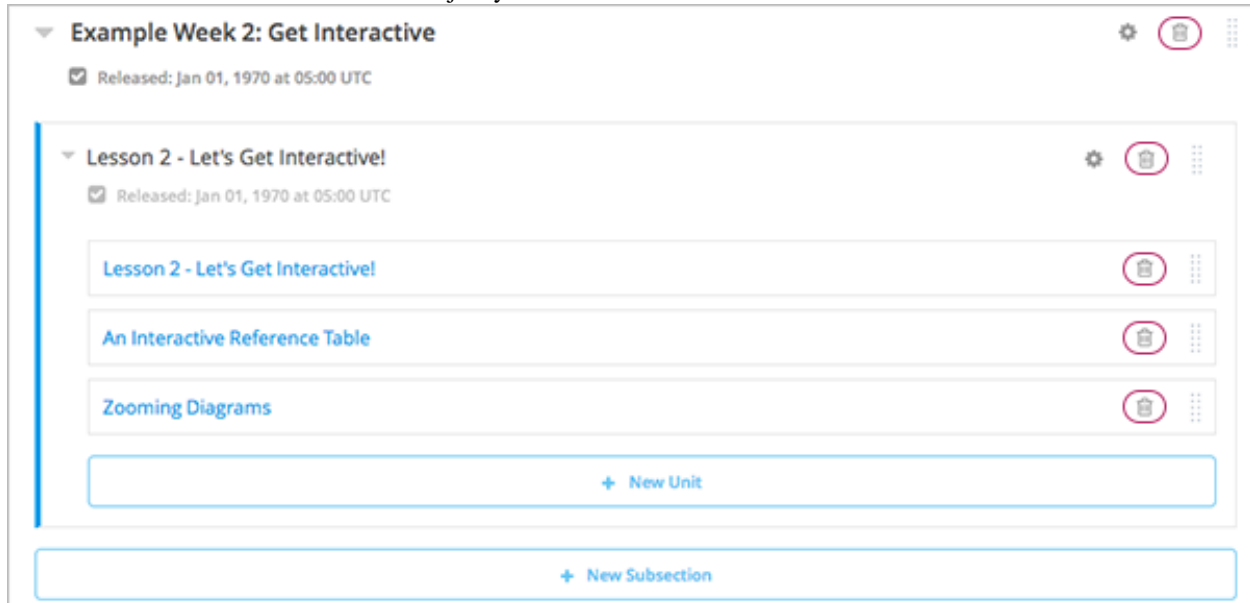
+ New Subsection

### 6.2.9 Delete Content in the Course Outline

You delete sections, subsections, and units from the course outline.

**Warning:** You cannot restore course content after you delete it. To ensure you do not delete content you may need later, you can move any unused content to a section in your course that you set to never release.

Click the delete icon in the box for the object you want to delete:



You are prompted to confirm the deletion.

---

**Note:** When you delete an object, all objects that it contains are deleted. For example, when you delete a subsection, all units in that subsection are deleted.

---

## 6.3 Developing Course Sections

To develop sections in your course, you must first understand the following:

- *What is a Section?*
- *Viewing Sections in the Outline*
- *The Student View of a Section*
- *Sections and Visibility to Students*
- *Release Statuses of Sections*

Section tasks:

- *Create a Section*
- *Change a Section Name*
- *Set a Section Release Date*
- *Publish all Units in a Section*



- *Hide a Section from Students*
- *Delete a Section*

### 6.3.1 What Is a Section?

A section is the topmost category in your course. A section can represent a time period in your course, a chapter, or another organizing principle. A section contains one or more subsections.

### 6.3.2 Viewing Sections in the Outline

The follow example shows four sections, all collapsed, in the course outline:

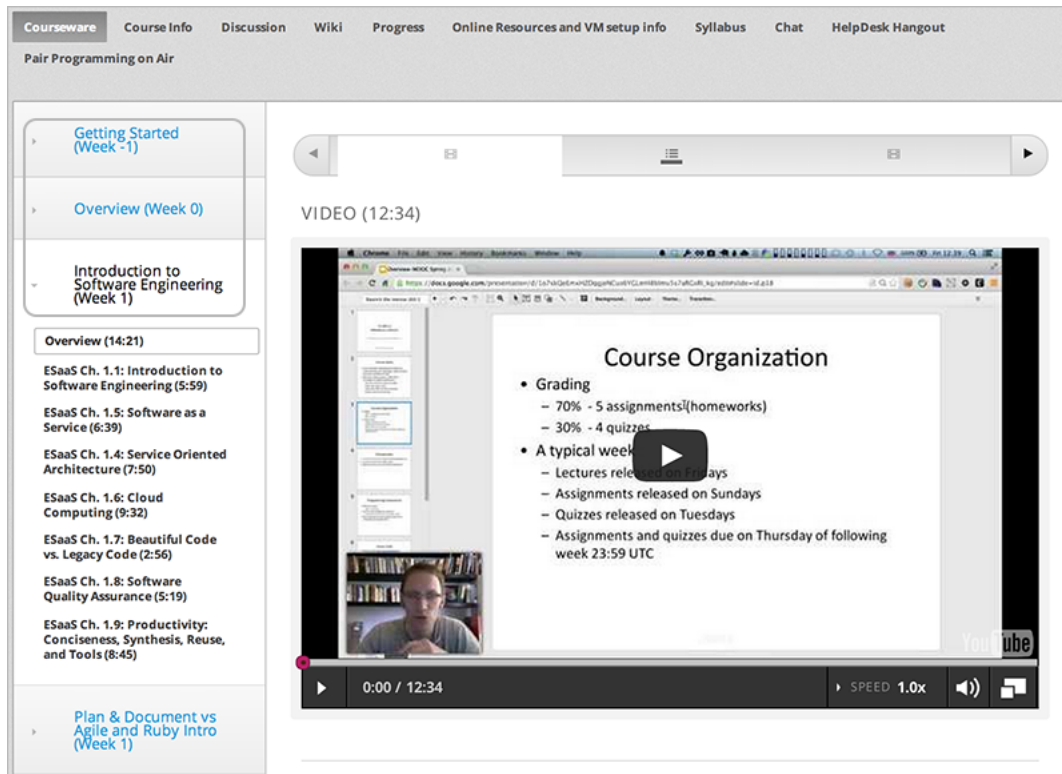
The screenshot displays the 'Course Outline' interface. At the top, there are three buttons: '+ New Section' (green), 'Collapse All Sections' (blue), and 'View Live' (blue). Below these, the outline lists four sections, each with a right-facing arrow icon and a release date of 'Released: Jan 01, 1970 at 05:00 UTC':

- Introduction
- Example Week 1: Getting Started
- Example Week 2: Get Interactive
- About Exams and Certificates

At the bottom of the outline is a '+ New Section' button. On the right side, a sidebar titled 'What can I do on this page?' provides instructions: 'You can create new sections and subsections, set the release date for sections, and create new units in existing subsections. You can set the assignment type for subsections that are to be graded, and you can open a subsection for further editing. In addition, you can drag and drop sections, subsections, and units to reorganize your course.'

### 6.3.3 The Student View of a Section

Students see sections in the **Courseware** tab. Students can expand one section at a time to see its contents. In the following example, three sections are circled, and the third one is expanded to show its subsections:



### 6.3.4 Sections and Visibility to Students

Students cannot see any content in the section if the section's release date is unscheduled or has not passed.

If a section's release date has passed, students can see content in the section if:

- The release date for the subsection that contains that content has passed.
- The unit has been published.
- The unit is not hidden from students.

### 6.3.5 Release Statuses of Sections

As an course author, you control the release status of sections. For the content of a section to be visible to students, the section must be released. See the following for more information about the possible releases statuses of sections:

- *Unscheduled*
- *Scheduled*
- *Released*
- *Released with Unpublished Changes*
- *Staff Only Content*

#### Unscheduled

If you do not change the *course start date* default value, 1/1/2030 00:00:00 UTC, when you create a new section, its release date will appear as *Unscheduled*. When the section release date is unscheduled, students cannot

see any content in that section, regardless of the publishing status of that content.

If you have modified the course start date, when you create a new section, the default release date is the course start date.

The following example shows how an unscheduled section is displayed in the outline, summarized with a gray bar:



To make the content available to students, you must schedule the release date.

### Scheduled

A section that is scheduled for release on a future date will not be visible to students until after the release date. Regardless of the publishing status of content within the section, the entire section will not be visible to students.

The following example shows how a section that is scheduled for release is displayed in the outline, summarized with a green bar:



The scheduled date must pass for the section to be visible to students.

### Released

A section that is released is visible to students; however, students see only subsections within the section that are also released, and units that are published.

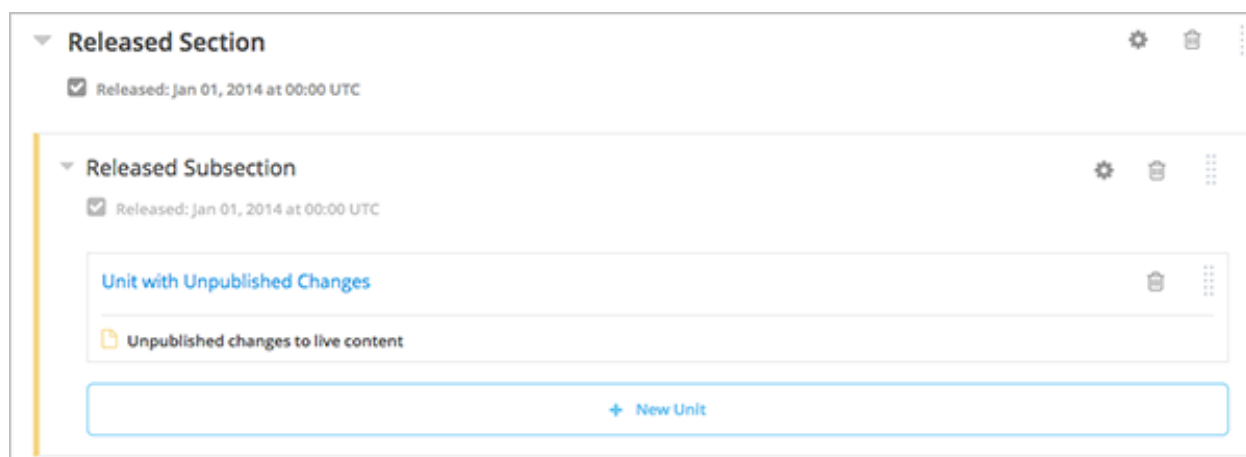
The following example shows how a released section is displayed in the outline, summarized with a blue bar:



### Released with Unpublished Changes

If you change a unit in a released section but do not publish the changes, students see the last published version of the modified unit.

The following example shows how a released section with unpublished changes is displayed in the outline, with a yellow bar. The section is expanded to show the unit with unpublished changes:

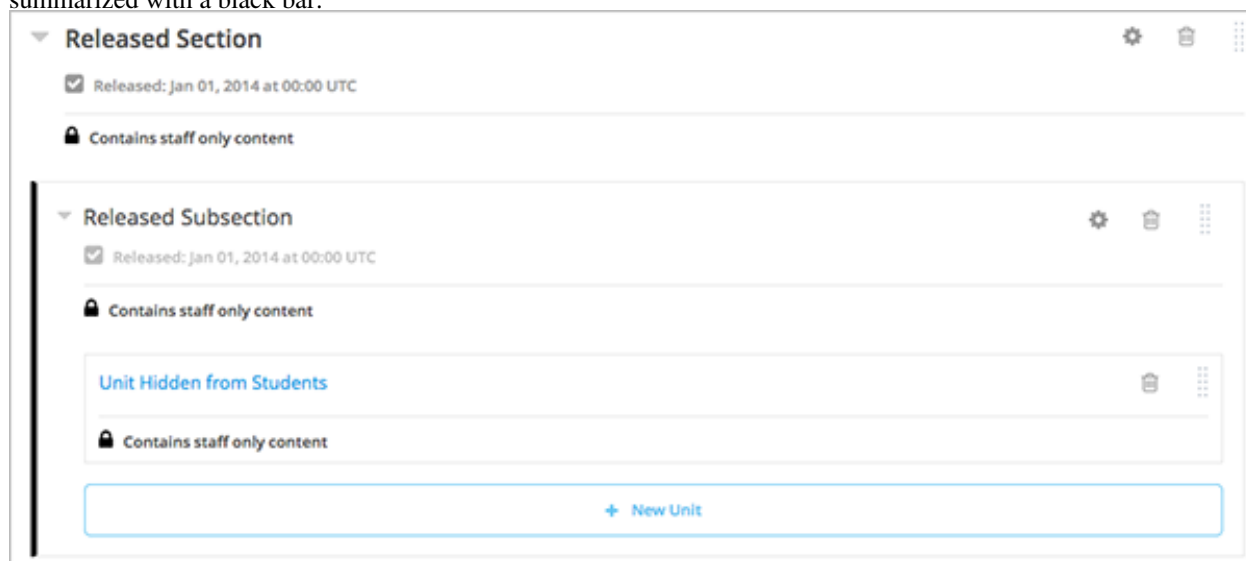


You must publish the unit for students to see the updates.

### Staff Only Content

A section can contain a unit that is hidden from students and available to staff only. That unit is not visible to students, regardless of the release date of the section or subsection.

The following example shows how a section that contains a unit that is hidden from students is displayed in the outline, summarized with a black bar:



### 6.3.6 Create a Section

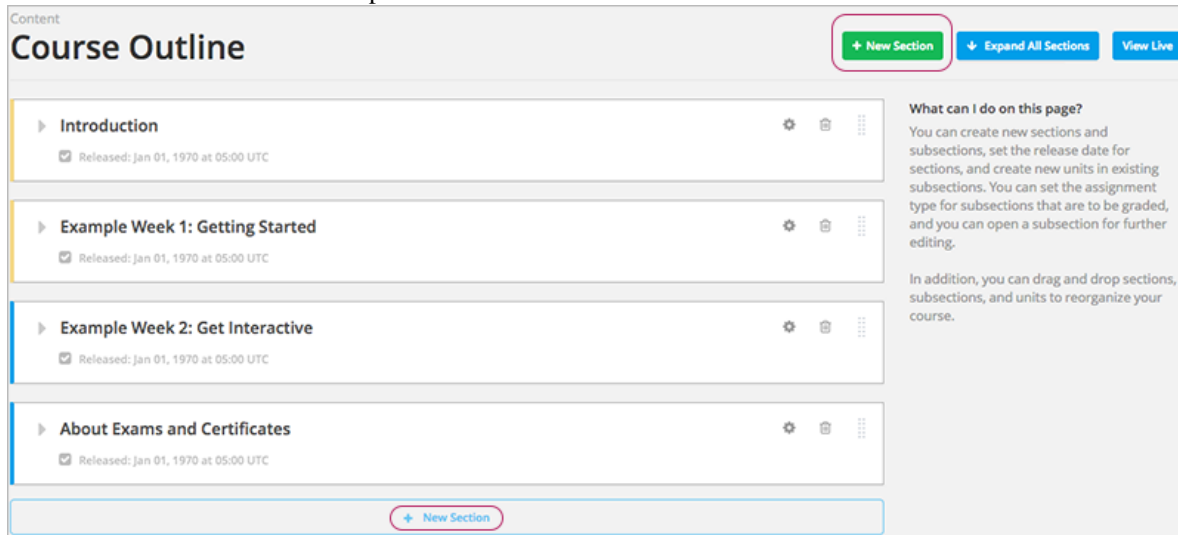
If you do not change the *course start date* default value, 1/1/2030, when you create a new section, its release date will be *Unscheduled*.

If you have modified the course start date, when you create a new section, the default release date is the course start date.

**Caution:** If the course start date is in the past, newly created sections are immediately visible to students.

To create a new section:

1. Click **New Section** at the top or bottom of the outline:



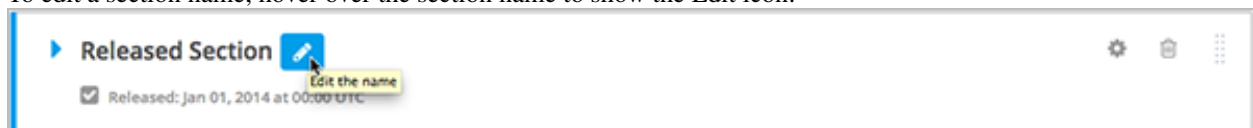
A new section is added at the end of the course content, with the section name selected.

2. Enter the name for the new section. Remember that students see the section name in the courseware.
3. *Add subsections* to the new section as needed.

It is recommended that you *test course content* as you create new sections.

### 6.3.7 Change a Section Name

To edit a section name, hover over the section name to show the Edit icon:



Click the Edit icon next to the section name. The name field becomes editable. Enter the new name and tab or click out of the field to save the name.

### 6.3.8 Set a Section Release Date

To set the section release date:

1. Click the Settings icon in the section box:



The **Settings** dialog box opens.

2. Enter the release date and time for the section:

### How to Navigate the Course Settings

Change the settings for How to Navigate the Course

#### Release Date and Time

Release Date:

Release Time in UTC:

3/12/2014

13:00

#### Student Visibility

☒ Hide from students

Save




Cancel

3. Click **Save**.




For more information, see [Release Dates](#).

### 6.3.9 Publish all Units in a Section



To publish all new and changed units in a section, click the publish icon in the box for the section:

▼ Introduction   

☒ Released: Jan 01, 1970 at 05:00 UTC

▼ Demo Course Overview   

☒ Released: Jan 01, 1970 at 05:00 UTC

Introduction: Video and Sequences  

Unpublished changes to live content

+ New Unit

---

**Note:** The publish icon only appears when there is new or changed content within the section.

---

See [Unit Publishing Status](#) for information about statuses and visibility to students.

### 6.3.10 Hide a Section from Students

You can hide all content in a section from students, regardless of the status of subsections and units within the section.

To hide a section from students:

1. Click the Settings icon in the section box:



The **Settings** dialog box opens.

2. Check **Hide from students**.

3. Click **Save**.

Now, no content in the section is visible to students.

To make the section visible to students, repeat these steps and clear the **Hide from students** checkbox.

**Warning:** When you clear the **Hide from students** checkbox for a section, not all content in the section is necessarily made visible to students. If you explicitly set a subsection or unit to be hidden from students, it remains hidden from students. Unpublished units remain unpublished, and changes to published units remain unpublished.

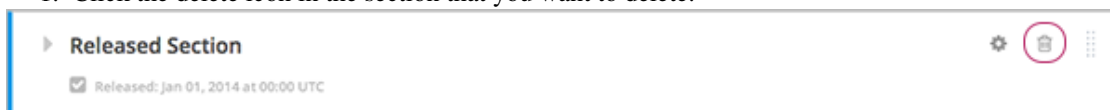
### 6.3.11 Delete a Section

When you delete a section, you delete all subsections and units within the section.

**Warning:** You cannot restore course content after you delete it. To ensure you do not delete content you may need later, you can move any unused content to a section in your course that you set to never release.

To delete a section:

1. Click the delete icon in the section that you want to delete:



2. When you receive the confirmation prompt, click **Yes, delete this section**.

## 6.4 Developing Course Subsections

To develop subsections in your course, you must first understand the following:

- *What is a Subsection?*
- *Viewing Subsections in the Outline*
- *The Student View of a Subsection*
- *Subsections and Visibility to Students*
- *Release Statuses of Subsections*

Subsection tasks:

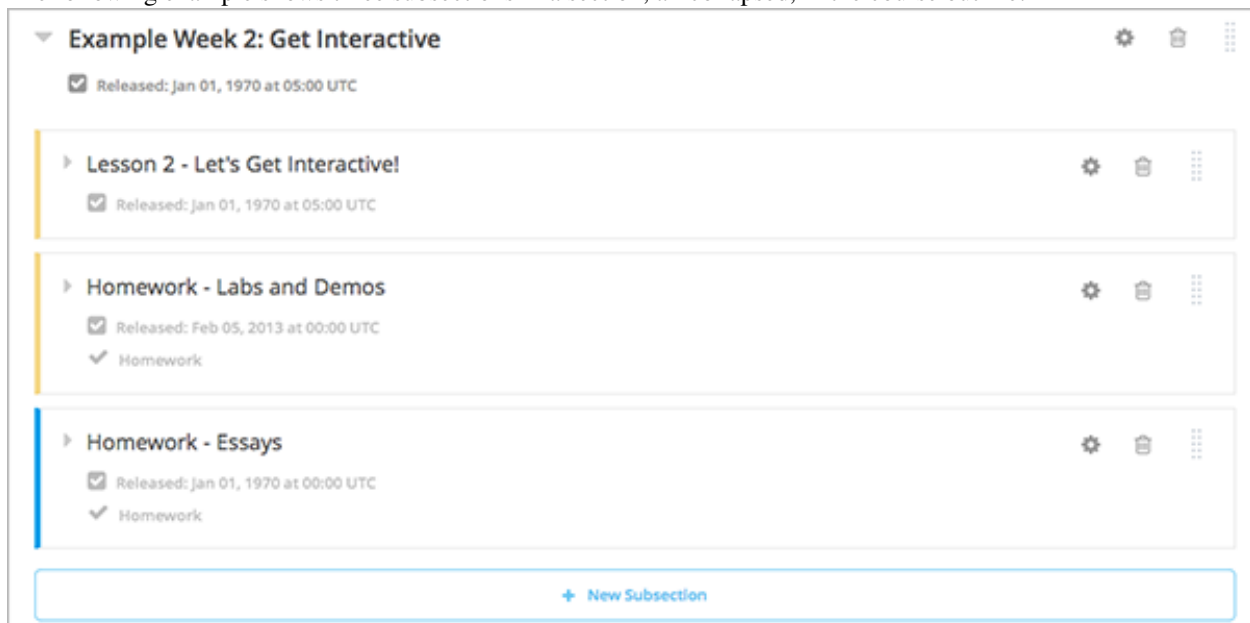
- *Create a Subsection*
- *Change a Subsection Name*
- *Set a Subsection Release Date*
- *Set the Assignment Type and Due Date for a Subsection*
- *Publish all Units in a Subsection*
- *Hide a Subsection from Students*
- *Delete a Subsection*

### 6.4.1 What Is a Subsection?

Sections are divided into subsections, which in turn contain one or more units. A subsection may represent a topic in your course, or another organizing principle. Subsections are sometimes called “lessons” or “learning sequences.”

### 6.4.2 Viewing Subsections in the Outline

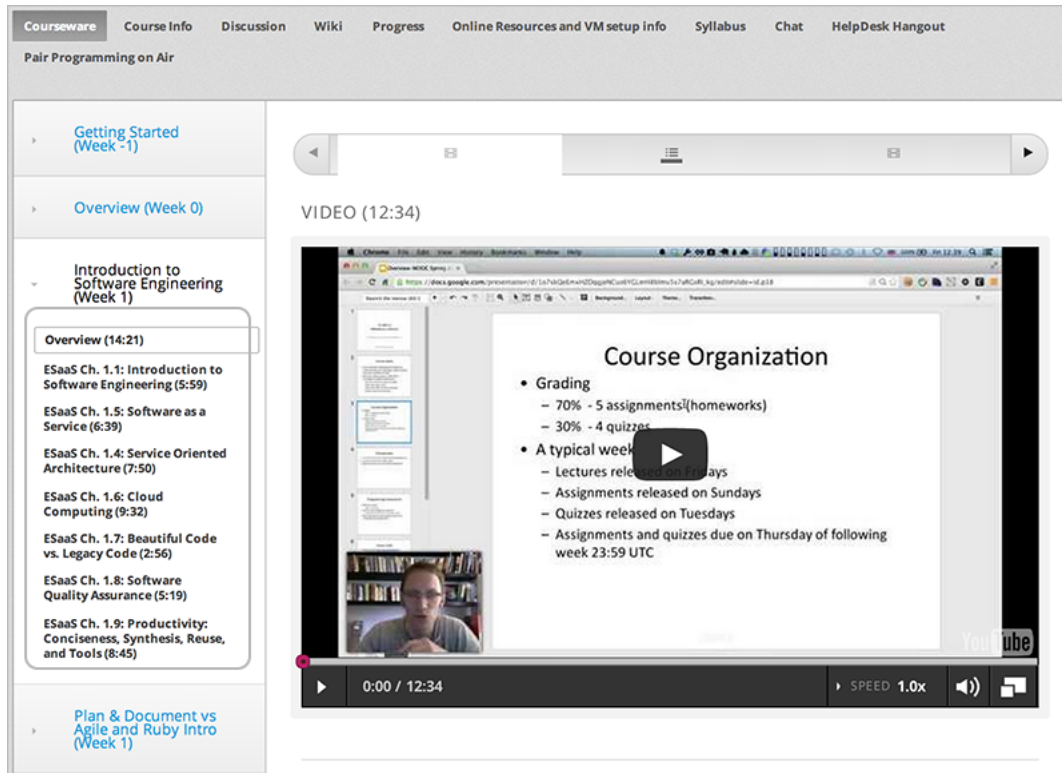
The following example shows three subsections in a section, all collapsed, in the course outline:





### 6.4.3 The Student View of a Subsection

Students see subsections in the Courseware tab, listed beneath the expanded section. In the following example, seven subsections are circled, and the first is open.



### 6.4.4 Subsections and Visibility to Students

Students cannot see any content in a subsection if the subsection's release date is unscheduled or has not passed.

If a subsection's release date has passed, students can see content in the subsection if the following three conditions are met:

- The release date of the parent section has passed.
- The units have been published.
- The units are not hidden from students.

### 6.4.5 Release Statuses of Subsections

As a course author, you control the release status of subsections. For the content of a subsection to be visible to students, the subsection must be released. See the following for more information about the possible releases statuses of subsections:

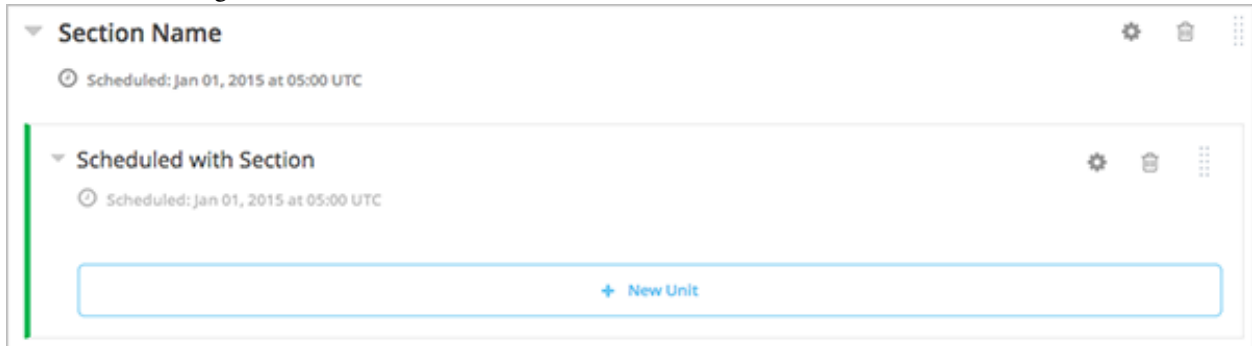
- *Scheduled with the Section*
- *Unscheduled*
- *Scheduled Later than the Section*
- *Scheduled with Unpublished Changes*

- *Released with Unpublished Changes*
- *Released*

### Scheduled with the Section

When you create a subsection, it is set by default to release at the same time as the section it is in. Therefore, published content in the subsection is visible to students at the date and time the section is released.

The following example shows how an subsection in the Scheduled with Section state is displayed in the outline, summarized with a green bar:

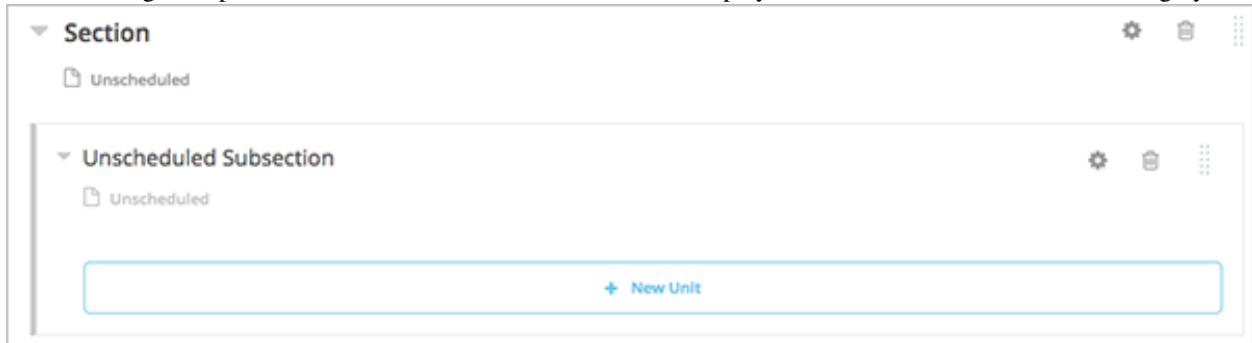


### Unscheduled

If the parent section is unscheduled, when you create a new subsection it will also be unscheduled.

Regardless of the publishing status of units within the subsection, no content in an unscheduled subsection is visible to students.

The following example shows how an unscheduled subsection is displayed in the outline, summarized with a gray bar:



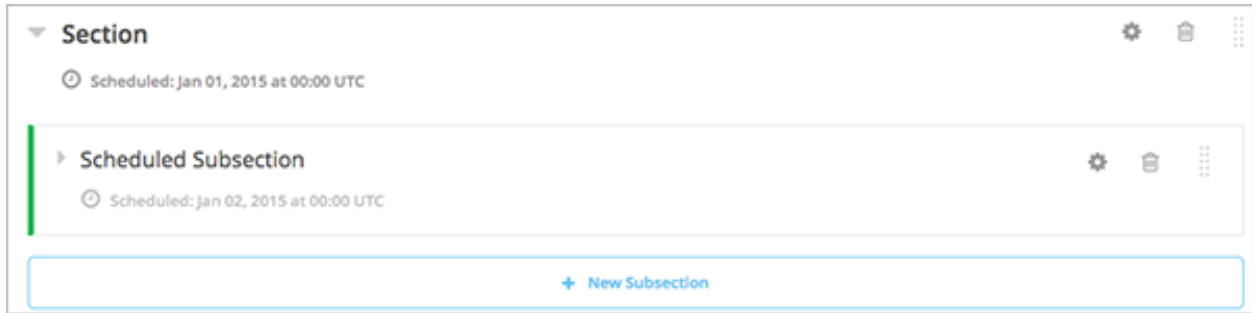
Content in the subsection is not visible to students until you set a release date and the date passes.

### Scheduled Later than the Section

You can set a subsection to release on a date after the section releases.

Content in a subsection that is scheduled for release on a future date is not visible to students, even if some or all of the units in the subsection are published.

The following example shows the way that a subsection that will release after its parent subsection appears in the course outline:



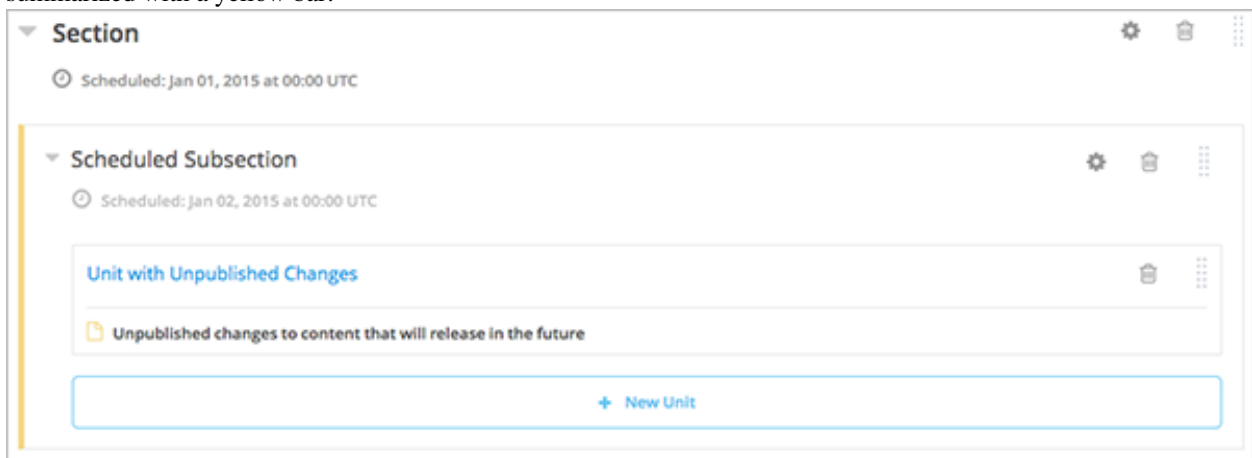
The scheduled date must pass for the subsection to be visible to students.

### Scheduled with Unpublished Changes

You can make changes to a published unit before its parent subsection is released.

In this situation, when the release date for the subsection passes, the last published version of units within the subsection are made visible to students. The changes in units are not visible to students until you publish them.

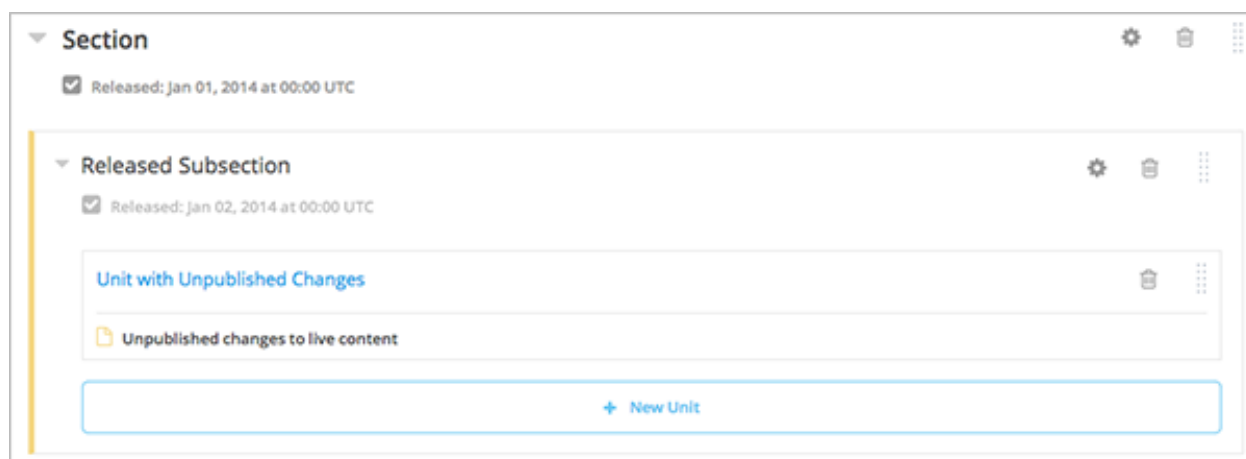
The following example shows how a scheduled subsection with unpublished changes is displayed in the outline, summarized with a yellow bar:



### Released with Unpublished Changes

If you modify a unit within a released subsection, those modifications are not visible to students until you publish them.

The following example shows how a released section that has unpublished changes appears in the outline, summarized with a yellow bar:



### Released

A subsection that is released is visible to students; however, students see only units within the subsection that are published.

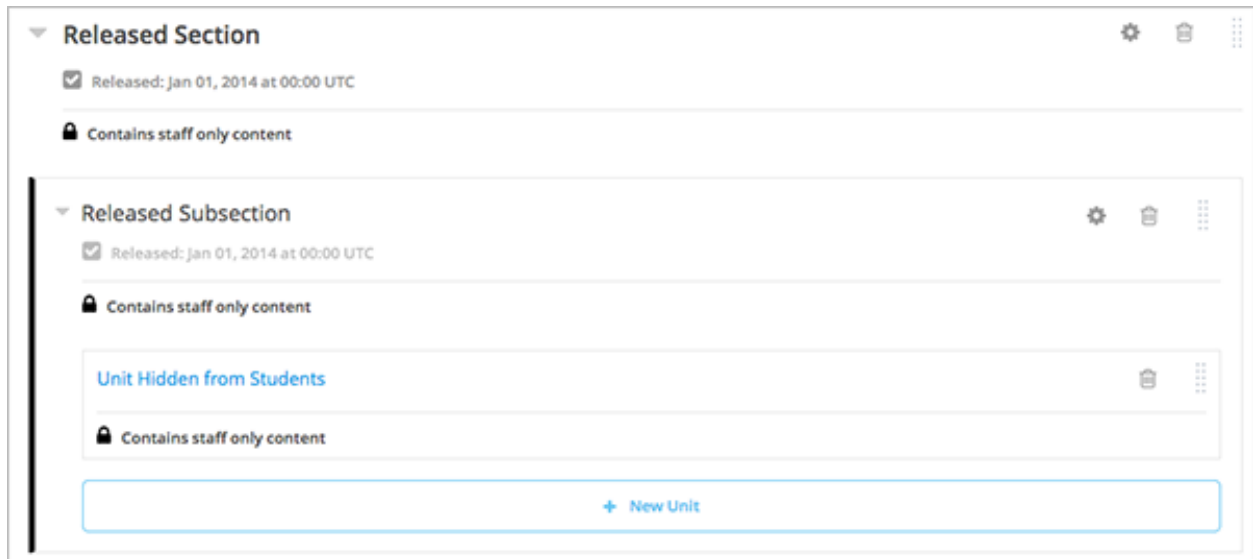
The following example shows how a released subsection is displayed in the outline, summarized with a blue bar:



### Staff Only Content

A subsection can contain a unit that is hidden from students and available to staff only. That unit is not visible to students, even if the subsection has been released.

The following example shows how an subsection that contains a unit that is hidden from students is displayed in the outline, summarized with a black bar:



### 6.4.6 Create a Subsection

To create a new subsection:

1. In the outline, expand the section in which you want to create a new subsection.
2. Click **New Subsection** at the bottom of the expanded section. A new subsection is added at the end of the section, with the subsection name selected.
3. Enter the name for the new subsection. Remember that students see the subsection name in the courseware.
4. *Add units* to the new subsection as needed.

It is recommended that you *test course content* as you create new subsections.

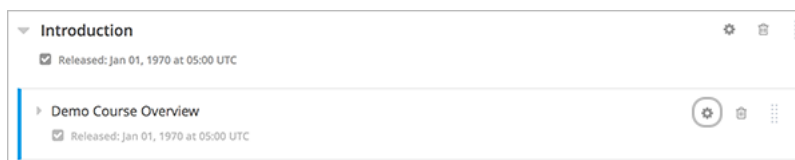
### 6.4.7 Change a Subsection Name

To change a subsection name, click the Edit icon next to the subsection name. The name field becomes editable. Enter the new name and tab or click out of the field to save the name.

### 6.4.8 Set a Subsection Release Date

To set the subsection release date:

1. Click the Settings icon in the subsection box:



The **Settings** dialog box opens.

2. Enter the release date and time for the section:

### Demo Course Overview Settings

Change the settings for Demo Course Overview

#### Release Date and Time

Release Date:

Release Time in UTC:

3/1/2014

05:00

↺

#### Grading

Grade as:

Homework

Due Date:

Due Time in UTC:

8/1/2014

00:00

↺

#### Student Visibility

☐ Hide from students

Save

Cancel

3. Click **Save**.

For more information, see [Release Dates](#).

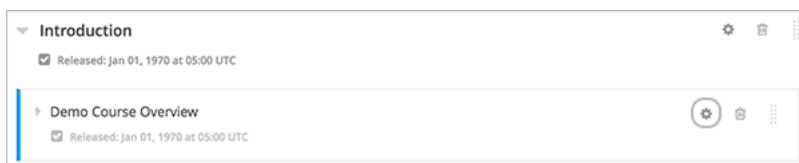
### 6.4.9 Set the Assignment Type and Due Date for a Subsection

You set the assignment type for problems at the subsection level.

When you set the assignment type for a subsection, all problems within the subsection are graded and weighted as a single type. For example, if you designate the assignment type for a subsection as **Homework**, then all problem types in that subsection are graded as homework.

To set the assignment type and due date for a subsection:

1. Click the Settings icon in the subsection box:



The Settings dialog box opens.

2. Select the assignment type for this subsection in the **Grade as** field:

### Demo Course Overview Settings

Change the settings for Demo Course Overview

#### Release Date and Time

Release Date:

Release Time in UTC:

3/1/2014

05:00

#### Grading

Grade as:

Homework

Due Date:

Due Time in UTC:

8/1/2014

00:00

#### Student Visibility

☐ Hide from students

Save

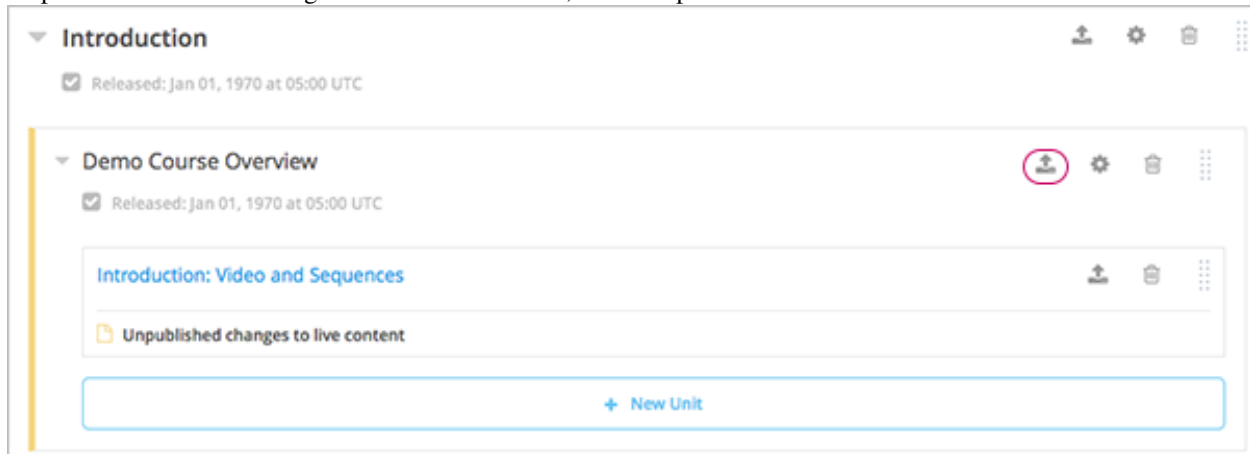
Cancel

3. Enter or select a due date and time for problems in this subsection.
4. Click **Save**.

For more information, see [Establishing a Grading Policy](#).

### 6.4.10 Publish all Units in a Subsection

To publish all new and changed units in a subsection, click the publish icon in the box for the subsection:



**Note:** The publish icon only appears when there is new or changed content within the subsection.

See *Unit Publishing Status* for information about statuses and visibility to students.

### 6.4.11 Hide a Subsection from Students

You can hide all content in a subsection from students, regardless of the status of units within the section.

To hide a subsection from students:

1. Click the Settings icon in the subsection box:



The **Settings** dialog box opens.

2. Check **Hide from students**.



### Demo Course Overview Settings

Change the settings for Demo Course Overview

#### Release Date and Time

Release Date:

Release Time in UTC:

3/1/2014

05:00

↺

#### Grading

Grade as:

Homework

Due Date:

Due Time in UTC:

8/1/2014

00:00

↺

#### Student Visibility

☒ Hide from students

Save

Cancel

3. Click **Save**.

Now, no content in the subsection is visible to students.

To make the subsection visible to students, repeat these steps and clear the **Hide from students** checkbox.

**Warning:** When you clear the **Hide from students** checkbox for a subsection, not all content in the subsection is necessarily made visible to students. If you explicitly set a unit to be hidden from students, it remains hidden from students. Unpublished units remain unpublished, and changes to published units remain unpublished.

## 6.4.12 Delete a Subsection

When you delete a subsection, you delete all units within the subsection.

**Warning:** You cannot restore course content after you delete it. To ensure you do not delete content you may need later, you can move any unused content to a section in your course that you set to never release.

To delete a subsection:

1. Click the delete icon in the subsection that you want to delete:



2. When you receive the confirmation prompt, click **Yes, delete this subsection**.

## 6.5 Developing Course Units

When working with units in the course outline, ensure you understand the following:

- *What is a Unit?*
- *Viewing Units in the Outline*
- *Viewing the Unit Page*
- *Viewing Units as a Student*
- *Unit Publishing Status and Visibility to Students*
- *Unit Publishing Status*

When developing your course, you perform the following tasks with units:

- *Create a Unit*
- *Edit a Unit*
- *Preview a Unit*
- *Publish a Unit*
- *Discard Changes to a Unit*
- *View a Published Unit*
- *Hide a Unit from Students*
- *Delete a Unit*

You add content to units with *course components*.

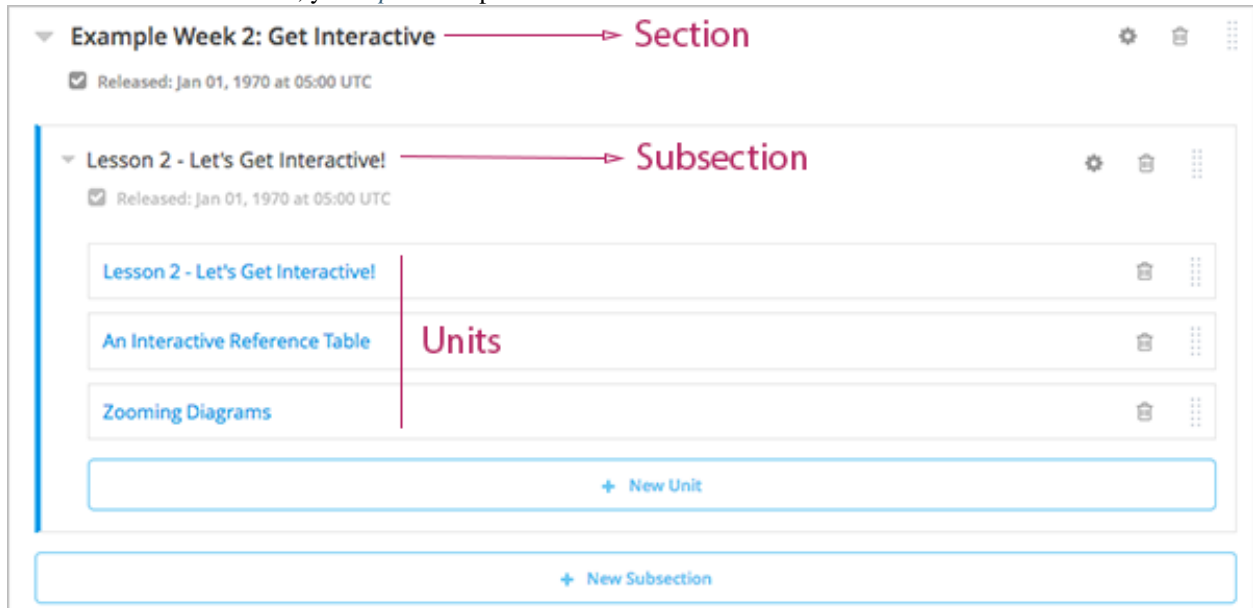
### 6.5.1 What is a Unit?

A unit is a part of a *subsection* that students view as a single page.

A unit contains one or more *components*, such as *HTML content*, *problems*, *discussions*, and *videos*.

## 6.5.2 Viewing Units in the Outline

To view units in the outline, you *expand* the parent section and subsection:




## 6.5.3 Viewing the Unit Page

When you click on a unit name in the outline, the **Unit** page opens.

The following example shows a unit page with two components, with circles and text to show different areas and controls in the page.

Example Week 2: Get Interactive / Homework - Labs and Demos

**Molecule Editor**  For testing the LMS view

[View Live Version](#) [Preview Changes](#)

**Status panel**

**Published and Live**

Last published Aug 07, 2014 at 19:28 UTC by staff

RELEASED:  
Feb 05, 2013 at 00:00 UTC with Subsection "Homework - Labs and Demos"

IS VISIBLE TO:  
Staff and Students  
☐ Hide from students

[Publish](#)

[Discard Changes](#)

Last published Aug 07, 2014 at 19:28 UTC by staff

**Unit Location**

LOCATION ID  
vertical\_0fab6aa52165

Use this ID when you create links to this unit from other course content. You enter the ID in the URL field.

**LOCATION IN COURSE OUTLINE**

Example Week 2: Get Interactive

Homework - Labs and Demos

Labs and Demos

Molecule Editor

Code Grader





Electric Circuit Simulator

Protein Creator

Molecule Structures

[+ New Unit](#)

**Caution:** The last published version of this unit is live. By publishing changes you will change the student experience.





html **Components in unit**    

**MOLECULE EDITOR**

A lot of students love the molecule builder. It makes creating and visualizing molecules rather easy. A chemistry professor may have you build and submit a molecule as part of an exercise.

**Using the Molecule Editor** [+ open](#)

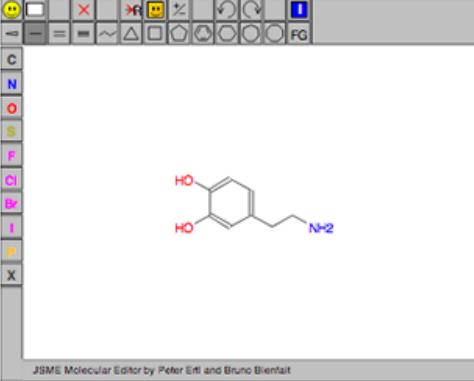
**Are the molecules I've drawn chemically possible?** [+ open](#)

Molecule Editor    

**MOLECULE EDITOR** (1 point possible)

The Dopamine molecule, as shown, cannot make ionic bonds. Edit the dopamine molecule so it can make ionic bonds.

When you are ready, click "Check." If you need to start over, click "Reset."



JSME Molecular Editor by Peter Ertl and Bruno Blierfart

[Reset](#)

[Check](#) [Show Answer](#)

**Subsection organization**

## 6.5.4 Viewing Units as a Student

To a student using the edX Learning Management System, each unit in the subsection appears as a link on the course ribbon at the top of the page. The active unit is open beneath the course ribbon.

The following image shows a subsection that has five units, which are circled in the ribbon above the video, with the first unit open:

**Units**

MEIOSIS AND THE RELATIONSHIP TO PUNNETT SQUARES

0:00 / 5:42    SPEED 1.0x    [Volume Icon]    [Full Screen Icon]    [CC Icon]

[Download video](#)    [Download transcript](#)

### 6.5.5 The Unit Workflow

When you have set up the *section* and *subsection* in the course outline, you then work with units.

The typical workflow is:

1. *Create a new unit.*
2. *Add components to the unit.*
3. *Publish the unit.*

After you publish the unit, you can:

1. *Modify components in the unit.*
2. *Publish the changes to the unit.*

The following diagram shows the typical unit development workflow:



As you work through these steps, the **publishing status** of the unit changes. The publishing status controls the content available to students, along with *release dates*. See the next section for more information.

### 6.5.6 Unit Publishing Status and Visibility to Students

The following information summarizes whether or not students can see a unit.

- Students never see a unit with the publishing status *Draft (Never Published)*.
- Students never see a unit with the publishing status *Visible to Staff Only*. See *Hide a Unit from Students* for more information.
- Students do not see a unit with the publishing status *Published Not Yet Released* until the *release date*. On the release date, the status changes to *Published and Live*.
- If the publishing status is *Published and Live*, students see the current version of the unit.
- If the publishing status is *Draft (Unpublished Changes)*, students see the last published version of the unit if the *release date* for the containing section and subsection has passed.

For more information, see *Controlling Content Visibility*.

### 6.5.7 Unit Publishing Status

As an course author, you work with units with the following statuses:

- *Draft (Never published)*
- *Published and Live*
- *Published (not yet released)*
- *Draft (Unpublished changes)*
- *Visible to Staff Only*

#### Draft (Never published)

When you create a new unit and add components to it, the unit's publishing status is **Draft (Never Published)**, as shown in the status panel:

**Draft (Never published)**

Draft saved on Aug 07, 2014 at 19:34 UTC by staff

RELEASE:  
**Feb 05, 2013 at 00:00 UTC with Subsection "Homework - Labs and Demos"**

WILL BE VISIBLE TO:  
**Staff and Students**  
☐ Hide from students

**Publish**

Discard Changes

In Studio, you see the version of the content that you're working on. Students never see a unit with this status, even if the release date has passed.

Though you do not see the unit in the LMS, you can *preview the unit*.

You must *publish the unit* for it to be included in the LMS.

### Published and Live

The release date for the section and subsection have passed. You've published the unit and haven't made any changes to it. You and students both see the current version of the unit.

**Published and Live**

Last published Aug 07, 2014 at 19:37 UTC by staff

RELEASED:  
**Feb 05, 2013 at 00:00 UTC with Subsection "Homework - Labs and Demos"**

IS VISIBLE TO:  
**Staff and Students**  
☐ [Hide from students](#)

**Publish**

[Discard Changes](#)

### Published (not yet released)

You've published the unit, but the release date hasn't passed. Students cannot see this unit until the release date passes.



**Published (not yet released)**

Last published Aug 07, 2014 at 19:39 UTC by staff

**SCHEDULED:**  
Jan 01, 2015 at 05:00 UTC with Subsection "Lesson 2 - Let's Get Interactive!"

**WILL BE VISIBLE TO:**  
**Staff and Students**  
☐ Hide from students

**Publish**

**Discard Changes**

### Draft (Unpublished changes)

When you edit a published unit, whether or not it is released, the unit's publishing status changes to **Draft (Unpublished Changes)**, as shown in the status panel:

### Draft (Unpublished changes)

Draft saved on Aug 07, 2014 at 19:41 UTC by staff

RELEASE:  
Jan 01, 2015 at 05:00 UTC with Subsection "Lesson 2 - Let's Get Interactive!"

WILL BE VISIBLE TO:  
**Staff and Students**  
☐ Hide from students

**Publish**

Discard Changes

In Studio, you see the draft of the content that you're working on. If the release date has passed, students see the last published version of the unit. If the release date hasn't passed, students can't see your content.

You must *publish the unit* for students to see your changes.

You can *preview the changes to a unit* to test how your changes will appear to students after you publish the unit.

### Visible to Staff Only

When you *hide a unit from students*, the unit's publishing status changes to **Visible to Staff Only**.

The publishing status of a unit can be **Visible to Staff Only** if you hid the parent *section* or *subsection* from students.

Students never see a unit with this status, even if it has been published and the release date has passed.

Visible to Staff Only

Last published Aug 07, 2014 at 19:42 UTC by staff

RELEASE:

~~Jan 01, 2015 at 05:00 UTC with Subsection "Lesson 2 - Let's Get Interactive!"~~

WILL BE VISIBLE TO:

**Staff Only**

☒ [Hide from students](#)

**Publish**

[Discard Changes](#)

### 6.5.8 Create a Unit

You can create a unit from the outline or create a unit in the same subsection from the unit page.

To create a unit from the outline:

1. In the outline, expand the subsection in which you want to create a new unit.
2. Click **New Unit** at the bottom of the expanded subsection. A new unit is added at the end of the subsection.
3. On the unit page, the unit name is selected. Edit the name as needed.
4. [Add components](#) to the new unit as needed.

To create a new unit from a unit page:

1. In the **Unit Location** panel, click **New Unit**.

## Unit Location

LOCATION ID

**d0d804e8863c4a95a659c04d8a2b2bc0**

Use this ID when you create links to this unit from other course content. You enter the ID in the URL field.

LOCATION IN COURSE OUTLINE

**Example Week 2: Get Interactive**

**Lesson 2 - Let's Get Interactive!**

Lesson 2 - Let's Get Interactive!

Zooming Diagrams

+ New Unit

The unit page for the new unit opens automatically.

2. On the unit page, the unit name is selected. Edit the name as needed.
3. *Add components* to the new unit as needed.

You must then *publish the unit* to make it visible to students.

### 6.5.9 Edit a Unit

You can edit a unit in the following ways:

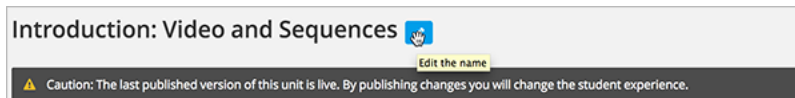
- *Edit the unit name*

- *Develop components*
- *Reorganize Components in Units*

When you make any of these changes, if you previously published the unit, the state changes to *Draft (Unpublished Changes)*. You must then *publish the unit* to make your edits visible to students.

## Edit the Unit Name

To edit a unit name, hover over the name to show the Edit icon:

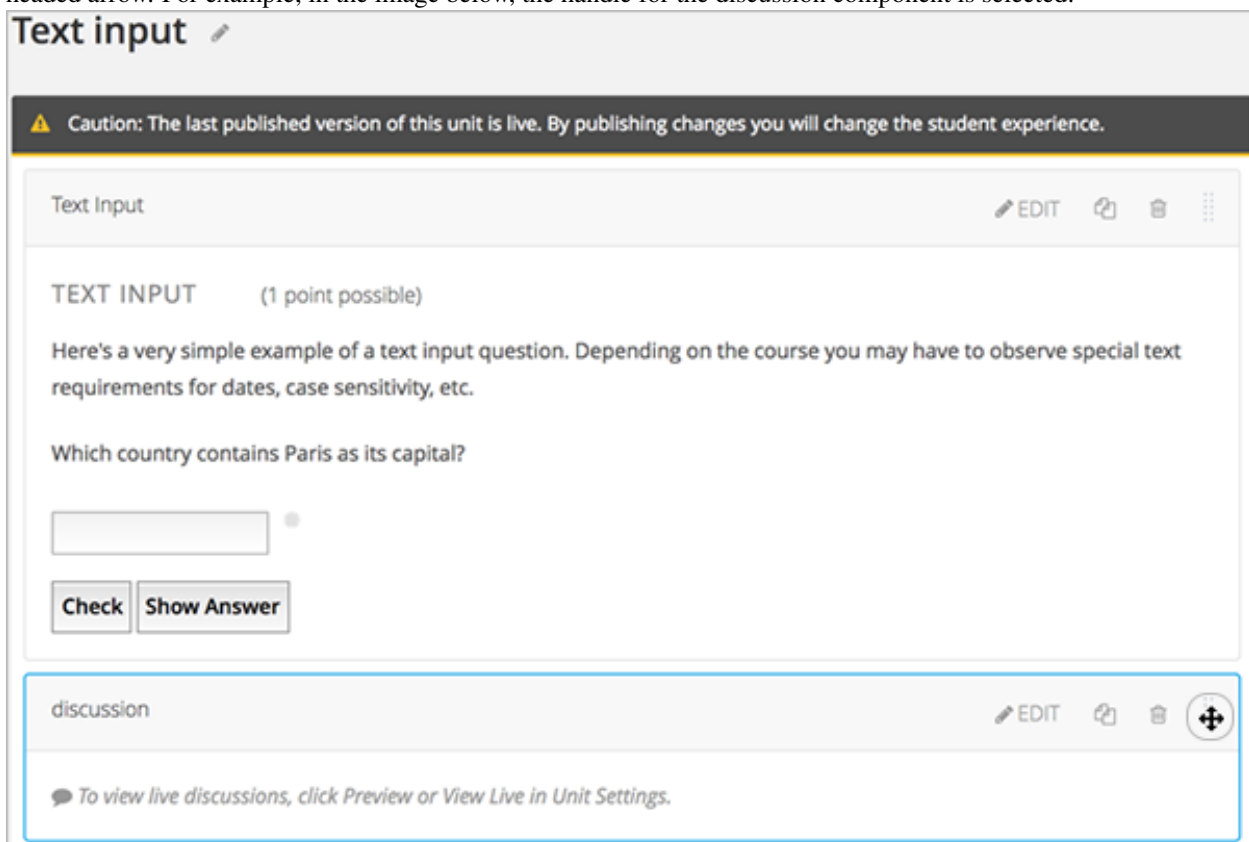


Click the Edit icon next to the unit name. The name field becomes editable. Enter the new name and tab or click out of the field to save the name.

## Reorganize Components in Units

You can reorganize components within a unit by dragging and dropping them to new locations.

To move a component, hover over the handle on the right of the component's box until the cursor changes to a four-headed arrow. For example, in the image below, the handle for the discussion component is selected:



Then, click and drag the component to the location that you want.

A dashed outline indicates where the component will land when you release the mouse button. For example, in the image below, the discussion component is being moved to the top of the unit:

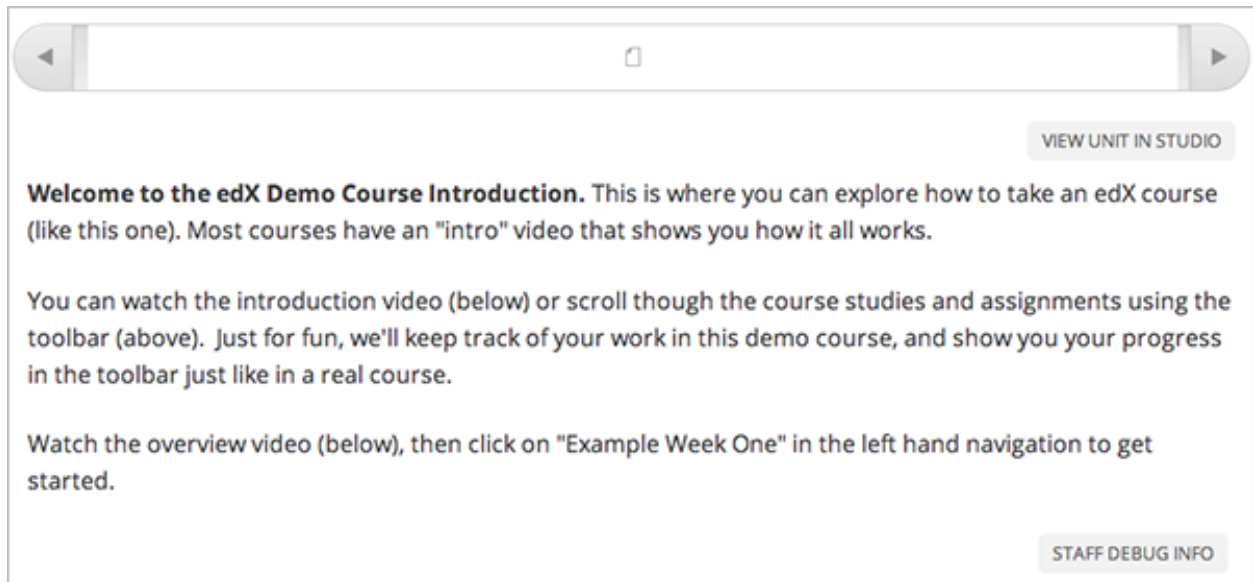
## 6.5.10 Preview a Unit

You preview a unit to review and test the content before it is visible to students.

You can preview a unit before it is published and when there are unpublished changes. When the unit is published and there are no pending changes, you cannot preview the unit; you must view the live version of the unit.

To preview the unit, in the unit page, click **Preview Changes**.

The unit opens in preview mode:



When you are revising a previously published unit, it is helpful to preview your changes in one window and *view the published unit* in a second window.

### 6.5.11 Publish a Unit

Publishing a unit makes the current version of the unit in Studio available to students, if the release date for the section and subsection have passed.

You publish a unit that has a status of *Draft (Never Published)* or *Draft (Unpublished Changes)*. When you publish a unit, the status changes to *Published and Live* or *Published Not Yet Released*.

You can publish a unit from the unit page or the course outline.

#### Use the Unit Page to Publish a Unit

To publish the unit, click **Publish** in the status panel:

### Draft (Unpublished changes)

Draft saved on Jul 21, 2014 at 19:02 UTC by staff

RELEASED:  
Jan 01, 1970 at 05:00 UTC with Section "Introduction"

WILL BE VISIBLE TO:  
**Staff and Students**  
☐ Hide from students

Publish

Discard Changes

Last published Jul 21, 2014 at 19:02 UTC by staff

## Use the Outline to Publish a Unit

To publish a unit from the outline, click the publish icon in the box for the unit:

▼ Introduction

Released: Jan 01, 1970 at 05:00 UTC

▼ Demo Course Overview

Released: Jan 01, 1970 at 05:00 UTC

Introduction: Video and Sequences

Unpublished changes to live content

+ New Unit

**Note:** The publish icon only appears when there is new or changed content in the unit.

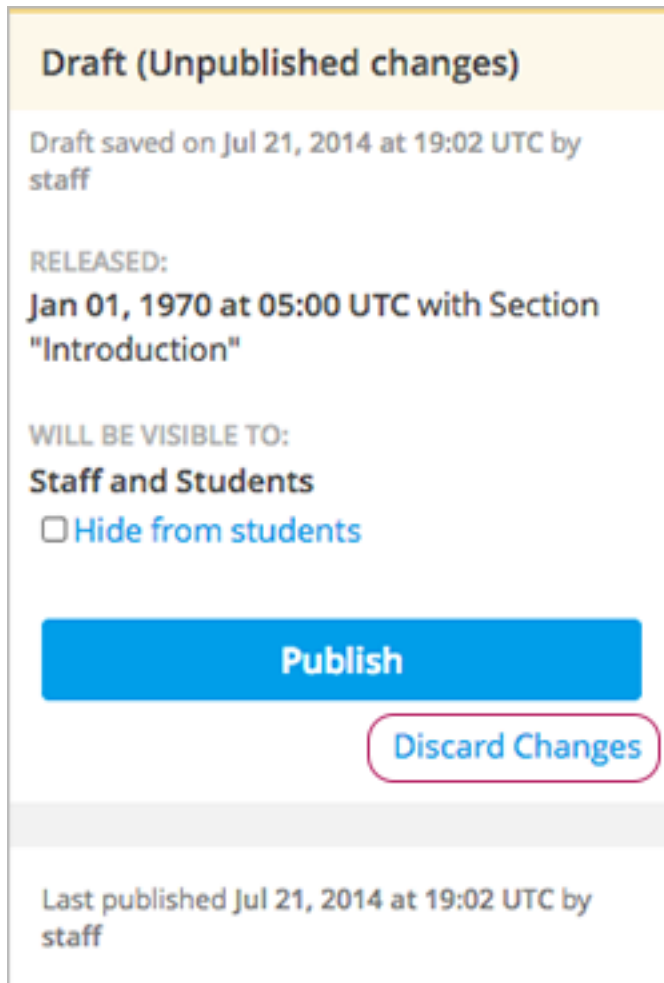


### 6.5.12 Discard Changes to a Unit

When you modify a published unit, your changes are saved in Studio, though the changes aren't visible to students until you publish the unit again.

In certain situations, you may decide that you never want to publish your changes. You can discard the changes so that Studio reverts to the last published version of the unit.

To discard changes and revert the Studio version of the unit to the last published version, click **Discard Changes** in the status panel:



The screenshot shows the 'Draft (Unpublished changes)' status panel in Studio. It includes the following information:

- Draft (Unpublished changes)** (Section header)
- Draft saved on Jul 21, 2014 at 19:02 UTC by staff
- RELEASED:**  
Jan 01, 1970 at 05:00 UTC with Section "Introduction"
- WILL BE VISIBLE TO:**  
Staff and Students
- ☐ Hide from students
- Publish** (Blue button)
- Discard Changes** (Red button, highlighted with a red circle)
- Last published Jul 21, 2014 at 19:02 UTC by staff

**Caution:** When you discard changes to a unit, the changes are permanently deleted. You cannot retrieve discarded changes or undo the action.

### 6.5.13 View a Published Unit

To view the last published version of a unit in the LMS, click **View Published Version**.

The screenshot shows the Open edX course editor interface. At the top, the breadcrumb is 'Example Week 2: Get Interactive / Lesson 2 - Let's Get Interactive!'. The main title is 'Lesson 2 - Let's Get Interactive!'. A caution banner states: 'Caution: The last published version of this unit is live. By publishing changes you will change the student experience.' Below this, the lesson content is displayed, including the title 'LESSON 2: LET'S GET INTERACTIVE!' and two paragraphs of text. To the right of the text is an illustration of two people assembling puzzle pieces. On the right side of the editor, there is a 'Published and Live' panel. It shows the 'Previously published' version with a release date of 'Jan 01, 2014 at 05:00 UTC with Subsection "Lesson 2 - Let's Get Interactive!"'. It also shows the 'IS VISIBLE TO:' settings, which are set to 'Staff and Students' with a checkbox for 'Hide from students' that is currently unchecked. At the bottom of this panel are buttons for 'Publish' and 'Discard Changes'.

The unit page opens in the LMS in Staff view. You may be prompted to log in to the LMS.

If the unit status is *Draft (Unpublished Changes)*, you do not see your changes in the LMS until you publish the unit again.

If the unit status is *Draft (Never Published)*, the **View Published Version** button is not enabled.

### 6.5.14 Hide a Unit from Students

You can prevent students from seeing a unit regardless of the unit status or the release schedules of the section and subsection.

For more information, see *Controlling Content Visibility*.

You can hide a unit from students using the course outline or the unit page.

#### Use the Unit Page to Hide a Unit

Select the **Hide from students** checkbox in the status panel:

## Visible to Staff Only

Last published Aug 07, 2014 at 19:51 UTC by staff

RELEASE:  
~~Jan 01, 2014 at 05:00 UTC with Subsection "Lesson 2 - Let's Get Interactive!"~~

IS VISIBLE TO:  
**Staff Only**

☒ Hide from students

Publish

Discard Changes

For more information, see *Controlling Content Visibility*.

### Use the Outline to Hide a Unit

1. Click the Settings icon in the unit box:

How to Navigate the Course
Released: Mar 12, 2013 at 13:00 UTC

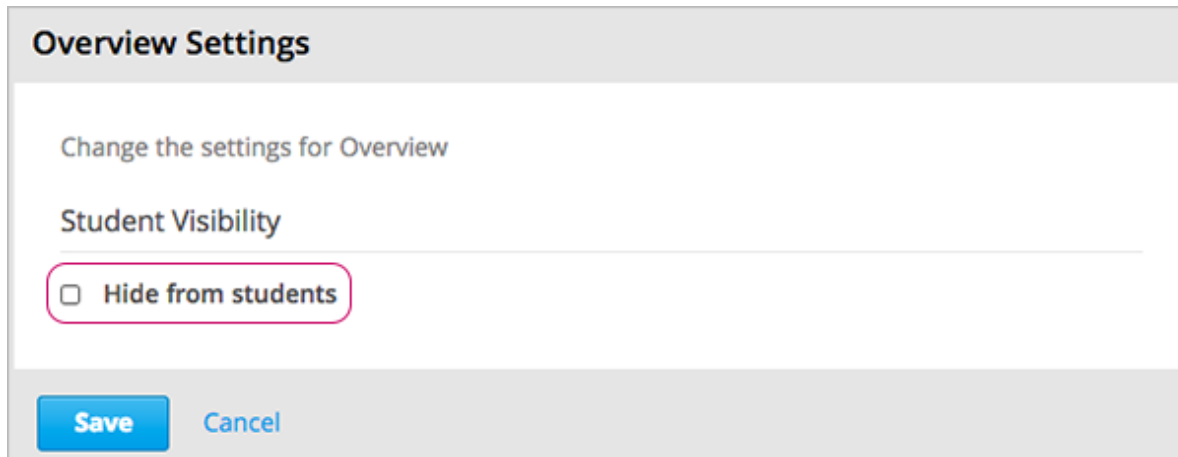
Overview
Released: Mar 12, 2013 at 13:00 UTC

Overview
Using the Video Player

+ New Unit

The **Settings** dialog box opens.

2. Check **Hide from students**.



3. Click **Save**.

### Make a Hidden Unit Visible to Students

Before you make a hidden unit visible to students, be aware that course content will immediately be visible to students, as follows:

- For a hidden unit that previously was published, clearing the check box publishes the current content for the unit. If you made changes to the unit while it was hidden, those draft changes are published.
- When you make a section or subsection that was previously hidden visible to students, draft content in units is *not* published. Changes you made since last publishing units are not made visible to students.

You can make a hidden unit visible to students from the unit page or the course outline. Follow the instructions above and clear the **Hide from students** checkbox.

You are prompted to confirm that you want to make the unit visible to students.

### 6.5.15 Delete a Unit

You delete a unit from the course outline.

When you delete a unit, you delete all components within the unit.

**Warning:** You cannot restore course content after you delete it. To ensure you do not delete content you may need later, you can move any unused content to a section in you

To delete a unit:

1. Click the delete icon in the box for the unit you want to delete:



2. When you receive the confirmation prompt, click **Yes, delete this unit**.

## 6.6 Developing Course Components

This chapter describes how you develop course components. See:

- *What is a Component*
- *Add a Component*
- *Edit a Component*
- *Duplicate a Component*
- *Delete a Component*
- *Components that Contain Other Components*

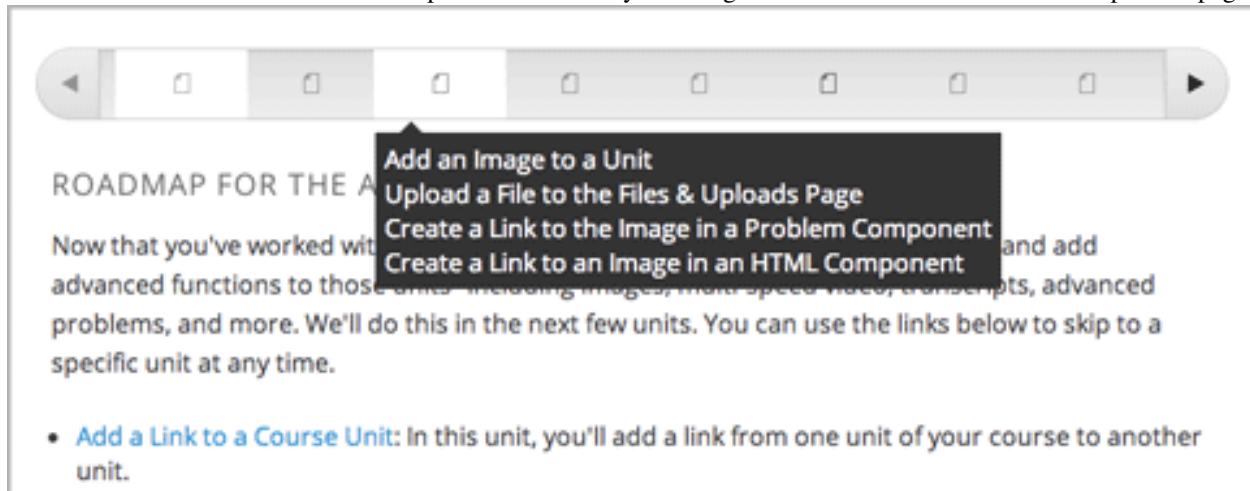
For more information about specific component types, see:

- *Creating Course Content*
- *Creating Exercises and Tools*

### 6.6.1 What is a Component?

A component is the part of a unit that contains your actual course content. A unit can contain one or more components.

A student can view the name of all components in a unit by hovering over the unit in the ribbon at the top of the page.

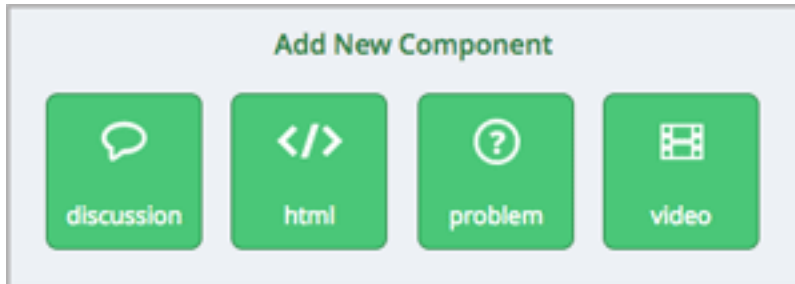


By default, Studio includes four types of components.

- **Discussion components** provide discussion spaces in the body of your course. Students can explore ideas about a lesson with their peers in a discussion space.
- **HTML components** allow you to add text, images, and some types of learning tools to your course. Content in HTML components is formatted as HTML.
- **Problem components** enable you to add many different types of exercises and problems to your course, from simple multiple choice problems to complex circuit schematic exercises.
- **Video components** contain the videos that you want to include in your course.

## 6.6.2 Add a Component

To add a component to the unit, click the component type that you want under **Add New Component**.



For more information, see the documentation for the specific component type that you want:

- *Working with Discussion Components*
- *Working with HTML Components*
- *Working with Problem Components*
- *Working with Video Components*

After you add a component, it is not visible to students until you *publish the unit*.

## 6.6.3 Edit a Component

To edit a component, click **Edit**:

The screenshot shows the 'Building a Computer Memory Element' editor. At the top, the title 'Building a Computer Memory Element' is circled in red. To its right, an 'EDIT' button is also circled in red. The main content area displays a video player with a red handwritten note '(A) First attempt' and a diagram of a memory cell. The diagram shows a box with 'dIN' and 'dOUT' labels, and a 'store' signal. Below the video player, there is a timeline and playback controls. On the right side, a transcript for 'SPEAKER 1' is visible, detailing the construction of an abstract memory cell.

Then follow instructions for the type of component you are editing.

After you edit a component, the changes are not visible to students until you *publish the unit*.

### Set the Display Name for a Component

Each component has a display name that shows in the component header when you can edit the component. The display name also shows to students when they hover the cursor over the unit icon in the course ribbon.

To set the display name for a component:

1. Edit the component.
2. Click **Settings**.
3. Edit the **Display Name** field.

The screenshot shows the 'Settings' dialog for editing a component. The title bar says 'Editing: Text'. There are two tabs: 'Editor' and 'Settings'. The 'Settings' tab is active. The 'Display Name' field is set to 'Text'. A note next to the field states: 'This name appears in the horizontal navigation at the top of the page.' At the bottom, there are 'SAVE' and 'CANCEL' buttons.

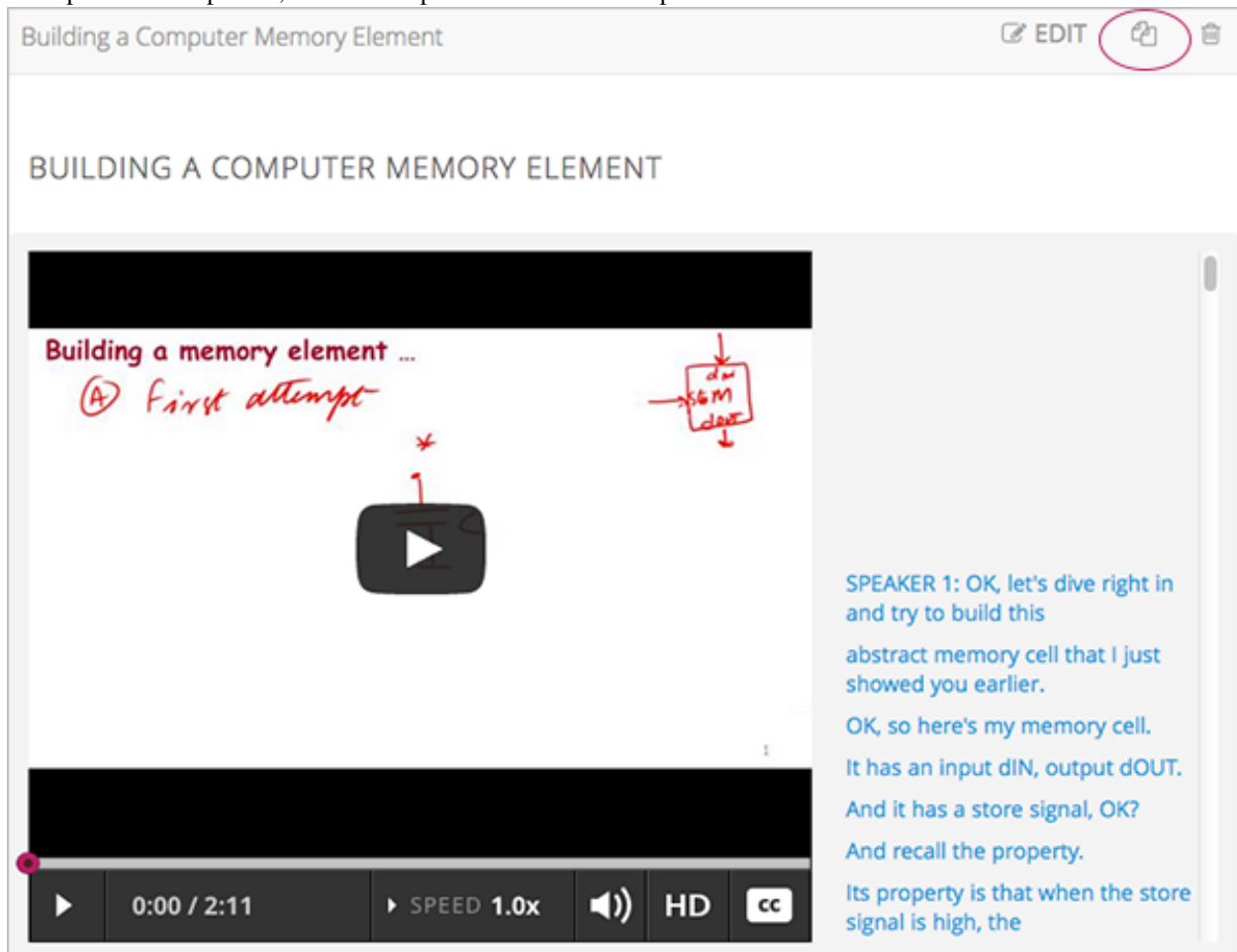
4. Click **Save**.

Different types of components have different fields in the Settings dialog box, but all have the **Display Name** field.

## 6.6.4 Duplicate a Component

When you duplicate a component, a new copy of that component is added directly beneath the first component. You can then modify the duplicate. In many cases, duplicating a component and editing a copy is a faster way to create new content.

To duplicate a component, click the Duplicate icon in the component header:



Then follow instructions for the type of component you are editing.

After you duplicate a component, the new component is not visible to students until you *publish the unit*.

**Note:** You cannot duplicate a content experiment.

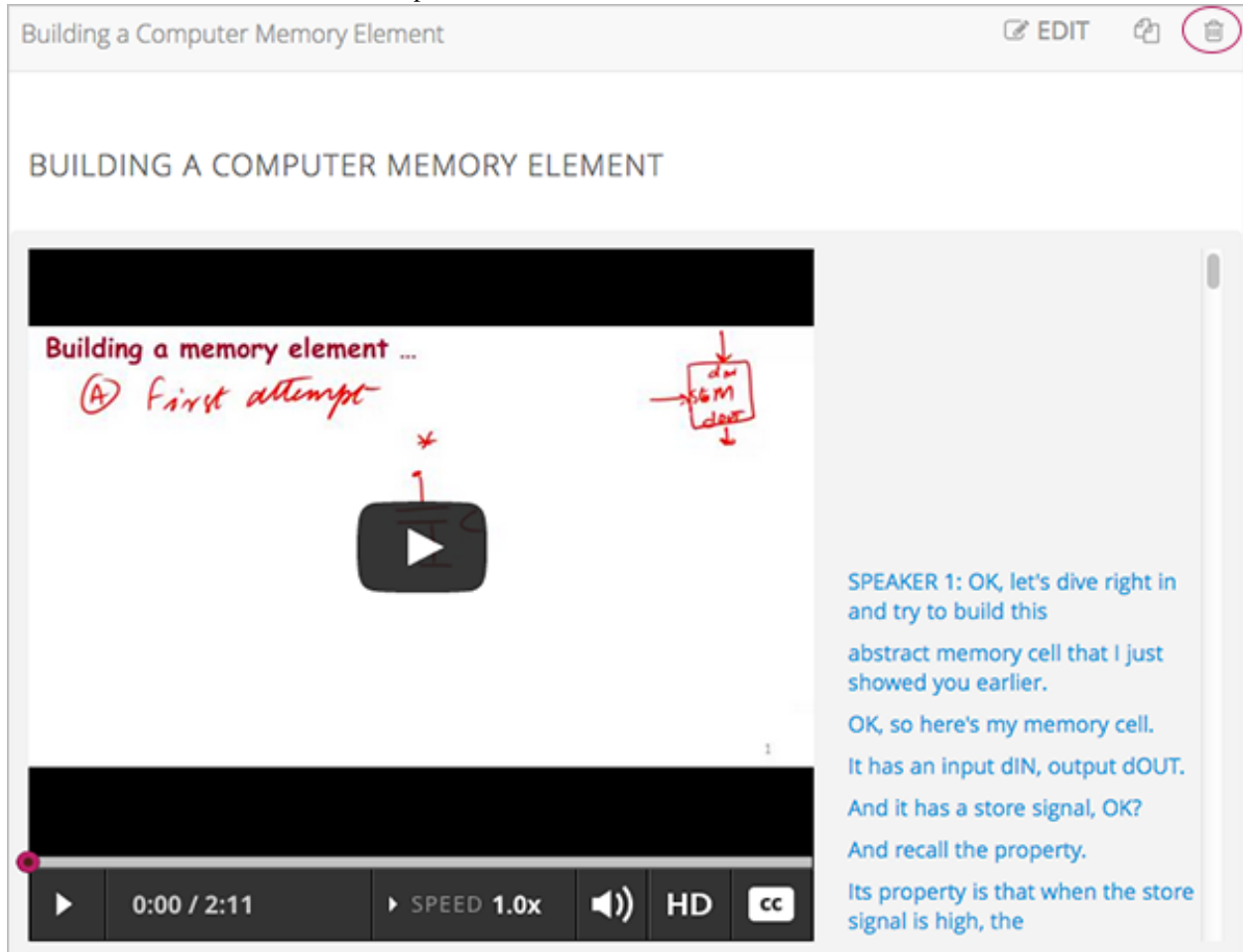


### 6.6.5 Delete a Component

**Caution:** Be sure you want to delete the component. You can not undo the deletion.

To delete a component:

1. Click the Delete icon in the component header:



2. When you receive the confirmation prompt, click **Yes, delete this component**.

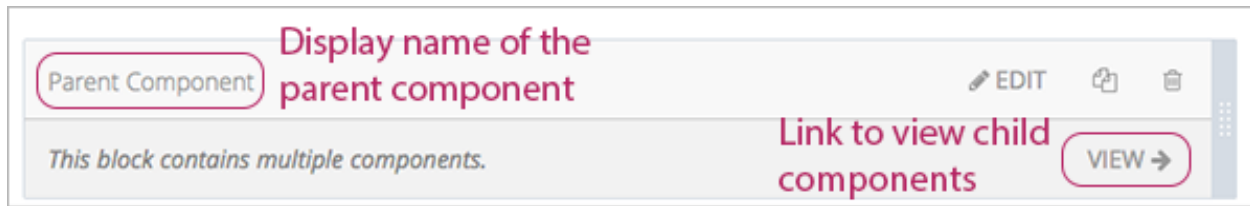
After you delete a component, the component remains visible to students until you *publish the unit*.

### 6.6.6 Components that Contain Other Components

For specific use cases, you configure course content so that components contain other components. For example, if you want to include conditional components or content experiments, you have to create components inside components. See *Creating Content Experiments* for more information.

The component that contains other components is referred to as the *parent*; the contained components are referred to as *children*.

In the unit page, a parent component appears with the display name and a **View** link. For example:



### Edit a Parent Component

A parent component does not directly contain content. Content such as HTML, videos, or problems are in the child components.

A parent component has a display name. When the unit is private or in draft, click **Edit** in the parent component to change the display name.

---

**Note:** Parent components of a specific type, such as content experiments, have additional attributes that you edit.

---

### View Child Components

When you click **View** in the parent component, the parent component page opens, showing all child components. In this example, Child Component A contains an HTML component and a video:

Child Component A

Child Component A

EDIT


Child Component A

This is an HTML component within component A.

Video

EDIT

VIDEO



Add New Component

Discussion

HTML

Problem

Video

Click the arrow next to a child component name to collapse it and hide the component's contents:



Click the arrow again to expand the component.

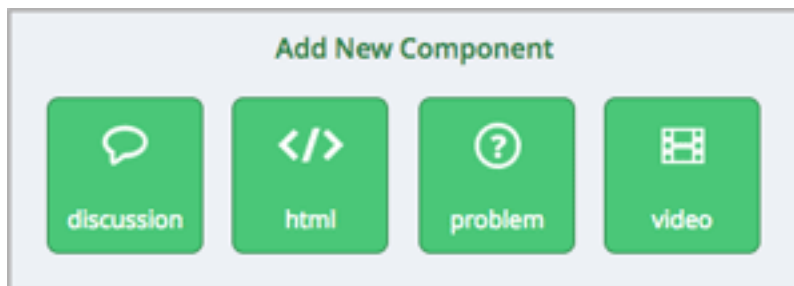
See:

- *Edit a Component*
- *Set the Display Name for a Component*
- *Duplicate a Component*
- *Delete a Component*

### Add a Child Component

If the containing unit is private or in draft, you can add a child component in its parent component.

To add a child component, open and expand the parent component. Then click the component type that you want under **Add New Component** within the parent component.



For more information, see the documentation for the specific component type that you want:

- *Working with Discussion Components*
- *Working with HTML Components*
- *Working with Problem Components*
- *Working with Video Components*

### XML for Parent and Child Components

You develop parent and child components in XML, then import the XML course into Studio to verify that the structure is as you intended.

For more information about working with your course's XML files, including information about terminology, see the [edX XML Tutorial](#).

The following examples show the XML used to create the unit and components shown in Studio above.

The XML for the unit is:

```
<vertical display_name="Unit 1">
  <html url_name="6a5cf0ea41a54b209e0815147896d1b2"/>
  <vertical url_name="131a499ddaa3474194c1aa2eced34455"/>
</vertical>
```

The `<vertical url_name="131a499ddaa3474194c1aa2eced34455"/>` element above references the parent component file that contains the child components:

```
<vertical display_name="Parent Component">
  <vertical url_name="2758bbc495dd40d59050da15b40bd9a5"/>
  <vertical url_name="c5c8b27c2c5546e784432f3b2b6cf2ea"/>
</vertical>
```

The two verticals referenced by the parent component refer to the child components, which contain the actual content of your course:

```
<vertical display_name="Child Component A">
  <html url_name="4471618afafb45bfb86cbe511973e225"/>
  <video url_name="fbd800d0bdbd4cb69ac70c47c9f699e1"/>
</vertical>
```

```
<vertical display_name="Child Component B">
  <html url_name="dd6ef295fda74a639842e1a49c66b2c7"/>
  <problem url_name="b40ecbe4ed1b4280ae93e2a158edae6f"/>
</vertical>
```

Theoretically, there is no limit to the levels of component nesting you can use in your course.

## The Student View of Nested Components

For students, all parent and child components are displayed on the unit page. The following example shows the student view of the unit described above:

## 1. SEPTEMBER 21

Words of encouragement! This is a short note that most students will read.

Anant Agarwal (6.002x Principal Instructor)

### Primary versus Secondary Updates:

Unfortunately, the internet throws a lot of text at students, and they do not read everything that they are given. However, many students *do* read all that they are given, and so detailed explanations in this section will benefit the most conscientious. Any essential information should be extremely quickly summarized in the primary section for skimmers.

### Star Forum Poster

Students appreciate knowing that the course staff is reading what they post, and one of several ways that you can do this is by acknowledging the star posters in your announcements.

This is group A.

## VIDEO



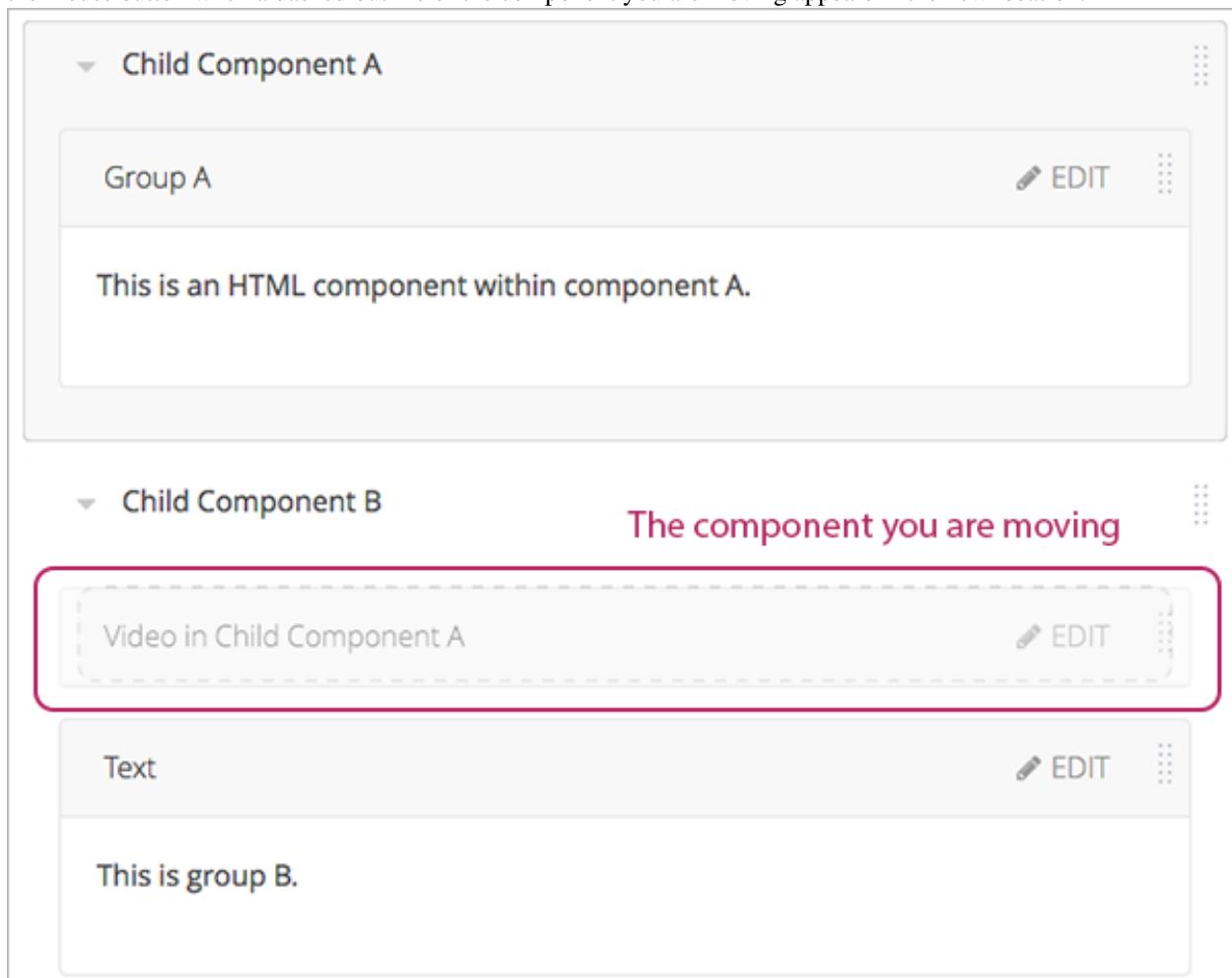
This is group B.

**Note:** The visibility of nested components depends on the visibility of the parent unit. The parent unit must be public for students to see nested components. For more information, see [Unit Publishing Status and Visibility to Students](#).

### 6.6.7 Reorganizing Child Components

You can reorganize child components through the same drag and drop process you use for other objects in your course outline. You hover over the element handle on the right side of the screen until the mouse pointer changes to a four-headed arrow. Then, click and drag the element to the location that you want.

Furthermore, when you have multiple levels of nesting, you can drag a child component into a different parent component, if both parents are expanded. For example, you can select the video component that is in Child Component A and drag it into Child Component B. Select the video component, and as you drag it into Child Component B, release the mouse button when a dashed outline of the component you are moving appears in the new location:



You can also drag a child component outside of a parent, so that the child moves to the same level as the parent.

**Note:** For content experiments, you cannot drag a child component outside of a test group.

## 6.7 Controlling Content Visibility

As course staff, you must carefully control which content is visible to students and when.

You control content visibility through these features in Studio:

- [Release Dates](#)
- [Unit Publishing Status](#)
- [Content Hidden from Students](#)
- [Content Groups](#)

These features work together to control content visibility for students.

### 6.7.1 Release Dates

You schedule release dates for sections and subsections. By default, a subsection inherits the release date of the section it is in, though you can change it to another date.

By defining release dates, you can ensure that content is available to students as planned without requiring manual intervention at that future time.

Published units are not visible to students until the scheduled release date. When the section and subsection have different release dates, published units are not visible until both dates have passed.

Prior to the release date, content is visible to course staff [previewing the course](#) or [viewing the live course as staff](#).

See:

- [Set a Section Release Date](#)
- [Set a Subsection Release Date](#)

### 6.7.2 Unit Publishing Status

You publish units to make them visible to students. Students see the last published version of a unit if the section and subsection it is in are released.

Students do not see units that have never been published, and they do not see unpublished changes to units or components within units. Therefore, you can make changes to units in released subsections without disrupting the student experience.

For more information, see [Unit Publishing Status](#).

You can publish all changes in a section or subsection at once, or publish changes to individual units. See:

- [Publish all Units in a Section](#)
- [Publish all Units in a Subsection](#)
- [Publish a Unit](#)

### 6.7.3 Content Hidden from Students

You can hide content from students. Such content is never visible to students, regardless of the release and publishing status.



You might hide a unit from students, for example, when that unit contains an answer to a problem in another unit of that subsection. After the problem's due date, you could make the unit with the answer visible.

You could also hide a unit from students if you wanted to use that unit to provide instructions or guidance meant only for course staff. Only course staff would see that unit in the course.

You can hide content at different levels:

- *Sections*
- *Subsections*
- *Units*

**Warning:** When you make a previously hidden section or subsection visible to students, not all content in the section or subsection is necessarily made visible to students. If you also explicitly set a child subsection or unit to be hidden from students, it remains hidden from students. Unpublished units remain unpublished, and changes to published units remain unpublished.

## 6.7.4 Content Groups

If you have cohorts enabled in your course, you can use content groups to designate particular components in your course as visible only to specific groups of students.

For details, see *Content Groups* and *Creating Cohort-Specific Courseware*.

## 6.8 Testing Your Course Content

The way your course looks in Studio is not the way that students will see and experience it when it is live.

It is recommended that you test your content continually as you build your course, so you can interact with your course from a student's point of view.

To test your content, you can:

- *Preview Course Content*
- *View Your Live Course*

---

**Note:** If you use content groups in your course to designate content as visible only to particular students, see *Preview Cohort-Specific Courseware*.

---

For information about setting up a beta test for your course, see *Beta Testing a Course*.

### 6.8.1 Preview Course Content

You preview course content before you publish it to test how it will look to students.

When you preview course content, you see the latest course content as configured in Studio. You see content in units with the publishing status *Draft (Never published)*, *Draft (Unpublished changes)*, or *Visible to Staff Only*.

If you use content groups and have designated components in a unit as visible only to particular groups, the visibility status indicates that some content in the unit is visible only to particular groups. For information about previewing course content if you use content groups to designate content as visible only to particular groups, see *Preview Cohort-Specific Courseware*.

For example, you *publish a unit* with a video and discussion:

The screenshot displays the 'Video and Discussion' unit editor in the Open edX course management system. At the top, a breadcrumb trail shows 'Introduction / Demo Course Overview'. The main title 'Video and Discussion' is followed by 'View Live Version' and 'Preview Changes' buttons. A caution message states: 'Caution: The last published version of this unit is live. By publishing changes you will change the student experience.'

The 'Video' section features a video player with a play button and a progress bar. The video content shows a woman, Lila Fisher, speaking. To the right of the video, the text reads: 'LILA FISHER: Hi, welcome to Edx. I'm Lila Fisher, an Edx fellow helping to put together these courses. As you know, our courses are entirely online. So before we start learning about the subjects that brought you here, let's learn'.

The 'Discussion' section at the bottom contains a message: 'To view live discussions, click Preview or View Live in Unit Settings. Discussion ID: c4e47116291f4658a17f526f2f077def'.

On the right side, the 'Published and Live' section shows the unit's history: 'Last published Jan 12, 2015 at 18:37 UTC by staff'. It also indicates the release date: 'RELEASED: Jan 01, 2015 at 00:00 UTC with Section "Introduction"'. The 'IS VISIBLE TO:' section shows 'Staff and Students' with a note: 'Some content in this unit is only visible to particular groups'. There are buttons for 'Publish' and 'Discard Changes'.

The 'Unit Location' section displays the 'LOCATION ID' as 'ad81bba712504c0581c98c27d96c0'. It includes a note: 'Use this ID when you create links to this unit from other course content. You enter the ID in the URL field.'

The 'LOCATION IN COURSE OUTLINE' section shows a list of units: 'Introduction', 'Demo Course Overview', and 'Video and Discussion'. A '+ New Unit' button is at the bottom.


Students see the same content in the LMS:

◀

▶

VIEW UNIT IN STUDIO

VIDEO



LYLA FISCHER: Hi, welcome to Edx. I'm Lyla Fischer, an Edx fellow helping to put together these courses. As you know, our courses are entirely online. So before we start learning about the subjects that brought you here, let's learn about the tools that you will

STAFF DEBUG INFO

Show Discussion

New Post

You later decide to add a multiple choice problem to the unit, before the discussion:

Introduction / Demo Course Overview

## Video and Discussion

View Live Version
Preview Changes

**Caution:** The last published version of this unit is live. By publishing changes you will change the student experience.

Video
EDIT

### VIDEO

LILA FISHER: Hi, welcome to Edx.  
I'm Lila Fisher, an Edx fellow helping to put together these courses.  
As you know, our courses are entirely online.  
So before we start learning about the subjects that brought you here, let's learn

Multiple Choice
EDIT

### MULTIPLE CHOICE

(1 point possible)

A multiple choice problem presents radio buttons for student input. Students can only select a single option presented. Multiple Choice questions have been the subject of many areas of research due to the early invention and adoption of bubble sheets.

#### Draft (Unpublished changes)

Draft saved on Jan 12, 2015 at 18:39 UTC by staff

RELEASE:  
Jan 01, 2015 at 00:00 UTC with Section "Introduction"

WILL BE VISIBLE TO:  
**Staff and Students**  
Some content in this unit is only visible to particular groups  
☐ Hide from students

**Publish**  
Discard Changes

Last published Jan 12, 2015 at 18:37 UTC by staff

#### Unit Location

LOCATION ID  
**ad81bba712504c0581c98c27d96c0a**  
Use this ID when you create links to this unit from other course content. You enter the ID in the URL field.

#### LOCATION IN COURSE OUTLINE

**Introduction**

**Demo Course Overview**

**Video and Discussion**

[+ New Unit](#)

Before you publish this change, you can see what the question will look to students.

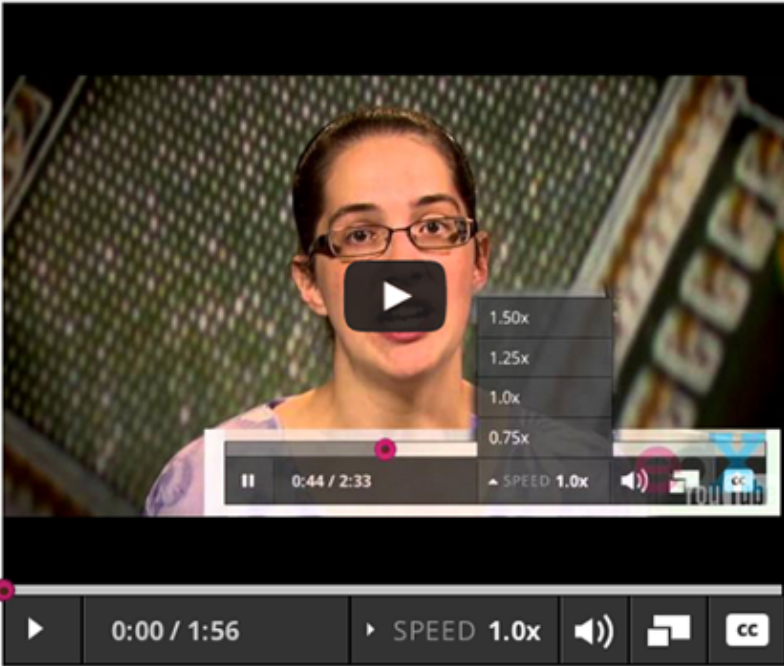
When you click **Preview Changes**, you see the unit in the LMS with the multiple choice question:

◀

▶

VIEW UNIT IN STUDIO

VIDEO



LYLA FISCHER: Hi, welcome to Edx.  
I'm Lyla Fischer, an Edx fellow helping to put together these courses.  
As you know, our courses are entirely online.  
So before we start learning about the subjects that

STAFF DEBUG INFO

MULTIPLE CHOICE (1 point possible)

What Apple device competed with the portable CD player?

☐ The iPad  
☐ Napster  
☐ The iPod  
☐ The vegetable peeler

Check Show Answer

SUBMISSION HISTORY STAFF DEBUG INFO

Show Discussion New Post

This preview shows how students will experience the unit after you *publish the change*.

In the live course, students continue to see the same content, without the multiple choice question, until you *publish the change*.

---

**Note:** **Preview Changes** is not available when the unit's state is *Published and Live*, because in this case the preview and live version are exactly the same. You can view the live course to see the published content.

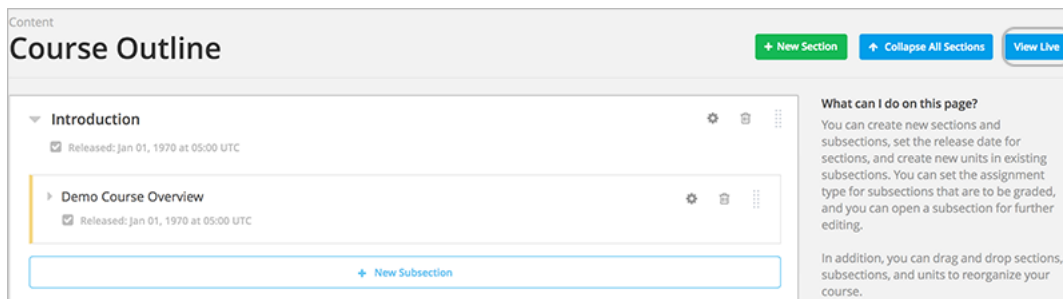
---

### 6.8.2 View Your Live Course

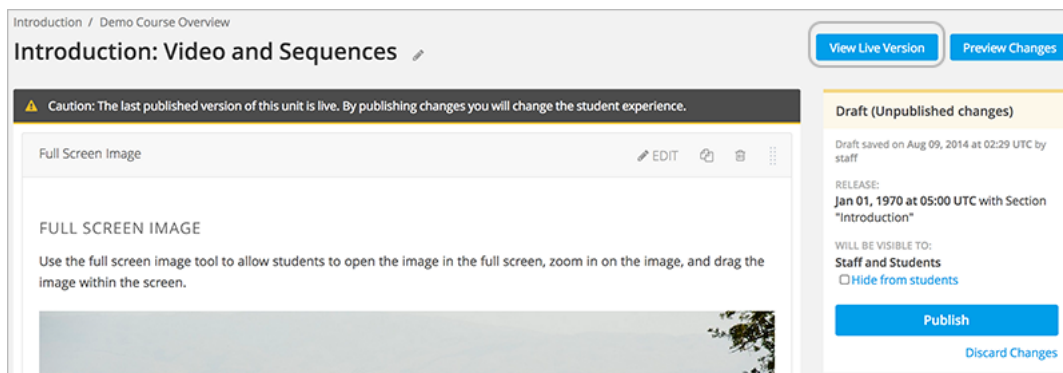
When you are working in Studio, you can test your course by viewing it in the LMS. In the LMS, you can see your course as a student sees it. You can see your course in *Staff View* or *Student View*. If you are using content groups to designate specific content as visible only to particular content groups, you can see your course as a content group would see it.

While you work in Studio, you can switch to your live course to see how your course appears to students in two ways.

- From the outline page, click **View Live**.



- In a unit page, click **View Live Version**.



### Staff View

You see the course in the **Staff View**.



#### In Staff View:

- You see all units that are *Published and Live*. For units that are *Draft (Unpublished changes)* or *Visible to Staff Only*, you see the last published version of the unit. You see these units regardless of the release dates of the containing section or subsection.
- You do not see units that are *Draft (Never published)*. To see these units, you must use Preview mode as described in *Preview Course Content*.
- You can access the Instructor Dashboard, which has features and reports that help you *run your course*.

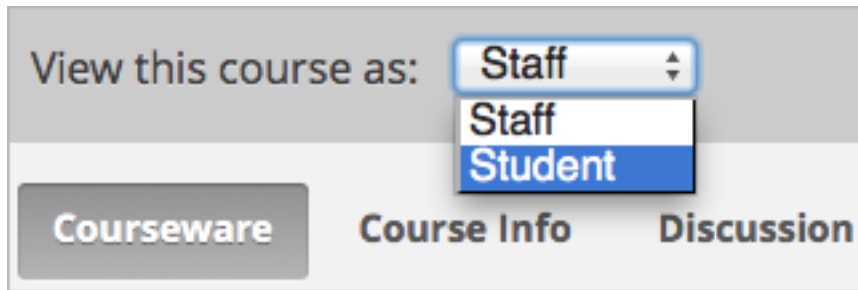
When you view your course in **Staff View**, you can execute tests to make sure that your course works the way you intend. For example, before the release date of a subsection, members of the course team can work through the problems to verify that the correct answer gets a green check for correct, and that any answer other than the correct one gets a red X for incorrect.

#### Student View

When viewing your course in the LMS, you can use the **Student** view to see the course with all course content that is intended for all students.

**Note:** If you have enabled your course for cohorts and have designated some content as visible only to certain content groups, you can select a content group from the **View Course As** drop down list to see the content exactly as a student in a cohort associated with that content group will see it. For details, see *Preview Cohort-Specific Courseware*.

To switch to the **Student** view, click **View this course as** and select **Student** from the drop down list.



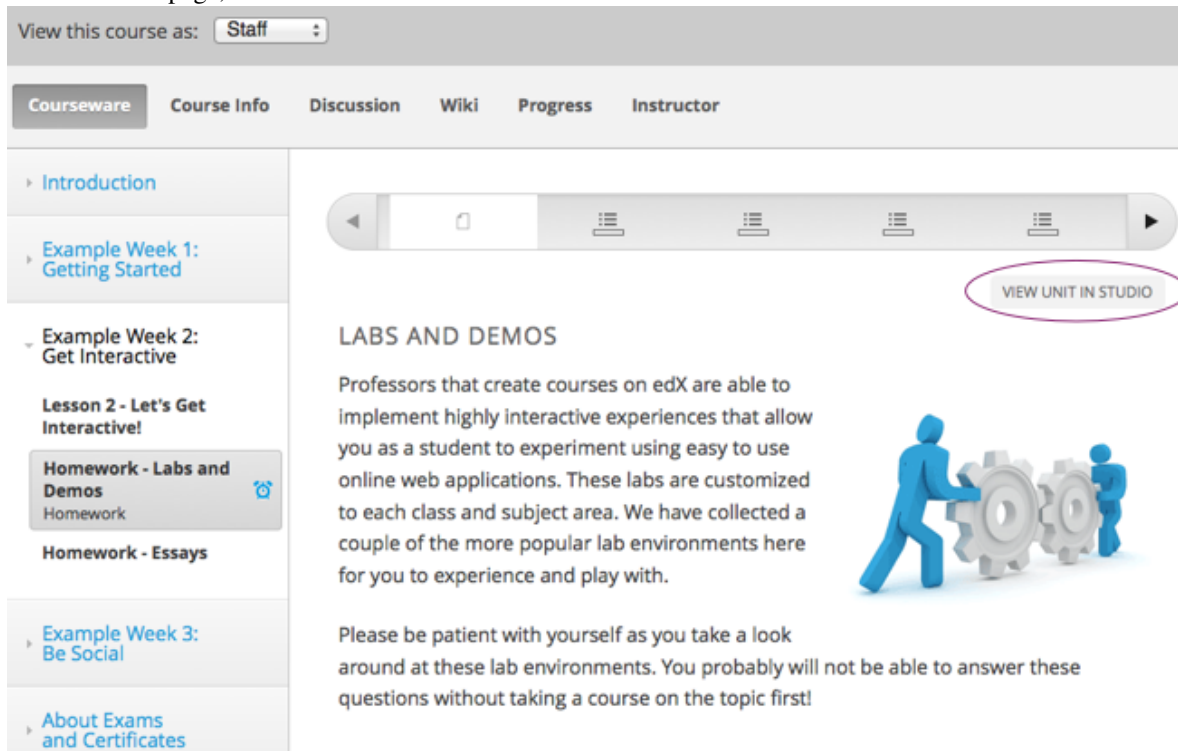
#### In Student View:

- You do not see sections or subsections that have not yet been released.
- If the section and subsection are released, you see units that are *Published and Live*. For units that are *Draft (Unpublished changes)*, you see the last published version of the unit.
- You do not see units that are *Draft (Never published)* or *Visible to Staff Only*. To see these units, you must switch back to Instructor view or use Preview mode as described in *Preview Course Content*.
- You can access the Instructor Dashboard, which has features and reports that help you run your course.

### 6.8.3 Open Studio from Your Live Course

When you are viewing your course in the LMS as **Staff View**, you can open Studio directly.

- In a unit page, click **View Unit in Studio**.



The unit page opens in Studio.

- In the Instructor Dashboard, click **View Course in Studio** to open the course outline.



Courseware Course Info Discussion Wiki Progress **Instructor**

## Instructor Dashboard

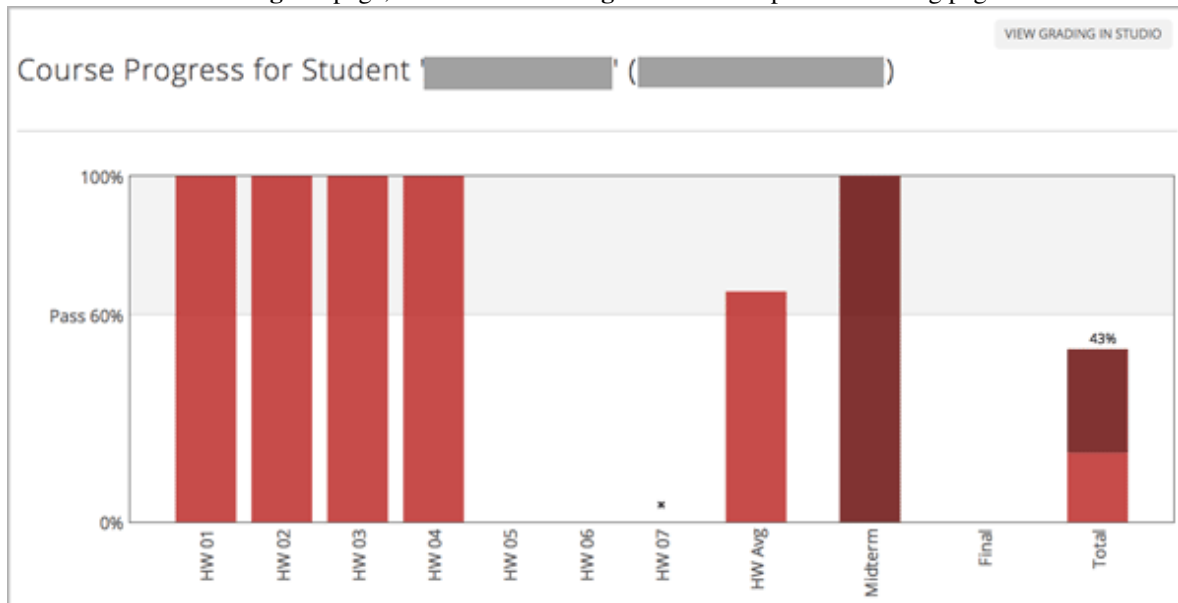
[REVERT TO LEGACY DASHBOARD](#) [VIEW COURSE IN STUDIO](#)

We've changed the look and feel of the Instructor Dashboard. During this transition time, you can still access the old Instructor Dashboard by clicking the 'Revert to Legacy Dashboard' button above.

[COURSE INFO](#) [MEMBERSHIP](#) [STUDENT ADMIN](#) [DATA DOWNLOAD](#) [ANALYTICS](#)

For information about the tasks you can complete on the Instructor Dashboard, see *Running Your Course*.

- In the **Course Progress** page, click **View Grading in Studio** to open the Grading page.



For information about checking a student's progress, see *Review How Grading Is Configured for Your Course*.



---

## Creating Course Content

---

Use the chapters in this section to understand how to create course content of different types.

For information on creating exercises and tools, see *Creating Exercises and Tools*.

For information on how to develop your course content in the Studio Outline page, see *Developing Your Course*.

### 7.1 Working with HTML Components

#### 7.1.1 HTML Component Overview

HTML, or HyperText Markup Language, is the standard markup language used to create web pages. Web browsers present HTML code in a more readable format.

When students see text and images in your course, they are seeing HTML code that is formatted and presented by their browsers. For more information about HTML, see [Wikipedia](#).

HTML components are the basic building blocks of your course content. You use HTML components to add and format text, links, images, and more. You can choose to create HTML components directly in HTML code, or using a visual editor that hides the HTML code details, as described below.

For more information, see the following topics:

- *Options for Editing HTML Components*
- *The Visual Editor*
- *The Raw HTML Editor*
- *HTML Component Templates*
- *Create an HTML Component*
- *Add a Link in an HTML Component*
- *Add an Image to an HTML Component*
- *Import LaTeX Code into an HTML Component*

---

**Note:** Review *Developing Your Course* and *Best Practices for HTML Markup* before you start working with HTML components.

---

To add an instant hangout to an HTML component, see *Google Instant Hangout Tool*.

### 7.1.2 Options for Editing HTML Components

You can work with HTML in two ways:

- *The Visual Editor*

With the visual editor you can create, edit, and format content in a word processing-like interface, without using HTML code directly. With the visual editor, you can more easily format your content, and add links and images. The visual editor provides access to HTML code so you can make small changes to formatting, if required. However, the HTML view in the visual editor does not provide the detailed control you can get with the raw HTML editor, and does not support custom formatting or scripts.

- *The Raw HTML Editor*

With the raw HTML Editor, you work directly with HTML code. If you need to use custom formatting or scripts in your content, you should use the raw HTML editor.

#### Set the Editor for an HTML Component

You set the editor for an HTML component in the **Settings** tab:

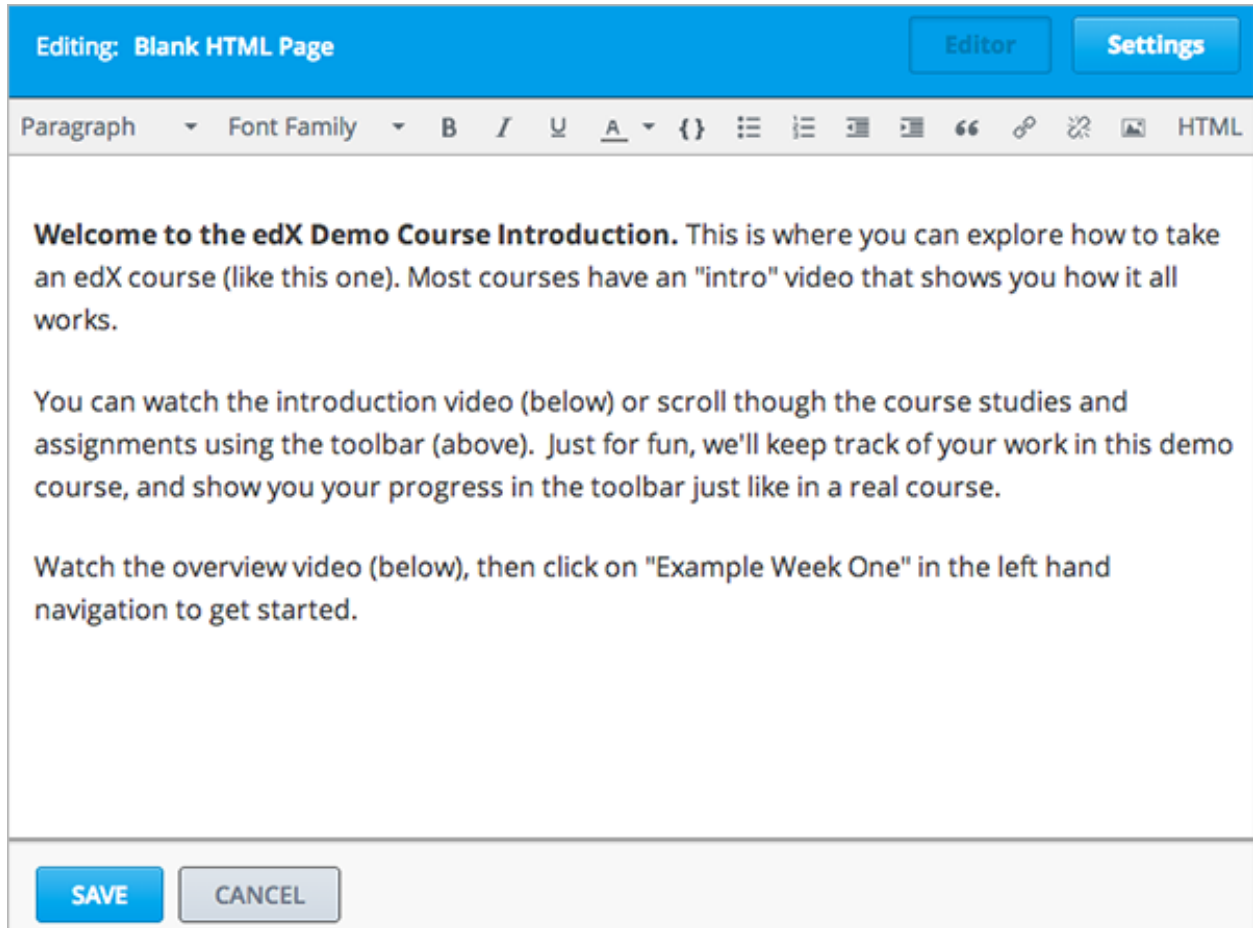
The screenshot shows a settings dialog titled "Editing: Raw HTML". It has two tabs: "EDITOR" and "SETTINGS". The "Display Name" field contains "Raw HTML" with a note below it: "This name appears in the horizontal navigation at the top of the page." The "Editor" dropdown menu is open, showing "Visual" selected. A red box highlights the "Editor" dropdown. Below the dropdown, text reads: "Select Visual to enter content and have the editor automatically create the HTML. Select Raw to edit HTML directly. If you change this setting, you must save the component and then re-open it for editing." At the bottom are "Save" and "Cancel" buttons.

Select **Visual** or **Raw**. When you change the editor, you must click **Save** and re-open the component to begin using the new editor.

**Warning:** If you work with content in the raw HTML editor, then switch to the visual editor, you may lose custom HTML that you created. Therefore, it is recommended that you start by using the visual editor, then switch to the raw HTML editor when you need to create custom HTML.

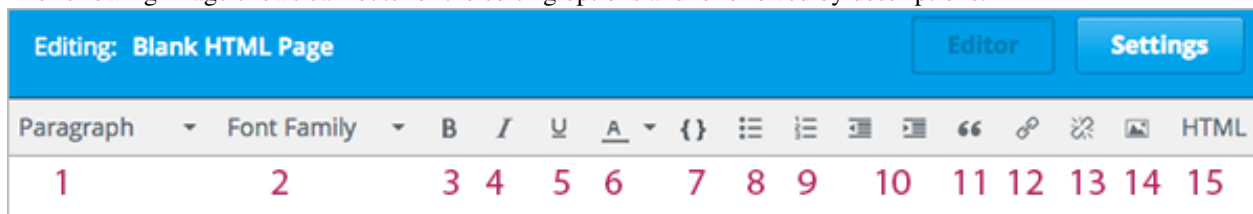
### 7.1.3 The Visual Editor

The visual editor provides a “what you see is what you get” (WYSIWYG) interface that allows you to format text by clicking the formatting buttons at the top of the editor.



**Note:** The visual editor is not available for *course handouts*.

The following image shows call-outs for the editing options and is followed by descriptions.

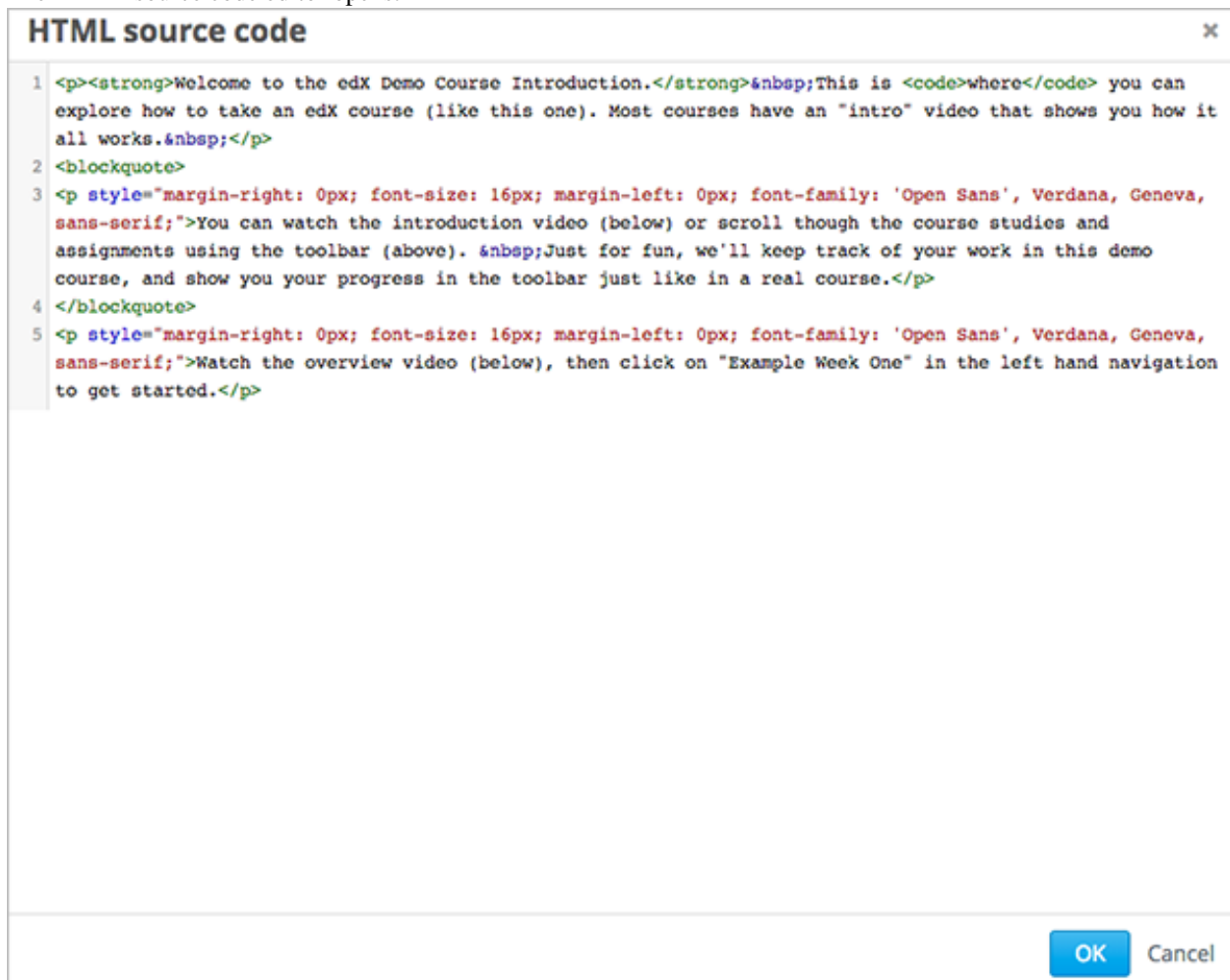


1. Choose a formatting style for the selected paragraph, such as heading 1, heading 2, or paragraph.
2. Choose a font family for selected text, such as Arial, Courier New, or Times New Roman.
3. Format selected text in bold.
4. Format selected text in italics.
5. Underline selected text.
6. Apply a color to the selected text.
7. Format selected text as code.
8. Create a bulleted list.

9. Create a numbered list.
10. Decrease and increased the indentation of the selected paragraph.
11. Format the selected paragraph as a blockquote.
12. Create a link from the selected text. See *Add a Link in an HTML Component*.
13. Delete the current link.
14. Insert an image at the cursor. See *Add an Image to an HTML Component*.
15. Work with HTML source code, described below.

### Work with HTML code in the Visual editor

To work with HTML source code for the content you create in the visual editor, click **HTML** in the editor toolbar. The HTML source code editor opens:



```
1 <p><strong>Welcome to the edX Demo Course Introduction.</strong>&nbsp;This is <code>where</code> you can
  explore how to take an edX course (like this one). Most courses have an "intro" video that shows you how it
  all works.&nbsp;</p>
2 <blockquote>
3 <p style="margin-right: 0px; font-size: 16px; margin-left: 0px; font-family: 'Open Sans', Verdana, Geneva,
  sans-serif;">You can watch the introduction video (below) or scroll though the course studies and
  assignments using the toolbar (above). &nbsp;Just for fun, we'll keep track of your work in this demo
  course, and show you your progress in the toolbar just like in a real course.</p>
4 </blockquote>
5 <p style="margin-right: 0px; font-size: 16px; margin-left: 0px; font-family: 'Open Sans', Verdana, Geneva,
  sans-serif;">Watch the overview video (below), then click on "Example Week One" in the left hand navigation
  to get started.</p>
```

Edit the HTML code as needed.

You should not add custom styles or scripts in the HTML code view in the visual editor. Use the raw HTML editor instead.

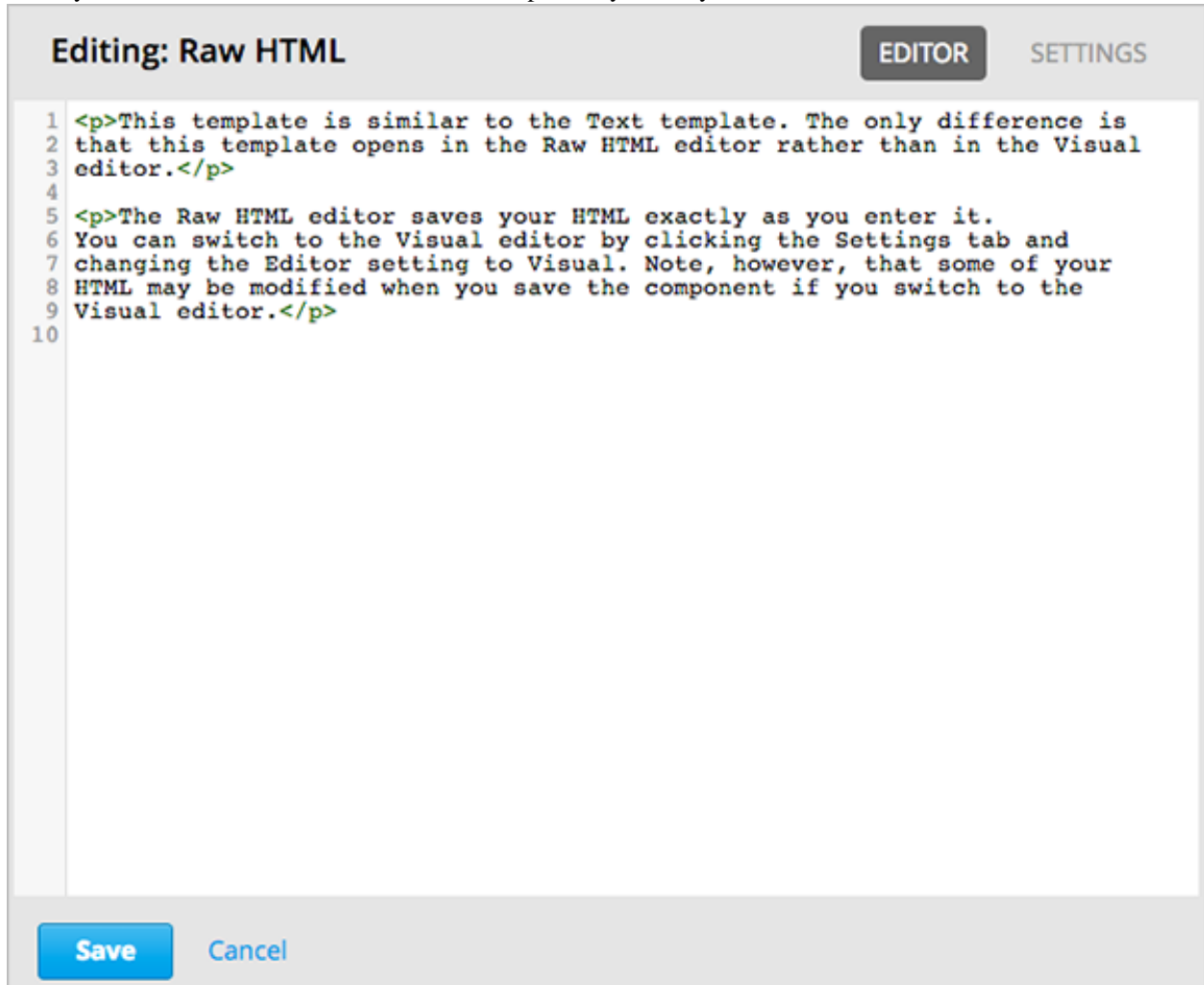
Click **OK** to close the source code editor and apply your changes in the visual editor. The visual editor then attempts to ensure the underlying HTML code is valid; for example, if you do not close a paragraph tag, the editor will close it

for you.

**Warning:** Clicking **OK** in the source code editor does not save your changes to the HTML component. You return to the component editor, where your changes are applied. You must then also click **Save** to save your changes and close the component. If you click **Cancel**, the changes you made in the HTML source code are lost.

### 7.1.4 The Raw HTML Editor

When you select the raw editor for the HTML component, you edit your content in a text editor:



You must enter valid HTML. The raw HTML editor does not validate your HTML code. Therefore you should thoroughly test the HTML content in your course.

### 7.1.5 HTML Component Templates

When you create a new HTML component, you select from a list of templates:

Text
Announcement
Anonymous User ID
Full Screen Image
IFrame
Raw HTML
Zooming Image
<input type="button" value="Cancel"/>

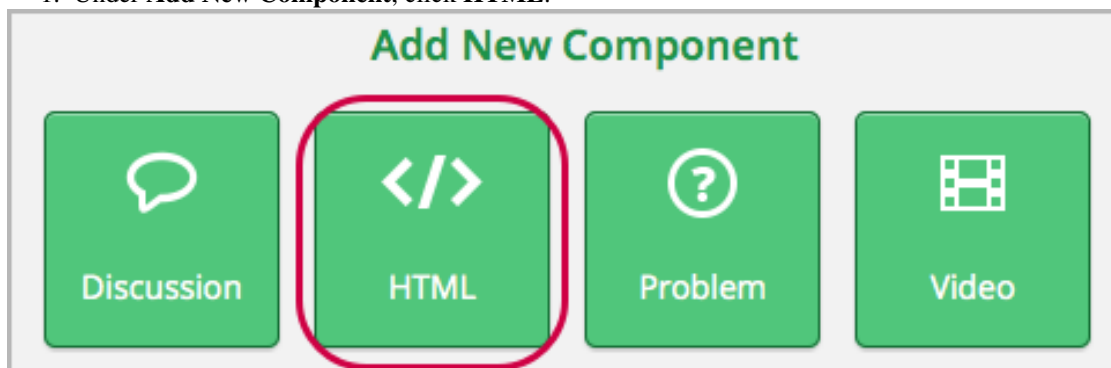
The raw HTML template is set to use the raw HTML editor. All other templates use the visual editor.

For any HTML component, you can change the editor, regardless of the template used to create the component. See *Set the Editor for an HTML Component*.

### 7.1.6 Create an HTML Component

To create an HTML component:

1. Under **Add New Component**, click **HTML**.

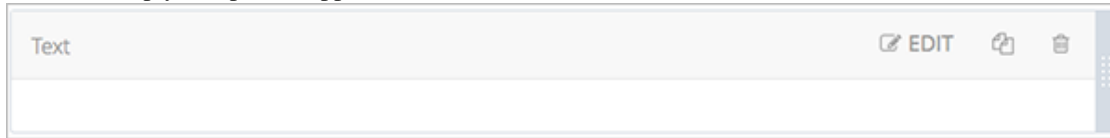


2. Select the template.



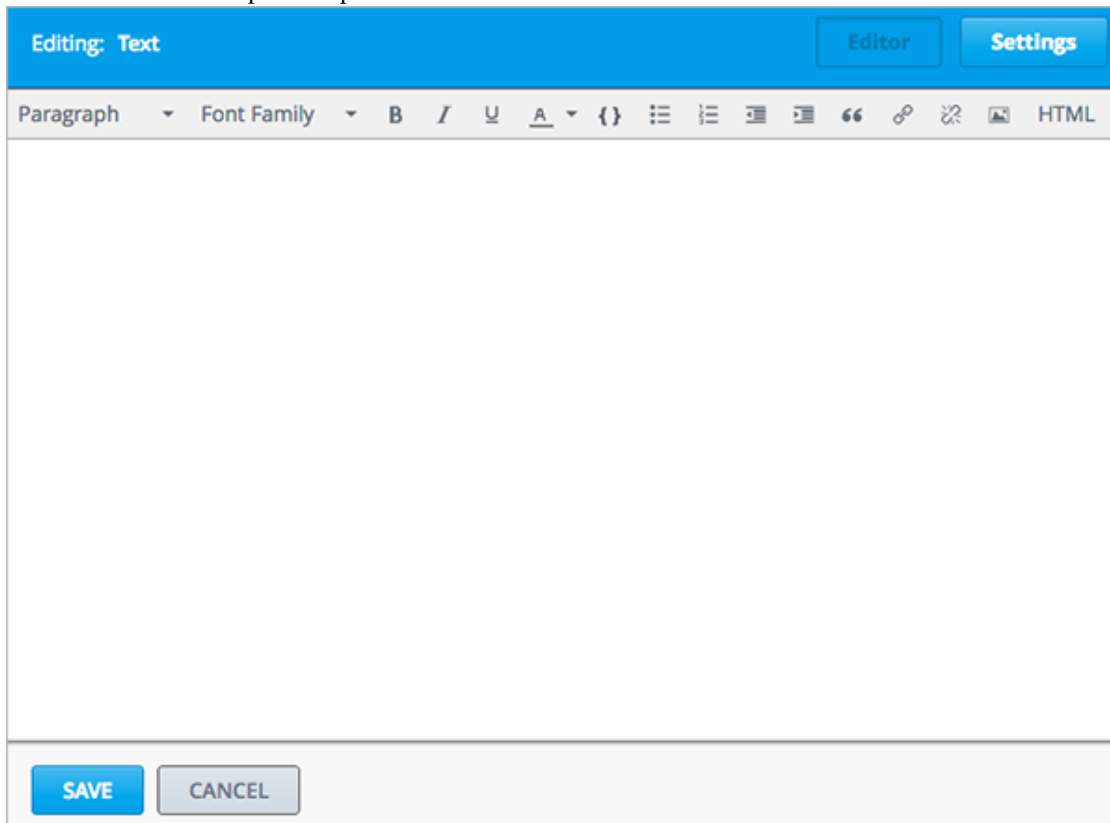
The rest of these instructions assume you selected **Text**, which creates an empty component with the visual editor selected.

An empty component appears at the bottom of the unit.



3. In the component, click **Edit**.

The HTML component opens in the visual editor.



4. Enter and format your content. You can *Work with HTML code in the Visual editor* if needed.
5. Enter a display name (the name that you want students to see). To do this, click **Settings** in the upper-right corner of the component editor, and then enter text in the **Display Name** field.

To return to the text editor, click **Editor** in the upper-right corner.

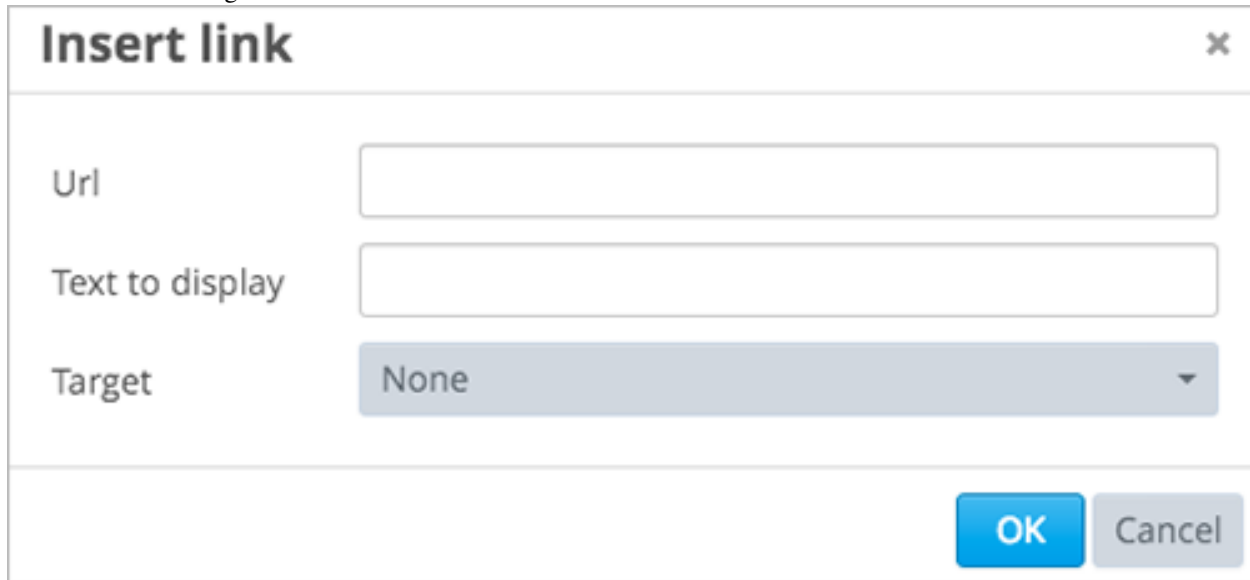
6. Click **Save** to save the HTML component.

When using the visual editor, you can also:

- *Add a Link in an HTML Component*
- *Add an Image to an HTML Component*
- *Import LaTeX Code into an HTML Component*

### 7.1.7 Add a Link in an HTML Component

When using the visual editor, to add a link to a website, course unit, or file in an HTML component, you work with the **Insert link** dialog box.

The image shows a dialog box titled "Insert link" with a close button (X) in the top right corner. Inside the dialog, there are three labeled input fields: "Url" with a text box, "Text to display" with a text box, and "Target" with a dropdown menu currently showing "None". At the bottom right of the dialog are two buttons: "OK" (blue) and "Cancel" (gray).

You can:

- *Add a Link to a Website*
- *Add a Link to a Course Unit*
- *Add a Link to a File*

#### Add a Link to a Website

To add a link to a website:

1. Select the text that you want to make into the link.
2. Click the link icon in the toolbar.
3. In the **Insert link** dialog box, enter the URL of the website that you want in the **URL** field.

## Insert link

Url

Text to display

Target

None

OK

Cancel

- If you want the link to open in a new window, click the drop-down arrow next to the **Target** field, and then select **New Window**. If not, you can leave the default value.
- Click **OK**.
- Save the HTML component and test the link.

### Add a Link to a Course Unit

You can add a link to a course unit in an HTML component.

- Obtain the unit identifier of the unit you're linking to. To do this, open the unit page in Studio, and copy the unit ID from the **Unit Identifier** field under **Unit Location** in the right pane.

Best Practices for Recording Video

BEST PRACTICES FOR RECORDING VIDEO

0:00 / 2:48

SPEED 1.0x

What that means is that you need to create good eye contact, as well as try and speak in a conversational tone.

What I'm really trying to do is have a conversation with you, just on the other side of that screen.

One of the other things that we often encourage is creating short segments for your content.

Ideally, three to seven minutes long.

This gives you the opportunity to think about your content in a way that is extremely modular and extremely succinct.

What you can do is take these segments and put them side by side, and then

nut exercises after them that

Previously published

RELEASED:

**Aug 01, 2014 at 00:00 UTC**  
with Section "Phase 2: Creating Course Content"

IS VISIBLE TO:

**Staff and Students**

☐ Hide from students

**Publish**

Discard Changes

Previously published

**Unit Location**

LOCATION ID

**a3940a924b314bc1aabb9ad93bcf85c5**

Use this ID when you create links to this unit from other course content. You enter the ID in the URL field.

LOCATION IN COURSE OUTLINE

**Phase 2: Creating Course Content**

- Open the HTML component where you want to add the link.
- Select the text that you want to make into the link.

- Click the link icon in the toolbar.
- In the **Insert link** dialog box, enter the following in the **URL** field.

`/jump_to_id/<unit identifier>`

Make sure to replace `<unit identifier>` (including the brackets) with the unit identifier that you copied in step 2, and make sure to include both forward slashes (`/`).



The screenshot shows a dialog box titled "Insert link" with a close button (X) in the top right corner. It contains three input fields: "Url" with the value "/jump\_to\_id/f0e6d90842c44cc7a50fd1a18a7dd982", "Text to display" with the value "Unit 2", and "Target" with the value "None". At the bottom right, there are two buttons: "OK" and "Cancel".

- If you want the link to open in a new window, click the drop-down arrow next to the **Target** field, and then select **New Window**. If not, you can leave the default value.
- Click **Insert**.
- Save the HTML component and test the link.

### Add a Link to a File

You can add a link in an HTML component to any file you've uploaded for the course. For more information about uploading files, see [Adding Files to a Course](#).

- On the **Files & Uploads** page, copy the **Embed URL** of the file.

Preview	Name	Date Added	Embed URL	External URL
	Syllabus.docx	Mar 06, 2014 at 17:54 UTC	<a href="/static/Syllabus.docx">/static/Syllabus.docx</a>	<a href="courses.stage.edx.org/c4x/m">courses.stage.edx.org/c4x/m</a>

---

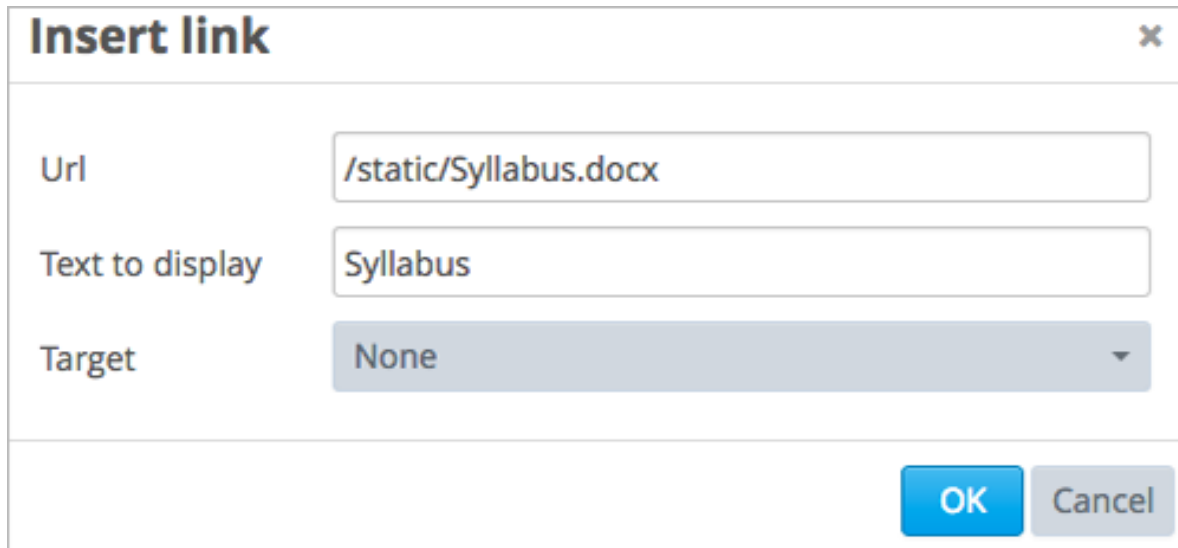
**Note:** You must use the **Embed URL** to link to the file, not the **External URL**.

---

- Select the text that you want to make into the link.
- Click the link icon in the toolbar.
- In the **Insert link** dialog box, enter the following in the **URL** field.

`/static/FileName.type`

Make sure to include both forward slashes (`/`).



The 'Insert link' dialog box contains three input fields and two buttons. The 'Url' field is set to '/static/Syllabus.docx'. The 'Text to display' field is set to 'Syllabus'. The 'Target' field is a dropdown menu currently showing 'None'. At the bottom right are 'OK' and 'Cancel' buttons.

Url	/static/Syllabus.docx
Text to display	Syllabus
Target	None

5. If you want the link to open in a new window, click the drop-down arrow next to the **Target** field, and then select **New Window**. If not, you can leave the default value.
6. Click **Insert**.
7. Save the HTML component and test the link.

## 7.1.8 Add an Image to an HTML Component

When using the visual editor, you can add any image that you have uploaded for the course to an HTML component. For more information about uploading images, see [Adding Files to a Course](#).

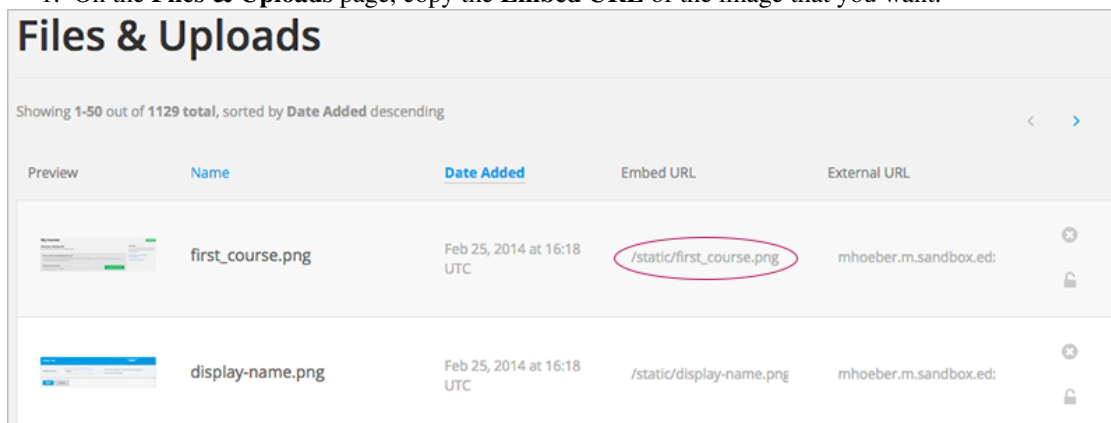
---

**Note:** Review [Best Practices for Describing Images](#) before you add images to HTML components.

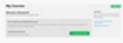

---

To add an image, you'll need the URL of the image that you uploaded to the course. You'll then create a link to the image in the HTML component.

1. On the **Files & Uploads** page, copy the **Embed URL** of the image that you want.



The 'Files & Uploads' page shows a list of files. The first file, 'first\_course.png', has its 'Embed URL' circled in red. The table has columns for Preview, Name, Date Added, Embed URL, and External URL.

Preview	Name	Date Added	Embed URL	External URL
	first_course.png	Feb 25, 2014 at 16:18 UTC	/static/first_course.png	mhoerber.m.sandbox.ed:
	display-name.png	Feb 25, 2014 at 16:18 UTC	/static/display-name.png	mhoerber.m.sandbox.ed:

---

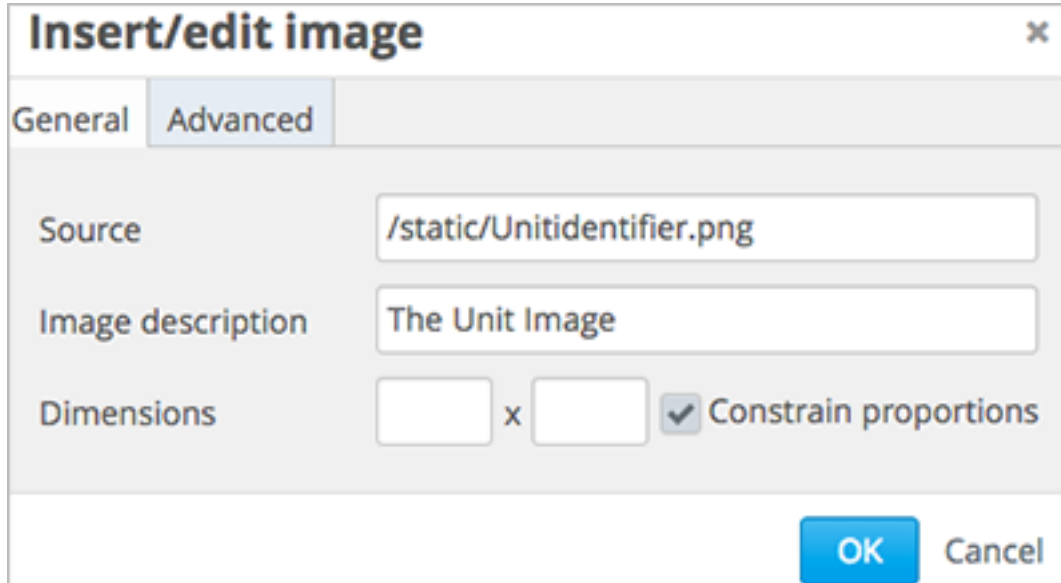
**Note:** You must use the **Embed URL** to add the image, not the **External URL**.

---

2. Click the image icon in the toolbar.
3. In the **Insert image** dialog box, enter the following in the **Source** field.

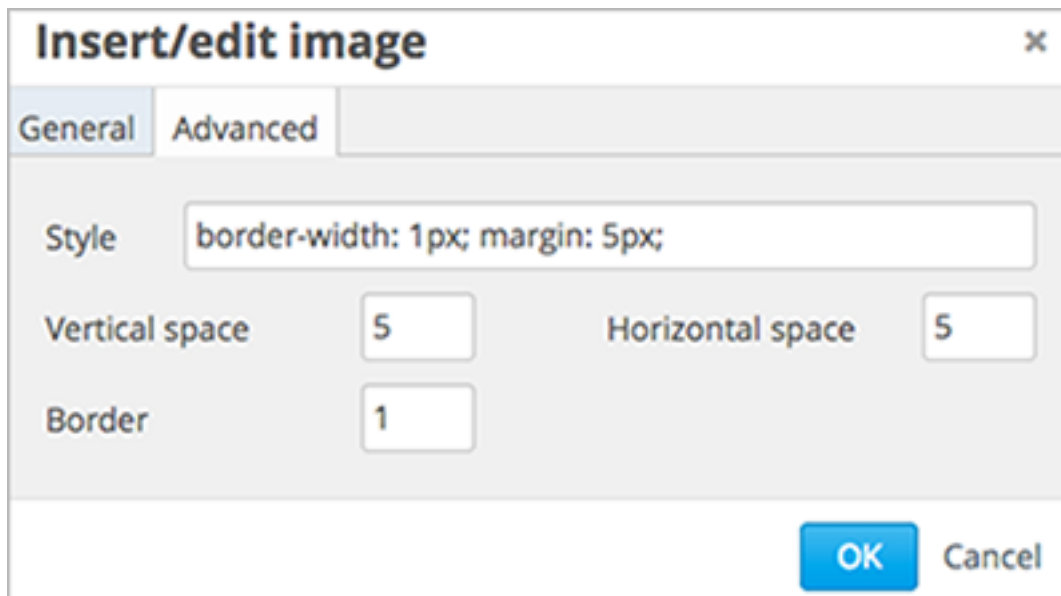
`/static/FileName.type`

Make sure to include both forward slashes (/).



The screenshot shows the 'Insert/edit image' dialog box with the 'General' tab selected. The 'Source' field contains the text '/static/Unitidentifier.png'. The 'Image description' field contains the text 'The Unit Image'. The 'Dimensions' section has two empty input boxes separated by an 'x' character, and a checked checkbox labeled 'Constrain proportions'. At the bottom right are 'OK' and 'Cancel' buttons.

4. Enter alternative text in the **Image description** field. This text becomes the value of the `alt` attribute in HTML and is required for your course to be fully accessible. See [Best Practices for Describing Images](#) for more information.
5. As needed, customize the image dimensions. Keep **Constrain proportions** checked to ensure the image keeps the same width and height proportions.
6. To change the spacing and border of the image, click the **Advanced** tab.



The screenshot shows the 'Insert/edit image' dialog box with the 'Advanced' tab selected. The 'Style' field contains the text 'border-width: 1px; margin: 5px;'. The 'Vertical space' field contains the number '5', and the 'Horizontal space' field contains the number '5'. The 'Border' field contains the number '1'. At the bottom right are 'OK' and 'Cancel' buttons.

7. Enter the **Vertical space**, **Horizontal space**, and **Border** as needed. The values you enter are automatically added to the **Style** field.

8. Click **OK** to insert the image in the HTML component.
9. Save the HTML component and test the image.

### 7.1.9 Import LaTeX Code into an HTML Component

You can import LaTeX code into an HTML component. You might do this, for example, if you want to create “beautiful math” such as the following.

**Example of E-text in LaTeX**

You can write complex equations such as the following in LaTeX.

$$x = \frac{-b \pm \sqrt{b^2 - 4 * a * c}}{2a}$$

$$L' = L\sqrt{1 - \frac{v^2}{c^2}}$$

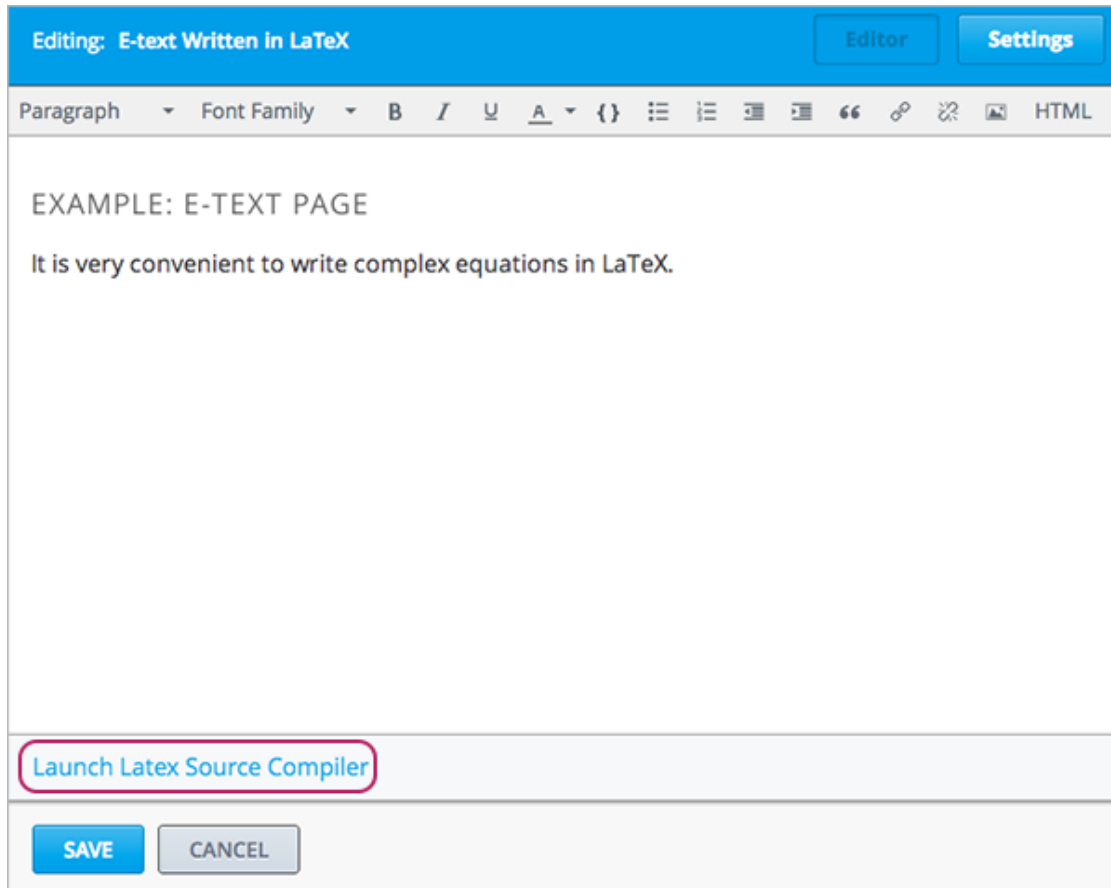
$$\lim_{x \rightarrow 0} \frac{e^x - 1}{2x} \stackrel{\left[ \frac{0}{0} \right]}{=} \lim_{x \rightarrow 0} \frac{e^x}{2} = \frac{1}{2}$$

**Warning:** The LaTeX processor that Studio uses to convert LaTeX code to XML is a third- party tool. We recommend that you use this feature with caution. If you do use it, make sure to work with your Program Manager.

This feature is not enabled by default. To enable it, you have to change the advanced settings in your course.

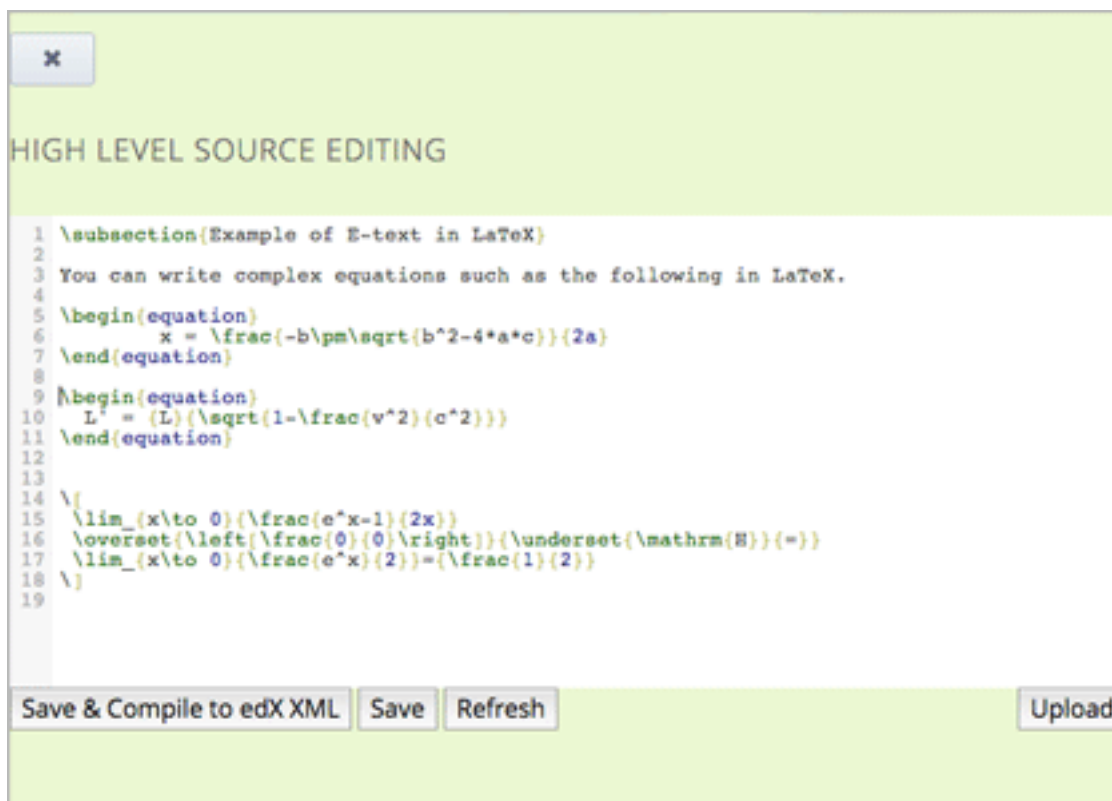
To create an HTML component that contains LaTeX code:

1. Enable the policy key in your course.
  - (a) In Studio, click **Settings**, and then click **Advanced Settings**.
  - (b) In the field for the **Enable LaTeX Compiler** policy key, change **false** to **true**.
  - (c) At the bottom of the page, click **Save Changes**.
2. In the unit where you want to create the component, click **html** under **Add New Component**, and then click **E-text Written in LaTeX**. The new component is added to the unit.
3. Click **Edit** to open the new component. The component editor opens.



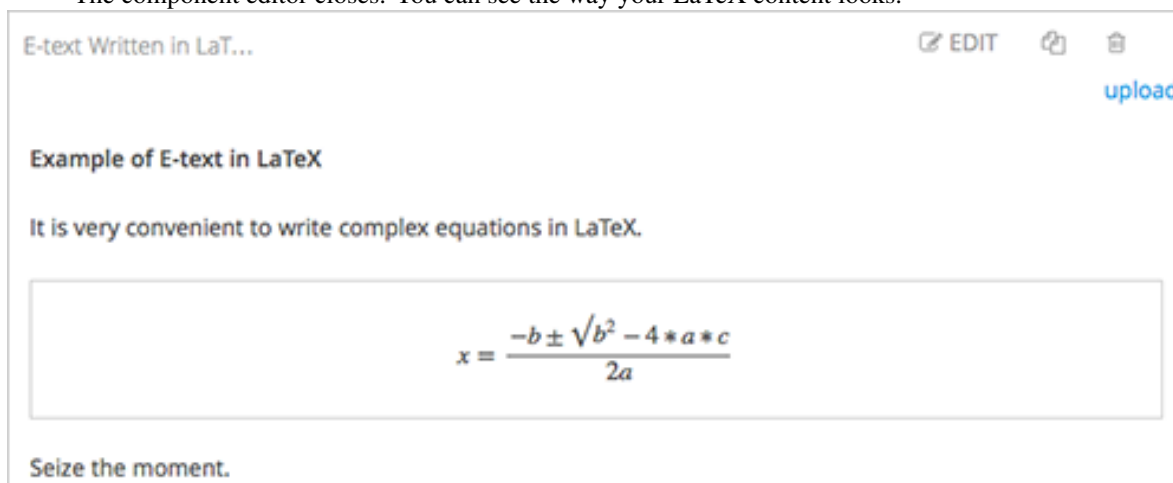
4. In the component editor, click **Launch Latex Source Compiler**. The LaTeX editor opens.





- Write LaTeX code as needed. You can also upload a LaTeX file into the editor from your computer by clicking **Upload** in the bottom right corner.
- When you have written or uploaded the LaTeX code you need, click **Save & Compile to edX XML** in the lower-left corner.

The component editor closes. You can see the way your LaTeX content looks.



- On the unit page, click **Preview** to verify that your content looks the way you want it to in the LMS.
- If you see errors, go back to the unit page. Click **Edit** to open the component again, and then click **Launch Latex Source Compiler** in the lower-left corner of the component editor to edit the LaTeX code.

## 7.2 Working with Video Components

### 7.2.1 Introduction to Videos

You can create a video of your lecture and add it to your course with other components—such as discussions and problems—to promote active learning. Adding a video to your course has several steps.

1. *Step 1. Create the Video.*
2. *Step 2. Create or Obtain a Video Transcript.*
3. *Step 3. Post the Video Online.*
4. *Step 4. Create a Video Component.*

Also see:

- *Video Table of Contents*
- *Additional Transcripts*
- *Steps for .sjson Files*

---

**Note:** Review *Best Practices for Accessible Media* before adding videos to your course.

---

To help course teams protect video assets, the edX video player hides video URLs from students by default. This functionality is in effect for all video files, including YouTube videos and videos that you have posted in other locations. Students can still download videos if you select the **Video Download Allowed** option for your video components. For more information about posting non-YouTube videos online, see *Step 3. Post the Video Online*. For more information about options that you can set when you create a video component, see *Advanced Options* under *Step 4. Create a Video Component*.

### 7.2.2 Step 1. Create the Video

Your videos can contain whatever content you want to include in the course. The [Creating Videos](#) section of [edX101 Overview of Creating an edX Course](#) has some helpful pointers for creating good video content.

#### Compression Specifications

When you create your video, edX recommends the following compression specs. (Note that these are recommended but not required.)

Output	Publish to YouTube	Publish downloadable file to AWS S3
Codec	H.264 .mp4	H.264 .mp4
Resolution & Frame Rate (see note)	1920x1080, progressive, 29.97 fps	1280x720, progressive, 29.97 fps
Aspect	1.0	1.0
Bit Rate	VBR, 2 pass	VBR, 2 pass
Target VBR	5 mbps	1 mbps
Max VBR	7.5 mbps	1.5 mbps
Audio	AAC 44.1 / 192 kbps	AAC 44.1 / 192 kbps

---

**Note:** Typically you export at the same frame rate that was used when you created the media file. For example, if you create the file in a country that uses the PAL system, you export at 25 fps instead of the NTSC standard of 29.97 fps.

---

## Video Formats

The edX video player supports videos in .mp4, .webm, .mpeg, and .ogg format. However, to help make sure all standard browsers can play your video, we strongly recommend that you **use the .mp4 or .webm format**.

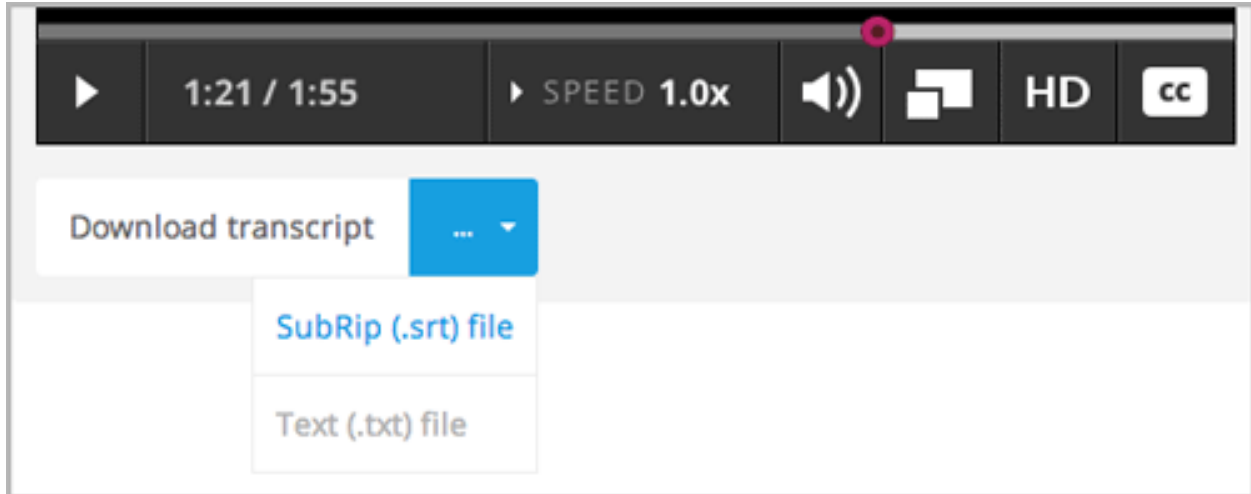
### 7.2.3 Step 2. Create or Obtain a Video Transcript

Transcripts are required for your videos. Transcripts are helpful for students who are viewing a video in a language other than their native language, who are unable to watch the video, or who want to review the content of the video. You can allow students to download transcripts so that they can read them offline. You associate a transcript with a video when you create the video component.

Timed transcripts in the SubRip Text (.srt) format are strongly recommended. A transcript in the .srt format appears next to its associated video and automatically scrolls as the video plays. A student can click a word in the transcript to jump to the point in the video where that word is spoken.

To create or obtain a transcript in .srt format, you can work with a company that provides captioning services. EdX works with [3Play Media](#). [YouTube](#) also provides captioning services.

When you upload an .srt file, a .txt file is created automatically. You can allow students to download these transcript files. If you allow your students to download transcripts, a **Download transcript** button appears under the video. Students can then select either **SubRip (.srt) file** or **Text (.txt) file** to download the .srt or .txt transcript.



You can also provide transcripts in different formats, such as .pdf, and you can provide transcripts in different languages. For more information about these options, see [Additional Transcripts](#).

---

**Note:** Historically, some courses used .sjson files for video transcripts. Use of .sjson files is no longer recommended; however, if transcripts in your course use this format, see [Steps for .sjson Files](#).

---

### 7.2.4 Step 3. Post the Video Online

All course videos should be posted to YouTube. By default, the edX video player accesses your YouTube videos.

Because YouTube is not available in all locations, however, we recommend that you also post copies of your videos on a third-party site such as [Amazon S3](#). When a student views a video in your course, if YouTube is not available in that student's location or if the YouTube video doesn't play, the video on the backup site starts playing automatically. You can also allow the student to download the video from the backup site.

After you post your video online, make sure you have the URL for the video. If you host copies of your video in more than one place, make sure you have the URL for each video location.

#### YouTube

After you create your video, upload the video to [YouTube](#).

---

**Note:** YouTube only hosts videos of up to 15 minutes. If you create a 0.75-speed option, you must make sure that your 1.0-speed video segments are only 11.25 minutes long so that YouTube can host all speeds. YouTube offers paid accounts that relax this restriction.

---

#### Other Sites

You can use any video backup site that you want. However, keep in mind that the site where you post the videos may have to handle a lot of traffic.

---

**Note:** The URL for the video that you post on a third-party site must end in .mp4, .webm, .mpeg, or .ogg. (To help make sure all standard browsers can play your video, we **strongly** recommend that you use .mp4 or .webm format.) EdX cannot support videos that you post on sites such as Vimeo.

---

### 7.2.5 Step 4. Create a Video Component

1. Under **Add New Component**, click **Video**.
2. When the new video component appears, click **Edit**. The video editor opens to the **Basic** tab.

Editing: Video

BASIC ADVANCED

Component Display Name

Video

The name students see. This name appears in the course ribbon and as a header for the video.

Default Video URL

http://youtu.be/OEoXaMPEzfM

The URL for your video. This can be a YouTube URL or a link to an .mp4, .ogg, or .webm video file hosted elsewhere on the Internet.

+ Add URLs for additional versions

Default Timed Transcript

✓ Timed Transcript Found

EdX has a timed transcript for this video. If you want to edit this transcript, you can download, edit, and re-upload the existing transcript. If you want to replace this transcript, upload a new .srt

Save

Cancel

You replace the default values with your own.

- In the **Component Display Name** field, enter the name you want students to see when they hover the mouse over the unit in the course ribbon. This text also appears as a header for the video.
- In the **Default Video URL** field, enter the URL of the video. For example, the URL may resemble one of the following.

```
http://youtu.be/OEoXaMPEzfM
http://www.youtube.com/watch?v=OEoXaMPEzfM
https://s3.amazonaws.com/edx-course-videos/edx-edx101/EDXSPCPJSP13-G030300.mp4
https://s3.amazonaws.com/edx-videos/edx101/video4.webm
```

**Note:** To be sure all students can access the video, we recommend providing both an .mp4 and a .webm version of your video. To do this, you can post additional versions of your videos on the Internet, then add the URLs for these versions below the default video URL. **These URLs cannot be YouTube URLs.** To add a URL for another version, click **Add URLs for additional versions**. The first listed video that is compatible with the student's computer will play.

- Next to **Default Timed Transcript**, select an option.
  - If edX already has a transcript for your video—for example, if you are using a video from an existing course—Studio automatically finds the transcript and associates the transcript with the video.

If you want to modify the transcript, click **Download Transcript for Editing**. You can then make your changes and upload the new file by clicking **Upload New Transcript**.

- If edX does not have a transcript for the video, but YouTube has a transcript, Studio automatically finds the YouTube transcript and asks if you want to import it. To use this YouTube transcript, click **Import YouTube Transcript**. (If you want to modify the YouTube transcript, import the YouTube transcript into Studio, and then click **Download Transcript for Editing**. You can then make your changes and upload the new file by clicking **Upload New Transcript**.)
- If both edX and YouTube have a transcript for your video, but the edX transcript is out of date, you receive a message asking if you want to replace the edX transcript with the YouTube transcript. To use the YouTube transcript, click **Yes, replace the edX transcript with the YouTube transcript**.
- If neither edX nor YouTube has a transcript for your video, and your transcript uses the .srt format, click **Upload New Transcript** to upload the transcript file from your computer.

---

**Note:**

- If your transcript uses the .sjson format, do not use this setting. For more information, see [Steps for .sjson Files](#).
  - If you want to provide a transcript in a format such as .pdf, do not use this setting to upload the transcript. For more information, see [Additional Transcripts](#).
- 

6. Optionally, click **Advanced** to set more options for the video. For a description of each option, see [Advanced Options](#).

7. Click **Save**.

### Advanced Options

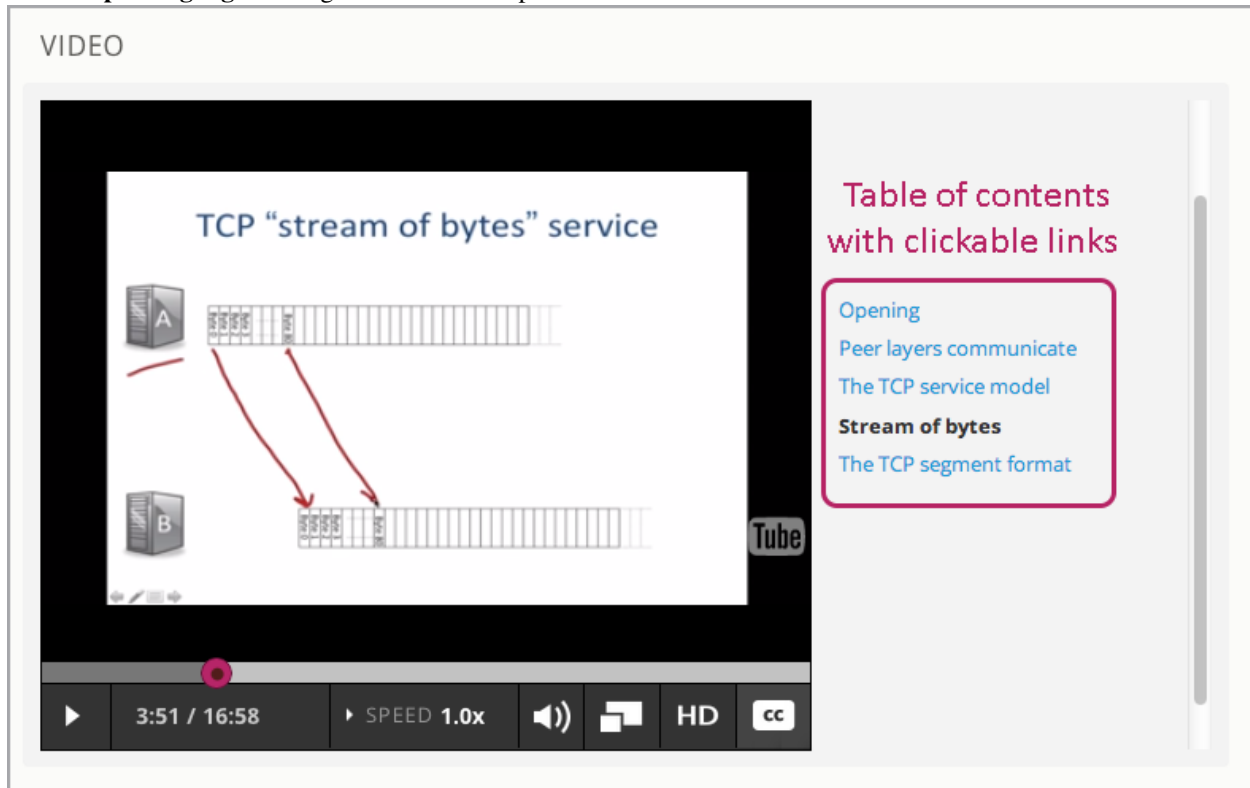
The following options appear on the **Advanced** tab in the video component.

<b>Component Display Name</b>	The name that you want your students to see. This is the same as the <b>Display Name</b> field on the <b>Basic</b> tab.
<b>Default Timed Transcript</b>	The name of the transcript file that is used in the <b>Default Timed Transcript</b> field on the <b>Basic</b> tab. This field is auto-populated. You do not have to change this setting.
<b>Download Transcript Allowed</b>	Specifies whether you want to allow students to download the timed transcript. If you set this value to <b>True</b> , a link to download the file appears below the video. By default, Studio creates a .txt transcript when you upload an .srt transcript. Students can download the .srt or .txt versions of the transcript when you set <b>Download Transcript Allowed</b> to <b>True</b> . If you want to provide the transcript for download in a different format as well, such as .pdf, upload a file to Studio by using the <b>Upload Handout</b> field.
<b>Downloadable Transcript URL</b>	The URL for a non-.srt version of the transcript file posted on the <b>Files &amp; Uploads</b> page or on the Internet. Students see a link to download the non-.srt transcript below the video. When you add a transcript to this field, only the transcript that you add is available for download. The .srt and .txt transcripts become unavailable. If you want to provide a downloadable transcript in a format other than .srt, we recommend that you upload a handout for students by using the <b>Upload Handout</b> field. For more information, see <a href="#">Additional Transcripts</a> .
<b>EdX Video ID</b>	An optional field used only by course teams that are working with edX to process and host video files.
<b>Show Transcript</b>	Specifies whether the transcript plays along with the video by default.
<b>Transcript Languages</b>	The transcript files for any additional languages. For more information, see <a href="#">Transcripts in Additional Languages</a> .
<b>Upload Handout</b>	Allows you to upload a handout to accompany this video. Your handout can be in any format. Students can download the handout by clicking <b>Download Handout</b> under the video.
<b>Video Download Allowed</b>	Specifies whether students can download versions of this video in different formats if they cannot use the edX video player or do not have access to YouTube. If you set this value to <b>True</b> , you must add at least one non-YouTube URL in the <b>Video File URLs</b> field.
<b>Video File URLs</b>	The URL or URLs where you posted non-YouTube versions of the video. Every URL should end in .mpeg, .webm, .mp4, or .ogg and cannot be a YouTube URL. Each student will be able to view the first listed video that is compatible with the student's computer. To allow students to download these videos, you must set <b>Video Download Allowed</b> to <b>True</b> . To help make sure all standard browsers can play your video, we <b>strongly</b> recommend that you use the .mp4 or .webm format.
<b>Video Start Time</b>	The time you want the video to start if you do not want the entire video to play. Formatted as HH:MM:SS. The maximum value is 23:59:59.
<b>Video Stop Time</b>	The time you want the video to stop if you do not want the entire video to play. Formatted as HH:MM:SS. The maximum value is 23:59:59.
<b>YouTube IDs</b>	If you have uploaded separate video files to YouTube for different speeds of your video (YouTube ID for .75x

## 7.2.6 Video Table of Contents

You can add a table of contents for your video by adding an .srt transcript file that contains clickable links to different parts of the video. When your students view the video, they can click the **CC** button at the bottom of the video player to switch between the main transcript for the video and the table of contents.

To add a table of contents, you work with a third-party service to create the .srt transcript file. Then, you use the **Transcript Languages** setting in the video component to associate the .srt file with the video.

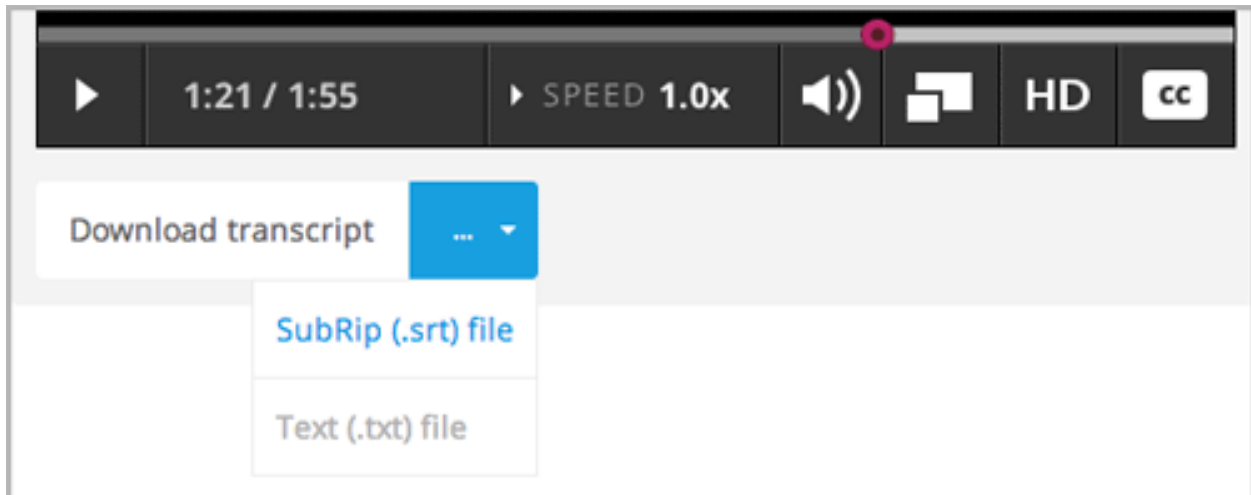


1. After you obtain the .srt transcript file that will function as the table of contents, open the video component for the video.
2. On the **Advanced** tab, scroll down to **Transcript Languages**, and then click **Add**.
3. In the drop-down list that appears, select **Table of Contents**.  
An **Upload** button appears.
4. Click **Upload**, browse to the .srt file for the transcript, and then click **Open**.
5. In the **Upload translation** dialog box, click **Upload**.

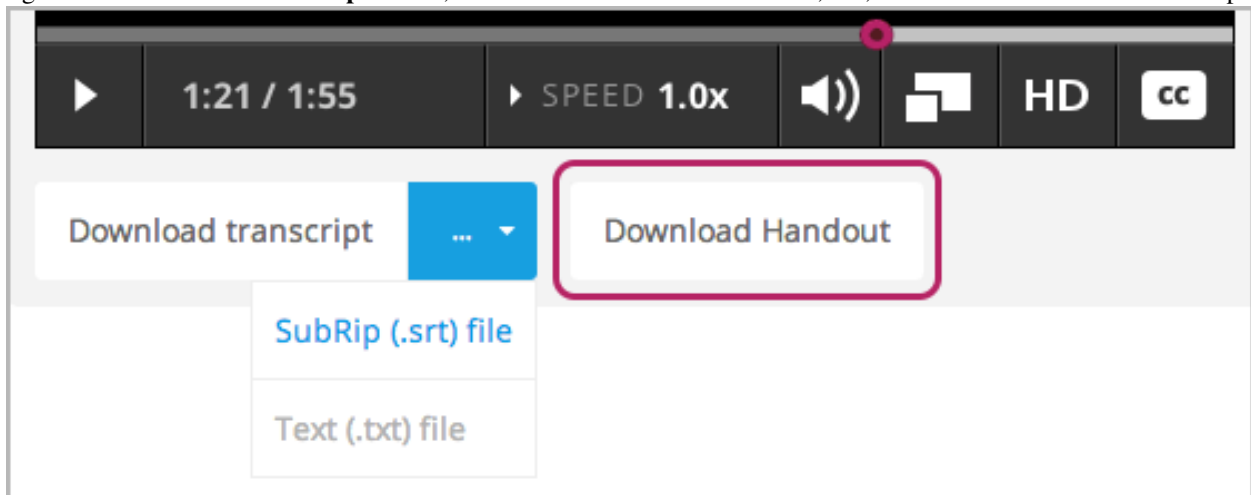
## 7.2.7 Additional Transcripts

By default, a .txt file is created when you upload an .srt file, and students can download an .srt or .txt transcript when you set **Download Transcript Allowed** to **True**. The **Download Transcript** button appears below the video, and students see the .srt and .txt options when they hover over the button.





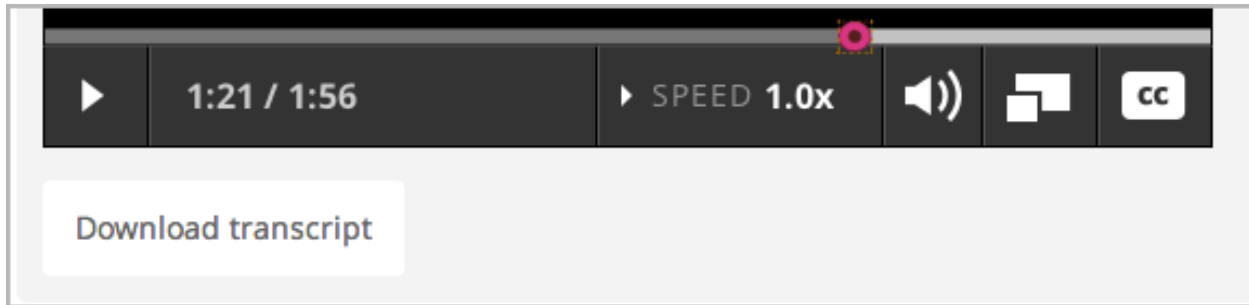
If you want to provide a downloadable transcript in a format such as .pdf along with the .srt and .txt transcripts, we recommend that you use the **Upload Handout** field. When you do this, a **Download Handout** button appears to the right of the **Download Transcript** button, and students can download the .srt, .txt, or handout version of the transcript.



To add a downloadable transcript by using the **Upload Handout** field:

1. Create or obtain your transcript as a .pdf or in another format.
2. In the video component, click the **Advanced** tab.
3. Locate **Upload Handout**, and then click **Upload**.
4. In the **Upload File** dialog box, click **Choose File**.
5. In the dialog box, select the file on your computer, and then click **Open**.
6. In the **Upload File** dialog box, click **Upload**.

Before Studio added the **Upload Handout** feature, some courses posted transcript files on the **Files & Uploads** page or on the Internet, and then added a link to those files in the video component. **We no longer recommend this method.** When you use this method, the **Download Transcript** button appears, but only the transcript that you add is available for download. The .srt and .txt transcripts become unavailable.



If you want to use this method, you can post your transcript online, and then add the URL to the transcript in the **Downloadable Transcript URL** field. However, bear in mind that students will not be able to download .srt or .txt transcripts.

### Transcripts in Additional Languages

You can provide transcripts for your video in other languages. To do this, you work with a third-party service to obtain an .srt transcript file for each language, and then associate the .srt file with the video in Studio.

1. After you obtain the .srt files for additional languages, open the video component for the video.
2. On the **Advanced** tab, scroll down to **Transcript Languages**, and then click **Add**.
3. In the drop-down list that appears, select the language for the transcript that you want to add.  
An **Upload** button appears below the language.
4. Click **Upload**, browse to the .srt file for the language that you want, and then click **Open**.
5. In the **Upload translation** dialog box, click **Upload**.
6. Repeat steps 2 - 5 for any additional languages.

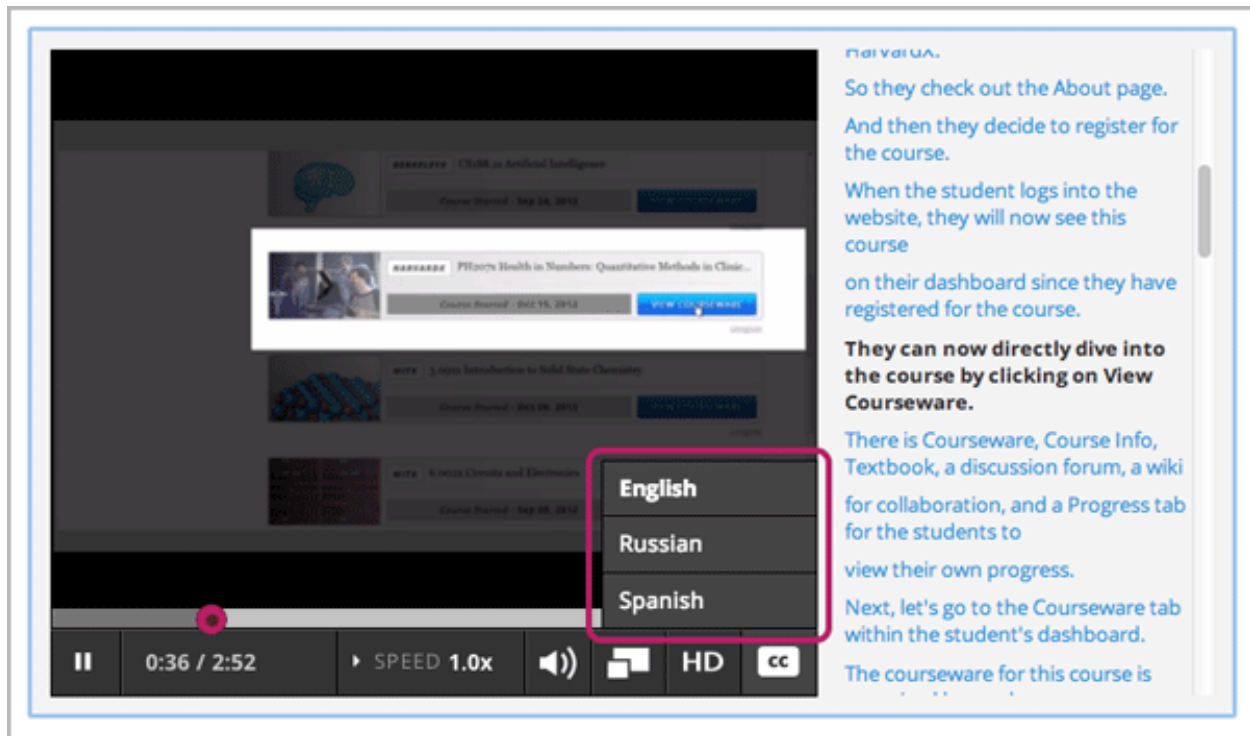
---

**Note:** Make sure that all your transcript file names are unique to each video and language. If you use the same transcript name in more than one video component, the same transcript will play for each video. To avoid this problem, you could name your foreign language transcript files according to the video's file name and the transcript language.

For example, you have two videos, named video1.mp4 and video2.mp4. Each video has a Russian transcript and a Spanish transcript. You can name the transcripts for the first video video1\_RU.srt and video1\_ES.srt, and name the transcripts for the second video video2\_RU.srt and video2\_ES.srt.

---

When your students view the video, they can click the **CC** button at the bottom of the video player to select a language.



## 7.2.8 Steps for .sjson Files

If your course uses .sjson files, you upload the .sjson file for the video to the **Files & Uploads** page, and then specify the name of the .sjson file in the video component.

**Note:** Only older courses that have used .sjson files in the past should use .sjson files. All new courses should use .srt files.

1. Obtain the .sjson file from a media company such as 3Play.
2. Change the name of the .sjson file to use the following format:  
`subs_{video filename}.srt.sjson`  
 For example, if the name of your video is **Lecture1a**, the name of your .sjson file must be **subs\_Lecture1a.srt.sjson**.
3. Upload the .sjson file for your video to the **Files & Uploads** page.
4. Create a new video component.
5. On the **Basic** tab, enter the name that you want students to see in the **Component Display Name** field.
6. In the **Video URL** field, enter the URL of the video. For example, the URL may resemble one of the following.

```
http://youtu.be/OEoXaMPEzfM
http://www.youtube.com/watch?v=OEoXaMPEzfM
https://s3.amazonaws.com/edx-course-videos/edx-edx101/EDXSPCPJSP13-G030300.mp4
```

7. Click the **Advanced** tab.
8. In the **Default Timed Transcript** field, enter the file name of your video. Do not include `subs_` or `.sjson`. For the example in step 2, you would only enter **Lecture1a**.

9. Set the other options that you want.
10. Click **Save**.

## 7.3 Working with Discussion Components

### 7.3.1 Overview

You can add a Discussion component to a unit, to pose a question related to the Unit and give students a chance to respond and interact.

See the following topics:

- *Create a Discussion Component*
- *A Student's View of the Discussion*

Before you add a Discussion component, it is generally a good idea to add an HTML component that introduces the topic to be discussed. The Discussion component itself does not contain any text and may be easy for students to overlook.

Also see the following chapters:

- *Managing Course Discussions*
- *Guidance for Discussion Moderators*


### 7.3.2 Create a Discussion Component

1. Under **Add New Component**, click **Discussion**.
2. In the Discussion component that appears, click **Edit**.



3. When the Discussion component editor opens, follow the guidelines in the editor to fill in the **Category**, the optional **Display Name**, and the **Subcategory** fields.

**Editing: Discussion**

Category  


A category name for the discussion. This name appears in the left pane of the discussion forum for the course.

---

Display Name

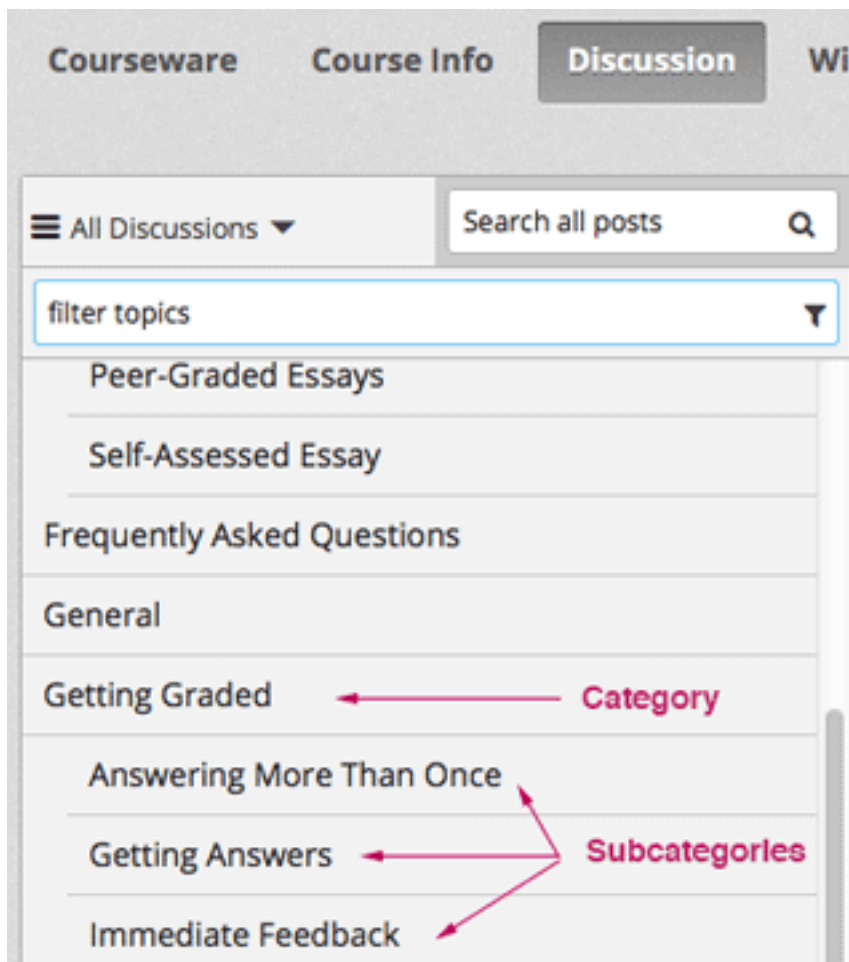
Display name for this module

---

Subcategory  

A subcategory name for the discussion. This name appears in the left pane of the discussion forum for the course.

The value in the **Display Name** field identifies the discussion in the course content. The values in the **Category** and **Subcategory** fields appear in the list of discussion topics on the **Discussion** page. To uniquely identify the discussion in your course, each **Category** / **Subcategory** pair that you supply must be unique.



4. Click **Save**.

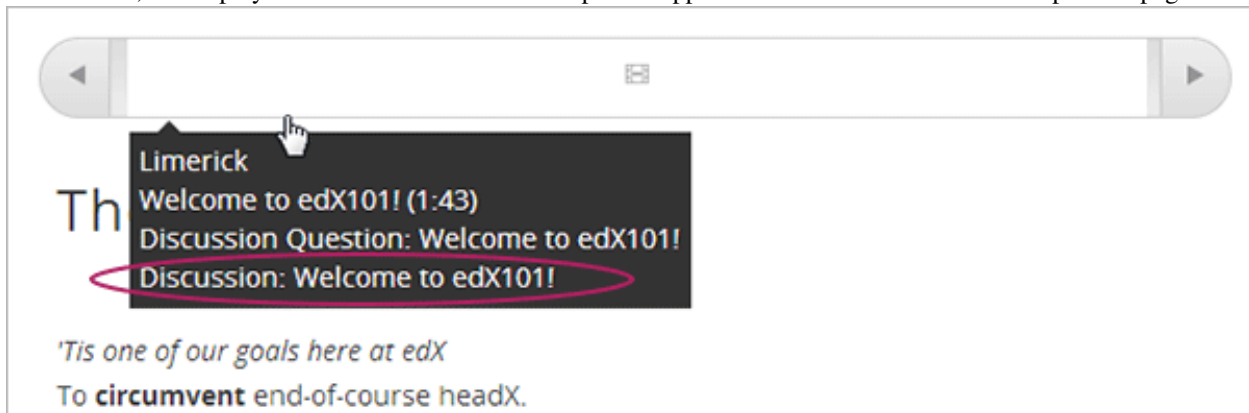
**Warning:** You should always use these steps to create a discussion component. If you create a discussion component by using the **Duplicate** button in Studio, both discussion components will contain the same conversations, even if users post in different discussions.

Discussion *categories* are immediately visible on the **Discussion** tab for your course when you create them, even if the unit that contains the Discussion is not published. However, an individual Discussion component is not visible until the unit is published and release dates for the section and subsection have passed. See [Controlling Content Visibility](#) for more information.

Additionally, you cannot see posts, responses, or comments in a Discussion component when you are working in Studio. To see the discussion, go to the unit that contains the Discussion component in Studio, and then click **Preview** or **View Live** under **Unit Settings**.

### 7.3.3 A Student's View of the Discussion

For students, the display name for the Discussion component appears in the course ribbon at the top of the page:



The Discussion space appears under other components in the unit. It doesn't have a label in the body of the unit. Instead, students see "Show discussion" or "Hide discussion" on the left, and a blue **New Post** button on the right.

In the following example, the Discussion component follows Video and HTML components:

## WELCOME TO EDX101! (1:43)



Download video [here](#).

## DISCUSSION QUESTION: WELCOME TO EDX101!

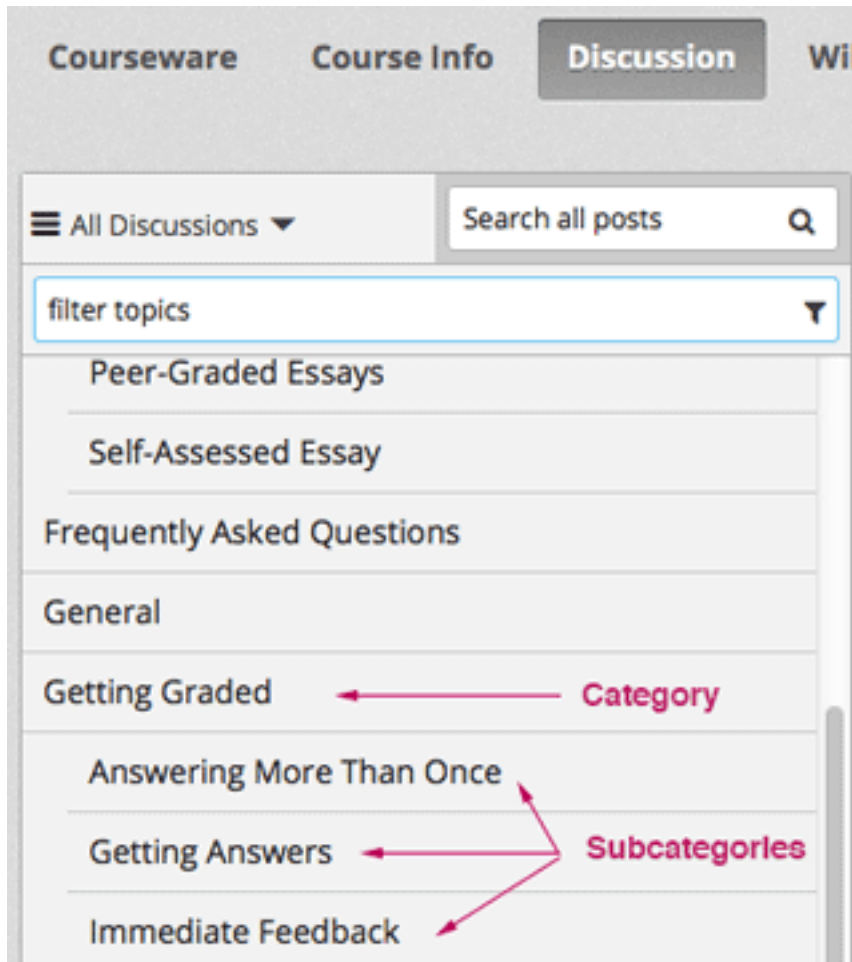
Anant Agarwal mentions several ways to present content in an online medium. In the discussion space below, mention one of these and share your thoughts about how to effectively incorporate it in an online course.

Show Discussion

New Post

In the **Discussion** tab at the top of the page, students can find the category and subcategory of the discussion in the left pane.





## 7.4 Working with Problem Components

### 7.4.1 Overview of Problem Components

The problem component allows you to add interactive, automatically graded exercises to your course content. You can create many different types of problems in Studio.

All problems receive a point score, but, by default, problems do not count toward a student's grade. If you want the problems to count toward the student's grade, change the assignment type of the subsection that contains the problems.

This section covers the basics of Problem components: what they look like to you and your students, and the options that every problem component has. For more information about individual problem types, see [Creating Exercises and Tools](#).

For more information, see the following topics.

- [The Student View of a Problem](#)
- [The Studio View of a Problem](#)
- [Problem Settings](#)
- [Modifying a Released Problem](#)
- [Additional Work with Problems](#)



- *Multiple Problems in One Component*
- *Problem Randomization*

## 7.4.2 The Student View of a Problem

All problems on the edX platform have several component parts.

H1P7: MERCURY ATOMS

How many atoms are in 15.3 cm<sup>3</sup> of mercury (at room temperature)?

6.22\*10<sup>23</sup>

6.22 · 10<sup>23</sup>

Check Save Show Answer

You have used 0 of 5 submissions

1. **Problem text.** The problem text can contain any standard HTML formatting.
2. **Response field with the student's answer.** Students enter answers in *response fields*. The appearance of the response field depends on the type of the problem.
3. **Rendered answer.** For some problem types, Studio uses MathJax to render plain text as “beautiful math.”
4. **Check button.** The student clicks **Check** to submit a response or find out if his answer is correct. If the answer is correct, a green check mark appears. If it is incorrect, a red X appears. When the student clicks the **Check button**, Studio saves the grade and current state of the problem.
5. **Save button.** The student can click **Save** to save his current response without submitting it for a grade. This allows the student to stop working on a problem and come back to it later.
6. **Show Answer button.** This button is optional. When the student clicks **Show Answer**, the student sees both the correct answer (see 2 above) and the explanation (see 10 below). The instructor sets whether the **Show Answer** button is visible.
7. **Attempts.** The instructor may set a specific number of attempts or allow unlimited attempts for a problem. By default, the course-wide **Maximum Attempts** advanced setting is null, meaning that the maximum number of attempts for problems is unlimited. If the course-wide **Maximum Attempts** setting is changed to a specific number, the **Maximum Attempts** setting for individual problems defaults to that number, and cannot be set to unlimited.

H1P7: MERCURY ATOMS

How many atoms are in  $15.3 \text{ cm}^3$  of mercury (at room temperature)?

✓ Answer: 6.22E23 ← 9

← 8

10

**SOLUTION:**

molar volume of Hg =  $14.82 \text{ cm}^3 / \text{mol}$

moles per unit volume =  $(1 / 14.82) \text{ mol} / \text{cm}^3$

# of Hg atoms in  $15.3 \text{ cm}^3 = (15.3 \text{ cm}^3)((1 / 14.82) \text{ mol} / \text{cm}^3)(6.02 \times 10^{23})$

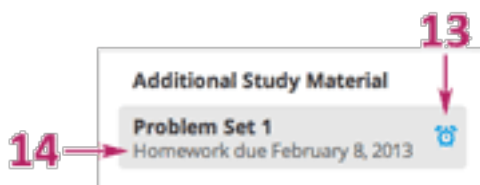
11 12 =  $6.22 \times 10^{23}$  atoms

You have used 1 of 5 submissions

8. **Feedback.** After a student clicks **Check**, all problems return a green check mark or a red X.



9. **Correct answer.** Most problems require that the instructor specify a single correct answer.
10. **Explanation.** The instructor may include an explanation that appears when a student clicks **Show Answer**.
11. **Reset button.** Students can click **Reset** to clear any input that has not yet been submitted, and try again to answer the question. If the student has already submitted an answer, clicking **Reset** clears the submission and, if the problem contains randomized variables and randomization is set to **On Reset**, changes the values the student sees in the problem. If the number of Maximum Attempts that was set for this problem has been reached, the **Reset** button is not visible.
12. **Hide Answer button.**



13. **Grading.** The instructor may specify whether a group of problems is graded. If a group of problems is graded, a clock icon appears for that assignment in the course accordion.



14. **Due date.** The date that the problem is due. A problem that is past due does not have a **Check** button. It also does not accept answers or provide feedback.

---

**Note:** Problems can be **open** or **closed**. Closed problems do not have a **Check** button. Students can still see questions, solutions, and revealed explanations, but they cannot check their work, submit responses, or change an earlier score.

---

There are also some attributes of problems that are not immediately visible. You can set these attributes in Studio.

- **Randomization.** For some problems, the instructor can specify whether a problem will use randomly generated numbers that vary from student to student.
- **Weight.** Different problems in a particular problem set may be given different weights.
- **Label.** To improve accessibility for students who have disabilities, each problem needs a descriptive label. The label typically contains part or all of the text of the question in the problem. Most templates include a space for a label. You can find example labels in the documentation for each problem or tool type.

### 7.4.3 The Studio View of a Problem

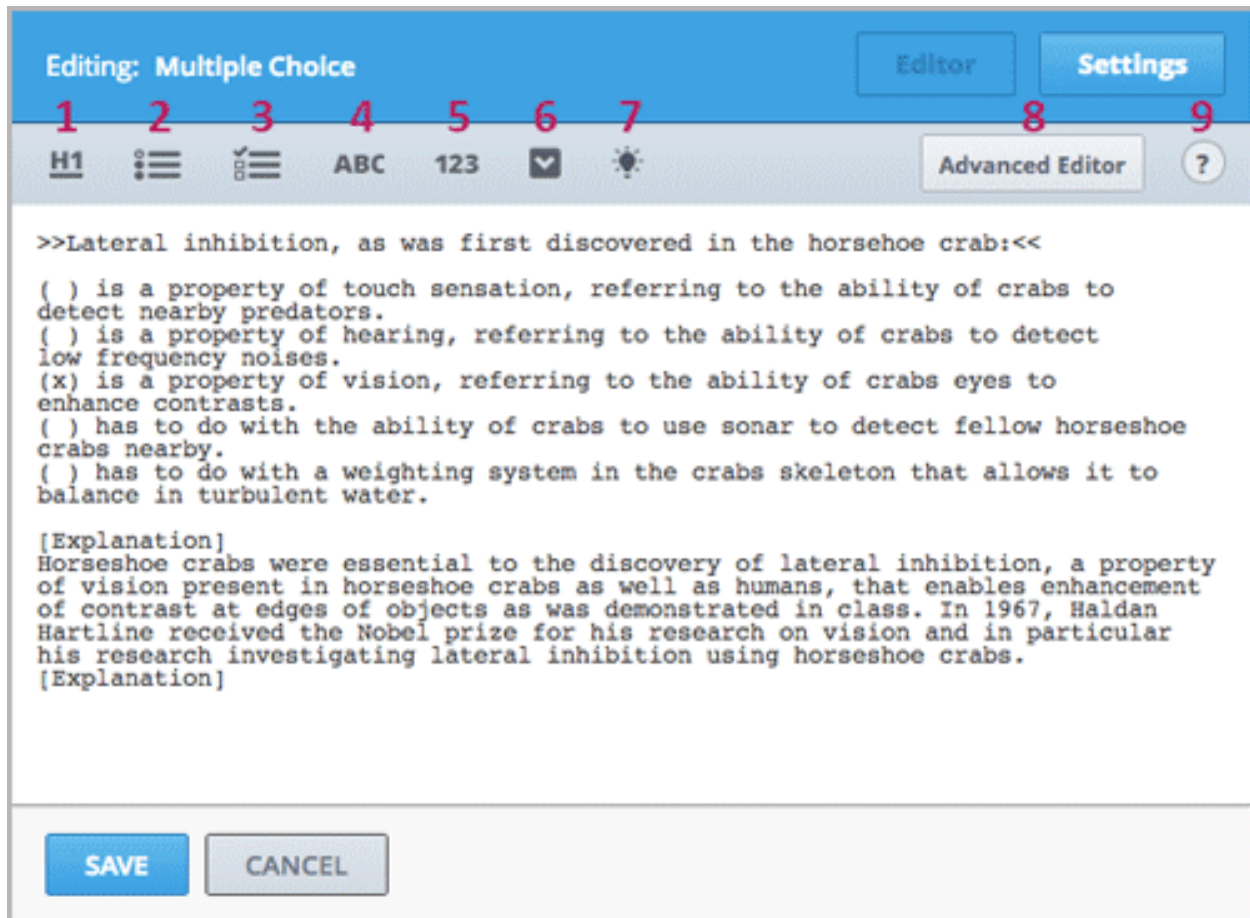
All problems are written in XML. However, Studio offers two interfaces for editing problem components: the Simple Editor and the Advanced Editor.

- The **Simple Editor** allows you to edit problems visually, without having to work with XML.
- The **Advanced Editor** converts the problem to edX's XML standard and allows you to edit that XML directly.

You can switch at any time from the Simple Editor to the Advanced Editor by clicking **Advanced Editor** in the top right corner of the Simple Editor interface. However, it is not possible to switch from the Advanced Editor to the Simple Editor.

#### The Simple Editor

Several problem templates, including multiple choice and text input problem templates, open in the Simple Editor. The following image shows a multiple choice problem in the Simple Editor.



The Simple Editor includes a toolbar that helps you format the text of your problem. When you select text and then click the formatting buttons, the Simple Editor formats the text for you automatically. The toolbar buttons are the following:

1. Create a level 1 heading.
2. Create multiple choice options.
3. Create checkbox options.
4. Create text input options.
5. Create numerical input options.
6. Create dropdown options.
7. Create an explanation that appears when students click **Show Answer**.
8. Open the problem in the Advanced Editor.
9. Open a list of formatting hints.

The following problem templates open in the Simple Editor.

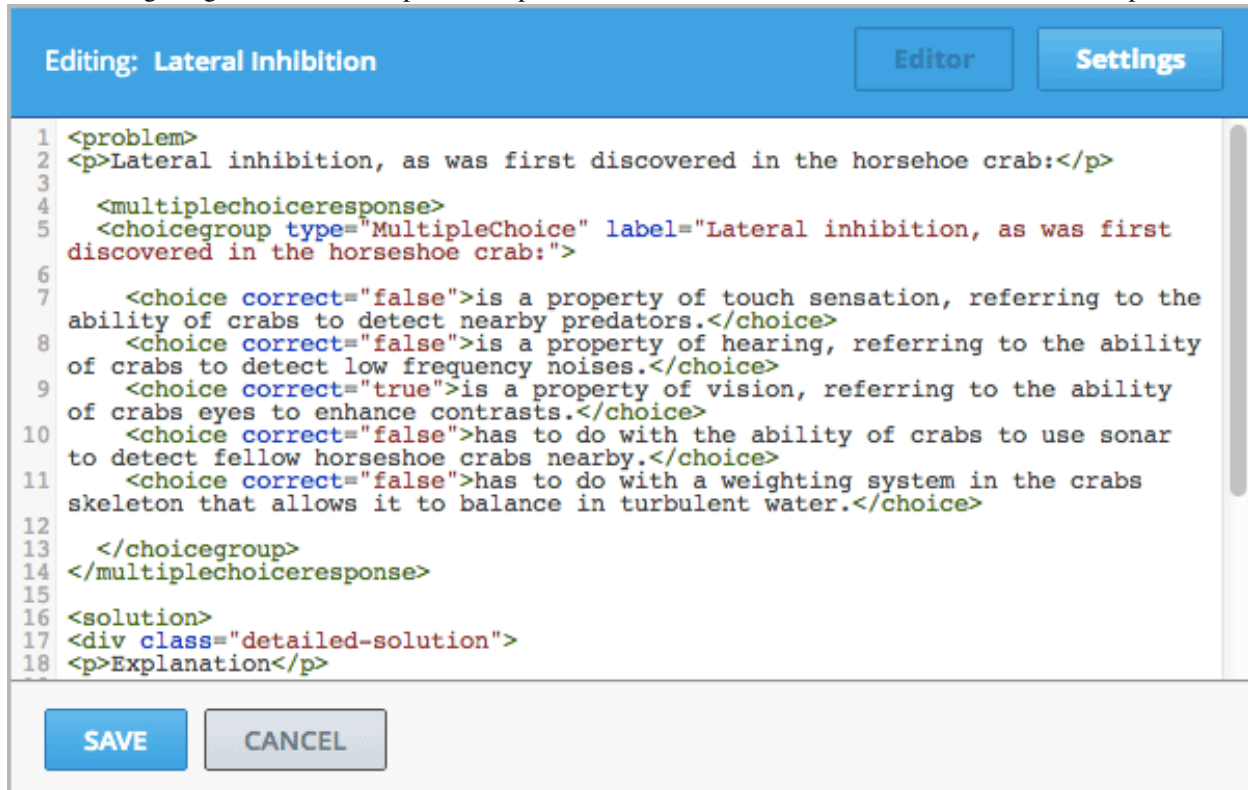
- *Checkbox Problem* In checkbox problems, students select one or more options from a list of possible answers.
- *Dropdown Problem* In dropdown problems, students select one answer from a dropdown list.
- *Multiple Choice Problem* Multiple choice problems require students to select one answer from a list of choices that appear directly below the question.

- *Numerical Input* Numerical input problems require answers that include only integers, fractions, and a few common constants and operators.
- *Text Input Problem* In text input problems, students enter a short text answer to a question.

## The Advanced Editor

The **Advanced Editor** opens a problem in XML. Templates for problems such as drag and drop and math expression input open directly in the Advanced Editor.

The following image shows the multiple choice problem above in the Advanced Editor instead of the Simple Editor.



The following problem templates open in the Advanced Editor.

- *Circuit Schematic Builder Problem* In circuit schematic problems, students create and modify circuits on an interactive grid and submit computer-generated analyses of the circuits for grading.
- *Custom JavaScript Problem* With custom JavaScript display and grading problems, you can incorporate problem types that you've created in HTML into Studio via an IFrame.
- *Drag and Drop Problem* Drag and drop problems require students to drag text or objects to a specific location on an image.
- *Image Mapped Input Problem* Image mapped input problems require students to click a specific location on an image.
- *Math Expression Input Problems* Math expression input problems require students to enter a mathematical expression as text, such as  $e=mc^2$ .
- *Problem with Adaptive Hint* These problems can give students feedback or hints based on their responses. Problems with adaptive hints can be text input or multiple choice problems.

- *Problem Written in LaTeX* This problem type allows you to convert problems that you’ve already written in LaTeX into the edX format. Note that this problem type is still a prototype, however, and may not be supported in the future.
- *Write-Your-Own-Grader Problem* Custom Python-evaluated input (also called “write-your-own-grader” problems evaluate students’ responses using an embedded Python script that you create. These problems can be any type.

## 7.4.4 Problem Settings

In addition to the text of the problem, problems that you create using a Problem component have the following settings. These settings appear on the **Settings** tab in the component editor.

- **Display Name**
- **Maximum Attempts**
- **Problem Weight**
- **Randomization**
- **Show Answer**
- **Show Reset Button**

Editing: Multiple Choice

Editor

Settings

Display Name	<input type="text" value="Lateral Inhibition"/>		This name appears in the horizontal navigation at the top of the page.
Maximum Attempts	<input type="text" value="3"/>		Defines the number of times a student can try to answer this problem. If the value is not set, infinite attempts are allowed.
Problem Weight	<input type="text" value="2"/>		Defines the number of points each problem is worth. If the value is not set, each response field in the problem is worth one point.
Randomization	<input type="text" value="Never"/>		Defines how often inputs are

SAVE

CANCEL

## Display Name

This setting indicates the name of your problem. The display name appears as a heading over the problem in the LMS and in the course ribbon at the top of the page.

**Display Name**

LATERAL INHIBITION (2 points possible)

Lateral inhibition, as was first discovered in the horseshoe crab:

- ☐ is a property of touch sensation, referring to the ability of crabs to detect nearby predators.
- ☐ is a property of hearing, referring to the ability of crabs to detect low frequency noises.
- ☐ is a property of vision, referring to the ability of crabs eyes to enhance contrasts.
- ☐ has to do with the ability of crabs to use sonar to detect fellow horseshoe crabs nearby.
- ☐ has to do with a weighting system in the crabs skeleton that allows it to balance in turbulent water.

Check Save Show Answer(s) You have used 0 of 3 submissions

## Maximum Attempts

This setting specifies the number of times a student is allowed to attempt answering the problem. By default, the course-wide **Maximum Attempts** advanced setting is null, meaning that the maximum number of attempts for problems is unlimited. If the course-wide **Maximum Attempts** setting is changed to a specific number, the **Maximum Attempts** setting for individual problems defaults to that number, and cannot be set to unlimited.

---

**Note:** Only questions that have a **Maximum Attempts** setting of 1 or higher are included on the Student Answer Distribution report that you can download during your course.

---

## Problem Weight

---

**Note:** Studio stores scores for all problems, but scores only count toward a student's final grade if they are in a subsection that is graded.

---

This setting specifies the maximum number of points possible for the problem. The problem weight appears next to the problem title.



### EXAMPLE DROPDOWN EXERCISE (3 points possible)

*This exercise first appeared in HarvardX's PH207x Health in Numbers: Quantitative Methods in Clinical & Public Health Research course, fall 2012.*

What type of data are the following?

Age:

Age, rounded to the nearest year:

Life stage - infant, child, and adult:

By default, each response field, or “answer space,” in a Problem component is worth one point. Any Problem component can have multiple response fields. For example, the Problem component above contains one dropdown problem that has three separate questions for students to answer, and thus has three response fields.

The following Problem component contains one text input problem, and has just one response field.

### EXAMPLE TEXT INPUT EXERCISE (1 point possible)

*This exercise first appeared in MITx's 14.73x The Challenges of Global Poverty course, spring 2013.*

What is the technical term that refers to the fact that, when enough people sleep under a bednet, the disease may altogether disappear?

### Computing Scores

The score that a student earns for a problem is the result of the following formula:



**Score = Weight × (Correct answers / Response fields)**

- **Score** is the point score that the student receives.
- **Weight** is the problem's maximum possible point score.
- **Correct answers** is the number of response fields that contain correct answers.
- **Response fields** is the total number of response fields in the problem.

### Examples

The following are some examples of computing scores.

#### *Example 1*

A problem's **Weight** setting is left blank. The problem has two response fields. Because the problem has two response fields, the maximum score is 2.0 points.

If one response field contains a correct answer and the other response field contains an incorrect answer, the student's score is 1.0 out of 2 points.

#### *Example 2*

A problem's weight is set to 12. The problem has three response fields.

If a student's response includes two correct answers and one incorrect answer, the student's score is 8.0 out of 12 points.

#### *Example 3*

A problem's weight is set to 2. The problem has four response fields.

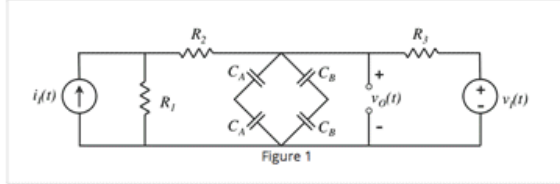
If a student's response contains one correct answer and three incorrect answers, the student's score is 0.5 out of 2 points.

### Randomization

This setting specifies whether certain values in your problem change each time a different student accesses the problem, or each time a single student tries to answer the problem. For example, the highlighted values in the problem below change each time a student submits an answer to the problem.

Q1 (6 points possible)

The step response of a circuit is its response to a step input,  $u(t)$ . Knowing the step response of a linear circuit is extremely valuable as we can figure out the circuit's stability. In this problem we will analyze the circuit in Figure 1 for the output voltage,  $v_O(t)$  given an initial condition. Then you will find the output response of two input steps—a current input,  $i_I(t)$ , and a voltage step,  $v_I(t)$ .



The element values are as follows:  $R_1 = 2\text{k}\Omega$ ,  $R_2 = 2\text{k}\Omega$ ,  $R_3 = 6\text{k}\Omega$ ,  $C_A = 1\mu\text{F}$ , and  $C_B = 0.5\mu\text{F}$ .

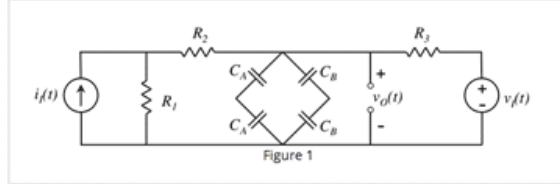
To begin we note that the capacitor bridge composed of four capacitors can be replaced with one capacitor,  $C_{TOT}$ . What is the value of  $C_{TOT}$  (in  $\mu\text{F}$ )?

First we consider the circuit in Figure 1 when  $i_I(t) = 0\text{A}$ ,  $v_I(t) = 0\text{V}$ , and  $v_O(0) = 2\text{V}$ . What is the time constant,  $\tau$  (in ms) of the output voltage?

What is the output voltage  $v_O(t)$  at time  $t = 0.25\text{ms}$ ?

Q1 (6 points possible)

The step response of a circuit is its response to a step input,  $u(t)$ . Knowing the step response of a linear circuit is extremely valuable as we can figure out the circuit's stability. In this problem we will analyze the circuit in Figure 1 for the output voltage,  $v_O(t)$  given an initial condition. Then you will find the output response of two input steps—a current input,  $i_I(t)$ , and a voltage step,  $v_I(t)$ .



The element values are as follows:  $R_1 = 1\text{k}\Omega$ ,  $R_2 = 1\text{k}\Omega$ ,  $R_3 = 2\text{k}\Omega$ ,  $C_A = 0.5\mu\text{F}$ , and  $C_B = 1.5\mu\text{F}$ .

To begin we note that the capacitor bridge composed of four capacitors can be replaced with one capacitor,  $C_{TOT}$ . What is the value of  $C_{TOT}$  (in  $\mu\text{F}$ )?

First we consider the circuit in Figure 1 when  $i_I(t) = 0\text{A}$ ,  $v_I(t) = 0\text{V}$ , and  $v_O(0) = 1\text{V}$ . What is the time constant,  $\tau$  (in ms) of the output voltage?

What is the output voltage  $v_O(t)$  at time  $t = 0.3\text{ms}$ ?

If you want to change, or “randomize,” specific values in your problem, you have to do both the following:

- Make sure that your problem contains a Python script that randomizes the values that you want.
- Enable randomization in the Problem component.

**Note:** Note that specifying this **Randomization** setting is different from *problem randomization*. The **Randomization** setting randomizes variables within a single problem. Problem randomization offers different problems or problem versions to different students. For more information, see [Problem Randomization](#).

To enable randomization, select an option for the **Randomization** setting. This setting has the following options.

<b>Always</b>	Students see a different version of the problem each time they click <b>Check</b> .
<b>On Reset</b>	Students see a different version of the problem each time they click <b>Reset</b> .
<b>Never</b>	All students see the same version of the problem. This is the default.
<b>Per Student</b>	Individual students see the same version of the problem each time they look at it, but that version is different from the version that other students see.

**Note:** The edX Platform has a 20-seed limit for randomization.

## Show Answer

This setting defines when the problem shows the answer to the student. This setting has the following options.

<b>Always</b>	Always show the answer when the student clicks the <b>Show Answer</b> button.
<b>Answered</b>	Show the answer after the student tries to answer the problem. If the question can be, and is, reset, the answer is not shown until the student tries the problem again. (When a student answers a question, the question is considered to be both attempted and answered. When the question is reset, the question is still attempted, but not yet answered.)
<b>Attempted</b>	Show the answer after the student tries to answer the problem. If the question can be, and is, reset, the answer <i>continues to show</i> . (When a student answers a question, the question is considered to be both attempted and answered. When the question is reset, the question is still attempted, but not yet answered.)
<b>Closed</b>	Show the answer after the student has used up all his attempts to answer the problem or the due date has passed.
<b>Finished</b>	Show the answer after the student has answered the problem correctly, the student has no attempts left, or the problem due date has passed.
<b>Correct or Past Due</b>	Show the answer after the student has answered the problem correctly or the problem due date has passed.
<b>Past Due</b>	Show the answer after the due date for the problem has passed.
<b>Never</b>	Never show the answer. In this case, the <b>Show Answer</b> button does not appear next to the problem in Studio or in the LMS.

### Show Reset Button

This setting defines whether a **Reset** button is visible on the problem. Students can click **Reset** to clear any input that has not yet been submitted, and try again to answer the problem. If the student has already submitted an answer, clicking **Reset** clears the submission and, if the problem contains randomized variables and randomization is set to **On Reset**, changes the values the student sees in the problem. If the number of Maximum Attempts that was set for this problem has been reached, the **Reset** button is not visible.

This problem-level setting overrides the course-level **Show Reset Button for Problems** setting.

## 7.4.5 Modifying a Released Problem

**Warning:** Be careful when you modify problems after they have been released! Changes that you make to published problems can affect the student experience in the course and analysis of course data.

After a student submits a response to a problem, the edX Learning Management System (LMS) stores the student's response, the score that the student received, and the maximum score for the problem. For problems with a **Maximum Attempts** setting greater than 1, the LMS updates these values each time the student submits a new response to a problem. However, if an instructor changes a problem or its attributes, existing student information for that problem is not automatically updated.

For example, you may release a problem and specify that its answer is 3. After some students have submitted responses, you notice that the answer should be 2 instead of 3. When you update the problem with the correct answer, the LMS doesn't update scores for students who answered 2 for the original problem and thus received the wrong score.

For another example, you may change the number of response fields to three. Students who submitted answers before the change have a score of 0, 1, or 2 out of 2.0 for that problem. Students who submitted answers after the change have scores of 0, 1, 2, or 3 out of 3.0 for the same problem.

If you change the weight setting for the problem in Studio, however, existing student scores update when the student's **Progress** page is refreshed. In a live section, students will see the effect of these changes.

### Workarounds

If you have to modify a released problem in a way that affects grading, you have two options within Studio to assure that every student has the opportunity to submit a new response and be regraded. Note that both options require you to ask your students to go back and resubmit answers to a problem.

- In the Problem component that you changed, increase the number of attempts for the problem. Then ask all your students to redo the problem.
- Delete the entire Problem component in Studio and create a new Problem component with the content and settings that you want. (If the revisions you must make are minor, duplicate the Problem component before you delete it and revise the copy.) Then ask all your students to complete the new problem.

For information about how to review and adjust student grades in the LMS, see *Student Grades and Grading*.

## 7.4.6 Additional Work with Problems

You have some further options when you work with problems. You can include more than one problem in a single problem component, or you can set up a problem that presents different versions to different students.

### Multiple Problems in One Component

You may want to create a problem that has more than one response type. For example, you may want to create a numerical input problem, and then include a multiple choice question about the numerical input problem. Or, you may want a student to be able to check the answers to many problems at one time. To do this, you can include multiple problems inside a single Problem component. The problems can be different types.

---

**Note:** You cannot use a *Custom JavaScript Problem* in a component that contains more than one problem. Each custom JavaScript problem must be in its own component.

---

To create multiple problems in one component, create a new Blank Advanced Problem component, and then add the XML for each problem in the component editor. You only need to include the XML for the problem and its answers. You don't have to include the code for other elements, such as the **Check** button.

Elements such as the **Check**, **Show Answer**, and **Reset** buttons, as well as the settings that you select for the Problem component, apply to all of the problems in that component. Thus, if you set the maximum number of attempts to 3, the student has three attempts to answer the entire set of problems in the component as a whole rather than three attempts to answer each problem individually. If a student clicks **Check**, the LMS scores all of the problems in the component at once. If a student clicks **Show Answer**, the answers for all the problems in the component appear.

## Problem Randomization

You may want to present different students with different problems, or different versions of the same problem. To do this, you'll create a Problem component for each problem or version in Studio, and then edit your course outside of Studio to randomize the problem that students see.

Note that *problem randomization* is different from the **Randomization** setting in Studio. The **Randomization** setting randomizes variables within a single problem. Problem randomization offers different problems or problem versions to different students.

---

**Note:** Creating problems with versions that can be randomized requires you to export your course, edit some of your course's XML files in a text editor, and then re-import your course. We recommend that you create a backup copy of your course before you do this. We also recommend that you only edit your course files in the text editor if you're very familiar with editing XML.

---

## Terminology

Sections, subsections, units, and components have different names in the **Course Outline** view and in the list of files that you'll see after you export your course and open the .xml files for editing. The following table lists the names of these elements in the **Course Outline** view and in a list of files.

Course Outline View	File List
Section	Chapter
Subsection	Sequential
Unit	Vertical
Component	Discussion, HTML, problem, or video

For example, when you want to find a specific section in your course, you'll look in the **Chapter** folder when you open the list of files that your course contains. To find a unit, you'll look in the **Vertical** folder.

## Create Randomized Problems

1. In the unit where you want to create a randomized problem, create a separate Problem component for each version or problem that you want to randomize. For example, if you want to offer four versions or problems, you'll create four separate Problem components. Make a note of the 32-digit unit ID that appears in the **Unit Identifier** field under **Unit Location**.
2. Export your course. For information about how to do this, see [Exporting and Importing a Course](#). Save the .tar.gz file that contains your course in a memorable location so that you can find it easily.
3. Locate the .tar.gz file that contains your course, and then unpack the .tar.gz file so that you can see its contents in a list of folders and files.

To do this on a Windows computer, you'll need to download a third-party program. For more information, see [How to Unpack a tar File in Windows](#), [How to Extract a Gz File](#), [The gzip Home Page](#), or the **Windows** section of the [How to Open .tar.gz Files](#) page.

For information about how to do this on a Mac, see the **Mac OS X** section of the [How to Open .tar.gz Files](#) page.

4. In the list of folders and files, open the **Vertical** folder.

---

**Note:** If your unit is not published, open the **Drafts** folder, and then open the **Vertical** folder in the **Drafts** folder.

---

5. In the **Vertical** folder, locate the .xml file that has the same name as the unit ID that you noted in step 1, and then open the file in a text editor such as Sublime 2. For example, if the unit ID is e461de7fe2b84ebeabe1a97683360d31, you'll open the e461de7fe2b84ebeabe1a97683360d31.xml file.

The file contains a list of all the components in the unit, together with the URL names of the components. For example, the following file contains four Problem components.

```
<vertical display_name="Test Unit">
  <problem url_name="d9d0ceb3ffc74eacb29501183e26ad6e"/>
  <problem url_name="ea66d875f4bf4a9898d8e6d2cc9f3d6f"/>
  <problem url_name="2616cd6324704f85bc315ec46521485d"/>
  <problem url_name="88987707294d4ff0ba3b86921438d0c0"/>
</vertical>
```

6. Add `<randomize>` `</randomize>` tags around the components for the problems that you want to randomize.

```
<vertical display_name="Test Unit">
  <randomize>
    <problem url_name="d9d0ceb3ffc74eacb29501183e26ad6e"/>
    <problem url_name="ea66d875f4bf4a9898d8e6d2cc9f3d6f"/>
    <problem url_name="2616cd6324704f85bc315ec46521485d"/>
    <problem url_name="88987707294d4ff0ba3b86921438d0c0"/>
  </randomize>
</vertical>
```

7. After you add the `<randomize>` `</randomize>` tags, save and close the .xml file.
8. Re-package your course as a .tar.gz file.

For information about how to do this on a Mac, see [How to Create a Tar GZip File from the Command Line](#).

For information about how to do this on a Windows computer, see [How to Make a .tar.gz on Windows](#).

9. In Studio, re-import your course.

---

### Note:

- Once you've implemented randomization, you can only see one of the versions or problems in Studio. You can edit that single problem directly in Studio, but to edit any of the other problems, you'll have to export your course, edit the problems in a text editor, and then re-import the course. This is true for instructors as well as course teams.
  - A .csv file for student responses contains the responses to each of the problems in the problem bank.
- 

## 7.5 Working with Content Libraries

### 7.5.1 Content Libraries Overview

In Studio, if you have course creation privileges, you can create a content library to build a pool of components that can be used in randomized assignments in your courses. You can add HTML components, problems, and video components to a library. Peer assessment and discussion components are not supported in content libraries.

---

**Note:** Content libraries are available only for courses that have course identifiers in this format: {key type}:{org}+{course}+{run}. For example, course-v1:edX+DemoX+Demo\_2015. Your course iden-

tifier appears in the browser address bar as the final part of the URL when you open your course in Studio. For more details, see [Create a New Course](#).

---

After creating a library and adding components to it, if you have [enabled content libraries](#) in your course, you can use these library components in randomized assignments in your course. You do this by adding a randomized content block to a course unit and indicating one or more libraries from which the randomized content is to drawn, as well as the number and type of problems that each student is assigned. If you specify more than one library from which to randomly draw components for the randomized assignment, the content from all specified libraries is combined before the random selection is made.

Libraries have separate users and levels of access from courses. Initially, only the person who created the library has access. She can add other users to the library. For details, see [Give Other Users Access to Your Library](#). The libraries that you create or have access to are listed on the **Libraries** tab on the Studio Home page.

See the following sections for details about creating and managing content libraries.

- [Enable Content Libraries](#)
- [Create a New Library](#)
- [Add Components to a Library](#)
- [View the Contents of a Library](#)
- [Edit Components in a Library](#)
- [Give Other Users Access to Your Library](#)

See the following sections for details about using content library components in a course.

- [Use Components from Libraries in a Course](#)
- [Add a Randomized Content Block to Your Course](#)
- [View the Matching Components in a Randomized Content Block](#)
- [Editing Components in Randomized Content Blocks](#)
- [Getting the Latest Version of Library Content](#)

## 7.5.2 Create a New Library

Use [content libraries](#) to build a pool of components that can be used in randomized assignments in your courses. You can create content libraries if you have course creation privileges.

For information about adding other users to a library after you create it, see [Give Other Users Access to Your Library](#).

To create a new content library, follow these steps.

1. Log in to Studio.
2. Click **New Library**.
3. Enter the required information for your new library, then click **Create**.

---

**Note:** Enter new library information carefully. The values in these fields become part of the URL for your library, therefore the total number of characters in the **Library Name**, **Organization**, and **Library Code** fields must be 65 or fewer.

---

### Create a New Library

**Library Name \***

The public display name for your library.

**Organization \***

The public organization name for your library. This cannot be changed.

**Library Code \***

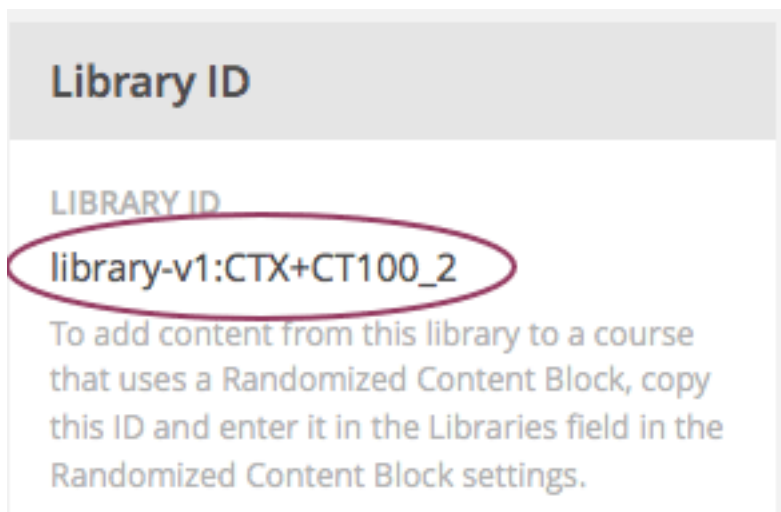
The unique code that identifies this library. Note: This is part of your library URL, so no spaces or special characters are allowed. This cannot be changed.

- For **Library Name**, enter the public display name for your library. Choose a meaningful name that will help you and other course team members to identify the contents of the library. For example, “Level 200 Math Problems”.
- For **Organization**, enter the identifier for your university. For example, enter HarvardX or MITx. Do not include spaces or special characters.
- For **Library Code**, enter an identifier for your library that is unique within your organization. This code becomes part of the URL for your library, so do not include spaces or special characters in the code.

4. Click **Create**.

You see the new library, to which you can now add components. For details about adding components to a library, see [Add Components to a Library](#).

The system-generated Library ID for the new library appears in the sidebar.



**Note:** Copy or make a note of the Library ID for the new library. When you add a randomized content block to a course unit, you use the Library ID to specify this library as a source for the randomized content.



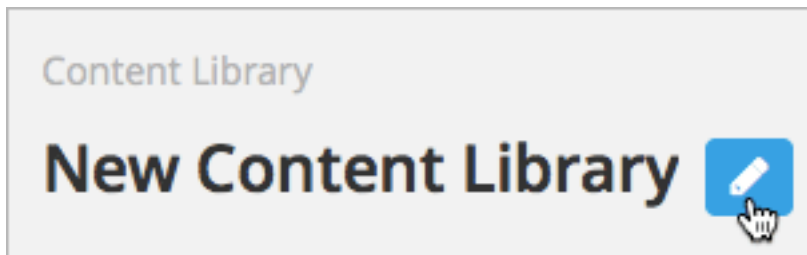
### 7.5.3 Edit a Library

After you create a library, the only change you can make to the initial library information is to the name. However, at any time, you can make changes to the components in your library, including adding or deleting components or editing the settings of components. For details about editing the contents of a library, see [Edit Components in a Library](#) and [Add Components to a Library](#).

To change the name of a library, follow these steps.

1. Log in to Studio.
2. Click **Libraries**, then click the library whose name you want to edit.
3. Click the **Edit** icon next to the library name.

The library name field becomes editable.



4. In the library name field, make edits or enter a new library name.
5. Click anywhere outside the library name field to save your changes.

For details about giving other users access to the library, see [Give Other Users Access to Your Library](#).

### 7.5.4 Add Components to a Library

To add new *components* to your library, follow these steps.

1. Log in to Studio.
2. Click **Libraries**, then click the library that you want to add components to.
3. Click **Add Component**, then click the component type that you want to add under **Add New Component**.

For more information about the types of components you can add to a library, see these topics.

- [Working with HTML Components](#)
- [Working with Problem Components](#)
- [Working with Video Components](#)

After you add a component to a library, you can edit its settings. These settings are retained when the component is selected from the library and used in a course.

When a component from the library is used in a randomized content block, you can further edit the component as it exists in the unit, without affecting the original version in the library. For details, refer to [Edit Components in a Library](#) and [Getting the Latest Version of Library Content](#).

### 7.5.5 View the Contents of a Library

To view the entire contents of a library in Studio, follow these steps.

1. Log in to Studio.

2. Click **Libraries**, then click the library whose components you want to view.

The components in the library display in the order in which they were added, with the most recently added at the bottom. If your library has more than 10 components, additional components are shown on other pages.

The range of the components shown on the current page, and the total number of components, are shown at the top of the page.

You can navigate through the pages in these ways:

- Use the < and > buttons at the top and bottom of the list to navigate to the previous and next pages.
- At the bottom of the page, you can edit the first number in the page range. Click the number to place your cursor in the field, then enter the page number you want to jump to.



To view the list of matching components in the library, see [View the Matching Components in a Randomized Content Block](#).

To view the randomized content as a student would see it, see [View the Randomized Content as a Student](#).

### 7.5.6 Edit Components in a Library

After you have added components to a content library, you can edit, duplicate, or delete them.

For step-by-step instructions for editing, duplicating, or deleting components, refer to the following topics:

- [Edit a Component](#)
- [Duplicate a Component](#)
- [Delete a Component](#)

---

**Note:** If you modify components in your library that are in use in a course, these updates in the “source” library are not reflected in the course unless you manually update the randomized content block in the course unit. For details about updating library components used in your course to match the latest version in the content library, see [Getting the Latest Version of Library Content](#).

---

### 7.5.7 Delete a Library

You cannot delete a library. Instead, you can discontinue use of an unwanted library. To do so, first make sure that none of its components are in use in any courses, then delete all components in the library. You can also [edit the name of the library](#) to make it clear to other course staff that the library should not be used as a source of randomized assignment content in courses.

For details about deleting components in a library, see [Edit Components in a Library](#).

### 7.5.8 Give Other Users Access to Your Library

When you create a library, you are automatically assigned an Admin role in that library.

You can give other Studio users access to your library. Depending on the level of access that you give them in the library, additional library users can view and use library content in courses, edit library content, or add and manage

other library users. All users to whom you give library access must be registered with Studio and have an active account.

These are the levels of access for libraries:

- **User** – Users can view library content and can use library components in their courses, but they cannot edit the contents of a library.
- **Staff** – Staff can use library components in their courses. In addition, as content co-authors, they have full editing privileges in a library.
- **Admin** – Admins have full editing privileges for a library. In addition, they can add and remove other team members from library access. There must be at least one user with Admin privileges in a library.

---

**Note:** The levels of access for libraries are hierarchical. You can add new library members only with the **User** level of access, after which you can give them the **Staff** level of access. You can give the **Admin** level of access only to people who already have the **Staff** level of access.

---

### Add a User to the Library

To grant a user initial **User** access to a library, follow these steps.

---

**Note:** Only library users with the **Admin** level of access can add users to the library.

---

1. Ensure that the new library member has an active Studio account.
2. On the Studio home page, click the **Libraries** tab and locate the library to which you are adding this user.
3. From the **Settings** menu select **User Access**.
4. On the **User Access** page, click **Add a New User**.
5. Enter the new user's email address, then click **ADD USER**.

The new user is added to the list of library members with the **User** level of access.

### Remove a User from the Library

You can remove users from the library at any time, regardless of the level of access that they have.

To remove a user from the library, follow these steps.

1. In Studio, click the **Libraries** tab and locate your library.
2. From the **Settings** menu select **User Access**.
3. On the **User Access** page, locate the user that you want to remove.
4. Hover over the user's box and click the trash can icon.

You are prompted to confirm the deletion.

5. Click **Delete**.

The user is removed from the library.

### Add Staff or Admin Access

The levels of access for libraries are hierarchical. You can add new library members only with the **User** level of access, after which you can give them the **Staff** level of access. You can give the **Admin** level of access only to people who already have the **Staff** level of access.

To give a library member a higher level of access to the library, follow these steps.

1. In Studio, click the **Libraries** tab and locate your library.
2. From the **Settings** menu select **User Access**.
3. On the **User Access** page, locate the user to whom you are giving additional privileges.
  - If he currently has **User** access, click **Add Staff Access**.
  - If he currently has **Staff** access, click **Add Admin Access**.

The user's display listing is updated to indicate the new level of access. In addition, their listing now includes a button to remove their current level of access and move them back to their previous level of access. For details about reducing a user's level of access to a library, see [Remove Staff or Admin Access](#).

### Remove Staff or Admin Access

After you have granted users **Staff** or **Admin** access, you (or other **Admin** library users) can reduce their levels of access.

To remove **Staff** or **Admin** access from a library user, follow these steps.

1. In Studio, click the **Libraries** tab and locate your library.
2. From the **Settings** menu select **User Access**.
3. On the **User Access** page, locate the user whose access level you are changing.
  - If she currently has **Staff** access, click **Remove Staff Access**.
  - If she currently has **Admin** access, click **Remove Admin Access**.

The user's display listing is updated to indicate their new role.

---

**Note:** There must always be at least one Admin for a library. If there is only one user with the Admin role, you cannot remove him or her from the Admin role unless you first assign another user to the Admin role.

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## Creating Exercises and Tools

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Use the chapters in this section to understand how to create exercises and tools in your course.

For information on how to develop your course content in the Studio Outline page, see *Developing Your Course*.

For information on building specific course component types, see *Creating Course Content*.

### 8.1 Creating Exercises and Tools

#### 8.1.1 Introduction to Exercises and Tools

Studio allows you to create a wide variety of exercises and tools for your course. Many of these exercises and tools have templates in Studio so that you can create them easily. In addition, individual course teams frequently create exercises that don't have templates in Studio. We're striving to make these tools available to all our course teams as well, and we have instructions for creating some of them in this section.

Depending on the exercise or tool, you'll use an HTML, Problem, or Advanced component. The page for each individual exercise or tool contains an example of each exercise or tool, together with all the files, code, and step-by-step instructions that you need to create the exercise or tool.

---

**Note:** Problems must include labels for accessibility. The label generally includes the text of the main question in your problem. Instructions for adding labels appear in the page for each individual problem.

---



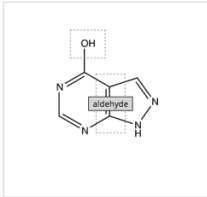
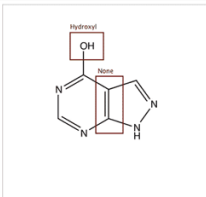


8.1.2 General Exercises and Tools

<div><div><div>Instructions</div><div>Collapse Instructions 1</div><div>Annotation Exercise, Hour 12 (to be done after the Hour 12 Question Set has been completed). Carefully read the following text and answer the accompanying question. To see the question while you read the text, hover your mouse over the highlighted selection in the text below.</div></div><div><div>Guided Discussion</div><div>Hide Annotations</div><div>This exercise first appeared in Harvard's CB22x: The Ancient Greek Hero course, spring 2013.</div><div>[122 And they (→ the Golden Generation of humankind) are superhumans (daimones). They exist because of the Will of Zeus. [123 They are the good, the earthbound (gēi-khthonioi), the guardians of mortal humans. [124 They guard acts of justice (dikē) and they guard against wretched acts of evil. [125 Enveloped in mist, they roam everywhere throughout the earth. [126 They are givers of prosperity. And they had this as a privilege (geras), a kingly one (basileion).</div></div></div> <div><div>QUESTION 1 (2/2 points)</div><div><div>Annotation Exercise</div><div>Return to Annotation 1</div><div>[124 They guard acts of justice (dikē) and they guard against wretched acts of evil.</div><div>Hesiodic poetry declares that heroes are protectors of justice. Is this declaration consistent with what we have read in Homeric poetry?</div><div>Type your response below:</div><div></div><div>In your response to this question, which tag below do you choose?</div><div><div>This declaration in Hesiodic poetry is inconsistent with Homeric poetry, since we see that heroes in the Iliad and Odyssey do in fact engage in unjust as well as just actions.</div><div><input checked="" type="radio"/> This declaration in Hesiodic poetry is consistent with Homeric poetry, since there is no real contradiction here between the two kinds of poetry.</div><div>We cannot be sure whether this declaration in Hesiodic poetry is consistent or inconsistent with Homeric poetry, where the actions of heroes are not evaluated in terms of injustice or justice.</div></div><div>Answer: This declaration in Hesiodic poetry is consistent with Homeric poetry, since there is no real contradiction here between the two kinds of poetry.</div><div>If you answered "This declaration in Hesiodic poetry is inconsistent with Homeric poetry, since we see that heroes in the Iliad and Odyssey do in fact engage in unjust as well as just actions," you would be missing the point. The heroes in the Iliad and Odyssey are still alive when they are engaged in their actions. By contrast, the heroes of the Golden Age are not of this world when they are protecting justice. Enveloped in mist and roaming throughout the earth, the heroes of the Golden Age are pictured as otherworldly spirits. This picture corresponds to the idea of cult heroes, not to the idea of epic heroes. If you answered "We cannot be sure whether this declaration in Hesiodic poetry is consistent or inconsistent with Homeric poetry, where the actions of heroes are not evaluated in terms of injustice or justice," you would be right in saying that Homeric poetry generally avoids evaluating the actions of heroes in terms of injustice or justice (though such evaluations "do" occasionally occur even in Homeric poetry, as I have argued in my overall write-up of this Hour in the book h24h), but you would still be missing the point I already made, that the heroes of the Golden Age are in an otherworldly state of existence when they are protecting justice, by contrast with the heroes of epic as portrayed in the Iliad and Odyssey. A better answer is "This declaration in Hesiodic poetry is consistent with Homeric poetry, since there is no real contradiction here between the two kinds of poetry." Hesiodic and Homeric poetry picture heroes in different but complementary ways, and they avoid contradicting each other about the basic fact that heroes are different when they are alive and when they are dead.</div><div><div>Reset</div><div>Hide Answer(s)</div></div></div></div> <td><div>Annotation Problem</div></td> <td><div>Annotation problems ask students to respond to questions about a specific block of text. The question appears above the text when the student hovers the mouse over the highlighted text so that students can think about the question as they read.</div></td>	<div>Annotation Problem</div>	<div>Annotation problems ask students to respond to questions about a specific block of text. The question appears above the text when the student hovers the mouse over the highlighted text so that students can think about the question as they read.</div>
<div><div>POLL QUESTION</div><div>All things being equal, should the government use public funds to invest in museums rather than sports arenas?</div><div><div><input checked="" type="radio"/> Yes</div><div></div><div>5780 (63.6%)</div></div><div><div><input type="radio"/> No</div><div></div><div>3308 (36.4%)</div></div><div>You responded "Yes" to the poll question. But what would you say to the following: What if public officials expect that more people will make use of and enjoy a sports arena? Should the government still use public funds to invest in museums instead?</div><div>Post your answer in the discussion section below, or view the discussion of those who responded "No" to the poll question <a href="#">here</a>.</div></div>		





### 8.1.3 Image-Based Exercises and Tools

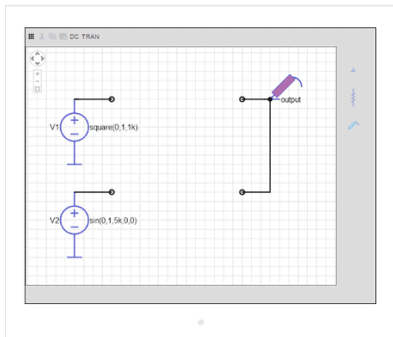

<p>The following drag and drop exercise first appeared in MIT's 7.00c: Introduction to Biology- The Secret of Life course in March 2013.</p> <p>You are shown one of many possible molecules. On the structure of allopurinol below, identify the functional groups that are present by dragging the functional group name listed onto the appropriate target boxes on the structure. If you want to change an answer, you have to drag off the name as well. You may need to scroll through the names of functional groups to see all options.</p>  <p>◀ methyl hydroxyl amino carboxyl aldehyde phosphate ▶</p> 	<p><i>Drag and Drop Problem</i></p>	<p>In drag and drop problems, students respond to a question by dragging text or objects to a specific location on an image.</p>
<p>SAMPLE IMAGE MODAL</p> <p>Fullscreen</p> 	<p><i>Full Screen Image Tool</i></p>	<p>The Full Screen Image tool allows a student to enlarge an image in the whole browser window. This is useful when the image contains a large amount of detail and text that is easier to view in context when enlarged.</p>
<p>In the image below, click inside any of the green rectangles.</p>  <p>Check Save Show Answer(s)</p>	<p><i>Image Mapped Input Problem</i></p>	<p>In an image mapped input problem, students click inside a defined area in an image. You define this area by including coordinates in the body of the problem.</p>
<p>8.1. Creating Exercises and Tools</p>		<p>191</p>

## 8.1.4 Multiple Choice Exercises and Tools

<p>This exercise first appeared in MITx's 14.73x The Challenges of Global Poverty course, spring 2013.</p> <p>Learning about the benefits of preventative healthcare can be particularly difficult. Check all of the reasons below why this may be the case.</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> A large amount of time passes between undertaking a preventative measure and seeing the result. <span style="color: green;">✓</span></li> <li><input checked="" type="checkbox"/> Non-immunized people will always fall sick. <span style="color: green;">✓</span></li> <li><input checked="" type="checkbox"/> If others are immunized, fewer people will fall sick regardless of a particular individual's choice to get immunized or not. <span style="color: green;">✓</span></li> <li><input type="checkbox"/> Trust in healthcare professionals and government officials is fragile. <span style="color: green;">✓</span></li> </ul> <p>EXPLANATION</p> <p>People who are not immunized against a disease may still not fall sick from the disease. If someone is trying to learn whether or not preventative measures against the disease have any impact, he or she may see these people and conclude, since they have remained healthy despite not being immunized, that immunizations have no effect. Consequently, he or she would tend to believe that immunization (or other preventative measures) have fewer benefits than they actually do.</p> <p>Reset Hide Answer(s)</p>	<p><i>Checkbox Problem</i></p>	<p>In checkbox problems, the student selects one or more options from a list of possible answers. The student must select all the options that apply to answer the problem correctly.</p>
<p>This exercise first appeared in Harvard's PH207x Health in Numbers: Quantitative Methods in Clinical &amp; Public Health Research course, fall 2012.</p> <p>What type of data are the following?</p> <p>Age:</p> <p>Continuous <input checked="" type="checkbox"/> Continuous <span style="color: green;">✓</span></p> <p>Age, rounded to the nearest year:</p> <p>Nominal <input checked="" type="checkbox"/> Discrete <span style="color: red;">✗</span></p> <p>Life stage - infant, child, and adult:</p> <p>Nominal <input checked="" type="checkbox"/> Nominal <span style="color: green;">✓</span></p> <p>Reset Hide Answer(s)</p>	<p><i>Dropdown Problem</i></p>	<p>Dropdown problems allow the student to choose from a collection of answer options, presented as a dropdown list. Unlike multiple choice problems, whose answers are always visible directly below the question, dropdown problems don't show answer choices until the student clicks the dropdown arrow.</p>
<p>This exercise first appeared in Harvard's PH278x: Human Health and Global Environmental Change course, spring 2013.</p> <p>Lateral inhibition, as was first discovered in the horseshoe crab...</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> is a property of touch sensation, referring to the ability of crabs to detect nearby predators. <span style="color: red;">✗</span></li> <li><input type="checkbox"/> is a property of hearing, referring to the ability of crabs to detect low frequency noises. <span style="color: red;">✗</span></li> <li><input checked="" type="checkbox"/> is a property of vision, referring to the ability of crabs eyes to enhance contrasts. <span style="color: red;">✗</span></li> <li><input checked="" type="checkbox"/> has to do with the ability of crabs to use sonar to detect fellow horseshoe crabs nearby. <span style="color: green;">✓</span></li> <li><input type="checkbox"/> has to do with a weighing system in the crabs skeleton that allows it to balance in turbulent water. <span style="color: green;">✓</span></li> </ul> <p>EXPLANATION</p> <p>Horseshoe crabs were essential to the discovery of lateral inhibition, a property of vision present in horseshoe crabs as well as humans, that enables enhancement of contrast at edges of objects as was demonstrated in class. In 1967, Haldan Hartline received the Nobel prize for his research on vision and in particular his research investigating lateral inhibition using horseshoe crabs.</p> <p>Reset Hide Answer(s)</p>	<p><i>Multiple Choice Problem</i></p>	<p>In multiple choice problems, students select one option from a list of answer options. Unlike with dropdown problems, whose answer choices don't appear until the student clicks the drop-down arrow, answer choices for multiple choice problems are always visible directly below the question.</p>
<p>THE VALUE OF PI (1/1 points)</p> <p>The numerical value of pi, rounded to two decimal points, is 3.24.</p> <p><input type="radio"/> True.</p> <p><input checked="" type="radio"/> False. The correct value is <input type="text" value="3.14"/> <span style="color: green;">✓</span></p>	<p><i>Multiple Choice and Numerical Input Problem</i></p>	<p>You can create a problem that combines a multiple choice and numerical input problems. Students not only select a response from options that you provide, but also provide more specific information, if necessary.</p>



### 8.1.5 STEM Exercises and Tools

<p> <b>CHEMICAL EQUATION PROBLEM</b> (1 point possible)          Some problems may ask for a particular chemical equation. Practice by writing out the following reaction in the box below.       </p> <div> <math display="block">\text{H}_2\text{SO}_4 \longrightarrow \text{H}^+ + \text{HSO}_4^-</math> <div> <math display="block">\text{H}_2\text{SO}_4 \rightarrow \text{H}^+ + \text{HSO}_4^-</math> </div> </div> <p>         Some tips:         <ul style="list-style-type: none"> <li>Use real element symbols.</li> <li>Create subscripts by using plain text.</li> <li>Create superscripts by using a caret (^).</li> <li>Create the reaction arrow (<math>\longrightarrow</math>) by using "&gt;".</li> </ul> </p> <div> <p>SOLUTION</p> <p>To create this equation, enter the following:</p> <math display="block">\text{H}_2\text{SO}_4 \rightarrow \text{H}^+ + \text{HSO}_4^-</math> <div> <div>Check</div> <div>Save</div> <div>Hide Answers(s)</div> </div> <p>You have used 0 of 10 submissions</p> </div>	<p><i>Chemical Equation Problem</i></p>	<p>Chemical equation problems allow the student to enter text that represents a chemical equation into a text box. The grader evaluates the student's response by using a Python script that you create and embed in the problem.</p>
<p>         This exercise first appeared in MITx's 6.002x: Circuits and Electronics course, spring 2012.       </p> <p>         A circuit that combines two or more signals is called a mixer. In this lab, your goal is to build a mixer that combines the signals generated by two voltage sources, <math>V_1</math> and <math>V_2</math>, where:       </p> <ul style="list-style-type: none"> <li><math>V_1</math> is a 1 kHz square wave that varies between 0V and +1V, and</li> <li><math>V_2</math> is a 5 kHz sine wave that varies between -1V and +1V.</li> </ul> <p>         Please design a circuit that mixes <math>V_1</math> and <math>V_2</math> to produce <math>V_{out}</math> such that       </p> <div> <math display="block">V_{out} \approx \frac{1}{2} V_1 + \frac{1}{6} V_2.</math> </div> <p>         The maximum value of the resulting output should be approximately 667mV and the minimum value should be approximately -167mV.       </p> <p>         Enter your circuit below, using the appropriate configuration of resistors. Please do not modify the wiring or parameters of the voltage sources -- your goal is to take the signals they generate and combine them, not to change what is generated. Run a 5ms transient analysis to verify the correct operation of your circuit. We will be checking for the transient waveform at the "output" node.       </p> 	<p><i>Circuit Schematic Builder Problem</i></p>	<p>In circuit schematic builder problems, students can arrange circuit elements such as voltage sources, capacitors, resistors, and MOSFETs on an interactive grid. They then submit a DC, AC, or transient analysis of their circuit to the system for grading.</p>
<p> <b>GENE EDITOR</b> (1 point possible)       </p> 	<p><i>Gene Explorer Tool</i></p>	<p>The Gene Explorer (GeneX) simulates the transcription, splicing, processing, and translation of a small hypothetical eukaryotic gene. GeneX allows students to make specific mutations in a gene sequence, and it then calculates and displays the effects of the mutations on the mRNA and protein.</p>
<p>         This exercise first appeared in MITx's 2.01x Elements of Structures course, spring 2013.       </p> <p>         The composite bar <b>BC</b> in the figure is composed of an inner core of cross sectional area <math>A_1 = 1 \text{ in}^2</math> and a sleeve of cross sectional area <math>A_2 = 4A_1</math>. The Young's modulus of the sleeve is <math>E_2</math>, and the modulus of the core is <math>E_1 = 2E_2</math>. Under the effects of unknown distributed loading, <math>f(x)</math> [N/in], the bar is observed to deform. The measured displacement field in the bar is <math>u(x) = ax^2 - 2aLx</math>, where <math>a = 0.05</math> [1/in] is a dimensional constant and <math>L = 1</math> in is the length of the bar. The origin of the <math>x</math>-axis is at the fixed support, <math>B</math>. The maximum magnitude (absolute value) of stress in the core is found to be 10 MPa.       </p>		<p><b>Chapter 8. Creating Exercises and Tools</b></p>

## **8.2 Annotation Problem**

In an annotation problem, the instructor highlights specific text inside a larger text block and then asks questions about that text. The questions appear when students hover the mouse over the highlighted text. The questions also appear in a section below the text block, along with space for students' responses.

Annotation problems ask students to respond to questions about a specific block of text. The question appears above the text when the student hovers the mouse over the highlighted text so that students can think about the question as they read.

## Instructions

[Collapse Instructions ↑](#)

Annotation Exercise, Hour 12 (to be done after the Hour 12 Question Set has been completed). Carefully read the following text and answer the accompanying question. To see the question while you read the text, hover your mouse over the highlighted selection in the text below.

## Guided Discussion

[Hide Annotations](#)

*This exercise first appeared in HarvardX's CB22x: The Ancient Greek Hero course, spring 2013.*

| 122 And they [= the Golden Generation of humankind] are superhumans [daimones]. They exist because of the Will of Zeus. | 123 They are the good, the earthbound [epi-khthonioi], the guardians of mortal humans. | 124 They guard acts of justice [dikē] and they guard against wretched acts of evil. | 125 Enveloped in mist, they roam everywhere throughout the earth. | 126 They are givers of prosperity. And they had this as a privilege [geras], a kingly one [basileion].

## QUESTION 1 (2/2 points)

## Annotation Exercise

[Return to Annotation ↑](#)

| 124 They guard acts of justice [dikē] and they guard against wretched acts of evil.

*Hesiodic poetry declares that heroes are protectors of justice. Is this declaration consistent with what we have read in Homeric poetry?*

Type your response below:

In your response to this question, which tag below do you choose?

☐ This declaration in Hesiodic poetry is inconsistent with Homeric poetry, since we see that heroes in the Iliad and Odyssey do in fact engage in unjust as well as just actions.



☒ This declaration in Hesiodic poetry is consistent with Homeric poetry, since there is no real contradiction here between the two kinds of poetry.

☐ We cannot be sure whether this declaration in Hesiodic poetry is consistent or inconsistent with Homeric poetry, where the actions of heroes are not evaluated in terms of injustice or justice.

**Answer:** This declaration in Hesiodic poetry is consistent with Homeric poetry, since there is no real contradiction here between the two kinds of poetry.

If you answered "This declaration in Hesiodic poetry is inconsistent with Homeric poetry, since we see that heroes in the Iliad and Odyssey do in fact engage in unjust as well as just actions," you would be missing the point. The heroes in the Iliad and Odyssey are still alive when they are engaged in the actions. In contrast, the heroes of the Golden Age are not of this world when they are protecting justice. Enveloped in mist and roaming throughout the earth, the heroes of the Golden Age are pictured as otherworldly spirits. This picture corresponds to the idea of cult heroes, not to the idea of epic heroes. If you answered "We

## 8.2.1 Create an Annotation Problem

To create an annotation problem, you'll add the Annotation advanced component to your course, add the **Instructions** and **Guided Discussion** segments of the problem, and then the **Annotation problem** segment of the problem.

1. Add the Annotation advanced component.

- (a) From the **Settings** menu select **Advanced Settings**.
- (b) In the field for the **Advanced Module List** policy key, place your cursor between the brackets.
- (c) Enter the following value. Make sure to include the quotation marks.

"annotatable"

- (a) At the bottom of the page, click **Save Changes**.

The page refreshes automatically. At the top of the page, you see a notification that your changes have been saved.

- (b) Return to the unit where you want to add the specialized problem. The list of possible components now contains an Advanced component.



2. Add the **Instructions** and **Guided Discussion** segments of the problem.

1. In the unit where you want to create the problem, under **Add New Component** click **Advanced**.
2. In the list of problem types, click **Annotation**.
3. In the component that appears, click **Edit**.
4. In the component editor, replace the example code with your own code.
5. Click **Save**.

3. Add the **Annotation problem** segment of the problem.

- (a) Under the Annotation component, create a new blank Advanced Problem component.
- (b) Paste the following code in the Advanced Problem component, replacing placeholders with your own information.

```
<problem>
  <annotationresponse>
    <annotationinput>
      <text>PLACEHOLDER: Text of annotation</text>
      <comment>PLACEHOLDER: Text of question</comment>
      <comment_prompt>PLACEHOLDER: Type your response below:</comment_prompt>
      <tag_prompt>PLACEHOLDER: In your response to this question, which tag below
do you choose?</tag_prompt>
    <options>
      <option choice="incorrect">PLACEHOLDER: Incorrect answer (to make this
option a correct or partially correct answer, change choice="incorrect"
```

```

to choice="correct" or choice="partially-correct")</option>
<option choice="correct">PLACEHOLDER: Correct answer (to make this option
an incorrect or partially correct answer, change choice="correct" to
choice="incorrect" or choice="partially-correct")</option>
<option choice="partially-correct">PLACEHOLDER: Partially correct answer
(to make this option a correct or partially correct answer,
change choice="partially-correct" to choice="correct" or choice="incorrect")
</option>
</options>
</annotationinput>
</annotationresponse>
<solution>
<p>PLACEHOLDER: Detailed explanation of solution</p>
</solution>
</problem>

```

4. Click **Save**.

## 8.3 Checkbox Problem

In checkbox problems, the student selects one or more options from a list of possible answers. The student must select all the options that apply to answer the problem correctly. Each checkbox problem must have at least one correct answer.

*This exercise first appeared in MITx's 14.73x The Challenges of Global Poverty course, spring 2013.*

Learning about the benefits of preventative healthcare can be particularly difficult. Check all of the reasons below why this may be the case.

✗ ☐ A large amount of time passes between undertaking a preventative measure and seeing the result. ✓

☒ Non-immunized people will always fall sick.

☒ If others are immunized, fewer people will fall sick regardless of a particular individual's choice to get immunized or not. ✓

☐ Trust in healthcare professionals and government officials is fragile. ✓

**EXPLANATION**

People who are not immunized against a disease may still not fall sick from the disease. If someone is trying to learn whether or not preventative measures against the disease have any impact, he or she may see these people and conclude, since they have remained healthy despite not being immunized, that immunizations have no effect. Consequently, he or she would tend to believe that immunization (or other preventative measures) have fewer benefits than they actually do.



### 8.3.1 Create a Checkbox Problem

You can create checkbox problems in the Simple Editor or in the Advanced Editor.

**Note:** All problems must include labels for accessibility. The label generally includes the text of the main question in your problem. To add a label for a common problem, surround the text of the label with angle brackets pointed toward the text (>>label text<<).

#### Simple Editor

1. Under **Add New Component**, click **Problem**.
2. In the **Select Problem Component Type** screen, click **Checkboxes** on the **Common Problem Types** tab.
3. In the Problem component that appears, click **Edit**.
4. In the component editor, replace the default text with the text of your problem. Enter each answer option on its own line.
5. Determine the text of the problem to use as a label, and then surround that text with two sets of angle brackets (>><<).
6. Select all the answer options, and then click the checkbox button.



When you do this, brackets appear next to each answer choice.

7. Add an **x** between the brackets for the correct answer or answers.
8. In the component editor, select the text of the explanation, and then click the explanation button to add explanation tags around the text.



9. On the **Settings** tab, specify the settings that you want.
10. Click **Save**.

For the example problem above, the text in the Problem component is the following.

```
Learning about the benefits of preventative healthcare can be particularly
difficult. >>Check all of the reasons below why this may be the case.<<

[x] A large amount of time passes between undertaking a preventative measure and seeing the result.
[ ] Non-immunized people will always fall sick.
[x] If others are immunized, fewer people will fall sick regardless of a particular individual's choice.
[x] Trust in healthcare professionals and government officials is fragile.

[explanation]
People who are not immunized against a disease may still not fall sick from the disease. If someone is
(or other preventative measures) have fewer benefits than they actually do.
[explanation]
```

### Advanced Editor

To create this problem in the Advanced Editor, click the **Advanced** tab in the Problem component editor, and then replace the existing code with the following code.

```
<problem>
  <p>Learning about the benefits of preventative healthcare can be particularly difficult. Check all
</p>
<choiceresponse>
  <checkboxgroup direction="vertical" label="Check all of the reasons below why this may be the case">
    <choice correct="true"><text>A large amount of time passes between undertaking a preventative mea
    <choice correct="false"><text>Non-immunized people will always fall sick.</text></choice>
    <choice correct="true"><text>If others are immunized, fewer people will fall sick regardless of a
    <choice correct="true"><text>Trust in healthcare professionals and government officials is fragil
  </checkboxgroup>
</choiceresponse>

  <solution>
    <div class="detailed-solution">
      <p>Explanation</p>
      <p>People who are not immunized against a disease may still not fall sick from the disease. If some
    </div>
  </solution>
</problem>
```

### 8.3.2 Checkbox Problem XML

#### Template

```
<problem>
  <p>Question text</p>

  <choiceresponse>

    <checkboxgroup direction="vertical" label="label text">
      <choice correct="false"><text>Answer option 1 (incorrect)</text></choice>
      <choice correct="true"><text>Answer option 2 (correct)</text></choice>
    </checkboxgroup>
  </choiceresponse>

  <solution>
    <div class="detailed-solution">
      <p>Solution or Explanation Heading</p>
      <p>Solution or explanation text</p>
    </div>
  </solution>
</problem>
```

#### Tags

- `<choiceresponse>` (required): Specifies that the problem contains options for students to choose from.
- `<checkboxgroup>` (required): Specifies that the problem is a checkbox problem.
- `<choice>` (required): Designates an answer option.

**Tag:** `<choiceresponse>`

Specifies that the problem contains options for students to choose from.

Attributes

(none)

Children

- `<checkboxgroup>`

**Tag:** `<checkboxgroup>`

Specifies that the problem is a checkbox problem.

Attributes

Attribute	Description
direction (optional)	Specifies the orientation of the list of answers. The default is vertical.
label (required)	Specifies the name of the response field.

Children

- `<choice>`

**Tag:** `<choice>`

Designates an answer option.

Attributes

Attribute	Description
true (at least one required)	Indicates a correct answer. For checkbox problems, one or more <code>&lt;choice&gt;</code> tags can contain a correct answer.
false (at least one required)	Indicates an incorrect answer.

Children

(none)

## 8.4 Chemical Equation Problem

The chemical equation problem type allows the student to enter text that represents a chemical equation into a text box. The system converts that text into a chemical equation below the text box. The grader evaluates the student's response by using a Python script that you create and embed in the problem.

**CHEMICAL EQUATION PROBLEM** (1 point possible)

Some problems may ask for a particular chemical equation. Practice by writing out the following reaction in the box below.

$\text{H}_2\text{SO}_4 \longrightarrow \text{H}^+ + \text{HSO}_4^-$

Some tips:

- Use real element symbols.
- Create subscripts by using plain text.
- Create superscripts by using a caret (^).
- Create the reaction arrow ( $\longrightarrow$ ) by using "->"

**SOLUTION**

To create this equation, enter the following:

$\text{H}_2\text{SO}_4 \rightarrow \text{H}^+ + \text{HSO}_4^-$

You have used 0 of 10 submissions

### 8.4.1 Create the Chemical Equation Problem

Chemical equation problems use MathJax to create formulas. For more information about using MathJax in Studio, see *A Brief Introduction to MathJax in Studio*.

To create the above chemical equation problem:

1. In the unit where you want to create the problem, click **Problem** under **Add New Component**, and then click the **Advanced** tab.
2. Click **Blank Advanced Problem**.
3. In the component that appears, click **Edit**.
4. In the component editor, paste the code from below.
5. Click **Save**.

## Sample Chemical Equation Problem Code

```

<problem>
  <startouttext/>
  <p>Some problems may ask for a particular chemical equation. Practice by writing out the following

\\( \\text{H}_2\\text{SO}_4 \\longrightarrow \\text{H}^+ + \\text{HSO}_4^- \\)

  <customresponse>
    <chemicalequationinput size="50" label="Enter the chemical equation"/>
    <answer type="loncapa/python">

if chemcalc.chemical_equations_equal(submission[0], 'H2SO4 -> H^+ + HSO4^-'):
    correct = ['correct']
else:
    correct = ['incorrect']

    </answer>
  </customresponse>
  <p>Some tips:</p>
  <ul>
    <li>Use real element symbols.</li>
    <li>Create subscripts by using plain text.</li>
    <li>Create superscripts by using a caret (^).</li>
    <li>Create the reaction arrow (\\(\\longrightarrow\\)) by using ">->".</li>
  </ul>

  <endouttext/>

  <solution>
  <div class="detailed-solution">
  <p>Solution</p>
  <p>To create this equation, enter the following:</p>
  <p>H2SO4 -> H^+ + HSO4^-</p>
  </div>
  </solution>
</problem>

```

## 8.4.2 Chemical Equation Problem XML

### Template

```

<problem>
  <startouttext/>
  <p>Problem text</p>

  <customresponse>
    <chemicalequationinput size="NUMBER" label="LABEL TEXT"/>
    <answer type="loncapa/python">

if chemcalc.chemical_equations_equal(submission[0], 'TEXT REPRESENTING CHEMICAL EQUATION'):
    correct = ['correct']
else:
    correct = ['incorrect']

    </answer>

```

```

</customresponse>

<endouttext/>

<solution>
<div class="detailed-solution">
<p>Solution or Explanation Header</p>
<p>Solution or explanation text</p>
</div>
</solution>
</problem>

```

## Tags

- `<customresponse>`: Indicates that this problem has a custom response.
- `<chemicalequationinput>`: Specifies that the answer to this problem is a chemical equation.
- `<answer type=loncapa/python>`: Contains the Python script that grades the problem.

**Tag:** `<customresponse>`

Indicates that this problem has a custom response. The `<customresponse>` tags must surround the `<chemicalequationinput>` tags.

Attributes

(none)

Children

- `<chemicalequationinput>`
- `<answer>`

**Tag:** `<chemicalequationinput>`

Indicates that the answer to this problem is a chemical equation and creates a response field where the student enters an answer.

Attributes

Attribute	Description
size	Specifies the size of the response field, in characters.
label (required)	Contains the text of the principal question in the problem.

Children

(none)

**Tag:** `<answer>`

Contains the Python script that grades the problem.

Attributes

Attribute	Description
type (required)	Must be “loncapa/python”.

Children

(none)

## **8.5 Circuit Schematic Builder Problem**

In circuit schematic builder problems, students can arrange circuit elements such as voltage sources, capacitors, resistors, and MOSFETs on an interactive grid. They then submit a DC, AC, or transient analysis of their circuit to the system for grading.

*This exercise first appeared in MITx's 6.002x: Circuits and Electronics course, spring 2012.*

A circuit that combines two or more signals is called a *mixer*. In this lab, your goal is to build a mixer that combines the signals generated by two voltage sources, V1 and V2, where:

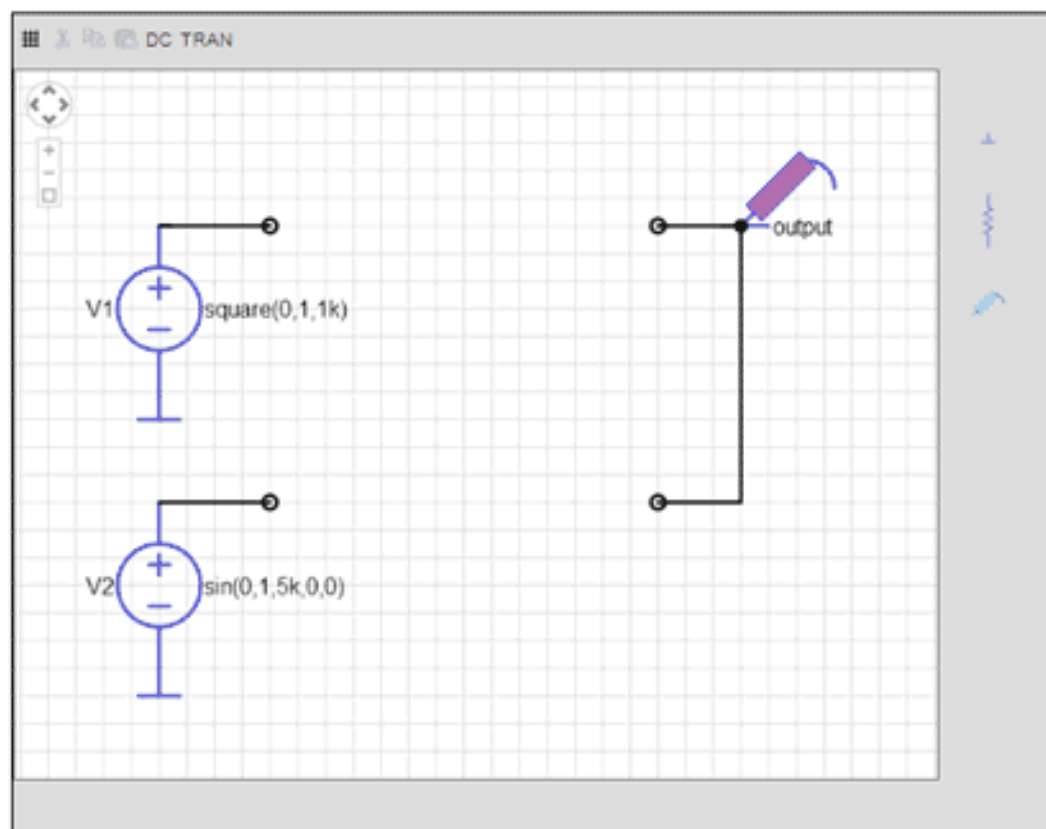
- V1 is a 1 kHz square wave that varies between 0V and +1V, and
- V2 is a 5 kHz sine wave that varies between -1V and +1V.

Please design a circuit that mixes V1 and V2 to produce Vout such that

$$V_{\text{out}} \approx \frac{1}{2} V_1 + \frac{1}{6} V_2.$$

The maximum value of the resulting output should be approximately  $667\text{mV}$  and the minimum value should be approximately  $-167\text{mV}$ .

Enter your circuit below, using the appropriate configuration of resistors. Please do not modify the wiring or parameters of the voltage sources -- your goal is to take the signals they generate and combine them, not to change what is generated. Run a 5ms transient analysis to verify the correct operation of your circuit. We will be checking for the transient waveform at the "output" node.





### 8.5.1 Create a Circuit Schematic Builder Problem

1. In the unit where you want to create the problem, click **Problem** under **Add New Component**, and then click the **Advanced** tab.
2. Click **Circuit Schematic Builder**.
3. In the component that appears, click **Edit**.
4. In the component editor, replace the example code with your own code.
5. Click **Save**.

#### Problem Code

To create the problem in the image above, paste the following code into the Advanced Editor.

```
<problem>
  <p>Make a voltage divider that splits the provided voltage evenly.</p>
  <schematicresponse>
    <center>
      <schematic height="500" width="600" parts="g,r" analyses="dc"
        initial_value="[["v",[168,144,0],{"value":"dc(1)","_json_":0},["1","0"]],["r",[296,120,0],{"r":
        />
      </center>
      <answer type="loncapa/python">
        dc_value = "dc analysis not found"
        for response in submission[0]:
          if response[0] == 'dc':
            for node in response[1:]:
              dc_value = node['output']
        if dc_value == .5:
          correct = ['correct']
        else:
          correct = ['incorrect']
      </answer>
    </schematicresponse>
  </schematicresponse>
  <p>Make a high pass filter.</p>
  <center>
    <schematic height="500" width="600" parts="g,r,s,c" analyses="ac"
      submit_analyses="{\"ac\":[[\"NodeA\",1,9]]}"
      initial_value="[["v",[160,152,0],{"name":"v1","value":"sin(0,1,1,0,0)","_json_":0},["1","0"]],["w
    </center>
    <answer type="loncapa/python">
      ac_values = None
      for response in submission[0]:
        if response[0] == 'ac':
          for node in response[1:]:
            ac_values = node['NodeA']
      print "the ac analysis value:", ac_values
      if ac_values == None:
        correct = ['incorrect']
      elif ac_values[0][1] < ac_values[1][1]:
        correct = ['correct']
      else:
        correct = ['incorrect']
    </answer>
  </schematicresponse>
  <solution>
    <div class="detailed-solution">
```

```

        <p>Explanation</p>
        <p>A voltage divider that evenly divides the input voltage can be formed with two identical resistors in series.
        <p></p>
        <p>A simple high-pass filter without any further constraints can be formed by simply putting a capacitor in series with the input.
        <p></p>
    </div>
</solution>
</problem>

```

## 8.6 Conditional Module

### 8.6.1 Format description

The main tag of conditional module input is:

```
<conditional> ... </conditional>
```

conditional can include any number of any xmodule tags (html, video, poll, etc.) or show tags.

#### conditional tag

The main container for a single instance of a conditional module. The following attributes can be specified for this tag:

```

sources - location id of required modules, separated by ';'
[message | ""] - message for case, where one or more are not passed. Here you can use variable {link}
[submitted] - map to `is_submitted` module method.
(pressing RESET button makes this function to return False.)

[correct] - map to `is_correct` module method
[attempted] - map to `is_attempted` module method
[poll_answer] - map to `poll_answer` module attribute
[voted] - map to `voted` module attribute

```

#### show tag

Symlink to some set of xmodules. The following attributes can be specified for this tag:

```
sources - location id of modules, separated by ';'

```

### 8.6.2 Example

#### Examples of conditional depends on poll

```

<conditional sources="i4x://MITx/0.000x/poll_question/first_real_poll_seq_with_reset" poll_answer="man"
message="{link} must be answered for this to become visible.">
    <html>
        <h2>You see this because your vote value for "First question" was "man"</h2>
    </html>
</conditional>

```

### Examples of conditional depends on poll (use <show> tag)

```
<conditional sources="i4x://MITx/0.000x/poll_question/first_real_poll_seq_with_reset" poll_answer="m
message="{link} must be answered for this to become visible.">
  <html>
    <show sources="i4x://MITx/0.000x/problem/test_1; i4x://MITx/0.000x/Video/Avi_resources; i4x.
  </html>
</conditional>
```

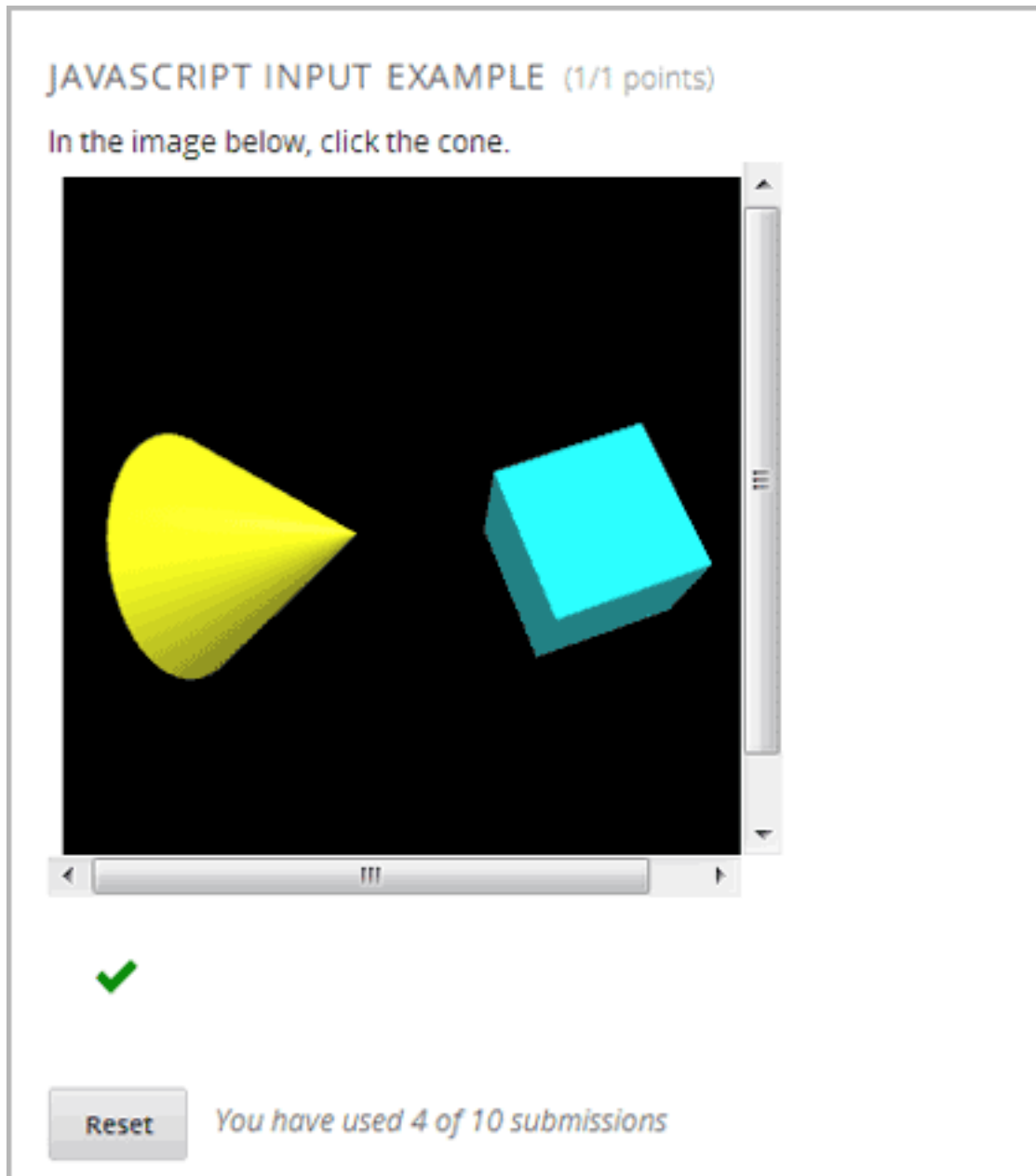
### Examples of conditional depends on problem

```
<conditional sources="i4x://MITx/0.000x/problem/Conditional:lec27_Q1" attempted="True">
  <html display_name="HTML for attempted problem">You see this, cause "lec27_Q1" is attempted.</html>
</conditional>
<conditional sources="i4x://MITx/0.000x/problem/Conditional:lec27_Q1" attempted="False">
  <html display_name="HTML for not attempted problem">You see this because "lec27_Q1" is not attempt
</conditional>
```

## 8.7 Custom JavaScript Problem

Custom JavaScript display and grading problems (also called *custom JavaScript problems* or *JS Input problems*) allow you to create a custom problem or tool that uses JavaScript and then add the problem or tool directly into Studio. When you create a JS Input problem, Studio embeds the problem in an inline frame (IFrame) so that your students can interact with it in the LMS. You can grade your students' work using JavaScript and some basic Python, and the grading is integrated into the edX grading system.

The JS Input problem that you create must use HTML, JavaScript, and cascading style sheets (CSS). You can use any application creation tool, such as the Google Web Toolkit (GWT), to create your JS Input problem.



**Caution:** You cannot use a custom JavaScript problem in a component that contains more than one problem. Each custom JavaScript problem must be in its own component. See [Multiple Problems in One Component](#) for more information.

### 8.7.1 Create a Custom JavaScript Display and Grading Problem

1. Create your JavaScript application, and then upload all files associated with that application to the **Files & Uploads** page.
2. In the unit where you want to create the problem, click **Problem** under **Add New Component**, and then click the **Advanced** tab.
3. Click **Custom JavaScript Display and Grading**.

4. In the component that appears, click **Edit**.
5. In the component editor, modify the example code according to your problem.
  - All problems have more than one element. Most problems conform to the same-origin policy (SOP), meaning that all elements have the same protocol, host, and port. For example, **`http://store.company.com:81/subdirectory_1/JSInputElement.html`** and **`http://store.company.com:81/subdirectory_2/JSInputElement.js`** have the same protocol (http), host (store.company.com), and port (81).

If any elements of your problem use a different protocol, host, or port, you need to bypass the SOP. For example, **`https://info.company.com/JSInputElement2.html`** uses a different protocol, host, and port. To bypass the SOP, change **`sop="false"`** in line 8 of the example code to **`sop="true"`**. For more information, see the same-origin policy page on the [Mozilla Developer Network](#) or on [Wikipedia](#).
6. If you want your problem to have a **Save** button, click the **Settings** tab, and then set **Maximum Attempts** to a number larger than zero.
7. Click **Save**.

### Re-create the Example Problem

To re-create the example problem above, you'll need the following files.

- webGLDemo.html
- webGLDemo.js
- webGLDemo.css
- three.min.js

To download these files in a .zip archive, go to <http://files.edx.org/JSInput.zip>.

---

**Note:** If you need to bypass the SOP, you'll also need the **jschannel.js** file, and your webGLDemo.html file will be slightly different. To download all these files in a .zip archive, go to [http://files.edx.org/JSInput\\_BypassSOP.zip](http://files.edx.org/JSInput_BypassSOP.zip).

---

1. Download and unpackage the files in either the JSInput.zip file or the JSInput\_BypassSOP.zip file.
2. On the **Files & Uploads** page, upload all the files from the .zip file.
3. Create a new custom JavaScript display and grading problem component.
4. On the **Settings** tab, set **Maximum Attempts** to a number larger than zero.
5. In the problem component editor, replace the example code with the code below.
6. Click **Save**.

### JavaScript Input Problem Code

```
<problem display_name="webGLDemo">
In the image below, click the cone.

<script type="loncapa/python">
import json
def vglcfn(e, ans):
    '''
    par is a dictionary containing two keys, "answer" and "state"
```

```
The value of answer is the JSON string returned by getGrade
The value of state is the JSON string returned by getState
'''
par = json.loads(ans)
# We can use either the value of the answer key to grade
answer = json.loads(par["answer"])
return answer["cylinder"] and not answer["cube"]
# Or we can use the value of the state key
'''
state = json.loads(par["state"])
selectedObjects = state["selectedObjects"]
return selectedObjects["cylinder"] and not selectedObjects["cube"]
'''
</script>
<customresponse cfn="vglcfn">
  <jsinput
    gradefn="WebGLDemo.getGrade"
    get_statefn="WebGLDemo.getState"
    set_statefn="WebGLDemo.setState"
    width="400"
    height="400"
    html_file="/static/webGLDemo.html"
  />
</customresponse>
</problem>
```

---

**Note:** When you create this problem, keep the following in mind.

- The `webGLDemo.js` file defines the three JavaScript functions (**WebGLDemo.getGrade**, **WebGLDemo.getState**, and **WebGLDemo.setState**).
  - The JavaScript input problem code uses **WebGLDemo.getGrade**, **WebGLDemo.getState**, and **WebGLDemo.setState** to grade, save, or restore a problem. These functions must be global in scope.
  - **WebGLDemo.getState** and **WebGLDemo.setState** are optional. You only have to define these functions if you want to conserve the state of the problem.
  - **Width** and **height** represent the dimensions of the `IFrame` that holds the application.
  - When the problem opens, the cone and the cube are both blue, or “unselected.” When you click either shape once, the shape becomes yellow, or “selected.” To unselect the shape, click it again. Continue clicking the shape to select and unselect it.
  - The response is graded as correct if the cone is selected (yellow) when the user clicks **Check**.
  - Clicking **Check** or **Save** registers the problem’s current state.
- 

## 8.7.2 JavaScript Input Problem XML

JSInput allows problem authors to turn stand-alone HTML files into problems that can be integrated into the edX platform. Since its aim is flexibility, it can be seen as the input and client-side equivalent of **CustomResponse**.

A JSInput exercise creates an `IFrame` in a static HTML page, and passes the return value of author-specified functions to the enclosing response type (generally **CustomResponse**). JSInput can also store and retrieve state.

## Template

The following is the basic format of a JSInput problem:

```
<problem>
  <script type="loncapa/python">
def all_true(exp, ans): return ans == "hi"
  </script>
  <customresponse cfn="all_true">
    <jsinput gradefn="gradefn"
      height="500"
      get_statefn="getstate"
      set_statefn="setstate"
      html_file="/static/jsinput.html"/>
    </customresponse>
  </problem>
```

The accepted attributes are:

Attribute Name	Value Type	Required	Default
html_file	URL string	Yes	None
gradefn	Function name	Yes	<i>gradefn</i>
set_statefn	Function name	No	None
get_statefn	Function name	No	None
height	Integer	No	<i>500</i>
width	Integer	No	<i>400</i>

## Required Attributes

- **html\_file**

The **html\_file** attribute specifies the HTML file that the IFrame will point to. The HTML file must be located in the content directory.

The IFrame is created using the sandbox attribute. Although pop-ups, scripts, and pointer locks are allowed, the IFrame cannot access its parent's attributes.

The HTML file must contain a **gradefn** function that the JSInput file can access. To determine whether the **gradefn** function is accessible, in the console, make sure that **gradefn** returns the right thing. When JSInput uses the **gradefn** function, *gradefn* is called with *gradefn.call(obj)*, where **obj** is the object-part of **gradefn**. For example, if **gradefn** is **myprog.myfn**, JSInput calls **myprog.myfun.call(myprog)**. (This is to ensure “*this*” continues to refer to what *gradefn* expects.)

Aside from that, more or less anything goes. Note that currently there is no support for inheriting CSS or JavaScript from the parent (aside from the Chrome-only **seamless** attribute, which is set to True by default).

- **gradefn**

The **gradefn** attribute specifies the name of the function that will be called when a user clicks **Check**, and that returns the student's answer. Unless both the **get\_statefn** and **set\_statefn** attributes are also used, this answer is passed as a string to the enclosing response type. In the **customresponse** example above, this means **cfn** will be passed this answer as **ans**.

If the **gradefn** function throws an exception when a student attempts to submit a problem, the submission is aborted, and the student receives a generic alert. The alert can be customised by making the exception name `Waitfor Exception`; in that case, the alert message will be the exception message.

**Important:** To make sure the student’s latest answer is passed correctly, make sure that the **gradefn** function is not asynchronous. Additionally, make sure that the function returns promptly. Currently the student has no indication that her answer is being calculated or produced.

---

### Optional Attributes

- **set\_statefn**

Sometimes a problem author will want information about a student’s previous answers (“state”) to be saved and reloaded. If the attribute **set\_statefn** is used, the function given as its value will be passed the state as a string argument whenever there is a state, and the student returns to a problem. The function has the responsibility to then use this state appropriately.

The state that is passed is:

- The previous output of **gradefn** (i.e., the previous answer) if **get\_statefn** is not defined.
- The previous output of **get\_statefn** (see below) otherwise.

It is the responsibility of the iframe to do proper verification of the argument that it receives via **set\_statefn**.

- **get\_statefn**

Sometimes the state and the answer are quite different. For instance, a problem that involves using a javascript program that allows the student to alter a molecule may grade based on the molecule’s hydrophobicity, but from the hydrophobicity it might be incapable of restoring the state. In that case, a *separate* state may be stored and loaded by **set\_statefn**. Note that if **get\_statefn** is defined, the answer (i.e., what is passed to the enclosing response type) will be a json string with the following format:

```
{
  answer: `[answer string]`
  state: `[state string]`
}
```

The enclosing response type must then parse this as json.

- **height** and **width**

The **height** and **width** attributes are straightforward: they specify the height and width of the IFrame. Both are limited by the enclosing DOM elements, so for instance there is an implicit max-width of around 900.

In the future, JSInput may attempt to make these dimensions match the HTML file’s dimensions (up to the aforementioned limits), but currently it defaults to 500 and 400 for **height** and **width**, respectively.

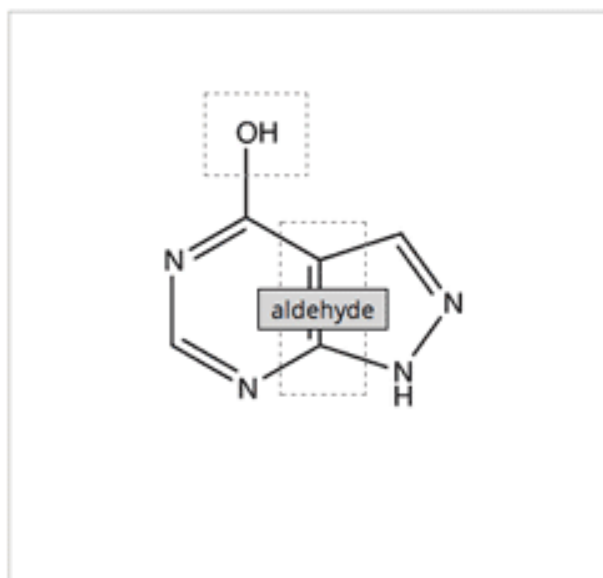
## 8.8 Drag and Drop Problem

In drag and drop problems, students respond to a question by dragging text or objects to a specific location on an image.

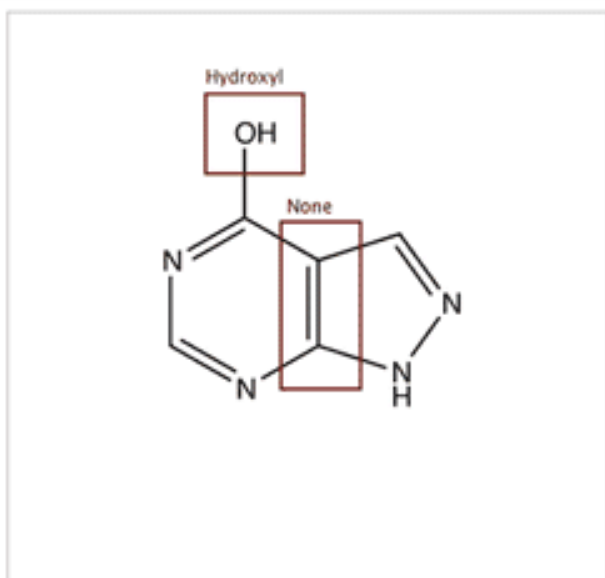


The following drag and drop exercise first appeared in MIT's 7.00x: Introduction to Biology - The Secret of Life course in March 2013.

You are shown one of many possible molecules. On the structure of allopurinol below, identify the functional groups that are present by dragging the functional group name listed onto the appropriate target boxes on the structure. If you want to change an answer, you have to drag off the name as well. You may need to scroll through the names of functional groups to see all options.



◀	methyl	hydroxyl	amino	carboxyl	aldehyde	phospha	▶
---	--------	----------	-------	----------	----------	---------	---



### 8.8.1 Create a Drag and Drop Problem

To create a simple drag and drop problem in which students drag labels onto an image, you'll upload the image that you want students to drag labels onto, and then create a Problem component.

1. On the **Files & Uploads** page, upload your image file. For more information about uploading files, see [Adding Files to a Course](#).
2. In the unit where you want to create the problem, click **Problem** under **Add New Component**, and then click the **Advanced** tab.
3. Click **Drag and Drop**.
4. In the component that appears, click **Edit**.
5. In the component editor, replace the example text with the text of your problem.
6. In the `<drag_and_drop_input>` tag, replace `https://studio.edx.org/c4x/edx/DemoX/asset/L9_buckets.png` with the URL of your image file on the **Files & Uploads** page (for example, `/static/Image.png`).
7. For at least one `<draggable>` tag, replace the text of the `label` attribute with the text of the label you want students to drag. For example, if you want students to drag the word "Iceland" onto your image, the new tag would resemble the following:

```
<draggable id="1" label="Iceland"/>
```

8. Repeat the previous step for all the labels that you want to use. Make sure that the `id` attribute is different for each `<draggable>` tag.
9. Determine the coordinates and radius of the correct area on the image.
10. Under `correct_answer = {`, add an entry for each label, using the following format. These values are in pixels:

```
'id': [[x coordinate, y coordinate], radius]
```

For example, if your image is 600 pixels wide and 400 pixels high, and you want your students to drag the Iceland label to an area in the upper-left part of the image and drag a Sweden label near the lower-right part of your image, the code would resemble the following (where 2 is the ID for the Sweden label):

```
correct_answer = {
    '1': [[50, 50], 75]
    '2': [[550, 350], 75]}
```

---

**Note:** Make sure the code contains the closing curly brace `}`.

---

11. Click **Save**.

### Sample Drag and Drop Problem Code

To create the drag and drop problem that appears in the image above, you'll download two files from edX, upload these files to the **Files & Uploads** page, and then add the code for the problem to a Problem component.

1. Download the following files from edX:
  - Allopurinol.gif
  - AllopurinolAnswer.gif

To download both these files in a .zip archive, click <http://files.edx.org/DragAndDropProblemFiles.zip>.

2. Upload the Allopurinol.gif and AllopurinolAnswer.gif files to the **Files & Uploads** page.
3. In the unit where you want to create the problem, click **Problem** under **Add New Component**, and then click the **Advanced** tab.
4. Click **Drag and Drop**.
5. In the component that appears, click **Edit**.
6. In the component editor, replace the example code with the following code.
7. Click **Save**.

**Problem Code:**

```
<problem>
  <p> Allopurinol is a drug used to treat and prevent gout, a very painful form of arthritis. Once on
  <p> You are shown one of many possible molecules. On the structure of allopurinol below, identify t
  <customresponse>
    <drag_and_drop_input no_labels="true" one_per_target="true" target_outline="true" img="/static/A
      <draggable can_reuse="true" label="methyl" id="1"/>
      <draggable can_reuse="true" label="hydroxyl" id="2"/>
      <draggable can_reuse="true" label="amino" id="3"/>
      <draggable can_reuse="true" label="carboxyl" id="4"/>
      <draggable can_reuse="true" label="aldehyde" id="5"/>
      <draggable can_reuse="true" label="phosphate" id="6"/>
      <draggable can_reuse="true" label="sulfhydryl" id="7"/>
      <draggable can_reuse="true" label="phenyl" id="8"/>
      <draggable can_reuse="true" label="none" id="none"/>
      <target id="0" h="53" w="66" y="55.100006103515625" x="131.5"/>
      <target id="1" h="113" w="55" y="140.10000610351562" x="181.5"/>
    </drag_and_drop_input>
    <answer type="loncapa/python">
correct_answer = [ {'draggables': ['2'], 'targets': ['0' ], 'rule':'unordered_equal' },
{'draggables': ['none'], 'targets': ['1' ], 'rule':'unordered_equal' }]
if draganddrop.grade(submission[0], correct_answer):
    correct = ['correct']
else:
    correct = ['incorrect']
    </answer>
  </customresponse>
  <solution>
    
  </solution>
</problem>
```

**8.8.2 Drag and Drop Problem XML**

```
<problem>
  Here's an example of a "Drag and Drop" question set. Click and drag each word in the scrollbar b
  <customresponse>
    <drag_and_drop_input img="https://studio.edx.org/c4x/edx/DemoX/asset/L9_buckets.png">
      <draggable id="1" label="a"/>
      <draggable id="2" label="cat"/>
      <draggable id="3" label="there"/>
      <draggable id="4" label="pear"/>
      <draggable id="5" label="kitty"/>
      <draggable id="6" label="in"/>
      <draggable id="7" label="them"/>
    </drag_and_drop_input>
  </customresponse>
</problem>
```

```

    <draggable id="8" label="za"/>
    <draggable id="9" label="dog"/>
    <draggable id="10" label="slate"/>
    <draggable id="11" label="few"/>
  </drag_and_drop_input>
  <answer type="loncapa/python">
    correct_answer = {
      '1':      [[70, 150], 121],
      '6':      [[190, 150], 121],
      '8':      [[190, 150], 121],
      '2':      [[310, 150], 121],
      '9':      [[310, 150], 121],
      '11':     [[310, 150], 121],
      '4':      [[420, 150], 121],
      '7':      [[420, 150], 121],
      '3':      [[550, 150], 121],
      '5':      [[550, 150], 121],
      '10':     [[550, 150], 121]}
    if draganddrop.grade(submission[0], correct_answer):
      correct = ['correct']
    else:
      correct = ['incorrect']

  </answer>
</customresponse>
<customresponse>
  <text>
    <h2>Drag and Drop with Outline</h2>
    <p>Please label hydrogen atoms connected with left carbon atom.</p>
  </text>
  <drag_and_drop_input img="https://studio.edx.org/c4x/edx/DemoX/asset/ethglycol.jpg" target_outlet="1">
    <draggable id="1" label="Hydrogen" />
    <draggable id="2" label="Hydrogen" />
    <target id="t1_o" x="10" y="67" w="100" h="100"/>
    <target id="t2" x="133" y="3" w="70" h="70"/>
    <target id="t3" x="2" y="384" w="70" h="70"/>
    <target id="t4" x="95" y="386" w="70" h="70"/>
    <target id="t5_c" x="94" y="293" w="91" h="91"/>
    <target id="t6_c" x="328" y="294" w="91" h="91"/>
    <target id="t7" x="393" y="463" w="70" h="70"/>
    <target id="t8" x="344" y="214" w="70" h="70"/>
    <target id="t9_o" x="445" y="162" w="100" h="100"/>
    <target id="t10" x="591" y="132" w="70" h="70"/>
  </drag_and_drop_input>
  <answer type="loncapa/python">
    correct_answer = [{
      'draggables': ['1', '2'],
      'targets': ['t2', 't3', 't4'],
      'rule': 'anyof'
    }]
    if draganddrop.grade(submission[0], correct_answer):
      correct = ['correct']
    else:
      correct = ['incorrect']

  </answer>
</customresponse>
</problem>

```

## Tags

- `<customresponse>`: Indicates that the problem is a custom response problem.
- `<drag_and_drop_input>`: Indicates the custom response problem is a drag and drop problem.
- `<draggable>`: Specifies a single object that a student will drag onto the base image.
- `<target>`: Specifies the location on the base image where a draggable must be dropped.

**Tag:** `<drag_and_drop_input>`

### Attributes

Attribute	Description
<code>img</code> (required)	Relative path to an image that will be the base image. All draggables can be dragged onto it.
<code>target_outline</code>	Specifies whether an outline (gray dashed line) should be drawn around targets (if they are specified). It can be either 'true' or 'false'. If not specified, the targets do not have outlines.
<code>one_per_target</code>	Specify whether to allow more than one draggable to be placed onto a single target. It can be either 'true' or 'false'. If not specified, the default value is 'true'.
<code>no_labels</code> (required)	default is false, in default behaviour if label is not set, label is obtained from id. If <code>no_labels</code> is true, labels are not automatically populated from id, and one can not set labels and obtain only icons.

### Children

- `<draggable>`
- `<target>`

**Tag:** `<draggable>`

Specifies a single draggable object in a drag and drop problem.

A draggable is what the user must drag out of the slider and drop onto the base image. After a drag operation, if the center of the draggable is located outside the rectangular dimensions of the image, it will be returned to the slider.

For the grader to work, each draggable must have a unique ID.

### Attributes

Attribute	Description
<code>id</code> (required)	Unique identifier of the draggable object.
<code>label</code> (optional)	Text label that the user sees.
<code>icon</code> (optional)	For draggables that are images, the relative path to the image file.
<code>can_reuse</code>	true or false, default is false. If true, same draggable can be used multiple times.

### Children

(none)

**Tag:** `<target>`

Specifies the location on the base image where a student must drop a draggable item. By design, if the center of a draggable lies within the target (i.e. in the rectangle defined by  $[[x, y], [x + w, y + h]]$ , it is within the target. Otherwise, it is outside.

If you specify at least one target, and a student drops a draggable item on a location that is outside a target, the draggable item returns to the slider.

If you don't specify a target, a student can drop a draggable item anywhere on the base image.

## Attributes

Attribute	Description
id (required)	Unique identifier of the target object.
x	X-coordinate on the base image where the top left corner of the target will be positioned.
y	Y-coordinate on the base image where the top left corner of the target will be positioned.
w	Width of the target, in pixels.
h	Height of the target, in pixels.

## Children

(none)

### 8.8.3 Targets on Draggables

Sometimes it is not enough to have targets only on the base image, and all of the draggables on these targets. If a complex problem exists where a draggable must become itself a target (or many targets), then the following extended syntax can be used:

```
<draggable {attribute list}>
  <target {attribute list} />
  <target {attribute list} />
  <target {attribute list} />
  ...
</draggable>
```

The attribute list in the tags above (draggable and target) is the same as for normal draggable and target tags. The only difference is when you will be specifying inner target position coordinates. Use the `x` and `y` attributes to set the offset of the inner target from the upper-left corner of the parent draggable (that contains the inner target).

#### Limitations of targets on draggables

- Currently there is a limitation to the level of nesting of targets.

Even though you can pile up a large number of draggables on targets that themselves are on draggables, the Drag and Drop problem will be graded only if there is a maximum of two levels of targets. The first level are the *base* targets. They are attached to the base image. The second level are the targets defined on draggables.

- Another limitation is that the target bounds are not checked against other targets.

You must make sure that there is no overlapping of targets. You should also ensure that targets on draggables are smaller than the actual parent draggable. Technically this is not necessary, but from the usability perspective it is desirable.

- You can have targets on draggables only in the case when there are base targets defined (base targets are attached to the base image).

If you do not have base targets, then you can only have a single level of nesting (draggables on the base image). In this case the client side will be reporting (x,y) positions of each draggable on the base image.

### 8.8.4 Correct answer format

For specifying answers for targets on draggables, see [Answer format for targets on draggables](#).

There are two correct answer formats: short and long

In short form, the correct answer is mapping of `draggable_id` to `target_id`:

```
correct_answer = {'grass': [[300, 200], 200], 'ant': [[500, 0], 200]}
correct_answer = {'name4': 't1', '7': 't2'}
```

In long form, the correct answer is list of dicts. Every dict has 3 keys: `draggables`, `targets` and `rule`. For example:

```
correct_answer = [
{
  'draggables': ['7', '8'],
  'targets': ['t5_c', 't6_c'],
  'rule': 'anyof'
},
{
  'draggables': ['1', '2'],
  'targets': ['t2_h', 't3_h', 't4_h', 't7_h', 't8_h', 't10_h'],
  'rule': 'anyof'
}]
```

“Draggables” is the list of draggable IDs. “Target” is the list of target IDs that draggables must be dragged to.

**Caution:** Draggables in dicts inside `correct_answer` list must not intersect.

Wrong (for draggable id 7):

```
correct_answer = [
{
  'draggables': ['7', '8'],
  'targets': ['t5_c', 't6_c'],
  'rule': 'anyof'
},
{
  'draggables': ['7', '2'],
  'targets': ['t2_h', 't3_h', 't4_h', 't7_h', 't8_h', 't10_h'],
  'rule': 'anyof'
}]
```

Rules are:

- `exact`: Targets for draggable IDs in `user_answer` are the same as targets from the correct answer. For example, for draggables 7 and 8, the user must drag 7 to target1 and 8 to target2 if the `correct_answer` is:

```
correct_answer = [
{
  'draggables': ['7', '8'],
  'targets': ['target1', 'target2'],
  'rule': 'exact'
}]
```

- `unordered_equal`: Allows draggables be dragged to targets unordered. For students to drag 7 to target1 or target2 and 8 to target2 or target1 and 7 and 8 must be in different targets, then correct answer must be:

```
correct_answer = [
{
  'draggables': ['7', '8'],
  'targets': ['target1', 'target2'],
```

```
'rule': 'unordered_equal'
}]
```

- **anyof**: Allows draggables to be dragged to any target. For students to drag 7 and 8 to target1 or target2, any of these are correct with the *anyof* rule:

```
correct_answer = [
{
  'draggables': ['7', '8'],
  'targets': ['target1', 'target2'],
  'rule': 'anyof'
}]
```

If `can_reuse` is `true`, then you have draggables a,b,c and 10 targets. These will allow you to drag 4 a draggables to [target1, target4, target7, target10]; you do not need to write a four times. Also this will allow you to drag the b draggable to target2 or target5 for target5 and target2.:

```
correct_answer = [
{
  'draggables': ['a'],
  'targets': ['target1', 'target4', 'target7', 'target10'],
  'rule': 'unordered_equal'
},
{
  'draggables': ['b'],
  'targets': ['target2', 'target5', 'target8'],
  'rule': 'anyof'
},
{
  'draggables': ['c'],
  'targets': ['target3', 'target6', 'target9'],
  'rule': 'unordered_equal'
}]
```

Sometimes you want to allow students to drag only two b draggables. In this case you should use the `anyof+number` or `unordered_equal+number` rule:

```
correct_answer = [
{
  'draggables': ['a', 'a', 'a'],
  'targets': ['target1', 'target4', 'target7'],
  'rule': 'unordered_equal+number'
},
{
  'draggables': ['b', 'b'],
  'targets': ['target2', 'target5', 'target8'],
  'rule': 'anyof+number'
},
{
  'draggables': ['c'],
  'targets': ['target3', 'target6', 'target9'],
  'rule': 'unordered_equal'
}]
```

When there are no multiple draggables per targets (`one_per_target="true"`), for the same number of draggables, `anyof` is equal to `unordered_equal`.

If `can_reuse=true`, then you must use only the long form of the correct answer.



## Answer format for targets on draggables

As with the cases described above, an answer must provide precise positioning for each draggable (on which targets it must reside). In the case when a draggable must be placed on a target that itself is on a draggable, then the answer must contain the chain of target-draggable-target.

For example, suppose we have three draggables - up, s, and p. Draggables s and p have targets on themselves. More specifically, p has three targets - 1, 2, and 3. The first requirement is that s and p are positioned on specific targets on the base image. The second requirement is that draggable up is positioned on specific targets of draggable p. Below is an excerpt from a problem:

```
<draggable id="up" icon="/static/images/images_list/lcao-mo/up.png" can_reuse="true" />

<draggable id="s" icon="/static/images/images_list/lcao-mo/orbital_single.png" label="s orbital" can_
  <target id="1" x="0" y="0" w="32" h="32"/>
</draggable>

<draggable id="p" icon="/static/images/images_list/lcao-mo/orbital_triple.png" can_reuse="true" label="p orbital" can_
  <target id="1" x="0" y="0" w="32" h="32"/>
  <target id="2" x="34" y="0" w="32" h="32"/>
  <target id="3" x="68" y="0" w="32" h="32"/>
</draggable>

...

correct_answer = [
  {
    'draggables': ['p'],
    'targets': ['p-left-target', 'p-right-target'],
    'rule': 'unordered_equal'
  },
  {
    'draggables': ['s'],
    'targets': ['s-left-target', 's-right-target'],
    'rule': 'unordered_equal'
  },
  {
    'draggables': ['up'],
    'targets': ['p-left-target[p][1]', 'p-left-target[p][2]', 'p-right-
      target[p][2]', 'p-right-target[p][3]',],
    'rule': 'unordered_equal'
  }
]
```

Note that you must specify rules for all draggables, even if a draggable gets included in more than one chain.

## 8.8.5 Grading logic

1. The student's answer and the correct answer are parsed to the same format:

```
group_id: group_draggables, group_targets, group_rule
```

group\_id is ordinal number, for every dict in correct answer incremental group\_id is assigned: 0, 1, 2, ...

Draggables from the user answer are added to the same group\_id where identical draggables from the correct answer are, for example:

```
If correct_draggables[group_0] = [t1, t2] then
user_draggables[group_0] are all draggables t1 and t2 from the user answer:
[t1] or [t1, t2] or [t1, t2, t2] etc..
```

2. For every group from the user answer, for that group's draggables, if number is in the group rule, set() is applied. If number is not in rule, set is not applied:

```
set() : [t1, t2, t3, t3] -> [t1, t2, ,t3]
```

For every group, at this step, draggables lists are equal.

3. For every group, lists of targets are compared using the rule for that group.

### Set and +number cases

set() and +number are needed only for the case of reusable draggables. For other cases there are no equal draggables in list, so set() does nothing.

- The set() operation allows you to create a rule for the case of “any number of the same draggable can be dragged to targets”:

```
{
  'draggables': ['draggable_1'],
  'targets': ['target3', 'target6', 'target9'],
  'rule': 'anyof'
}
```

- The number rule is used for the case of reusable draggables, when you want to fix number of draggable to drag. In this example only two instances of draggable\_1 are allowed to be dragged:

```
{
  'draggables': ['draggable_1', 'draggable_1'],
  'targets': ['target3', 'target6', 'target9'],
  'rule': 'anyof+number'
}
```

- Note, that in using rule exact, one does not need number, because you cannot recognize from the user interface which reusable draggable is on which target. For example:

```
{
  'draggables': ['draggable_1', 'draggable_1', 'draggable_2'],
  'targets': ['target3', 'target6', 'target9'],
  'rule': 'exact'
}
```

Correct handling of this example is to create different rules for draggable\_1 and draggable\_2.

- For unordered\_equal (or exact) you don't need number if you have only the same draggable in the group, as the target length will provide the constraint for the number of draggables:

```
{
  'draggables': ['draggable_1'],
  'targets': ['target3', 'target6', 'target9'],
  'rule': 'unordered_equal'
}
```

This means that only draggable\_1 can be dragged.

- But if you have more than one different reusable draggable in the list, you may use the `number` rule:

```
{
  'draggables': ['draggable_1', 'draggable_1', 'draggable_2'],
  'targets': ['target3', 'target6', 'target9'],
  'rule': 'unordered_equal+number'
}
```

If you do not use `number`, the draggables list will be set to `[draggable_1, draggable_2]`.

## 8.9 Dropdown Problem

Dropdown problems allow the student to choose from a collection of answer options, presented as a dropdown list. Unlike multiple choice problems, whose answers are always visible directly below the question, dropdown problems don't show answer choices until the student clicks the dropdown arrow.

*This exercise first appeared in HarvardX's PH207x Health in Numbers: Quantitative Methods in Clinical & Public Health Research course, fall 2012.*

What type of data are the following?

Age:

Continuous  Continuous ✓

Age, rounded to the nearest year:

Nominal  Discrete ✗

Life stage - infant, child, and adult:

Nominal  Nominal ✓

### 8.9.1 Create a Dropdown Problem

You can create dropdown problems in the Simple Editor or in the Advanced Editor.

**Note:** All problems must include labels for accessibility. The label generally includes the text of the main question in your problem. To add a label for a common problem, surround the text of the label with angle brackets pointed toward the text (`>>label text<<`).

#### Simple Editor

To create a dropdown problem, follow these steps.

1. Under **Add New Component**, click **Problem**.
2. In the **Select Problem Component Type** screen, click **Dropdown** on the **Common Problem Types** tab.
3. In the new Problem component that appears, click **Edit**.
4. Replace the default text with the text for your problem. Enter each of the possible answers on the same line, separated by commas.
5. Determine the text of the problem to use as a label, and then surround that text with two sets of angle brackets (>><<).
6. Select all the answer options, and then click the dropdown button.



When you do this, a double set of brackets ([ [ ]) appears and surrounds the answer options.

7. Inside the brackets, surround the correct answer with parentheses.
8. In the component editor, select the text of the explanation, and then click the explanation button to add explanation tags around the text.



9. On the **Settings** tab, specify the settings that you want.
10. Click **Save**.

For the example problem above, the text in the Problem component is the following.

```
>>What type of data are the following?<<

Age:
[[Nominal, Discrete, (Continuous)]]
Age, rounded to the nearest year:
[[Nominal, (Discrete), Continuous]]
Life stage - infant, child, and adult:
[[ (Nominal), Discrete, Continuous]]
```

### Advanced Editor

To create this problem in the Advanced Editor, click the **Advanced** tab in the Problem component editor, and then replace the existing code with the following code.

#### Problem Code:

```
<problem>
<p>
  <em>This exercise first appeared in HarvardX's PH207x Health in Numbers: Quantitative Methods in C
</p>
<p>What type of data are the following?</p>
<p>Age:</p>
<optionresponse>
  <optioninput options="('Nominal','Discrete','Continuous')" correct="Continuous" label="Age"/>
</optionresponse>
<p>Age, rounded to the nearest year:</p>
<optionresponse>
  <optioninput options="('Nominal','Discrete','Continuous')" correct="Discrete" label="Age, rounded t
```

```

</optionresponse>
<p>Life stage - infant, child, and adult:</p>
<optionresponse>
  <optioninput options="('Nominal','Discrete','Continuous')" correct="Nominal" label="Life stage"/>
</optionresponse>
</problem>

```

## 8.9.2 Dropdown Problem XML

### Template

```

<problem>
<p>
  Problem text</p>
<optionresponse>
  <optioninput options="('Option 1','Option 2','Option 3')" correct="Option 2" label="label text"/>
</optionresponse>
  <solution>
    <div class="detailed-solution">
      <p>Explanation or Solution Header</p>
      <p>Explanation or solution text</p>
    </div>
  </solution>
</problem>

```

```

<problem>
<p>Problem text</p>
<optionresponse>
  options="('A','B') "
  correct="A"/>
  label="label text"
</optionresponse>

  <solution>
    <div class="detailed-solution">
      <p>Explanation or Solution Header</p>
      <p>Explanation or solution text</p>
    </div>
  </solution>
</problem>

```

### Tags

- `<optionresponse>` (required): Indicates that the problem is a dropdown problem.
- `<optioninput>` (required): Lists the answer options.

**Tag:** `<optionresponse>`

Indicates that the problem is a dropdown problem.

Attributes

(none)

Children

- `<optioninput>`

**Tag:** `<optioninput>`

Lists the answer options.

Attributes

Attribute	Description
options (re-quired)	Lists the answer options. The list of all answer options is surrounded by parentheses. Individual answer options are surrounded by single quotation marks (') and separated by commas (,).
correct (re-quired)	Indicates whether an answer is correct. Possible values are “true” and “false”. Only one <b>correct</b> attribute can be set to “true”.
label (re-quired)	Specifies the name of the response field.

Children

(none)

## 8.10 External Grader

### 8.10.1 Overview

An external grader is a service that receives student responses to a problem, processes those responses, and returns feedback and a problem grade to the edX platform. You build and deploy an external grader separately from the edX platform.

See the following sections for more information:

- [\*External Grader Example\*](#)
- [\*External Graders and XQueue\*](#)
- [\*The XQueue Interface\*](#)
- [\*Building an External Grader\*](#)
- [\*Create a Code Response Problem\*](#)

### 8.10.2 External Grader Example

An external grader is particularly useful for software programming courses where students are asked to submit complex code. The grader can run tests that you define on that code and return results to a student.

For example, you define a problem that requires students to submit Python code, and create a set of tests that an external grader can run to verify the submissions. When a student enters Python code for the problem and clicks **Check**, the code is sent to the grader for testing. If the code passes all tests, the grader returns the score and a string indicating that the solution is correct.

```

12     for month in range(12):
13         month += 1
14         tempBalance -= lowestPayment
15         tempBalance += (annualInterestRate/12) * tempBalance
16     if tempBalance < 0.1 and tempBalance > -0.1:
17         break;
18     if tempBalance > 0:

```

✓ Correct

Test results

**CORRECT** [See full output](#)

[See full output](#)

The external grader can return a string with results, which the student can see by clicking **See full output**. This can be particularly useful when the solution is not correct and you want to return information about the failed tests. For example:

**INCORRECT** [Hide output](#)

✗ Test Case 1

balance = 320000; annualInterestRate = 0.2

**Your output:**

```

Lowest Payment: 29157.51

*** ERROR: Your numerical answer was not within the error margin of our answer.
First error found: expected 29157.09 +/- 0.2, got 29157.51. ***

```

**Correct output:**

```

Lowest Payment: 29157.09

```

### 8.10.3 External Graders and XQueue

The edX Platform communicates with your external grader through XQueue. XQueue provides students' input to the grader; it then receives results from the grader and returns them to students.

Student submissions are collected in XQueue, where they remain until the grader actively retrieves, or pulls, the next submission from the queue for grading.

The external grader polls the XQueue through a RESTful interface at a regular interval. When the external grader pulls a submission, it runs the tests on it, then pushes the response back to XQueue through the RESTful interface. XQueue

then delivers the response to the edX Learning Management System.

For example code of an external grader that uses Pull mode, see the [Stanford-Online repository xqueue\\_pull\\_ref](#).

### External Grader Workflow

The following steps show the complete process:

1. The student either enters code or attaches a file for a problem, then clicks Check.
2. The external grader pulls the code from XQueue.
3. The external grader runs the tests that you created on the code.
4. The external grader returns the grade for the submission, as well as any results in a string, to XQueue.
5. The XQueue delivers the results to the edX Learning Management System.
6. The student sees the problem results and the grade.

### The XQueue Name

Your course will use a specific XQueue name. You use this name when creating problems in edX Studio. You get this name from your edX Program Manager. As edX hosts many XQueues for different courses, it is critical that you use the exact XQueue name in your problems, as described in the section [Create a Code Response Problem](#).

## 8.10.4 The XQueue Interface

The student submission sent from XQueue to the grader, and the response sent from the grader to XQueue, are JSON objects, as described below.

---

**Note:** XQueue does not send the the student ID to the external grader. Your grader cannot access student IDs or associate student IDs with submissions.

---

For the code for the XQueue interface, see the file [urls.py](#) in the [edX XQueue repository](#).

### Inputs to the External Grader

The grader receives student submissions as a JSON object with two keys:

- **student\_response:** A string containing the student's code submission. The string comes from either input the student enters in the edX Learning Management System or a file the student attaches.
- **grader\_payload:** An optional string that you can specify when creating the problem. For more information, see the section [Create a Code Response Problem](#).

For example:

```
{
  "xqueue_body":
  "{
    "student_response": "def double(x):\n return 2*x\n",
    "grader_payload": "problem_2"
  }"
}
```



## External Grader Responses

After running tests and recording results for a submission, the grader must return information by posting a JSON response. The JSON string contains an indication if the submission was correct, the score, and any message the tests create.

In the following example, the grader returns a JSON string that indicates the submission was correct, the score was 1, and a message:

```
{
  "correct": true,
  "score": 1,
  "msg": "<p>The code passed all tests.</p>"
}
```

### 8.10.5 Building an External Grader

Course staff, not edX, is responsible for building and deploying the external grader.

In addition to creating tests that are specific to the problems you use in your course, there are four areas that you must plan for when building an external grader:

- *Scale*
- *Security*
- *Reliability and Recovery*
- *Testing*

#### Scale

Your external grader must be able to scale to support the number of students in your course.

Keep in mind that student submissions will likely come in spikes, not in an even flow. For example, you should expect the load to be much greater than average in the hours before an exam is due. Therefore, you should verify that the external grader can process submissions from a majority of students in a short period of time.

#### Security

Students are submitting code that executes directly on a server that you are responsible for. It is possible that a student will submit malicious code. Your system must protect against this and ensure that the external grader runs only code that is relevant to the course problems. How you implement these protections depends on the programming language you are using and your deployment architecture. You must ensure that malicious code won't damage your server.

#### Reliability and Recovery

Once your course starts, many students will submit code at any possible time, and expect to see results quickly. If your external grader is prone to failure or unexpected delays, the student experience will be poor.

Therefore, you must ensure that your grader has high availability and can recover from errors. Prior to your course starting, you must have a plan to immediately notify the team responsible for operating your grader, as well as edX operations, when the grader fails. In collaboration with edX, you should develop a procedure to quickly identify the cause of failure, which can be your grader or edX's XQueue.

Contact your edX Program Manager for more information.

If you know the grader will be unavailable at a certain time for maintenance, you should [Add a Course Update](#).

### Testing

You should test your grader thoroughly before your course starts. Be sure to test incorrect code as well as correct code to ensure that the grader responds with appropriate scores and messages.

### 8.10.6 Create a Code Response Problem

You create a code response problem in edX Studio by adding a common blank problem, then editing the XML problem definition in the *The Advanced Editor*.

See *Working with Problem Components* for more information.

Following is a basic example of the XML definition of a problem that uses an external grader:

```
<problem display_name="Problem 6">
  <text>
    <p>Write a program that prints "hello world".</p>
  </text>
  <coderesponse queue_name="my_course_queue">
    <textbox rows="10" cols="80" mode="python" tabsize="4"/>
    <codeparam>
      <initial_display>
        # students please write your program here
        print ""
      </initial_display>
      <answer_display>
        print "hello world"
      </answer_display>
      <grader_payload>
        {"output": "hello world", "max_length": 2}
      </grader_payload>
    </codeparam>
  </coderesponse>
</problem>
```

Note the following about the XML definition:

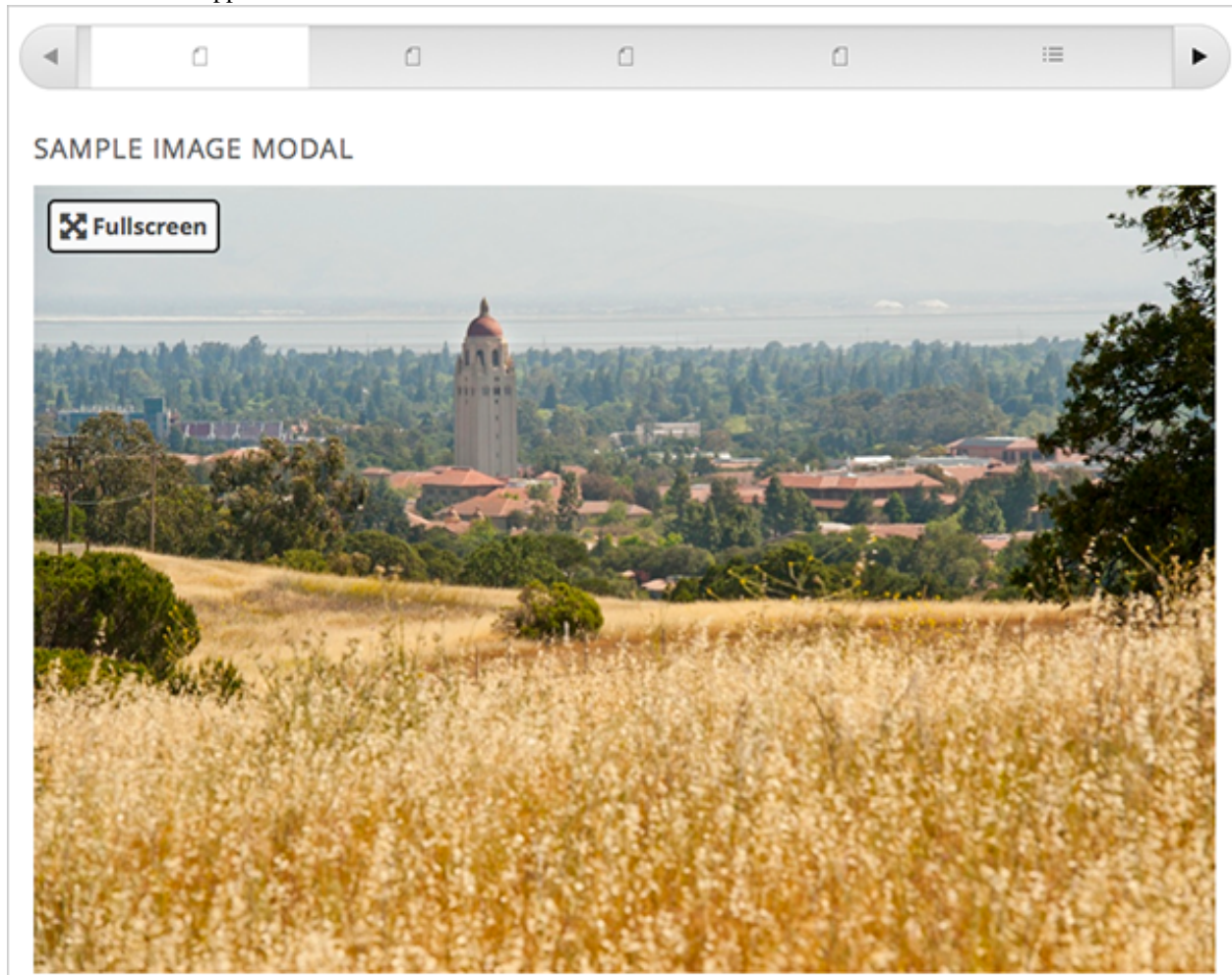
- **queue\_name:** The value of the queue\_name attribute of the <coderesponse> element maps to an XQueue that edX sets up for the course. You get this name from your edX Program Manager. You must use this exact name in order for the problem to communicate with the correct XQueue.
- **Input Type:** In this example, the input type is specified by the <textbox> element. When you use <textbox>, the student enters code in a browser field when viewing the course unit. The other element you can use to specify the input type is <filesubmission>, which enables the student to attach and submit a code file in the unit.
- **<grader\_payload>:** You can use the <grader\_payload> element to send information to the external grader in the form of a JSON object. For example, you can use <grader\_payload> to tell the grader which tests to run for this problem.

## 8.11 Full Screen Image Tool

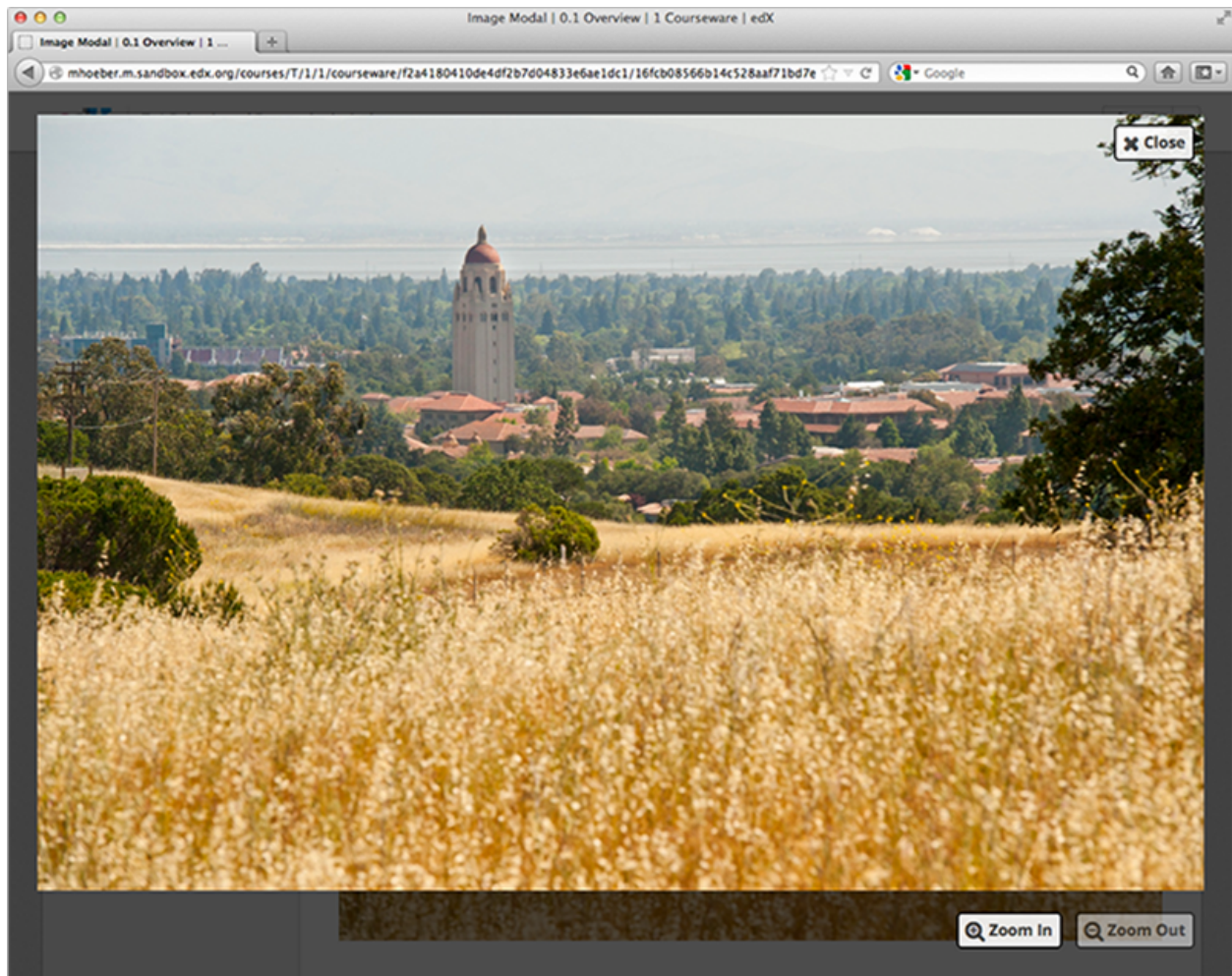
Some large images are difficult for students to view in the courseware. The full screen image tool allows students to enlarge the image, so they can see all the detail in context.

### 8.11.1 The Student View of a Full Screen Image

The student sees the full screen image in a unit page. When the student hovers the mouse pointer over the image, the **Fullscreen** button appears:

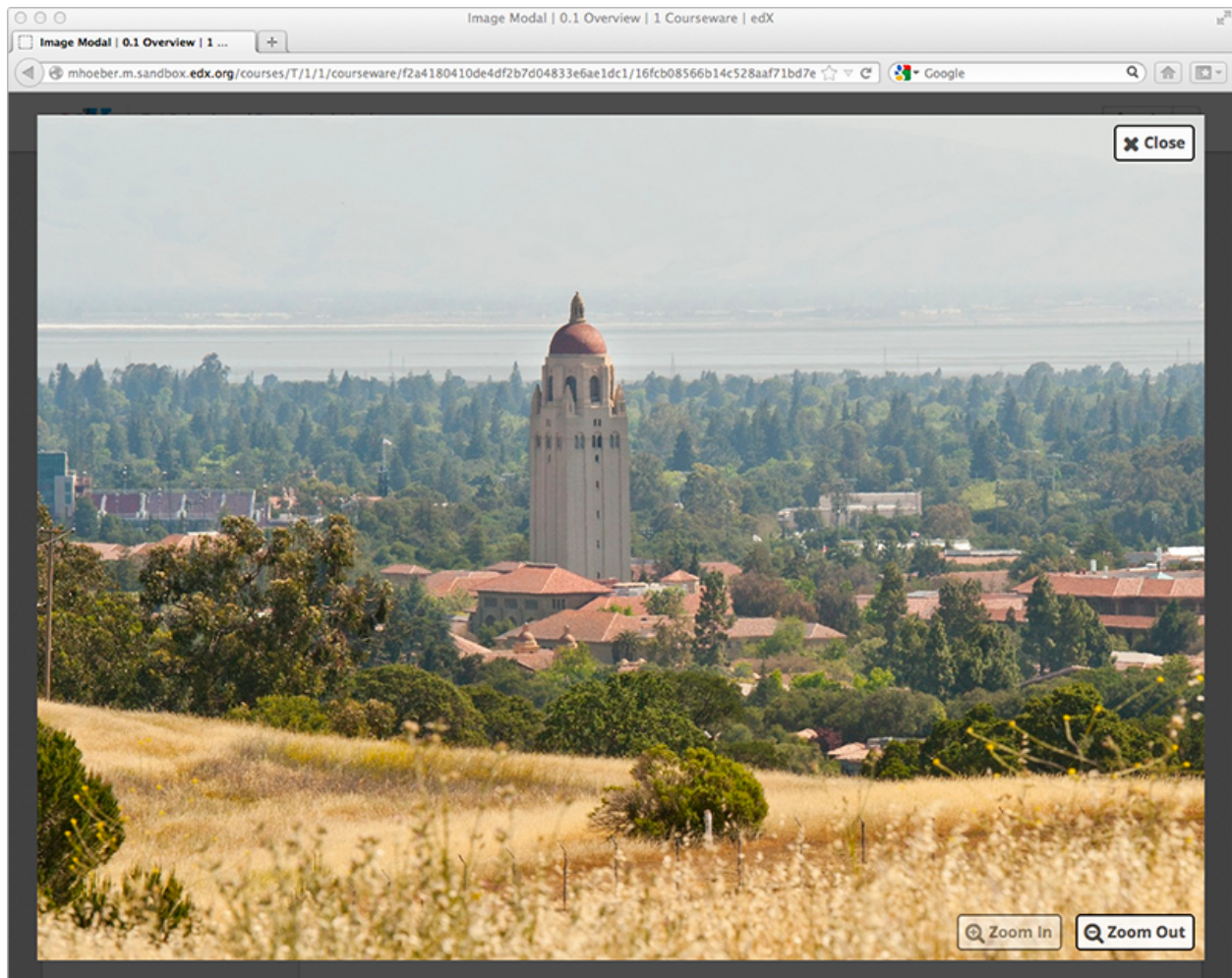


When the student clicks **Fullscreen**, the image opens and expands in the full browser window. The buttons **Close**, **Zoom In**, and **Zoom Out** appear:



The student can then zoom in on the image, and drag the image to view the desired part of it:





### 8.11.2 Create a Full Screen Image

1. Upload your image file to the **Files & Uploads** page. For more information about how to do this, see [Adding Files to a Course](#).
2. Under **Add New Component**, click **html**, and then click **Full Screen Image**.
3. In the new component that appears, click **Edit**.
4. In the component editor, replace the default title, remove the instructional paragraph, and add text as needed.
5. Switch to the **HTML** tab.
6. Replace the following placeholders with your own content.
  - Replace the value of the `<a>` element's `href` attribute with the path to your image. Do not change the value of the `class` attribute. For example:  

```
<a href="/static/Image1.jpg" class="modal-content">
```
  - Replace the value of the `<img>` element's `src` attribute with the path to your image. For example:  

```

```
  - Ensure that the value of the `href` and `src` attributes are the same, and that you do not change the `class` attribute. Your sample code should look like the following:

```
<h2>Sample Image Modal</h2>
<a href="/static/Image1.jpg" class="modal-content">

</a>
```

**Note:** You can use this same HTML code in any HTML component, not just those components you created as full screen images.

7. Click **Save** to save the HTML component.

## 8.12 Gene Explorer Tool

The Gene Explorer (GeneX), from the biology department at [UMB](#), simulates the transcription, splicing, processing, and translation of a small hypothetical eukaryotic gene. GeneX allows students to make specific mutations in a gene sequence, and it then calculates and displays the effects of the mutations on the mRNA and protein.

Specifically, the Gene Explorer does the following:

1. Finds the promoter and terminator
2. Reads the DNA sequence to produce the pre-mRNA
3. Finds the splice sites
4. Splices and tails the mRNA
5. Finds the start codon
6. Translates the mRNA

GENE EDITOR (1 point possible)

DNA: Promoter Terminator

5' - TAAGGC TATA CCGAGAT - 3'

3' - ATTCGG ATAT TGGCTCTA - 5'

pre-mRNA: Exon Int

5' - CCGAGAUUGAUCCCUUGUGCGAUAGGUGUGUCCCCCCCAAGUGUGCGUGCAAAAAAAAAACAAAGGCCAGG - 3'

mature-mRNA and Protein (previous):

5' - CCGAGAUUGAUCCCUUGUGCGAUUGUGUGUCCCCCCCAAGUGUGCGUGCAAAAAAAAAACAAAGGCCAGG - 3'

N-MetProLeuSerAspValGluArgGlyPro-C

Reset DNA Sequence Enter New DNA Sequence Selected Base =

For more information about the Gene Explorer, see [The Gene Explorer](#).

### 8.12.1 Gene Explorer Code

```
<problem>
<p>Make a single base pair substitution mutation in the gene below that results in a protein that is
<p>Note that a "single base pair substitution mutation" is when a single base is changed to another b
<script type="loncapa/python">
def genex_grader(expect,ans):
    if ans=="CORRECT": return True
    import json
    ans=json.loads(ans)
    return ans["genex_answer"]=="CORRECT"
</script>
<customresponse cfn="genex_grader">
<editageneinput width="818" height="1000" dna_sequence="TAAGGCTATAACCGAGATTGATGCCTTGTGCGATAAGGTGTGTC
</customresponse>
</problem>
```

In this code:

- **width** and **height** specify the dimensions of the application, in pixels.
- **genex\_dna\_sequence** is the default DNA sequence that appears when the problem opens.
- **dna\_sequence** contains the application's state and the student's answer. This value must be the same as **genex\_dna\_sequence**.
- **genex\_problem\_number** specifies the number of the problem. This number is based on the five gene editor problems in the MITx 7.00x course—for example, if you want this problem to look like the second gene editor problem in the 7.00x course, you would set the **genex\_problem\_number** value to 2. The number must be 1, 2, 3, 4, or 5.

## 8.13 Google Calendar Tool

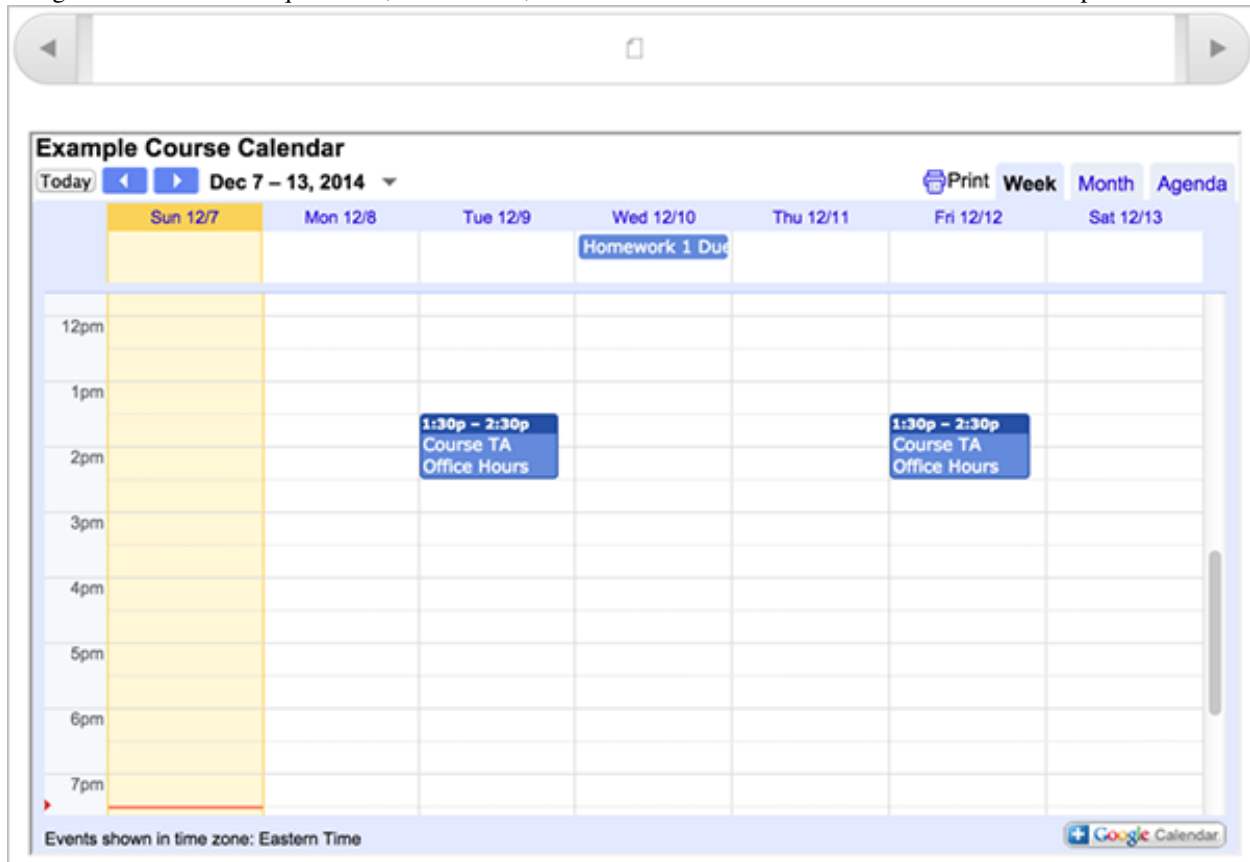
This chapter describes how to embed Google calendars in your course. For more information, see any of the following topics.

- *Overview*
- *Embedding a Google Calendar in Your Course*
  - *Enable Google Calendars in the Course*
    - \* *Enable Google Calendars in edX Studio*
    - \* *Enable Google Calendars in OLX*
  - *Make the Google Calendar Public and Obtain Its ID*
  - *Add a Google Calendar in the Courseware*
    - \* *Add a Google Calendar Component in edX Studio*
    - \* *Add a Google Calendar XBlock in OLX*
- *Editing Google Calendars*

You can also use Google Drive files, such as documents, spreadsheets, and images, in your course. For more information, see *Google Drive Files Tool*.

### 8.13.1 Overview

You can embed a Google calendar in your course so that students see the calendar in the courseware. You can use a Google calendar to share quiz dates, office hours, or other schedules of interest to students. For example:



### 8.13.2 Embedding a Google Calendar in Your Course

Embedding a Google calendar in your course has three steps.

1. *Enable Google calendars in your course* by using *Studio* or *OLX*.
2. *Make the Google calendar public and obtain its ID*.
3. *Add the Google calendar to your course* by using *Studio* or *OLX*.

#### Enable Google Calendars in the Course

You can enable Google Calendars in the course by using either Studio or OLX.

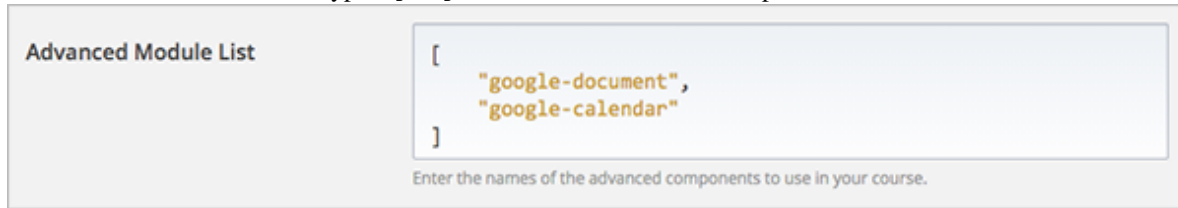
#### Enable Google Calendars in edX Studio

To enable Google Calendars in your course:

1. From the **Settings** menu, select **Advanced Settings**.



2. In the **Advanced Module List** field, place your cursor between the braces, and then type "google-calendar". If you see other values in this field, add a comma after the closing quotation mark for the last value, and then type "google-calendar". For example:



The screenshot shows a text input field labeled "Advanced Module List". Inside the field, the following JSON array is entered: `[ "google-document", "google-calendar" ]`. Below the input field, there is a placeholder text: "Enter the names of the advanced components to use in your course."

3. At the bottom of the page, select **Save Changes**.

### Enable Google Calendars in OLX

To enable Google Calendars in your course, you edit the XML file that defines the course structure. You locate the course element's advanced-modules attribute, and add the string google-calendar to it.

For example, the following XML code enables Google Calendars in a course. It also enables Google Drive files.

```
<course advanced_modules="[&quot;google-document&quot;;,
    &quot;google-calendar&quot;]" display_name="Sample Course"
    start="2014-01-01T00:00:00Z">
    ...
</course>
```

For more information, see [The Courseware Structure](#).

### Make the Google Calendar Public and Obtain Its ID

Before you can add a Google calendar to your course, you must make the calendar public and obtain its ID.

---

**Important:** The tasks described in this section rely on the use of third-party software. Because the software is subject to change by its owner, the steps provided here are intended as guidelines and not as an exact procedure.

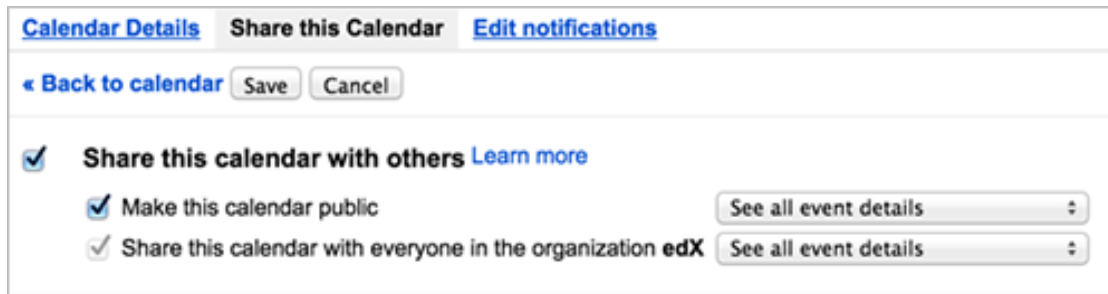
---

#### Make the Google Calendar Public

1. Open the Google calendar.
2. From the **Settings** menu, select **Settings**.
3. Select the **Calendars** tab.

You might have multiple calendars on the **Calendars** tab. Find the calendar that you want to share in your courseware.

4. In the row for the calendar to share, in the **Sharing** column, select **Edit Settings**.
5. Click the **Share this Calendar** tab, and then select **Make this calendar public**.

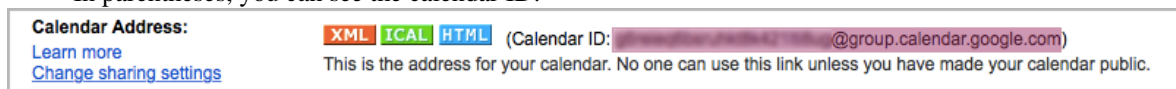


7. Select **Save**.

The **Calendar Settings** page closes, and you return to the **Calendars** tab. You continue by *obtaining the Google calendar's ID*.

### Obtain the Google Calendar ID

1. On the **Calendars** tab, click the name of the calendar.
2. Select the **Calendar Details** tab.
3. Next to the **Calendar Address** label, look to the right of the three colored **XML**, **ICAL**, and **HTML** buttons. In parentheses, you can see the calendar ID.



The calendar ID resembles the following text.

abcdefghijklmnop1234567890@group.calendar.google.com

Select and copy the calendar ID. You use this value to configure the Google calendar component in your course.

### Add a Google Calendar in the Courseware

To add a Google calendar in the courseware, you create an advanced component in Studio or create a Google calendar XBlock in OLX.

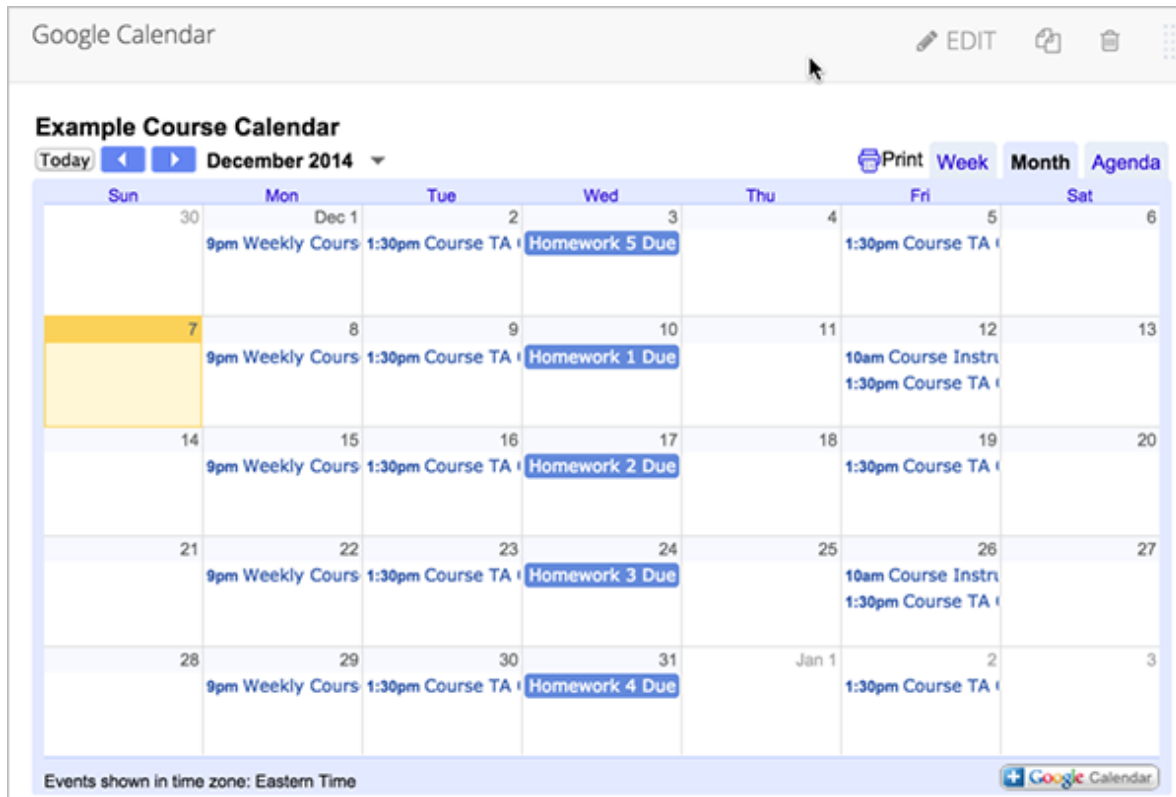
### Add a Google Calendar Component in edX Studio

Make sure that you *enable Google Calendars in your course* before you add the Google Calendar component.

To add a Google calendar component:

1. On the **Course Outline** page, open the unit where you want to add the Google calendar component.
2. Under **Add New Component** click **Advanced**, and then select **Google Calendar**.

The new component is added to the unit, with the default edX Google calendar embedded.



3. In the new component, select **Edit**.

### Editing: Google Calendar

**Display Name**

This name appears in the horizontal navigation at the top of the page.

---

**Public Calendar ID**

Google provides an ID for publicly available calendars. In the Google Calendar, open Settings and copy the ID from the Calendar Address section into this field. You can [learn more here](#).

---

**Default View**

The calendar view that students see by default. A student can change this view.

---

**Save** [Cancel](#)

4. In the **Display Name** field, type the name for the component.

5. In the **Public Calendar ID** field, paste the calendar ID you copied in the *Obtain the Google Calendar ID* task.
6. For the **Default View** field, select **Month**, **Week**, or **Agenda**.

This is the initial view that your students have of the calendar. Each student can change his or her view.

7. Select **Save**.

You can then *Preview Course Content* to see how the unit with the Google calendar will appear to students.

### Add a Google Calendar XBlock in OLX

To add a Google calendar XBlock in OLX, create the `google-calendar` element. You can embed this element in the `vertical` element, or you can embed this element in its own file that is referenced within the vertical. For more information, see *The Courseware Structure*.

For example:

```
<google-calendar url_name="4115e717366045eaae7764b2e1f25e4c"
  calendar_id="abcdefghijklmnop1234567890@group.calendar.google.com"
  default_view="1" display_name="Class Schedule"/>
```

The value of the `calendar_id` attribute is the calendar ID that you copied in the *Obtain the Google Calendar ID* task.

---

**Note:** The edX Learning Management System sets the height and width values for Google Calendars. If you add these attributes, the LMS overrides your changes.

---

### 8.13.3 Editing Google Calendars

When you make changes to a Google calendar that is embedded in your course, students see the updates immediately. You make changes to calendars with the Google user interface. You do not need to edit the Google Calendar component.

## 8.14 Google Drive Files Tool

This chapter describes how to embed Google Drive files, such as documents, spreadsheets, and images, in your course. For more information, see any of the following topics.

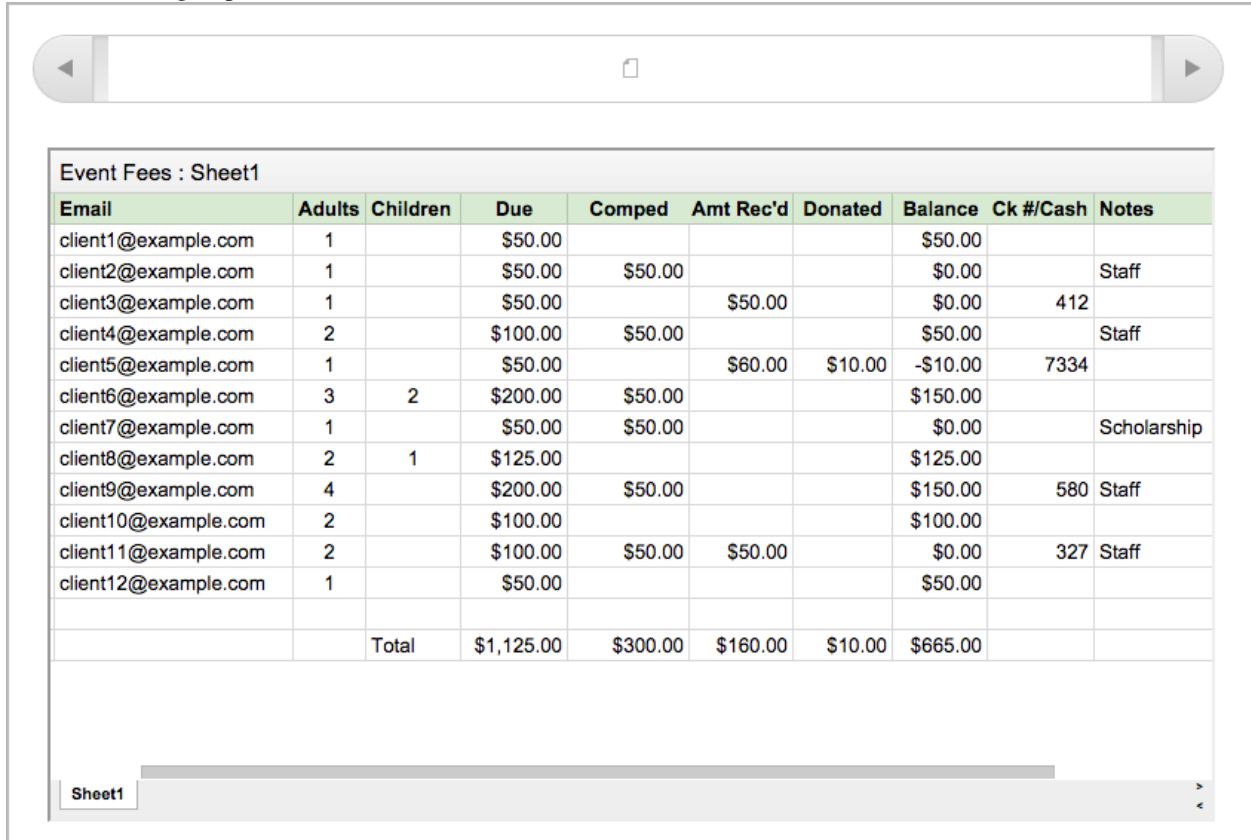
- *Overview*
- *Embedding a Google Drive File in Your Course*
  - *Enable Google Drive Files in Your Course*
    - \* *Enable Google Drive Files in edX Studio*
    - \* *Enable Google Drive Files in OLX*
  - *Obtain the Google Drive File Embed Code*
  - *Add a Google Drive File to Your Course*
    - \* *Add a Google Drive File Component in edX Studio*
    - \* *Add a Google Drive File XBlock in OLX*

- *Editing Google Drive Files*

You can also use *Google calendars* in courseware. For more information, see *Google Calendar Tool*.

### 8.14.1 Overview

You can embed a Google Drive file in your course so that students see the file in the courseware. For example, you can share a Google spreadsheet with students.



Email	Adults	Children	Due	Comped	Amt Rec'd	Donated	Balance	Ck #/Cash	Notes
client1@example.com	1		\$50.00				\$50.00		
client2@example.com	1		\$50.00	\$50.00			\$0.00		Staff
client3@example.com	1		\$50.00		\$50.00		\$0.00	412	
client4@example.com	2		\$100.00	\$50.00			\$50.00		Staff
client5@example.com	1		\$50.00		\$60.00	\$10.00	-\$10.00	7334	
client6@example.com	3	2	\$200.00	\$50.00			\$150.00		
client7@example.com	1		\$50.00	\$50.00			\$0.00		Scholarship
client8@example.com	2	1	\$125.00				\$125.00		
client9@example.com	4		\$200.00	\$50.00			\$150.00	580	Staff
client10@example.com	2		\$100.00				\$100.00		
client11@example.com	2		\$100.00	\$50.00	\$50.00		\$0.00	327	Staff
client12@example.com	1		\$50.00				\$50.00		
		Total	\$1,125.00	\$300.00	\$160.00	\$10.00	\$665.00		

You can embed the following types of Google Drive files.

- Google Docs (text documents)
- Google Drawings (images)
- Google Forms (forms or surveys)
- Google Slides (presentations)
- Google Sheets (spreadsheets)

### 8.14.2 Embedding a Google Drive File in Your Course

Embedding a Google Drive file in your course has three steps:

1. *Enable Google Drive files in your course* by using *Studio* or *OLX*.
2. *Obtain the Google Drive File Embed Code*.
3. *Add the Google Drive file to your course* by using *Studio* or *OLX*.

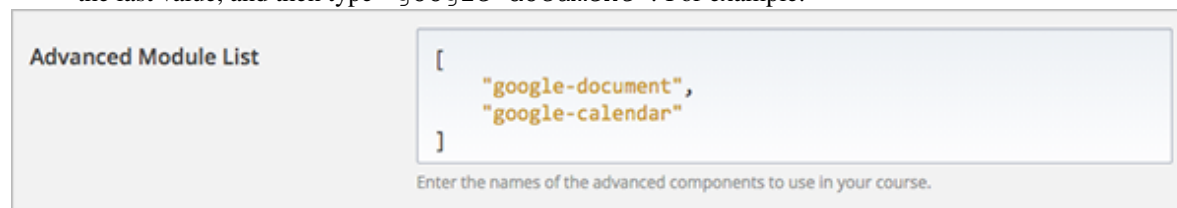
### Enable Google Drive Files in Your Course

You can enable Google Drive files in the course by using either Studio or OLX.

#### Enable Google Drive Files in edX Studio

To enable Google Drive files in your course:

1. From the **Settings** menu, select **Advanced Settings**.
2. In the **Advanced Module List** field, place your cursor between the braces, and then type "google-document". If you see other values in this field, add a comma after the closing quotation mark for the last value, and then type "google-document". For example:



Advanced Module List

```
[  
  "google-document",  
  "google-calendar"  
]
```

Enter the names of the advanced components to use in your course.

3. At the bottom of the page, select **Save Changes**.

#### Enable Google Drive Files in OLX

To enable Google Drive files in your course, you edit the XML file that defines the course structure. You locate the course element's `advanced-modules` attribute, and add the string `google-document` to it.

For example, the following XML code enables Google Drive files in a course. It also enables Google calendars.

```
<course advanced_modules="['&quot;google-document&quot;;  
  &quot;google-calendar&quot;']" display_name="Sample Course"  
  start="2014-01-01T00:00:00Z">  
  ...  
</course>
```

For more information, see [The Courseware Structure](#).

### Publish the Google Drive File and Obtain the Embed Code

Before you can add a Google Drive file to your course, you must publish the file to the web and obtain the embed code for the file.

---

**Important:** The task described in this section relies on the use of third-party software. Because the software is subject to change by its owner, the steps provided here are intended as guidelines and not as an exact procedure.

---

1. Open the Google Drive file.
2. From the **File** menu, select **Publish to the web**.

×

## Publish to the web

This document is not published to the web.

Make your content visible to anyone by publishing it to the web. You can link to or embed your document. [Learn more](#)

Link

Embed

Publish

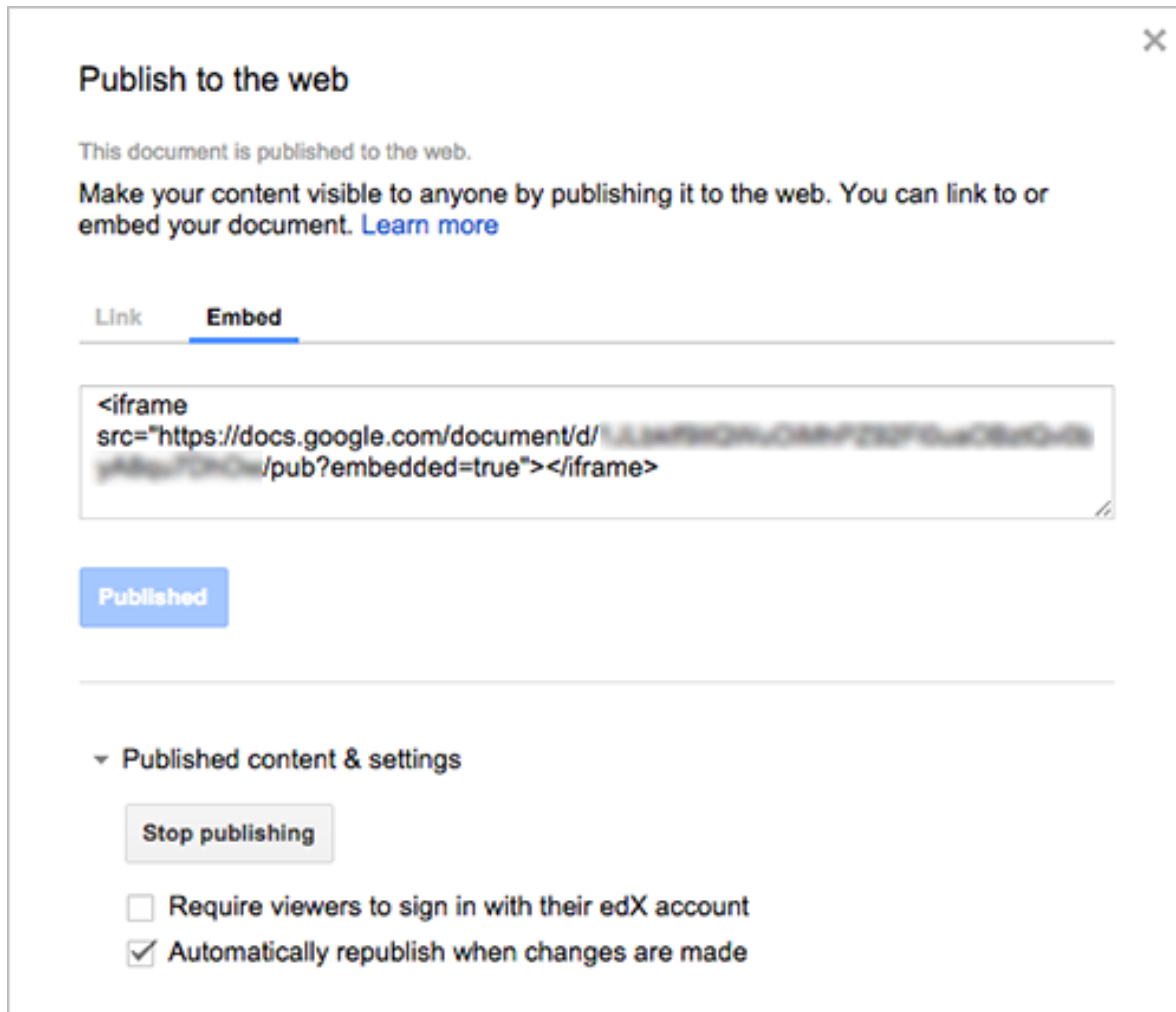
Published content & settings

Start publishing

☐ Require viewers to sign in with their edX account

☒ Automatically republish when changes are made

3. Click **Publish**, then select **OK** to confirm the action.
4. Click the **Embed** tab.



5. Copy the complete string in the **Embed** field, including the `<iframe>` tags.

---

**Note:** Google images do not have an `<iframe>` tag. To embed an image, you copy the complete `img` tag.

---

You use that string to configure the Google Drive file component.

## Add a Google Drive File to Your Course

To add a Google Drive file in the courseware, you create an advanced component in Studio or create a Google Document Xblock in OLX.

### Add a Google Drive File Component in edX Studio

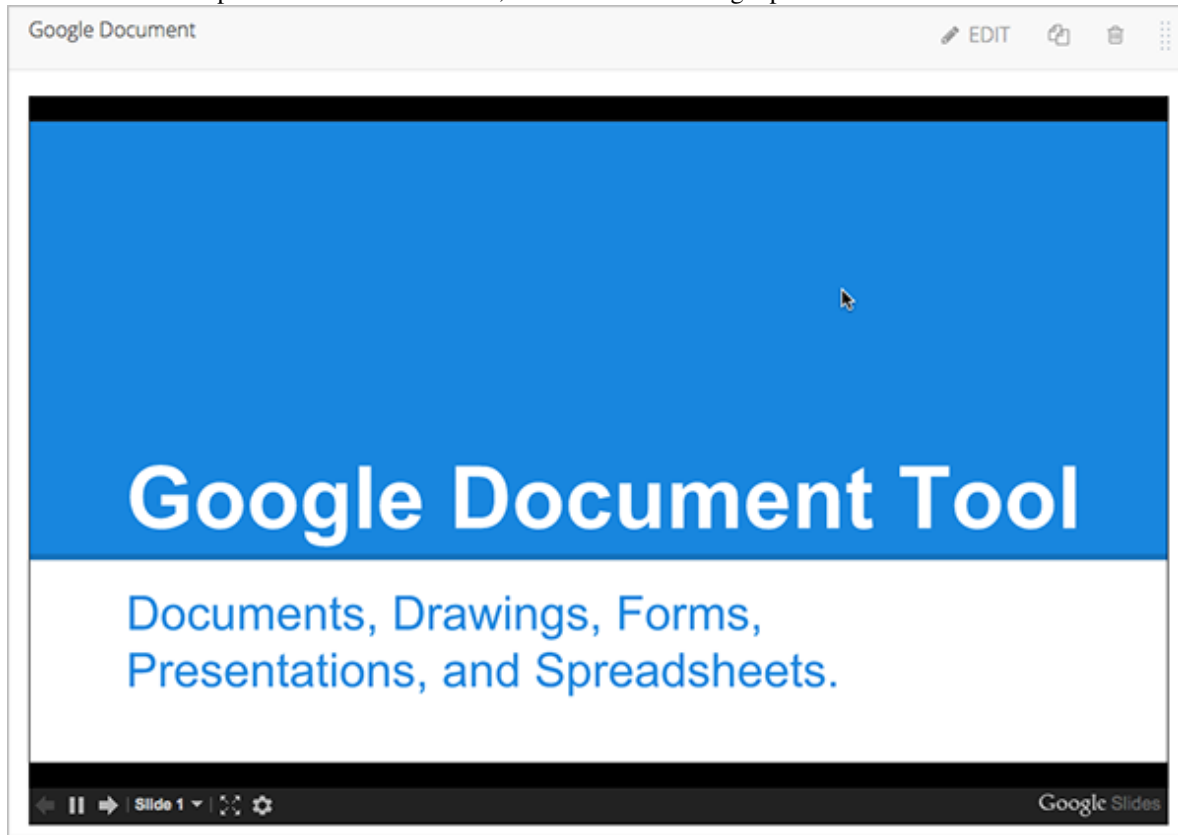
Ensure you *enable Google Drive files* before you add the component.

To add a Google Drive file component:

1. On the Course Outline page, open the unit where you want to add the Google Drive component.
2. Under **Add New Component** click **Advanced**, and then select **Google Document**.



The new component is added to the unit, with the default Google presentation embedded.



3. In the new component, select **Edit**.

A screenshot of a web form titled 'Editing: Google Document'. It has two main input fields. The first is labeled 'Display Name' and contains the text 'Google Document'. Below it is a small note: 'This name appears in the horizontal navigation at the top of the page.' The second field is labeled 'Embed Code' and contains an HTML iframe code snippet: '<iframe src="https://docs.google.com/presentation/d/.../embed?'. Below this field is a note: 'Google provides an embed code for Drive documents. In the Google Drive document, from the File menu, select Publish to the Web. Modify settings as needed, click Publish, and copy the embed code into this field.' At the bottom of the form are two buttons: 'Save' and 'Cancel'.

4. In the **Display Name** field, type the name for the component.
5. In the **Embed Code** field, paste the embed code you copied in the *Obtain the Google Drive File Embed Code* task.
6. Click **Save**.

You can then *Preview Course Content* to see how the unit with the Google drive file will appear to students.

### Add a Google Drive File XBlock in OLX

To add a Google Drive file XBlock in OLX, you create the `google-document` element. You can embed the `google-document` element in the `vertical` element, or you can create the `google-document` element as a stand-alone file that you reference in the `vertical`.

For more information, see [The Courseware Structure](#).

For example:

```
<google-document url_name="c5804436419148f68e2ee44abd396b12"
  embed_code="&lt;iframe
  frameborder="0" src="https://docs.google.com/spreadsheets/pub
  ?key=0AuZ_5O2JZpH5dGVUVDNGUE05aTFNcEl2Z0ZuTUNmWUE&output=html&widge
  t=true" &gt;&lt;/iframe&gt;" display_name="Google Document"/>
```

The value of the `embed_code` attribute is the embed code you copied in the *Obtain the Google Drive File Embed Code* task.

---

**Note:** The edX Learning Management System sets the height and width values for Google Drive files. If you add these attributes, the LMS overrides your changes.

---

### 8.14.3 Editing Google Drive Files

When you edit and save a Google Drive file that is embedded in your course, students see the updates immediately. You make changes to files with the Google user interface. You do not need to edit the Google Document component.

## 8.15 Google Instant Hangout Tool

This chapter describes how you can use instant hangouts in your course. See:

- *Overview*
- *Instant Hangouts in Your Course*
- *The Student Experience*
- *Limitations*
- *Create the Instant Hangout*

### 8.15.1 Overview

You can add the ability for students to participate in instant hangouts directly from your course.

With instant hangouts, students can:

- Interact through live video and voice.
- Share screens and watch videos together.
- Collaborate on documents.

For a full list of instant hangout features, see the [Google Hangouts page](#).

**Note:** Students who want to participate in instant hangouts must have a Google account. You should note this in your course materials.

## 8.15.2 Instant Hangouts in Your Course

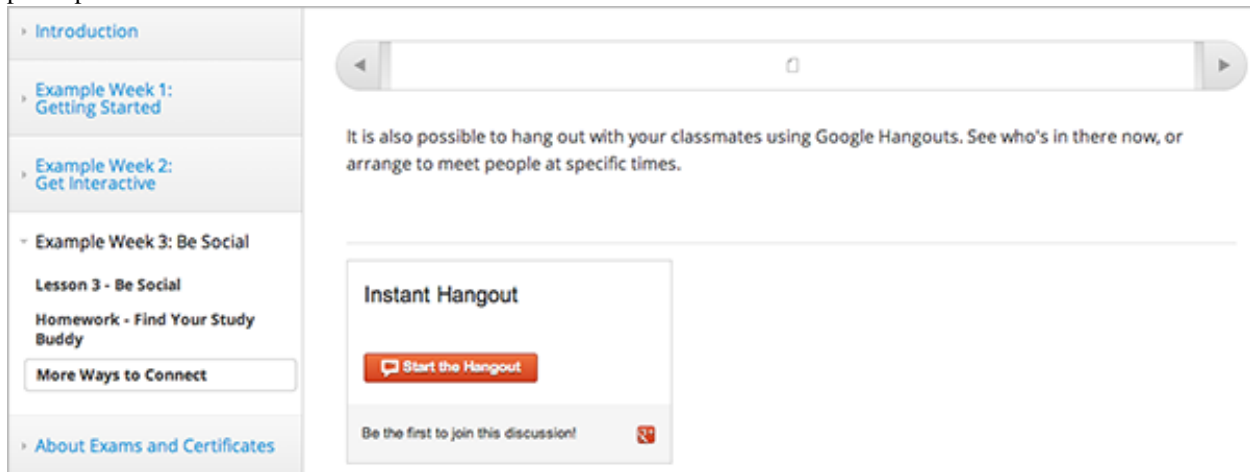
You can add one or more instant hangouts in your course. For example, you can add an instant hangout:

- In a page, to provide students with a hangout for the entire course. See [Adding Pages to a Course](#) for more information.
- In an HTML component, to provide a hangout for students working on that specific course unit. See [Working with HTML Components](#) for more information about creating HTML components.

An instant hangout is specific to the page it is opened from. For example, students who join a hangout from one course unit interact among themselves, while students who join a hangout from another unit interact in a different hangout.

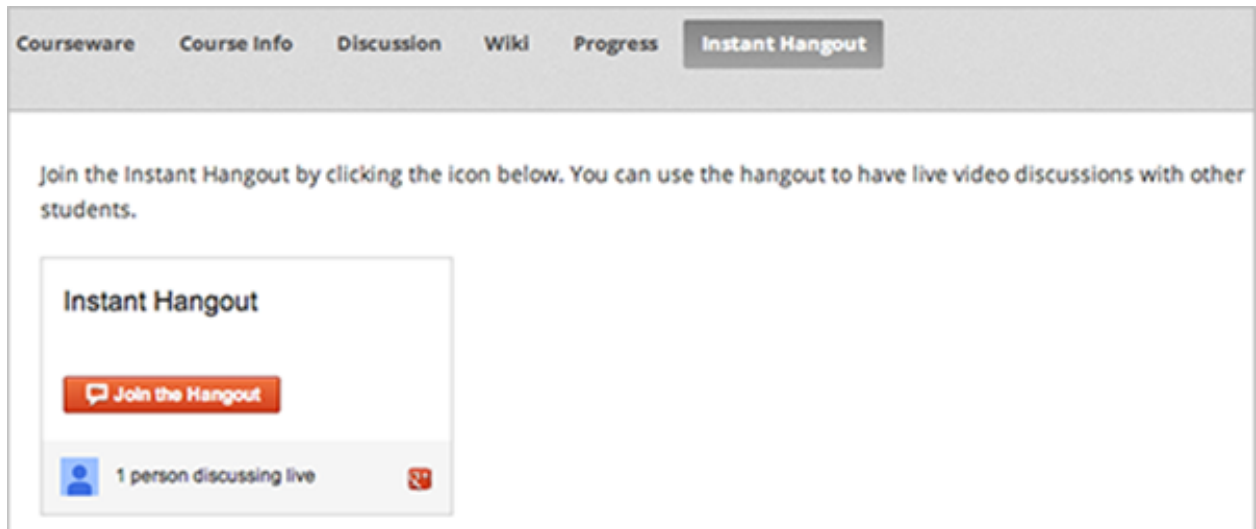
## 8.15.3 The Student Experience

When you add the instant hangout to your course, a control for the hangout appears on that page. The following example shows the control in a course unit. The control shows that the student can start the hangout and be the first participant.



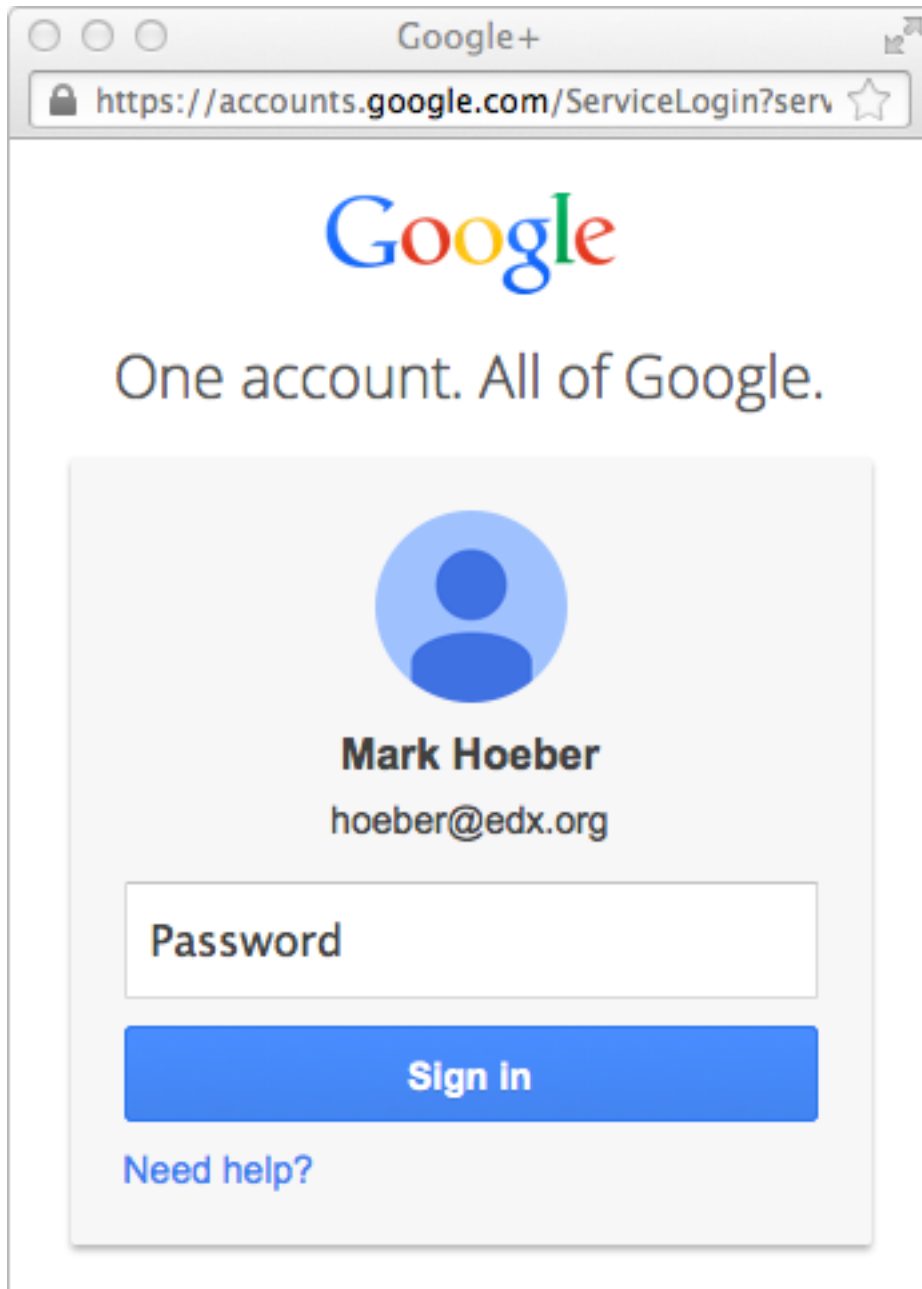
To start the hangout, the student clicks **Start the Hangout**. (After the first student clicks **Start the Hangout**, other students see a **Join the Hangout** button.)

The following example shows the control in a page when a hangout has already started. The control has a **Join the Hangout** button, and shows that one other student is already in the hangout.



To join the hangout, the student clicks **Join the Hangout**.

If not already logged in, the student is prompted to log in to Google:



Students who do not have a Google account can create one from the login page.

After the student has logged in to Google, the hangout opens in a separate browser window:



#### 8.15.4 Limitations

Currently, only ten students can join a single instant hangout. You should note this in your course materials.

Students in hangouts that are started from different pages in your course are counted separately. So you can have ten students participating in a hangout started from one unit, and ten other students in a hangout started from a different unit.

#### 8.15.5 Create the Instant Hangout

To create an instant hangout in your course:

1. Get the [instant hangout JavaScript file](#) from [GitHub](#).
2. Copy the text of this file into a text editor on your computer, and save the file as a JavaScript file (that is, when you save the file, change the extension from .txt to .js).

---

**Note:** Make sure that you copy the raw GitHub file, which does not contain formatting. Do not copy the formatted file. Any formatting will cause the JavaScript to not work correctly.

---

3. Upload the JavaScript file to the **Files & Uploads** page in your course. See [Adding Files to a Course](#) for more information.
4. In either a page or an HTML component, open the HTML editor.
5. On the first line, add the JavaScript file you uploaded in a `<script>` tag, making sure you use full opening and closing tags.

For example, if your JavaScript file is named **instanhangouts-0.1.0.js**, you would enter the following:

```
<script src='/static/instanthangouts-0.1.0.js'></script>
```

6. After the `<script>` tag, add:

```
<div class='instanthangouts' />
```

7. Add any additional text and tags that you want.

For example, the complete HTML could be:

```
<p>Join an instant hangout by clicking the button below.  
You can use the hangout to have live video discussions with other students.</p>  
<script src='/static/instanthangouts-0.1.0.js'></script>  
<div class='instanthangouts' />
```

8. Test the instant hangout in your course.

## Updating the JavaScript File

Google will periodically update the instant hangouts JavaScript file. To receive update notifications, go to the [instant hangouts repository page](#), and then click **Watch** in the upper-right area of the page.

To use an updated JavaScript file in your course, we recommend that you copy the JavaScript from the repository into a file that has the same name as the file that you uploaded to your course. When you upload the new file, the new file replaces the previous file.

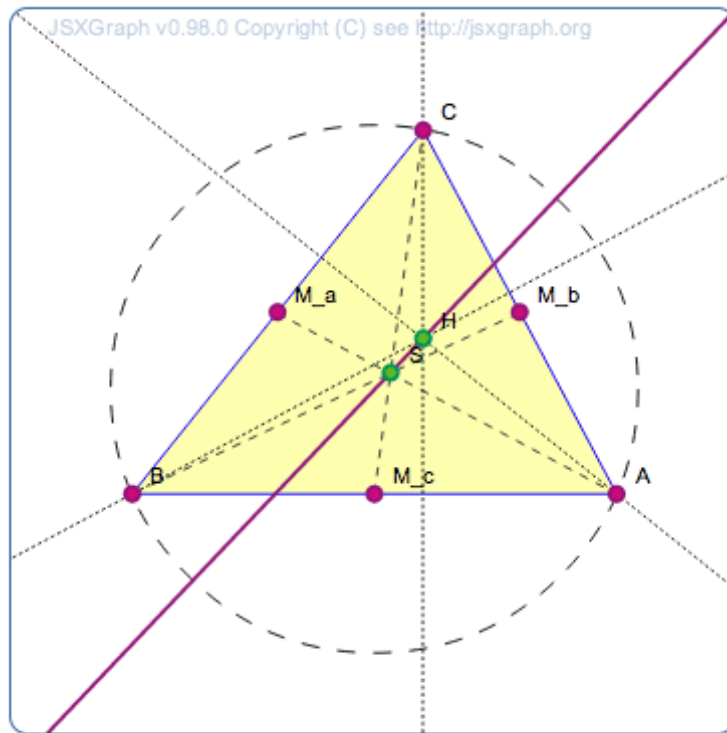
**Warning:** If you include version numbers in the file names of uploaded files, you will have to edit any HTML components or pages that include an instant hangout control every time that you update the JavaScript file.

## 8.16 IFrame Tool

An IFrame allows you to integrate ungraded exercises and tools from any Internet site into the body of your course. The IFrame appears inside an HTML component, and the exercise or tool appears inside the IFrame. IFrames can include your own tools or third-party tools.

## EULER LINES

In the image below, drag any of the red points to a new location. As you drag the point, notice the way the point's position affects the triangle's Euler line.



IFrames are well-suited for tools that demonstrate a concept but that won't be graded or store student data. If you want to add a graded tool or exercise, add the tool as a *custom JavaScript problem* or an *LTI component*.

For more information about IFrames, see the [IFrame specification](#).

### 8.16.1 Create an IFrame Tool

To add an exercise or tool in an IFrame, you'll create an IFrame HTML component and add the URL of the page that contains the exercise or tool to the component. You can also add text and images both before and after the IFrame.

**Note:** The URL of the page that contains the exercise or tool must start with `https` instead of `http`. If the URL starts with `http`, you have to work with the owner of that page to find out if an `https` version is available. Some websites do not allow their content to be embedded in IFrames.

1. Under **Add New Component**, click **html**, and then click **IFrame**.
2. In the new component that appears, click **Edit**.
3. In the toolbar in the component editor, click **HTML**.
4. In the HTML source code editor, locate the following HTML (line 7). This HTML includes the `<iframe>` element:



```
<p><iframe src="https://studio.edx.org/c4x/edx/DemoX/asset/eulerLineDemo.html" width="402" height="200">
```

5. Replace the default URL in the **src** attribute (<https://studio.edx.org/c4x/edx/DemoX/asset/eulerLineDemo.html>) with the URL of the page that contains the exercise or tool. **This URL must start with https.** Make sure you don't delete the quotation marks that surround the URL.
6. Change the attributes in the **IFrame** element to specify any other settings that you want. For more information about these settings, see *IFrame Settings*. You can also change the text between the opening and closing **<iframe>** tags. A student only sees this text if the student uses a browser that does not support **IFrames**.
7. Click **OK** to close the HTML source code editor and return to the Visual editor.
8. In the Visual editor, replace the default text with your own text.
9. Click **Save**.

## IFrame Settings

To specify settings for your **IFrame**, you'll add, remove, or change the attributes inside the opening **<iframe>** tag. The **<iframe>** tag **must** contain a **src** attribute that specifies the URL of the web page you want. Other attributes are optional.

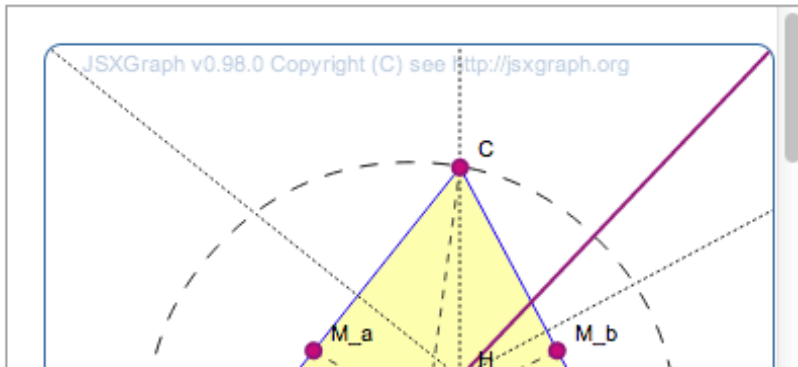
You can add these attributes in any order you want.

Attribute	Description
<b>src</b> (required)	Specifies the URL of the page that contains the exercise or tool.
<b>width</b> and <b>height</b> (optional)	Specify the width and height of the <b>IFrame</b> , in pixels or as a percentage. To specify the value in pixels, enter numerals. To specify a percentage, enter numerals followed by a percent sign. If you don't specify the width and height, the <b>IFrame</b> uses the dimensions that the linked page has set. These dimensions vary by website. If you change the width and height of the <b>IFrame</b> , the content from the linked page may be resized, or only part of the content may appear.
<b>marginwidth</b> and <b>marginheight</b> (optional)	Specify the size of the space between the edges of the <b>IFrame</b> and your exercise or tool, in pixels.
<b>frameborder</b> (optional)	Specifies whether a border appears around your <b>IFrame</b> . If the value is 0, no border appears. If the value is any positive number, a border appears.
<b>scrolling</b> (optional)	Specifies whether a scrollbar appears to help users see all of the <b>IFrame's</b> content if your <b>IFrame</b> is smaller than the exercise or tool it contains. For example, if the content in your <b>IFrame</b> is very tall, you can set the <b>IFrame's</b> height to a smaller number and add a vertical scroll bar for users, as in the first image below.

For example, compare how the different settings in each of the **<iframe>** elements below affect the **IFrame**.

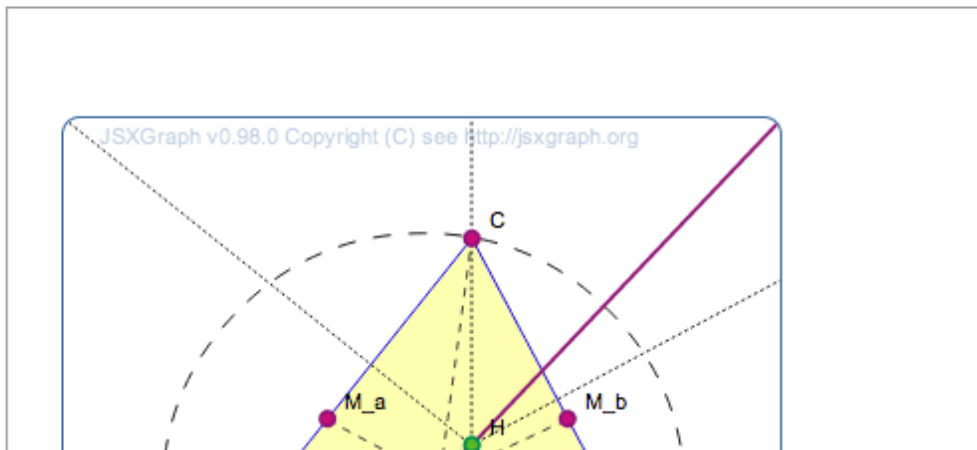
```
<p><iframe src="https://studio.edx.org/c4x/edx/DemoX/asset/eulerLineDemo.html" width="442" height="200">
```

In the image below, drag any of the red points to a new location. As you drag the point, notice the way the point's position affects the triangle's Euler line.



```
<p><iframe src="https://studio.edx.org/c4x/edX/DemoX/asset/eulerLineDemo.html" width="550" height="250">
```

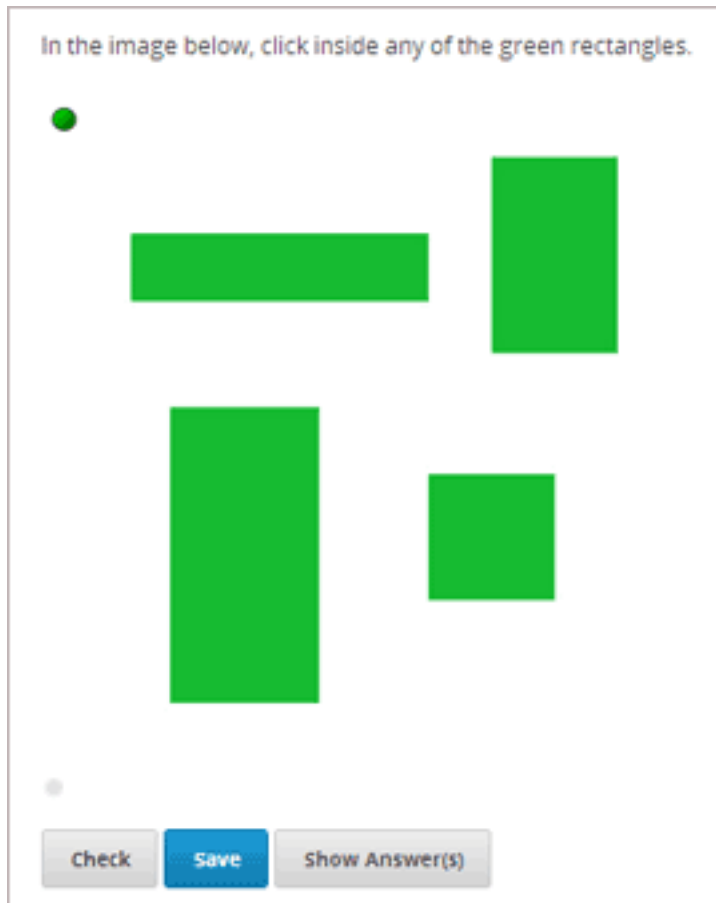
In the image below, drag any of the red points to a new location. As you drag the point, notice the way the point's position affects the triangle's Euler line.



For more information about IFrame attributes, see the [IFrame specification](#).

## 8.17 Image Mapped Input Problem

In an image mapped input problem, students click inside a defined area in an image. You define this area by including coordinates in the body of the problem.



### 8.17.1 Create an Image Mapped Input Problem

To create a image mapped input problem:

1. In the unit where you want to create the problem, click **Problem** under **Add New Component**, and then click the **Advanced** tab.
2. Click **Image Mapped Input**.
3. In the component that appears, click **Edit**.
4. In the component editor, replace the example code with your own code.
5. Click **Save**.

**Problem Code:**

```
<problem>
  <p><b>Example Problem</b></p>
  <startouttext/>
  <p>In the image below, click the triangle.</p>
  <endouttext/>
  <imageresponse>
    <imageinput src="/static/threeshapes.png" width="220" height="150" rectangle="(80,40)-(130,90)" />
  </imageresponse>
</problem>
```

## 8.17.2 Image Mapped Input Problem XML

### Template

```
<problem>
  <startouttext/>
  <p>In the image below, click the triangle.</p>
  <endouttext/>
  <imageresponse>
    <imageinput src="IMAGE FILE PATH" width="NUMBER" height="NUMBER" rectangle="(X-AXIS,Y-AXIS)-(X-AXIS,Y-AXIS)" />
  </imageresponse>
</problem>
```

### Tags

- `<imageresponse>`: Indicates that the problem is an image mapped input problem.
- `<imageinput>`: Specifies the image file and the region in the file that the student must click.

**Tag:** `<imageresponse>`

Indicates that the problem is an image mapped input problem.

Attributes

(none)

Children

- `<imageinput>`

**Tag:** `<imageinput>`

Specifies the image file and the region in the file that the student must click.

Attributes

Attribute	Description
src (required)	The URL of the image
height (required)	The height of the image, in pixels
width (required)	The width of the image, in pixels
rectangle (required)	An attribute with four embedded values in the format ( <code>&lt;start_width&gt;</code> , <code>&lt;start_height&gt;</code> )-( <code>&lt;end_width&gt;</code> , <code>&lt;end_height&gt;</code> ). All coordinates start with (0,0) in the top left corner and increase in value toward the bottom right corner, very similar to the progression of reading English. The two coordinates defined form the two opposite corners of a box which a student can click inside of.

Children

(none)

## 8.18 LTI Component

You might have discovered or developed an external learning application that you want to add to your online course. Or you might have a digital copy of your textbook that uses a format other than PDF. You can add external learning applications or textbooks to Studio by using a Learning Tools Interoperability (LTI) component. The LTI component is based on the [IMS Global Learning Tools Interoperability](#) version 1.1.1 specifications.

You can use an LTI component in several ways.

- You can add external LTI content that is only displayed and does not require a student response, such as textbook content.
- You can add external LTI content that requires a student response. An external provider will grade student responses.
- You can use the component as a placeholder for syncing with an external grading system.

For example, the following LTI component incorporates a Cerego tool that students interact with.

These activities will help you remember some of the facts you are learning about important jazz eras and artists. Your goal is to reach "memory permanence" for all items, so that the information sinks in and you're able to remember it long after you finish the course.

Your progress on this set, Jazz Facts 2, counts as 20% of your final grade. Although the recommended deadline has passed, you can still revisit Jazz Facts 1 and continue to work for credit. Links to all the sets are available on the [Practice Your Knowledge](#) page.

The screenshot shows the Cerego interface. At the top, there's a dark header with the Cerego logo on the left, a progress bar in the center labeled 'progress' with a green bar and '47%' on the right, and 'Help' and 'Settings' icons on the far right. Below the header is a light gray bar. Underneath that is a yellow bar with the question 'Can you name a musician who played this instrument?'. In the center is a large green square with a white question mark. Below that, the text 'Tenor Saxophone' is displayed. At the bottom is a dark gray bar with a 'Pause' button on the left and 'Don't know it' and 'Know it' buttons on the right.

### 8.18.1 Obtain LTI Information

Before you create an LTI component from an external LTI provider in a unit, you need the following information.

- The **launch URL** (if the LTI component requires a student response that will be graded). You obtain the launch URL from the LTI provider. The launch URL is the URL that Studio sends to the external LTI provider so that the provider can send back students' grades.
- The **LTI Passports** policy key. This policy key has three parts: an LTI ID, a client key, and a client secret.
  - The **LTI ID**. This is a value that you create to refer to the external LTI provider. You should create an LTI

ID that you can remember easily.

The LTI ID can contain uppercase and lowercase alphanumeric characters, as well as underscore characters (\_). It can be any length. For example, you may create an LTI ID that is as simple as **test\_lti\_id**, or your LTI ID may be a string of numbers and letters such as **id\_21441** or **book\_lti\_provider\_from\_new\_york**.

- The **client key**. This value is a sequence of characters that you obtain from the LTI provider. The client key is used for authentication and can contain any number of characters. For example, your client key may be **b289378-f88d-2929-ctools.school.edu**.
- The **client secret**. This value is a sequence of characters that you obtain from the LTI provider. The client secret is used for authentication and can contain any number of characters. For example, your client secret can be something as simple as **secret**, or it may be a string of numbers and letters such as **23746387264** or **yt4984yr8**.

To create the **LTI Passports** policy key, combine the LTI ID, client key, and client secret in the following format (make sure to include the colons):

```
lti_id:client_key:client_secret
```

For example, an **LTI Passports** policy key may resemble any of the following:

```
test_lti_id:b289378-f88d-2929-ctools.school.edu:secret
```

```
id_21441:b289378-f88d-2929-ctools.school.edu:23746387264
```

```
book_lti_provider_from_new_york:b289378-f88d-2929-ctools.company.com:yt4984yr8
```

## 8.18.2 Create an LTI Component

Creating an LTI component in your course has three steps.

1. Add LTI to the **Advanced Module List** policy key.
2. Register the LTI provider.
3. Create the LTI component in an individual unit.

### Step 1. Add LTI to the Advanced Module List Policy Key

1. On the **Settings** menu, click **Advanced Settings**.
2. In the field for the **Advanced Module List** policy key, place your cursor between the brackets.
3. Enter `"lti"`. Make sure to include the quotation marks, but not the period.



Advanced Module List

`["lti"]`

Enter the names of the advanced components to use in your course.

**Note:** If the **Advanced Module List** field already contains text, place your cursor directly after the closing quotation mark for the final item, and then enter a comma followed by `"lti"` (make sure that you include the quotation marks).

4. At the bottom of the page, click **Save Changes**.

The page refreshes automatically. At the top of the page, you see a notification that your changes have been saved.

### Step 2. Register the External LTI Provider

To register the external LTI provider, you'll add the **LTI Passports** policy key to the course's advanced settings.

1. On the **Advanced Settings** page, locate the **LTI Passports** policy key.
2. Place your cursor between the brackets.
3. Enter the **LTI Passports** policy key surrounded by quotation marks.

For example, the text in the **LTI Passports** field may resemble the following.

```
"test_lti_id:b289378-f88d-2929-ctools.umich.edu:secret"
```

If you have multiple LTI providers, separate the values for each **LTI Passports** policy key with a comma. Make sure to surround each entry with quotation marks.

```
"test_lti_id:b289378-f88d-2929-ctools.umich.edu:secret",  
"id_21441:b289378-f88d-2929-ctools.school.edu:23746387264",  
"book_lti_provider_from_new_york:b289378-f88d-2929-ctools.company.com:yt4984yr8"
```

4. At the bottom of the page, click **Save Changes**.

The page refreshes automatically. At the top of the page, you see a notification that your changes have been saved, and you can see your entries for the **LTI Passports** policy key.

### Step 3. Add the LTI Component to a Unit

1. In the unit where you want to create the problem, click **Advanced** under **Add New Component**, and then click **LTI**.
2. In the component that appears, click **Edit**.
3. In the component editor, specify the settings that you want. See [LTI Component Settings](#) for a description of each setting.
4. Click **Save**.





## 8.18.3 LTI Component Settings

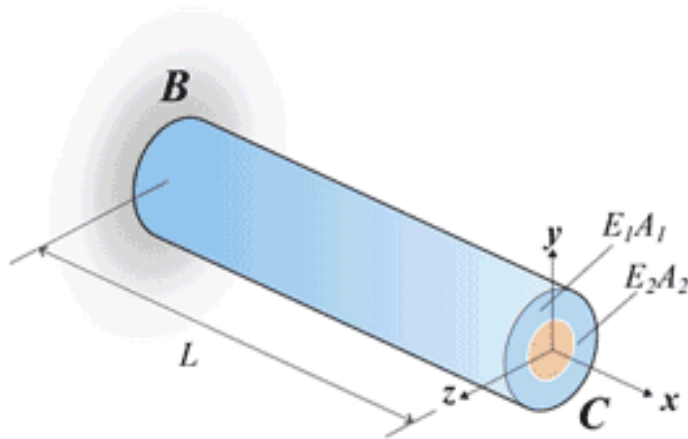
Setting	Description
Accept grades past deadline	Specifies whether third party systems are allowed to post grades past the deadline. By default, this value is set to True.
Button Text	Enter a custom label for the button that launches the third-party LTI application.
Custom Parameters	<p>Enables you to add one or more custom parameters. For example, if you added an e-book, you can set a custom parameter that opens the e-book to a specific page. You could also use a custom parameter to set the background color of the LTI component.</p> <p>Every custom parameter has a key and a value. You must add the key and value in the following format.</p> <p>key=value</p> <p>For example, a custom parameter may resemble the following.</p> <p>bgcolor=red</p> <p>page=144</p> <p>To add a custom parameter, click <b>Add</b>.</p>
Display Name	Specifies the name of the component. This name appears above the component and in the course ribbon at the top of the page in the courseware. Unique, descriptive display names help you identify problems quickly and accurately for analysis.
Hide External Tool	Indicates whether you want to launch an external tool or to use this component as a placeholder for syncing with an external grading system. If you set the value to True, Studio hides the <b>Launch</b> button and any IFrames for this component. By default, this value is set to False.
LTI ID	Specifies the LTI ID for the external LTI provider. This value must be the same LTI ID that you entered on the <b>Advanced Settings</b> page.
LTI URL	Specifies the URL of the external tool that this component launches. This setting is applicable when <b>Hide External Tool</b> is set to False.
Open in New Page	Specify whether the problem opens in a new page. If you set this value to True, the student clicks a link that opens the LTI content in a new window. If you set this value to False, the LTI content opens in an IFrame in the current page. This setting is applicable when <b>Hide External Tool</b> is set to False.
Request user's email	If <b>Open in New Page</b> is set to True, you can also request user information. Set this value to True to request the user's email address.
Request user's username	If <b>Open in New Page</b> is set to True, you can also request user information. Set this value to True to request the user's username.
Scored	Indicates whether the LTI component receives a numerical score from the external LTI system. By default, this value is set to False.
Weight	Specifies the number of points possible for the problem. By default, if an external LTI provider grades the problem, the problem is worth 1 point, and a student's score can be any value between 0 and 1. This setting is applicable when <b>Scored</b> is set to True.
264	<p><b>Chapter 8. Creating Exercises and Tools</b></p> <p>For more information about problem weights and computing point scores, see <a href="#">Problem Weight</a>.</p>

## 8.19 Math Expression Input Problems

In math expression input problems, students enter text that represents a mathematical expression into a field, and text is converted to a symbolic expression that appears below that field. Unlike numerical input problems, which only allow integers and a few select constants, math expression problems can include unknown variables and more complicated symbolic expressions.

*This exercise first appeared in MITx's 2.01x Elements of Structures course, spring 2013.*

The composite bar  $BC$  in the figure is composed of an inner core of cross sectional area  $A_2 = 1 \text{ mm}^2$  and a sleeve of cross sectional area  $A_1 = 4A_2$ . The Young's modulus of the sleeve is  $E_1$  and the modulus of the core is  $E_2 = 2E_1$ . Under the effects of unknown distributed loading,  $f_x(x) [\text{N/m}]$ , the bar is observed to deform. The measured displacement field in the bar is  $u_x(x) = ax^2 - 2aLx$ , where  $a = 0.05 [1/\text{m}]$  is a dimensional constant and  $L = 1 \text{ m}$  is the length of the bar. The origin of the  $x$ -axis is at the fixed support,  $B$ . The maximum magnitude (absolute value) of stress in the core is found to be  $10 \text{ MPa}$ .



Try it (do not include units in your response):

In terms of  $L$ ,  $a$ ,  $E_1$ ,  $A_2$  and  $x$ , write a symbolic expression for  $\mathcal{N}(x)$ :

✓

$$12 \cdot a \cdot L \cdot E_1 \cdot A_2 \cdot \left( \frac{x}{L} - 1 \right)$$

What is the numerical value of  $\mathcal{N}(x=0)$  in Newtons?

N ✗

Reset

Show Answer(s)

For more information about characters that students can enter, see Math Response Formatting for Students.

The grader uses a numerical sampling to determine whether the student's response matches the instructor-provided math expression, to a specified numerical tolerance. The instructor must specify the allowed variables in the expression as well as the range of values for each variable.

**Warning:** Math expression input problems cannot currently include negative numbers raised to fractional powers, such as  $(-1)^{1/2}$ . Math expression input problems can include complex numbers raised to fractional powers, or positive non-complex numbers raised to fractional powers.

When you create a math expression input problem in Studio, you'll use [MathJax](#) to change your plain text into "beautiful math." For more information about how to use MathJax in Studio, see [A Brief Introduction to MathJax in Studio](#).

### 8.19.1 Create a Math Expression Input Problem

To create a math expression input problem:

1. In the unit where you want to create the problem, click **Problem** under **Add New Component**, and then click the **Advanced** tab.
2. Click **Math Expression Input**.
3. In the component that appears, click **Edit**.
4. In the component editor, replace the example code with your own code. To practice, you may want to use the sample problem code below.
5. Click **Save**.

#### Sample Problem Code

```
<problem>
  <p>Some problems may ask for a mathematical expression. Practice creating mathematical expressions

  <p>Write an expression for the product of R_1, R_2, and the inverse of R_3.</p>
  <formularesponse type="ci" samples="R_1,R_2,R_3@1,2,3:3,4,5#10" answer="$VoVi">
    <responseparam type="tolerance" default="0.00001"/>
    <formulaequationinput size="40" label="Enter the equation"/>
  </formularesponse>

  <script type="loncapa/python">
VoVi = "(R_1*R_2)/R_3"
  </script>

  <p>Let <i>x</i> be a variable, and let <i>n</i> be an arbitrary constant. What is the derivative of
  <script type="loncapa/python">
derivative = "n*x^(n-1)"
  </script>
  <formularesponse type="ci" samples="x,n@1,2:3,4#10" answer="$derivative">
    <responseparam type="tolerance" default="0.00001"/>
    <formulaequationinput size="40" label="Enter the equation"/>
  </formularesponse>

  <solution>
    <div class="detailed-solution">
      <p>Explanation or Solution Header</p>
      <p>Explanation or solution text</p>
    </div>
  </solution>
</problem>
```

## 8.19.2 Math Expression Input Problem XML

### Templates

```
<problem>
  <p>Write an expression for the product of R_1, R_2, and the inverse of R_3.</p>
  <formularesponse type="ci" samples="R_1,R_2,R_3@1,2,3:3,4,5#10" answer="R_1*R_2/R_3">
    <responseparam type="tolerance" default="0.00001"/>
    <formulaequationinput size="40" label="Enter the equation" />
  </formularesponse>
</problem>
```

```
<problem>
  <p>Problem text</p>
  <formularesponse type="ci" samples="VARIABLES@LOWER_BOUNDS:UPPER_BOUNDS#NUMBER_OF_SAMPLES" answer=
    <responseparam type="tolerance" default="0.00001"/>
    <formulaequationinput size="20" label="Enter the equation" />
  </formularesponse>

  <script type="loncapa/python">
PYTHON SCRIPT
  </script>

  <solution>
    <div class="detailed-solution">
      <p>Explanation or Solution Header</p>
      <p>Explanation or solution text</p>
    </div>
  </solution>
</problem>
```

### Tags

- <formularesponse>
- <formulaequationinput />
- <responseparam>
- <script>

**Tag:** <formularesponse>

Specifies that the problem is a math expression input problem. The <formularesponse> tag is similar to <numericalresponse>, but <formularesponse> allows unknown variables.

#### Attributes

**type:** Can be “cs” (case sensitive, the default) or “ci” (case insensitive, so that capitalization doesn’t matter in variable names).

**answer:** The correct answer to the problem, given as a mathematical expression. If you precede a variable name in the problem with a dollar sign (\$), you can include a script in the problem that computes the expression in terms of that variable.

**samples:** Specifies important information about the problem in four lists:

- **variables:** A set of variables that students can enter.

- **lower\_bounds:** For every defined variable, a lower bound on the numerical tests to use for that variable.
- **upper\_bounds:** For every defined variable, an upper bound on the numerical tests to use for that variable.
- **num\_samples:** The number of times to test the expression.

Commas separate items inside each of the four individual lists, and the at sign (@), colon (:), and pound sign (#) characters separate the four lists. The format is the following:

```
"variables@lower_bounds:upper_bounds#num_samples"
```

For example, a `<formularesponse>` tag that includes the **samples** attribute may look like either of the following.

```
<formularesponse samples="x,n@1,2:3,4#10">
```

```
<formularesponse samples="R_1,R_2,R_3@1,2,3:3,4,5#10">
```

Children

- `<formulaequationinput />`

**Tag:** `<formulaequationinput />`

Creates a response field where a student types an answer to the problem in plain text, as well as a second field below the response field where the student sees a typeset version of the plain text. The parser that renders the student's plain text into typeset math is the same parser that evaluates the student's response for grading.

Attributes

Attribute	Description
label (required)	Specifies the name of the response field.
size (optional)	Specifies the width, in characters, of the response field where students enter answers.

Children

(none)

**Tag:** `<responseparam>`

Used to define an upper bound on the variance of the numerical methods used to approximate a test for equality.

Attributes

Attribute	Description
default (required)	A number or a percentage specifying how close the student and grader expressions must be. Failure to include a tolerance leaves expressions vulnerable to unavoidable rounding errors during sapling, causing some student input to be graded as incorrect, even if it is algebraically equivalent to the grader's expression.
type	"tolerance"—defines a tolerance for a number

Children

(none)

## 8.20 Molecule Editor Tool

Students can use the molecule editor to learn how to create molecules. The molecule editor allows students to draw molecules that follow the rules for covalent bond formation and formal charge, even if the molecules are chemically

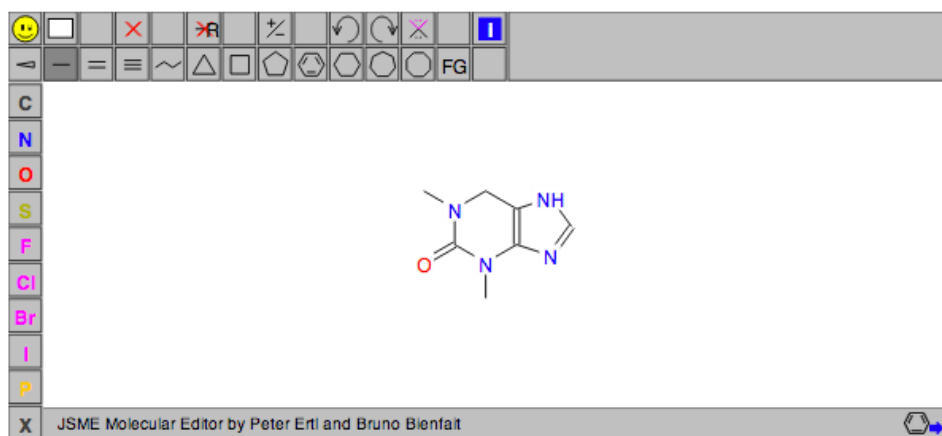
impossible, are unstable, or do not exist in living systems. The molecule editor warns students if they try to submit a structure that is chemically impossible.

The molecule editor incorporates two tools: the JSME molecule editor created by Peter Ertl and Bruno Bienfait, and JSmol, a JavaScript-based molecular viewer from Jmol. (You don't need to download either of these tools—Studio uses them automatically.) For more information about the JSME molecule editor, see [JSME Molecule Editor](#). For more information about JSmol, see [JSmol](#).

### MOLECULAR STRUCTURE (1 point possible)

A molecular structure problem lets the user use the JSME editor component to draw a new molecule or update an existing drawing and then submit their work. Answers are specified as SMILES strings.

I was trying to draw my favorite molecule, caffeine. Unfortunately, I'm not a very good biochemist. Can you correct my molecule?



Answer: C8H10N4O2

#### EXPLANATION

Some scholars have hypothesized that the renaissance was made possible by the introduction of coffee to Italy. Likewise scholars have linked the Enlightenment with the rise of coffee houses in England.

Check

Hide Answer

## 8.20.1 Create the Molecule Editor

To create a molecule editor, you need the following files:

- MoleculeAnswer.png
- MoleculeEditor\_HTML.png

- dopamine.mol

To download all of these files in a .zip archive, go to <http://files.edx.org/MoleculeEditorFiles.zip>.

---

**Note:** The molecule that appears when the tool starts is a dopamine molecule. To use a different molecule, download the .mol file for that molecule from the [list of molecules](#) on the [BioTopics](#) website. Then, upload the .mol file to the **Files & Uploads** page for your course in Studio, and change “dopamine.mol” in the example code to the name of your .mol file.

---

To create the molecule editor that appears in the image above, you need an HTML component followed by a Problem component.

1. Upload all of the files listed above to the **Files & Uploads** page in your course.
2. Create the HTML component.
  1. In the unit where you want to create the problem, click **HTML** under **Add New Component**, and then click **HTML**.
  2. In the component that appears, click **Edit**.
  3. In the component editor, paste the HTML component code from below.
  4. Make any changes that you want, and then click **Save**.
3. Create the Problem component.
  1. Under the HTML component, click **Problem** under **Add New Component**, and then click **Blank Advanced Problem**.
  2. In the component that appears, click **Edit**.
  3. In the component editor, paste the Problem component code from below.
  4. Click **Save**.

### Molecule Editor Code

To create the molecule editor, you need an HTML component and a Problem component.

#### HTML Component Code

```
<h2>Molecule Editor</h2>
<p>The molecule editor makes creating and visualizing molecules easy. A chemistry professor may have
<div>
<script type="text/javascript">// 
function toggle2(showHideDiv, switchTextDiv) {
    var ele = document.getElementById(showHideDiv);
    var text = document.getElementById(switchTextDiv);
    if(ele.style.display == "block") {
        ele.style.display = "none";
        text.innerHTML = "+ open";
    }
    else {
        ele.style.display = "block";
        text.innerHTML = "- close";
    }
}</pre></div><div data-bbox="112 932 147 948" data-label="Page-Footer"><hr/><p>270</p></div><div data-bbox="561 932 884 949" data-label="Page-Footer"><p>Chapter 8. Creating Exercises and Tools</p></div>
```



```
// ]]></script>
</div>
<div>
<style type="text/css"></style>
</div>
<div id="headerDiv">
<div id="titleText">Using the Molecule Editor<a id="myHeader" href="javascript:toggle2('myContent','r
</div>
<div id="contentDiv">
<div id="myContent" style="display: none;">
<p>In this problem you will edit a molecule using the molecular drawing program shown below:</p>
</div>
</div>
<p>&nbsp;</p>
<div id="headerDiv">
<div id="titleText">Are the molecules I've drawn chemically possible?<a id="IntroductionHeader" href=
</div>
<div id="contentDiv">
<div id="IntroductionContent" style="display: none;">
<p>The chemical editor you are using ensures that the structures you draw are correct in one very nar
<p>If you submit a structure that includes atoms that are not possible or are beyond the scope of th
</div>
</div>
<div id="ap_listener_added">&nbsp;</div>
```

### Problem Component Code

```
<problem>
<p>The dopamine molecule, as shown, cannot make ionic bonds. Edit the dopamine molecule so it can make
<p>When you are ready, click Check. If you need to start over, click Reset.</p>
<script type="loncapa/python">
def check1(expect, ans):
    import json
    mol_info = json.loads(ans)["info"]
    return any(res == "Can Make Ionic Bonds" for res in mol_info)
</script>
<customresponse cfn="check1">
    <editamoleculeinput file="/static/dopamine.mol">
    </editamoleculeinput>
</customresponse>
<solution>
    
</solution>
</problem>
```

### Problem 2

```
<problem>
<p>The dopamine molecule, as shown, cannot make strong hydrogen bonds. Edit the dopamine molecule so
<script type="loncapa/python">
def grader_1(expect, ans):
    import json
    mol_info = json.loads(ans)["info"]
    return any(res == "Cannot Make Strong Hydrogen Bonds" for res in mol_info)
</script>
<customresponse cfn="grader_1">
    <editamoleculeinput file="/static/dopamine.mol">
```

```

    </editamoleculeinput>
  </customresponse>
</problem>

```

### Problem 3

```

<problem>
<p>The dopamine molecule has an intermediate hydrophobicity. Edit the dopamine molecule so that it is
<script type="loncapa/python">
def grader_2(expect, ans):
    import json
    mol_info = json.loads(ans) ["info"]

    hydrophobicity_index_str=mol_info[0]
    hydrophobicity_index=float(hydrophobicity_index_str[23:])
    return hydrophobicity_index > .490
</script>
<customresponse cfn="grader_2">
  <editamoleculeinput file="/static/dopamine.mol">
  </editamoleculeinput>
</customresponse>
</problem>

```

## 8.21 Molecule Viewer Tool

Studio offers two tools that you can use in discussions of molecules:

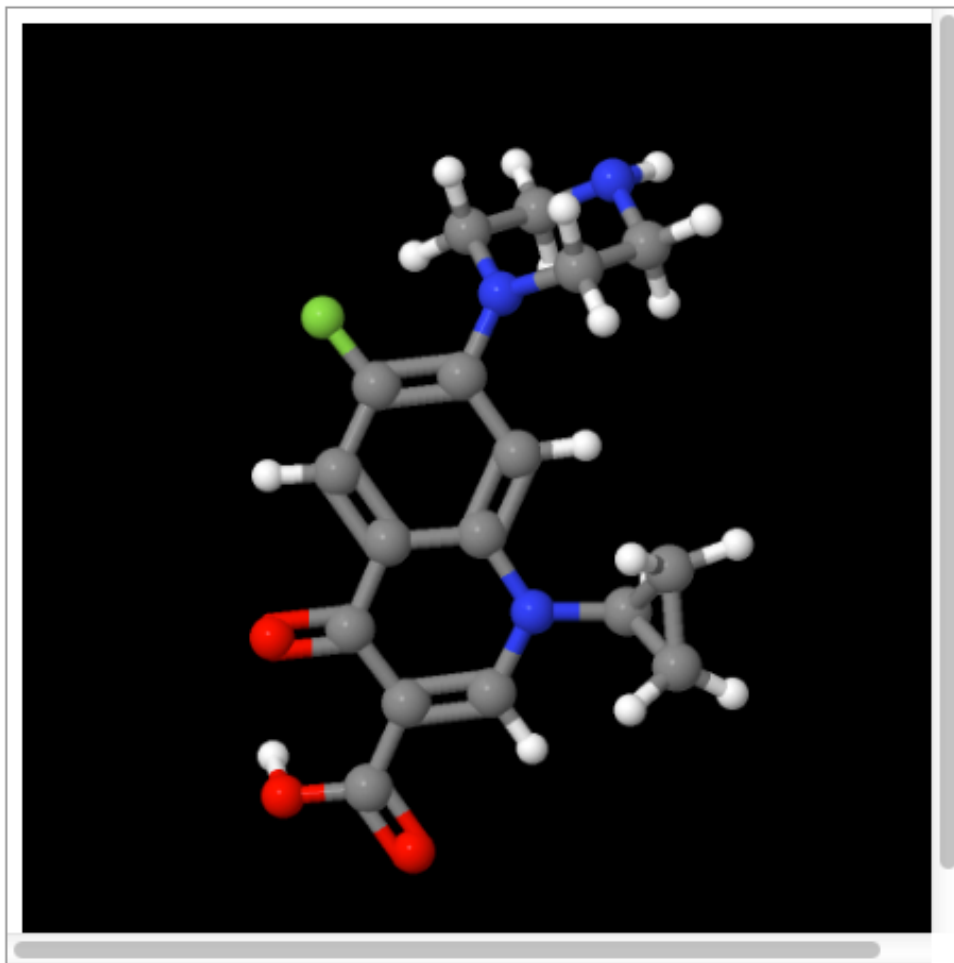
- With the **molecule viewer** tool, you can create three-dimensional representations of molecules for students to view.
- With the **molecule editor** problem type, you can allow students to draw their own molecules. For more information about this tool, see [Molecule Editor Tool](#).

Both tools use **JSmol**, a JavaScript-based molecular viewer from Jmol. (You don't need to download this tool; Studio uses it automatically.) For more information about JSmol, see [JSmol](#).

The following image shows the molecule viewer tool in a course:

## CIPROFLOXACIN

In this course, we've studied the chemical structure of several different "broad-spectrum" antibiotics. The following image shows a molecule of Ciprofloxacin, a fluoroquinolone used to treat UTIs:



**Note:** To create a molecule viewer tool, you must have permission to upload files to a third-party file hosting site such as Amazon Web Services Simple Storage Service (AWS S3). When you create the molecule viewer, you'll upload a folder that contains a large number of files to the file hosting site.

### 8.21.1 Create the Molecule Viewer Tool

Creating a molecule viewer tool has several steps:

1. Download files from the [BioTopics website](#) and from edX.

2. Move or edit some of the files that you downloaded.
3. Upload a folder that contains all of the files that you downloaded and edited to your own file hosting site.
4. Create an HTML component that contains an IFrame in Studio. The IFrame references the files that you upload to the file hosting site.

### Download Files from BioTopics and edX

1. Create or download a .mol file for the molecule that you want to show. You can download a variety of .mol files from the [BioTopics website](#). Save the file in a place where you can easily find it.
2. Download the [MoleculeViewerFiles.zip](#) file from edX.
3. Unzip the [MoleculeViewerFiles.zip](#) file that you've downloaded.

When you unzip the file, you'll see a **MoleculeViewerFiles** folder that contains the following folders and files:

- data (folder)
- j2s (folder)
- js (folder)
- MoleculeViewer.html (file)

### Move the .mol File and Edit the MoleculeViewer.html File

1. Move the .mol file that you downloaded from BioTopics into the **data** folder that you downloaded from edX.
2. Edit the MoleculeViewer.html file:
  - (a) In a text editor, open the MoleculeViewer.html file.
  - (b) In line 19 of the MoleculeViewer.html file, change **Example.mol** to the name of your .mol file. For example, if you downloaded the Glucose.mol file, line 19 in your file will look like the following:

```
script: "set antialiasDisplay; background black; load  
data/Glucose.mol; "
```

3. Save the MoleculeViewer.html file.

### Upload Files to a Hosting Site

1. Make sure that your **MoleculeViewerFiles** folder contains the following folders and files:
  - data (folder): Earlier, you added a .mol file to this folder.
  - j2s (folder)
  - js (folder)
  - MoleculeViewer.html (file): Earlier, you changed line 19 in this file.
2. Upload the entire **MoleculeViewerFiles** folder to your file hosting site.

---

**Note:** Because this folder contains many files, uploading the folder may take several minutes, even over a fast connection.

---

## Create a Component in Studio

1. In Studio, open the unit where you want to add the molecule viewer.
2. Under **Add New Component**, click **HTML**, and then click **IFrame**.
3. In the component editor that opens, replace the existing content with your own text.
4. In the toolbar, click **HTML**.
5. In the **HTML Source Code** box, enter the following line in the place where you want the molecule viewer to appear:

```
<p><iframe name="moleculeiframe" src="https://path_to_folder/MoleculeViewerFiles/Molec  
width="500" height="500"></iframe></p>
```

6. Replace `path_to_file` with the URL of your file hosting site. For example, the line may look like the following:

```
<p><iframe name="moleculeiframe" src="https://myfiles.example.com/MoleculeViewerFiles/  
width="500" height="500"></iframe></p>
```

7. Click **OK** to close the **HTML Source Code** box, and then click **Save** to save the component.
8. Click **Preview** to see your component as a student would see it.

## 8.22 Multiple Choice Problem

In multiple choice problems, students select one option from a list of answer options. Unlike with dropdown problems, whose answer choices don't appear until the student clicks the drop-down arrow, answer choices for multiple choice problems are always visible directly below the question.

*This exercise first appeared in HarvardX's PH278x: Human Health and Global Environmental Change course, spring 2013.*

Lateral inhibition, as was first discovered in the horseshoe crab...

- ☐ is a property of touch sensation, referring to the ability of crabs to detect nearby predators.
- ☐ is a property of hearing, referring to the ability of crabs to detect low frequency noises.
- ☒ is a property of vision, referring to the ability of crabs eyes to enhance contrasts. ✖
- ☐ has to do with the ability of crabs to use sonar to detect fellow horseshoe crabs nearby. ✔
- ☐ has to do with a weighting system in the crabs skeleton that allows it to balance in turbulent water.

EXPLANATION

Horseshoe crabs were essential to the discovery of lateral inhibition, a property of vision present in horseshoe crabs as well as humans, that enables enhancement of contrast at edges of objects as was demonstrated in class. In 1967, Haldan Hartline received the Nobel prize for his research on vision and in particular his research investigating lateral inhibition using horseshoe crabs.

Multiple choice problems also have several advanced options, such as presenting a random set of choices to each student. For more information about these options, see [Advanced Options for Multiple Choice Problems](#).

### 8.22.1 Create a Multiple Choice Problem

You can create multiple choice problems in the Simple Editor or in the Advanced Editor.

**Note:** All problems must include labels for accessibility. The label generally includes the text of the main question in your problem. To add a label for a common problem, surround the text of the label with angle brackets pointed toward the text (>>label text<<).

#### Simple Editor

1. Under **Add New Component**, click **Problem**.
2. In the **Select Problem Component Type** screen, click **Multiple Choice** on the **Common Problem Types** tab.
3. When the new Problem component appears, click **Edit**.
4. In the component editor, replace the sample problem text with the text of your problem. Enter each answer option on its own line.
5. Determine the text of the problem to use as a label, and then surround that text with two sets of angle brackets (>><<).
6. Select all the answer options, and then click the multiple choice button.



When you do this, the component editor adds a pair of parentheses next to each possible answer.

7. Add an “x” between the parentheses next to the correct answer.
8. In the component editor, select the text of the explanation, and then click the explanation button to add explanation tags around the text.



9. On the **Settings** tab, specify the settings that you want.
10. Click **Save**.

For the example problem above, the text in the Problem component is the following.

```
>>Lateral inhibition, as was first discovered in the horseshoe crab:<<

( ) is a property of touch sensation, referring to the ability of crabs to
detect nearby predators.
( ) is a property of hearing, referring to the ability of crabs to detect
low frequency noises.
(x) is a property of vision, referring to the ability of crabs eyes to
enhance contrasts.
( ) has to do with the ability of crabs to use sonar to detect fellow horseshoe
crabs nearby.
( ) has to do with a weighting system in the crabs skeleton that allows it to
balance in turbulent water.

[Explanation]
Horseshoe crabs were essential to the discovery of lateral inhibition, a property of
vision present in horseshoe crabs as well as humans, that enables enhancement of
contrast at edges of objects as was demonstrated in class. In 1967, Haldan Hartline
received the Nobel prize for his research on vision and in particular his research
investigating lateral inhibition using horseshoe crabs.
[Explanation]
```

## Advanced Editor

To create this problem in the Advanced Editor, click the **Advanced** tab in the Problem component editor, and then replace the existing code with the following code.

```
<problem>
<p>Lateral inhibition, as was first discovered in the horseshoe crab...</p>
<multiplechoiceresponse>
  <choicegroup type="MultipleChoice" label="Lateral inhibition, as was first discovered in the horseshoe crab">
    <choice correct="false">is a property of touch sensation, referring to the ability of crabs to de
    <choice correct="false">is a property of hearing, referring to the ability of crabs to detect low
    <choice correct="false">is a property of vision, referring to the ability of crabs eyes to enhanc
    <choice correct="true">has to do with the ability of crabs to use sonar to detect fellow horsesho
    <choice correct="false">has to do with a weighting system in the crabs skeleton that allows it to
  </choicegroup>
</multiplechoiceresponse>
<solution>
  <div class="detailed-solution">
```

```
<p>Explanation</p>
  <p>Horseshoe crabs were essential to the discovery of lateral inhibition, a property of vision p
</div>
</solution>
</problem>
```

### 8.22.2 Advanced Options for Multiple Choice Problems

Multiple choice problems have several advanced options. You can change the order of answers in the problem, include explanations that appear when a student selects a specific incorrect answer, or present a random set of choices to each student. For more information, see the following:

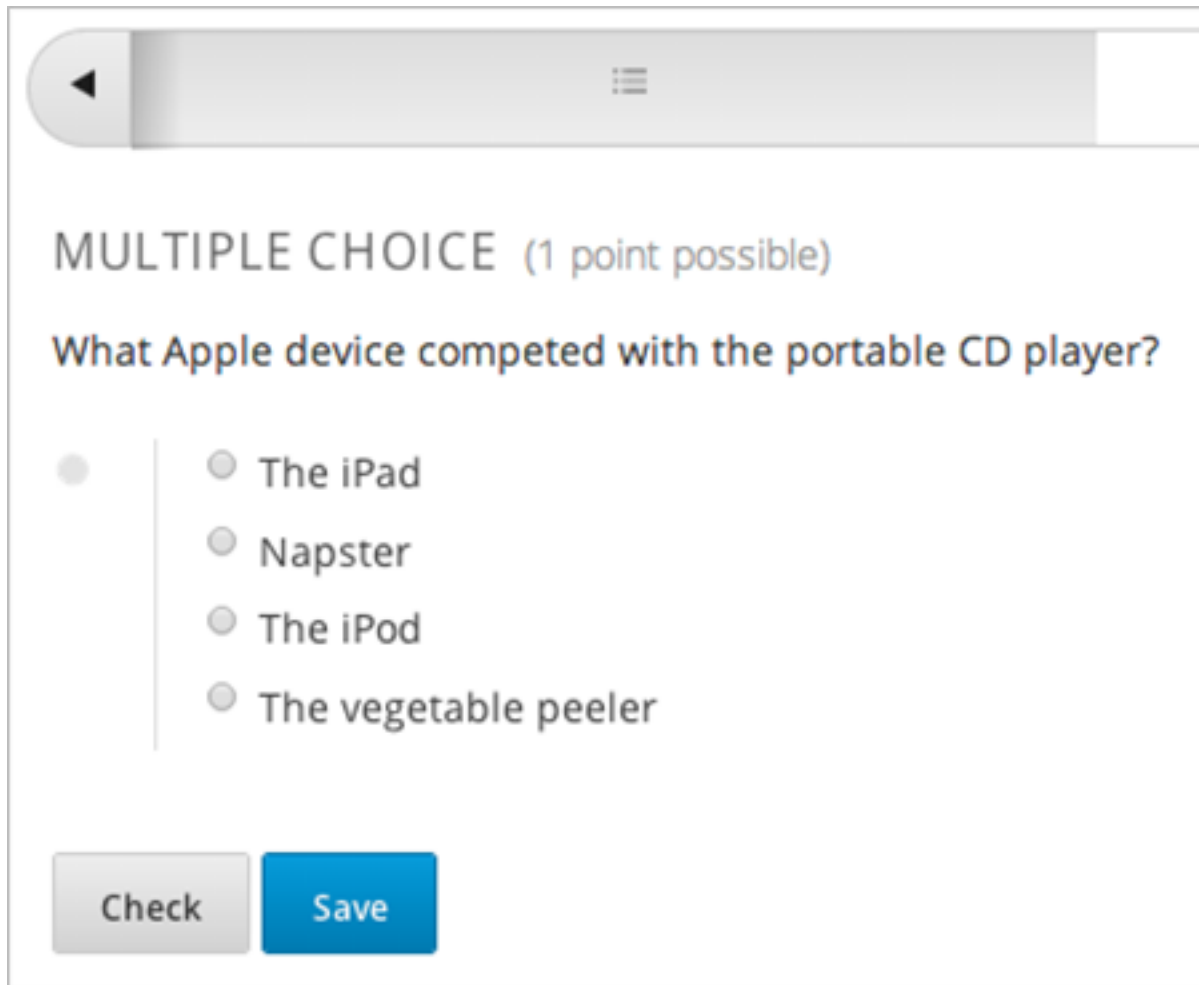
- *Shuffle Answers in a Multiple Choice Problem*
- *Targeted Feedback in a Multiple Choice Problem*
- *Answer Pools in a Multiple Choice Problem*

#### Shuffle Answers in a Multiple Choice Problem

Optionally, you can configure a multiple choice problem so that it shuffles the order of possible answers.

For example, one view of the problem could be:





The screenshot shows a user interface for a Multiple Choice problem. At the top, there is a navigation bar with a back arrow on the left and a menu icon on the right. Below the navigation bar, the text "MULTIPLE CHOICE (1 point possible)" is displayed. The question text is "What Apple device competed with the portable CD player?". There are four radio button options: "The iPad", "Napster", "The iPod", and "The vegetable peeler". At the bottom of the problem area, there are two buttons: "Check" (grey) and "Save" (blue).

MULTIPLE CHOICE (1 point possible)

What Apple device competed with the portable CD player?

- ☐ The iPad
- ☐ Napster
- ☐ The iPod
- ☐ The vegetable peeler

Check Save

And another view of the same problem, for another student or for the same student of a subsequent view of the unit, could be:

**MULTIPLE CHOICE** (1 point possible)

What Apple device competed with the portable CD player?

- ☐ Napster
- ☐ The iPad
- ☐ The vegetable peeler
- ☐ The iPod

You can also have some answers shuffled, but not others. For example, you may want to have the answer “All of the Above” fixed at the end of the list, but shuffle other answers.

You can configure the problem to shuffle answers through *The Simple Editor* or *The Advanced Editor*.

### Use the Simple Editor to Shuffle Answers

You can configure the problem to shuffle answers in *The Simple Editor*.

For example, the following text defines a multiple choice problem, before shuffling is enabled. The (x) indicates the correct answer:

```
>>What Apple device competed with the portable CD player?<<
  ( ) The iPad
  ( ) Napster
  (x) The iPod
  ( ) The vegetable peeler
```

To add shuffling to this problem, add ! in the parenthesis of the first answer:

```
>>What Apple device competed with the portable CD player?<<
  (!) The iPad
  ( ) Napster
```

```
(x) The iPod
( ) The vegetable peeler
```

To fix an answer's location in the list, add @ in the parenthesis of that answer:

```
>>What Apple device competed with the portable CD player?<<
  (!) The iPad
  ( ) Napster
  (x) The iPod
  ( ) The vegetable peeler
  (@) All of the above
```

You can combine symbols within parenthesis as necessary. For example, to show the correct answer in a fixed location, you could use:

```
(x@) The iPod
```

### Use the Advanced Editor to Shuffle Answers

You can configure the problem to shuffle answers through XML in *The Advanced Editor*.

For example, the following XML defines a multiple choice problem, before shuffling is enabled:

```
<p>What Apple device competed with the portable CD player?</p>
<multiplechoiceresponse>
  <choicegroup type="MultipleChoice">
    <choice correct="false">The iPad</choice>
    <choice correct="false">Napster</choice>
    <choice correct="true">The iPod</choice>
    <choice correct="false">The vegetable peeler</choice>
  </choicegroup>
</multiplechoiceresponse>
```

To add shuffling to this problem, add `shuffle="true"` to the `<choicegroup>` element:

```
<p>What Apple device competed with the portable CD player?</p>
<multiplechoiceresponse>
  <choicegroup type="MultipleChoice" shuffle="true">
    <choice correct="false">The iPad</choice>
    <choice correct="false">Napster</choice>
    <choice correct="true">The iPod</choice>
    <choice correct="false">The vegetable peeler</choice>
  </choicegroup>
</multiplechoiceresponse>
```

To fix an answer's location in the list, add `fixed="true"` to the `choice` element for the answer:

```
<p>What Apple device competed with the portable CD player?</p>
<multiplechoiceresponse>
  <choicegroup type="MultipleChoice" shuffle="true">
    <choice correct="false">The iPad</choice>
    <choice correct="false">Napster</choice>
    <choice correct="true">The iPod</choice>
    <choice correct="false">The vegetable peeler</choice>
    <choice correct="false" fixed="true">All of the above</choice>
  </choicegroup>
</multiplechoiceresponse>
```

## Targeted Feedback in a Multiple Choice Problem

You can configure a multiple choice problem so that explanations for incorrect answers are automatically shown to students. You can use these explanations to guide students towards the right answer. Therefore, targeted feedback is most useful for multiple choice problems for which students are allowed multiple attempts.

### Use the Advanced Editor to Configure Targeted Feedback

You configure the problem to provide targeted feedback through XML in *The Advanced Editor*.

Follow these XML guidelines:

- Add a `targeted-feedback` attribute to the `<multiplechoiceresponse>` element, with no value: `<multiplechoiceresponse targeted-feedback="">`
- Add a `<targetedfeedbackset>` element before the `<solution>` element.
- Within `<targetedfeedbackset>`, add one or more `<targetedfeedback>` elements.
- Within each `<targetedfeedback>` element, enter your explanation for the incorrect answer in HTML as markup described below.
- Connect the `<targetedfeedback>` element with a specific incorrect answer by using the same `explanation-id` attribute value for each.
- Use the `<solution>` element for the correct answer, with the same `explanation-id` attribute value as the correct `<choice>` element.

For example, the XML for the multiple choice problem is:

```
<p>What Apple device competed with the portable CD player?</p>
<multiplechoiceresponse targeted-feedback="">
  <choicegroup type="MultipleChoice">
    <choice correct="false" explanation-id="feedback1">The iPad</choice>
    <choice correct="false" explanation-id="feedback2">Napster</choice>
    <choice correct="true" explanation-id="correct">The iPod</choice>
    <choice correct="false" explanation-id="feedback3">The vegetable peeler</choice>
  </choicegroup>
</multiplechoiceresponse>
```

This is followed by XML that defines the targeted feedback:

```
<targetedfeedbackset>
  <targetedfeedback explanation-id="feedback1">
    <div class="detailed-targeted-feedback">
      <p>Targeted Feedback</p>
      <p>The iPad came out later and did not directly compete with portable CD players.</p>
    </div>
  </targetedfeedback>
  <targetedfeedback explanation-id="feedback2">
    <div class="detailed-targeted-feedback">
      <p>Targeted Feedback</p>
      <p>Napster was not an Apple product.</p>
    </div>
  </targetedfeedback>
  <targetedfeedback explanation-id="feedback3">
    <div class="detailed-targeted-feedback">
      <p>Targeted Feedback</p>
      <p>Vegetable peelers don't play music.</p>
    </div>
  </targetedfeedback>
</targetedfeedbackset>
```

```

</targetedfeedback>
</targetedfeedbackset>

<solution explanation-id="correct">
  <div class="detailed-solution">
    <p>The iPod directly competed with portable CD players.</p>
  </div>
</solution>

```

## Answer Pools in a Multiple Choice Problem

You can configure a multiple choice problem so that a random subset of choices are shown to each student. For example, you can add 10 possible choices to the problem, and each student views a set of five choices.

The answer pool must have at least one correct answer, and can have more than one. In each set of choices shown to a student, one correct answer is included. For example, you may configure two correct answers in the set of 10. One of the two correct answers is included in each set a student views.

### Use the Advanced Editor to Configure Answer Pools

You configure the problem to provide answer pools through XML in *The Advanced Editor*.

Follow these XML guidelines:

- In the `<choicegroup>` element, add the `answer-pool` attribute, with the numerical value indicating the number of possible answers in the set. For example, `<choicegroup answer-pool="4">`.
- For each correct answer, to the `<choice>` element, add an `explanation-id` attribute and value that maps to a solution. For example, `<choice correct="true" explanation-id="iPod">The iPod</choice>`.
- For each `<solution>` element, add an `explanation-id` attribute and value that maps back to a correct answer. For example, `<solution explanation-id="iPod">`.

**Note:** If the choices include only one correct answer, you do not have to use the `explanation-id` in either the choice or `<solution>` element. You do still use the `<solutionset>` element to wrap the `<solution>` element.

For example, for the following multiple choice problem, a student will see four choices, and in each set one of the choices will be one of the two correct ones. The explanation shown for the correct answer is the one with the same explanation ID.

```

<problem>
  <p>What Apple devices let you carry your digital music library in your pocket?</p>
  <multiplechoiceresponse>
    <choicegroup type="MultipleChoice" answer-pool="4">
      <choice correct="false">The iPad</choice>
      <choice correct="false">Napster</choice>
      <choice correct="true" explanation-id="iPod">The iPod</choice>
      <choice correct="false">The vegetable peeler</choice>
      <choice correct="false">The iMac</choice>
      <choice correct="true" explanation-id="iPhone">The iPhone</choice>
    </choicegroup>
  </multiplechoiceresponse>

```

```

<solutionset>
  <solution explanation-id="iPod">
    <div class="detailed-solution">
      <p>Explanation</p>
      <p>Yes, the iPod is Apple's portable digital music player.</p>
    </div>
  </solution>
  <solution explanation-id="iPhone">
    <div class="detailed-solution">
      <p>Explanation</p>
      <p>In addition to being a cell phone, the iPhone can store and play your digital music.</p>
    </div>
  </solution>
</solutionset>
</problem>

```

### 8.22.3 Multiple Choice Problem XML

#### Template

```

<problem>
<p>Question text</p>
<multiplechoiceresponse>
  <choicegroup type="MultipleChoice" label="label text">
    <choice correct="false" name="a">Incorrect choice</choice>
    <choice correct="true" name="b">Correct choice</choice>
  </choicegroup>
</multiplechoiceresponse>

<solution>
  <div class="detailed-solution">
    <p>Explanation or solution header</p>
    <p>Explanation or solution text</p>
  </div>
</solution>
</problem>

```

#### Tags

- `<multiplechoiceresponse>` (required): Indicates that the problem is a multiple choice problem.
- `<choicegroup>` (required): Indicates the beginning of the list of options.
- `<choice>` (required): Lists an answer option.

**Tag:** `<multiplechoiceresponse>`

Indicates that the problem is a multiple choice problem.

Attributes

(none)

Children

- `<choicegroup>`
- All standard HTML tags (can be used to format text)

**Tag:** <choicegroup>

Indicates the beginning of the list of options.

Attributes

Attribute	Description
label (required)	Specifies the name of the response field.
type (required)	Must be set to “MultipleChoice”.

Children

- <choice>

**Tag:** <choice>

Lists an answer option.

Attributes

Attribute	Description
correct (at least one required)	Indicates a correct or incorrect answer. When the attribute is set to “true”, the choice is a correct answer. When the attribute is set to “false”, the choice is an incorrect answer. Only one choice can be a correct answer.
name	A unique name that the back end uses to refer to the choice.

Children

(none)

## 8.23 Multiple Choice and Numerical Input Problem

You can create a problem that combines a multiple choice and numerical input problems. Students not only select a response from options that you provide, but also provide more specific information, if necessary.

**Note:** Currently, students can only enter numerals in the text field. Students cannot enter words or mathematical expressions.

### 8.23.1 Create a Multiple Choice and Numerical Input Problem

To create a multiple choice and numerical input problem:

1. In the unit where you want to create the problem, click **Problem** under **Add New Component**, and then click the **Advanced** tab.

2. Click **Blank Advanced Problem**.
3. In the component that appears, click **Edit**.
4. In the component editor, paste the code from below.
5. Replace the example problem and response options with your own text.
6. Click **Save**.

### 8.23.2 Multiple Choice and Numerical Input Problem Code

```
<problem>
The numerical value of pi, rounded to two decimal points, is 3.24.
<choicetextresponse>
<radiotextgroup>
<choice correct="false">True.</choice>
<choice correct="true">False. The correct value is <numtolerance_input answer="3.14"/>.</choice>
</radiotextgroup>
</choicetextresponse>
</problem>
```

## 8.24 Numerical Input

Numerical input problems are the simpler of the two mathematics tools that Studio offers. In these problems, students enter numbers or specific and relatively simple mathematical expressions to answer a question. The text that the students enter is converted to a symbolic expression that appears below the response field.



## NUMERICAL RESPONSE

What base is the decimal numeral system in?



Answer: 10

What is the value of the standard gravity constant  $g$ , measured in  $\text{m/s}^2$ ? Give your answer to at least two decimal places.



Answer: 9.80665

What is the distance in the plane between the points  $(\pi, 0)$  and  $(0, e)$ ? You can type math.



Answer: 4.15435440231

## EXPLANATION

The decimal numerical system is base ten.

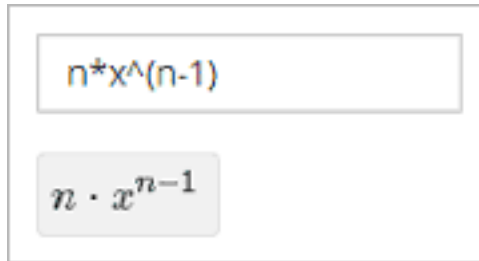
The standard gravity constant is defined to be precisely  $9.80665 \text{ m/s}^2$ . This is 9.80 to two decimal places. Entering 9.8 also works.

By the distance formula, the distance between two points in the plane is the square root of the sum of the squares of the differences of each coordinate. Even though an exact numerical value is checked in this case, the easiest way to enter this answer is to type `sqrt(pi^2+e^2)` into the editor. Other answers like

`sqrt((pi-0)^2+(0-e)^2)` also work.

Note that students' responses don't have to be exact for these problems. You can specify a margin of error, or tolerance. You can also specify a correct answer explicitly, or use a Python script. For more information, see the instructions below.

Responses for numerical input problems can include integers, fractions, and constants such as  $\pi$  and  $e$ . Responses can also include text representing common functions, such as square root (`sqrt`) and log base 2 (`log2`), as well as trigonometric functions and their inverses, such as sine (`sin`) and arcsine (`arcsin`). For these functions, the text that the student enters is converted into mathematical symbols. The following example shows the way the system renders students' text responses in numerical input problems.



The image shows a math input interface. At the top, a text box contains the string `n*x^(n-1)`. Below it, a gray box displays the rendered mathematical expression  $n \cdot x^{n-1}$ .

For more information about characters that students can enter, see [Math Response Formatting for Students](#).

### 8.24.1 Create a Numerical Input Problem

You can create numerical problems in the Simple Editor or in the Advanced Editor regardless of the answer to the problem. If the text of your problem doesn't include any italics, bold formatting, or special characters, you can create the problem in the Simple Editor. If the text of your problem contains special formatting or characters, or if your problem contains a Python script, you'll use the Advanced Editor.

For example, the following example problems require the Advanced Editor.

What is the value of the standard gravity constant  $g$ , measured in  $\text{m/s}^2$ ? Give your answer to at least two decimal places.




**Answer:** 9.80665

What is the distance in the plane between the points  $(\pi, 0)$  and  $(0, e)$ ? You can type math.



$$\sqrt{(\pi - 0)^2 + (0 - e)^2}$$

**Answer:** 4.15435440231

#### EXPLANATION

The standard gravity constant is defined to be precisely  $9.80665 \text{ m/s}^2$ . This is 9.80 to two decimal places. Entering 9.8 also works.

By the distance formula, the distance between two points in the plane is the square root of the sum of the squares of the differences of each coordinate. Even though an exact numerical value is checked in this case, the easiest way to enter this answer is to type `sqrt(pi^2+e^2)` into the editor. Other answers like `sqrt((pi-0)^2+(0-e)^2)` also work.



You have used 2 of 5 submissions

For more information about including a Python script in your problem, see [Write-Your-Own-Grader Problem](#).

### Simple Editor

1. Under **Add New Component**, click **Problem**.
2. In the **Select Problem Component Type** screen, click **Numerical Input** on the **Common Problem Types** tab.
3. When the new Problem component appears, click **Edit**.
4. In the component editor, replace the sample problem text with your own text.

5. Determine the text of the problem to use as a label, and then surround that text with two sets of angle brackets (>><<).
6. Select the text of the answer, and then click the numerical input button.



When you do this, an equal sign appears next to the answer.

7. (Optional) Specify a margin of error, or tolerance. You can specify a percentage, number, or range.
  - To specify a percentage on either side of the correct answer, add **+ -NUMBER%** after the answer. For example, if you want to include a 2% tolerance, add **+ -2%**.
  - To specify a number on either side of the correct answer, add **+ -NUMBER** after the answer. For example, if you want to include a tolerance of 5, add **+ -5**.
  - To specify a range, use brackets [] or parentheses (). A bracket indicates that range includes the number next to it. A parenthesis indicates that the range does not include the number next to it. For example, if you specify **[5, 8)**, correct answers can be 5, 6, and 7, but not 8. Likewise, if you specify **(5, 8]**, correct answers can be 6, 7, and 8, but not 5.
8. In the component editor, select the text of the explanation, and then click the explanation button to add explanation tags around the text.



9. On the **Settings** tab, specify the settings that you want.
10. Click **Save**.

For the first example problem above, the text in the Problem component is the following.

```
>>What base is the decimal numeral system in?<<

= 10

[explanation]
The decimal numeral system is base ten.
[explanation]
```

### Advanced Editor

To create this problem in the Advanced Editor, click the **Advanced** tab in the Problem component editor, and then replace the existing code with the following code.

#### Problem Code:

```
<problem>
  <p><b>Example Problem</b></p>

  <p>What base is the decimal numeral system in?
    <numericalresponse answer="10">
      <formulaequationinput label="What base is the decimal numeral system in?"/>
    </numericalresponse>
  </p>

  <p>What is the value of the standard gravity constant <i>g</i>, measured in m/s<sup>2</sup>? Give y
```

```

<numericalresponse answer="9.80665">
  <responseparam type="tolerance" default="0.01" />
  <formulaequationinput label="Give your answer to at least two decimal places"/>
</numericalresponse>
</p>

<!-- The following uses Python script spacing. Make sure it isn't indented when you add it to the Problem -->
<script type="loncapa/python">
computed_response = math.sqrt(math.fsum([math.pow(math.pi,2), math.pow(math.e,2)]))
</script>

<p>What is the distance in the plane between the points (pi, 0) and (0, e)? You can type math.
  <numericalresponse answer="$computed_response">
    <responseparam type="tolerance" default="0.0001" />
    <formulaequationinput label="What is the distance in the plane between the points (pi, 0) and (0, e)? You can type math." />
  </numericalresponse>
</p>
<solution>
  <div class="detailed-solution">
    <p>Explanation</p>
    <p>The decimal numerical system is base ten.</p>
    <p>The standard gravity constant is defined to be precisely 9.80665 m/s<sup>2</sup>. This is 9.80 to two decimal places. Entering 9.8 also works.</p>
    <p>By the distance formula, the distance between two points in the plane is the square root of the sum of the squares of the differences of each coordinate. Even though an exact numerical value is checked in this case, the easiest way to enter this answer is to type
      <code>sqrt(pi^2+e^2)</code> into the editor.
      Other answers like <code>sqrt((pi-0)^2+(0-e)^2)</code> also work.
    </p>
  </div>
</solution>
</problem>

```

## 8.24.2 Numerical Input Problem XML

### Templates

The following templates represent problems with and without a decimal or percentage tolerance.

#### Problem with no tolerance

```

<p>TEXT OF PROBLEM
  <numericalresponse answer="ANSWER (NUMBER)">
    <formulaequationinput label="TEXT OF PROBLEM"/>
  </numericalresponse>
</p>

<solution>
  <div class="detailed-solution">
    <p>TEXT OF SOLUTION</p>
  </div>
</solution>
</problem>

```

### Problem with a decimal tolerance

```
<problem>

  <p>TEXT OF PROBLEM
  <numericalresponse answer="ANSWER (NUMBER)">
    <responseparam type="tolerance" default="NUMBER (DECIMAL, e.g., .02)" />
    <formulaequationinput label="TEXT OF PROBLEM"/>
  </numericalresponse>
</p>

  <solution>
  <div class="detailed-solution">
    <p>TEXT OF SOLUTION</p>
  </div>
</solution>
</problem>
```

### Problem with a percentage tolerance

```
<problem>

  <p>TEXT OF PROBLEM
  <numericalresponse answer="ANSWER (NUMBER)">
    <responseparam type="tolerance" default="NUMBER (PERCENTAGE, e.g., 3%)" />
    <formulaequationinput label="TEXT OF PROBLEM"/>
  </numericalresponse>
</p>

  <solution>
  <div class="detailed-solution">
    <p>TEXT OF SOLUTION</p>
  </div>
</solution>
</problem>
```

### Answer created with a script

```
<problem>

<!-- The following uses Python script spacing. Make sure it isn't indented when you add it to the Problem -->
<script type="loncapa/python">
computed_response = math.sqrt(math.fsum([math.pow(math.pi,2), math.pow(math.e,2)]))
</script>

  <p>TEXT OF PROBLEM
    <numericalresponse answer="$computed_response">
      <responseparam type="tolerance" default="0.0001" />
      <formulaequationinput label="TEXT OF PROBLEM"/>
    </numericalresponse>
  </p>

  <solution>
  <div class="detailed-solution">
```

```

<p>TEXT OF SOLUTION</p>
</div>
</solution>
</problem>

```

## Tags

- `<numericalresponse>` (required): Specifies that the problem is a numerical input problem.
- `<formulaequationinput />` (required): Provides a response field where the student enters a response.
- `<responseparam>` (optional): Specifies a tolerance, or margin of error, for an answer.
- `<script>` (optional):

**Note:** Some older problems use the `<textline math="1" />` tag instead of the `<formulaequationinput />` tag. However, the `<textline math="1" />` tag has been deprecated. All new problems should use the `<formulaequationinput />` tag.

**Tag:** `<numericalresponse>`

Specifies that the problem is a numerical input problem. The `<numericalresponse>` tag is similar to the `<formularesponse>` tag, but the `<numericalresponse>` tag does not allow unspecified variables.

### Attributes

Attribute	Description
answer (required)	The correct answer to the problem, given as a mathematical expression.

**Note:** If you include a variable name preceded with a dollar sign (\$) in the problem, you can include a script in the problem that computes the expression in terms of that variable.

The grader evaluates the answer that you provide and the student's response in the same way. The grader also automatically simplifies any numeric expressions that you or a student provides. Answers can include simple expressions such as "0.3" and "42", or more complex expressions such as "1/3" and "sin(pi/5)".

### Children

- `<responseparam>`
- `<formulaequationinput>`

**Tag:** \* `<formulaequationinput>`

Creates a response field in the LMS where students enter a response.

### Attributes

Attribute	Description
label (required)	Specifies the name of the response field.
size (optional)	Defines the width, in characters, of the response field in the LMS.

### Children

(none)

**Tag:** `<responseparam>`

Specifies a tolerance, or margin of error, for an answer.

**Attributes**

Attribute	Description
type (optional)	“tolerance”: Defines a tolerance for a number
default (optional)	A number or a percentage specifying a numerical or percent tolerance.

**Children**

(none)

**Tag:** `<script>`

Specifies a script that the grader uses to evaluate a student’s response. A problem behaves as if all of the code in all of the script tags were in a single script tag. Specifically, any variables that are used in multiple `<script>` tags share a namespace and can be overridden.

As with all Python, indentation matters, even though the code is embedded in XML.

**Attributes**

Attribute	Description
type (required)	Must be set to “loncapa/python”.

**Children**

(none)

## 8.25 Open Response Assessments

### 8.25.1 Open Response Assessments

#### Introduction to Open Response Assessments

Open response assessments allow instructors to assign questions that may not have definite answers. Students submit a response to the question, and then that student and the student’s peers compare the response to a rubric that you create. Usually students will submit text responses. You can also allow your students to upload an image to accompany the text.

Open response assessments include peer assessments and self assessments. In peer assessments, students compare their peers’ responses to a rubric that you create. In self assessments, students compare their own responses to the rubric.

In open response assessments, students usually only see their own responses and any peer responses they assess. You can also allow students to see the top-scoring responses that their peers have submitted. For more information, see [Top Responses](#).

For more information about creating open response assessments, including step-by-step instructions, see the following sections:

- [Elements of an Open Response Assessment](#)
- [Peer Assessment Scoring](#)
- [Create an Open Response Assessment Assignment](#)
- [Accessing Assignment and Student Metrics](#)

For information about the student experience with open response assessments, see [Open Response Assessments](#) in the [edX Guide for Students](#).



## **Elements of an Open Response Assessment**

When you create an open response assessment assignment, you include several elements:

- The prompt, or question.
- The rubric.
- One or more assessment steps. Assignments can include a student training step, a peer assessment step, and a self assessment step.

---

**Note:** If you include a student training step, you must also add a peer assessment step. The student training step must be the first step.

---

For step-by-step instructions for creating an open response assessment, see [\*Create an Open Response Assessment Assignment\*](#).

### **Prompt**

The **prompt**, or question that you want your students to answer, appears near the top of the page, followed by a field where the student enters a response. You can require your students to enter text as a response, or you can allow your students to both enter text and upload an image.

This assignment has several steps. In the first step, you'll provide a response to the question. The other steps appear below the **Your Response** field.

### Censorship in the Libraries

'All of us can think of a book that we hope none of our children or any other children have taken off the shelf. But if I have the right to remove that book from the shelf -- that work I abhor -- then you also have exactly the same right and so does everyone else. And then we have no books left on the shelf for any of us.' --Katherine Paterson, Author

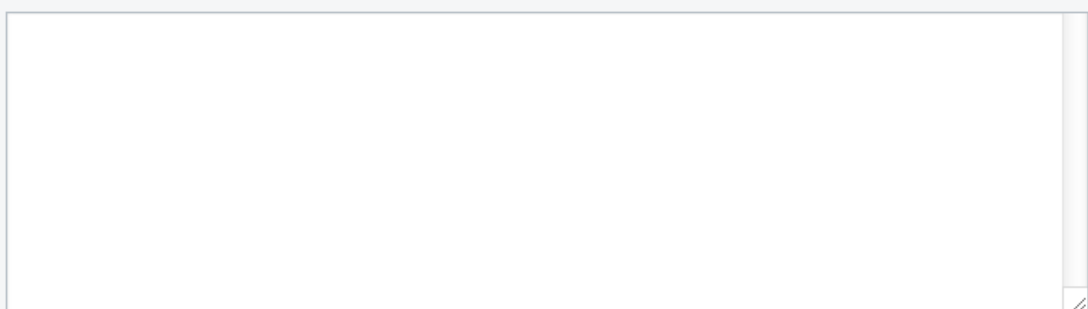
Write a persuasive essay to a newspaper reflecting your views on censorship in libraries. Do you believe that certain materials, such as books, music, movies, magazines, etc., should be removed from the shelves if they are found offensive? Support your position with convincing arguments from your own experience, observations, and/or reading.

Read for conciseness, clarity of thought, and form.

## 1 | Your Response

IN PROGRESS

Enter your response to the question. You can save your progress and return to complete your response at any time. **After you submit your response, you cannot edit it.**



YOU MAY CONTINUE TO WORK ON YOUR RESPONSE UNTIL YOU SUBMIT IT.

Save Your Progress

THIS RESPONSE HAS NOT BEEN SAVED.

Submit your response and move to the next step ▶

**Note:** If students upload an image, the image file must be a .jpg or .png file, and it must be smaller than 5 MB in size.

When you write your question, you can include helpful information for your students, such as what students can expect after they submit responses and the approximate number of words or sentences that a student's response should have. (A response cannot have more than 10,000 words.)

For more information, see [Step 2. Add the Prompt](#).

### Asking Students to Upload Images

You can ask your students to upload an image as part of their response. If you do this, however, keep the following in mind:

- Currently, you cannot require your students to upload an image. You can only allow it.
- All responses must include some text. Students cannot submit a response that only contains an image.
- Students can only submit one image with their response.

---

**Note:** Currently, course teams cannot see any of the images that students submit. Images are not visible in the body of the assignment in the courseware, and they are not included in the course data package.

---

### Rubric

Your assignment must include a **rubric** that you design. The same rubric is used for peer and self assessments, and the rubric appears when students begin grading. Students compare their peers' responses to the rubric.

Rubrics are made of *criteria* and *options*.

- Each criterion has a *name*, a *prompt*, and one or more *options*.
  - The name is a very short summary of the criterion, such as “Ideas” or “Content”. Criterion names generally have just one word. Because the system uses criterion names for identification, **the name for each criterion must be unique**. Criterion names do not appear in the rubric that students see when they are completing peer assessments, but they do appear on the page that shows the student's final grade.

**Your Grade:** 8 out of 14

**YOUR SUBMITTED RESPONSE**

Really really excited to be standing at the crossroads of technology and education!!!!!!

**PEER EVALUATIONS OF YOUR RESPONSE**

**Criteria names**

▼ Ideas 5 / 11 POINTS

PEER 1	PEER 2	PEER 3	YOUR SELF ASSESSMENT
<b>Good</b>	<b>Good</b>	<b>Good</b>	<b>Good</b>
Presents a unifying theme or main idea without going off on tangents. Stays completely focused on topic and task.	Presents a unifying theme or main idea without going off on tangents. Stays completely focused on topic and task.	Presents a unifying theme or main idea without going off on tangents. Stays completely focused on topic and task.	Presents a unifying theme or main idea without going off on tangents. Stays completely focused on topic and task.
5 POINTS	5 POINTS	5 POINTS	

▼ Content 3 / 3 POINTS

PEER 1	PEER 2	PEER 3	YOUR SELF ASSESSMENT
<b>Excellent</b>	<b>Excellent</b>	<b>Excellent</b>	<b>Excellent</b>
Includes in-depth information and exceptional supporting details that are fully developed. Explores all facets of the topic.	Includes in-depth information and exceptional supporting details that are fully developed. Explores all facets of the topic.	Includes in-depth information and exceptional supporting details that are fully developed. Explores all facets of the topic.	Includes in-depth information and exceptional supporting details that are fully developed. Explores all facets of the topic.
3 POINTS	3 POINTS	3 POINTS	

- The prompt is a description of the criterion.
- Options describe how well the response satisfies the criterion.
- Each option has a *name*, an *explanation*, and a *point value*.

▼ Determine if there is a unifying theme or main idea. — Criterion prompt				
Option names	● Poor	Option explanations	Difficult for the reader to discern the main idea. Too brief or too repetitive to establish or maintain a focus.	Option points
	● Fair		Presents a unifying theme or main idea, but may include minor tangents. Stays somewhat focused on topic and task.	
	● Good		Presents a unifying theme or main idea without going off on tangents. Stays completely focused on topic and task.	
▼ Assess the content of the submission				
● Poor	Includes little information with few or no details or unrelated details. Unsuccessful in attempts to explore any facets of the topic.		0 points	
● Fair	Includes little information and few or no details. Explores only one or two facets of the topic.		1 points	
● Good	Includes sufficient information and supporting details. (Details may not be fully developed; ideas may be listed.) Explores some facets of the topic.		3 points	
● Excellent	Includes in-depth information and exceptional supporting details that are fully developed. Explores all facets of the topic.		3 points	

Different criteria in the same assignment can have different numbers of options. For example, in the image above, the first criterion has three options and the second criterion has four options.

**Note:** You can also include criteria that do not have options, but that do include a field where students can enter feedback. For more information, see [Provide Only Comment Fields for Individual Criteria](#).

You can see both criterion and option names when you access assignment information for an individual student. For more information, see [Accessing Assignment and Student Metrics](#).

Student Information

Student Response

Masceras ac leo agestas, pellentesque ante id, tempus lorem. Cras suscipit venenatis ante, ac sodales libero scelerisque eget. Cras fella lectus, commodo vitae fella eget, facilisis bibendum risa. Aenean aliquam odio a rhoncus eleifend. Vivamus ut ipsum congue sapien feugiat semper sit amet et diam. Aenean lacus agestas ante, sit amet fringilla magna tristique ullamcorper. Vivamus hendrerit neque ac metus hendrerit, nec placerat ipsum varius. In nulla est, dignissim eu nunc eu, pulvinar vehicula sapien.

Peer Assessments for This Student

Peer 1:

CRITERION	SELECTED OPTION	FEEDBACK	POINTS	POINTS POSSIBLE
Ideas	Fair	Fuere veli neque, ultrices in vehicula id, fermentum quis ante. Pellentesque fella libero, vehicula quis tempus eu, ornare in magna. Quisque sagittis ultrices vehicula.	3	5
Content	Fair		1	3

Overall Feedback

Cras suscipit venenatis ante, ac sodales libero scelerisque eget. Cras fella lectus, commodo vitae fella eget, facilisis bibendum risa. Aenean aliquam odio a rhoncus eleifend. Vivamus ut ipsum congue sapien feugiat semper sit amet et diam.

Criterion names

Option names

When you create your rubric, decide how many points each option will receive, and make sure that the explanation for each option is as specific as possible. For example, one criterion and set of options may resemble the following.

### Criterion

Name: Origins

Prompt: Does this response explain the origins of the Hundred Years' War? (5 points possible)

### Options

Points	Name	Explanation
0	Not at all	This response does not address the origins of the Hundred Years' War.
1	Dynastic disagreement	This response alludes to a dynastic disagreement between England and France, but doesn't reference Edward III of England and Philip VI of France.
3	Edward and Philip	This response mentions the dynastic disagreement between Edward III and Philip VI, but doesn't address the role of Salic law.
5	Salic law	This response explains the way that Salic law contributed to the dynastic disagreement between Edward III and Philip VI, leading to the Hundred Years' War.

For more information about writing effective rubrics, see Heidi Goodrich Andrade's [Understanding Rubrics](#).

For more information, see [Step 3. Add the Rubric](#).

## **Assessment Steps**

In your assignment, you'll also specify the **assessment steps**. You can set the assignment to include a student training step, a peer assessment step, and a self assessment step.

You can see the type and order of the assessments when you look at the assignment. In the following example, after students submit a response, they complete a student training step ("Learn to Assess Responses"), complete peer assessments on other students' responses ("Assess Peers"), and then complete self assessments ("Assess Your Response").

This assignment has several steps. In the first step, you'll provide a response to the question. The other steps appear below the Your Response field.

Censorship in the Libraries

'All of us can think of a book that we hope none of our children or any other children have taken off the shelf. But if I have the right to remove that book from the shelf -- that work I abhor -- then you also have exactly the same right and so does everyone else. And then we have no books left on the shelf for any of us.' --Katherine Paterson, Author

Write a persuasive essay to a newspaper reflecting your views on censorship in libraries. Do you believe that certain materials, such as books, music, movies, magazines, etc., should be removed from the shelves if they are found offensive? Support your position with convincing arguments from your own experience, observations, and/or reading.

Read for conciseness, clarity of thought, and form.

**Current step** → 1 | Your Response **Status of current step** → IN PROGRESS

Enter your response to the question. You can save your progress and return to complete your response at any time. After you submit your response, you cannot edit it.

I think that censorship shouldn't be allowed per se, but that libraries should use judgment when they acquire books. Librarians can also work with kids to make sure the kids know what they're checking out. When I was 13 I was going to check out a book and the librarian told me it had mature content. I told him that was OK and he didn't have a problem with me checking out the book. But I'm glad he was paying enough attention to let me know. I think other kids might not have checked out the book.

YOU MAY CONTINUE TO WORK ON YOUR RESPONSE UNTIL YOU SUBMIT IT.

Save Your Progress THIS RESPONSE HAS BEEN SAVED BUT NOT SUBMITTED.

Submit your response and move to the next step ▶

**Next steps** → 2 | Learn to Assess Responses **Status of next steps** → NOT AVAILABLE

3 | Assess Peers NOT AVAILABLE

4 | Assess Your Response NOT AVAILABLE

**Your Grade: Not Started**

You have not started this problem yet.



---

**Note:** If you include a student training step, you must also include a peer assessment step. The student training step must come before peer and self assessment steps.

---

### **Student Training Step**

When you create a peer assessment assignment, you can include one or more student training assessments to help students learn to perform their own assessments. A student training assessment contains one or more sample responses that you write, together with the scores that you would give the sample responses. Students review these responses and try to score them the way that you scored them.

---

**Note:** If you include a student training step, you must also include a peer assessment step. The student training step must come before peer and self assessment steps.

---

In a student training assessment, the **Learn to Assess Responses** step opens immediately after a student submits a response. The student sees one of the sample responses that you created, along with the rubric. The scores that you gave the response do not appear. The student also sees the number of sample responses that he or she will assess.

1
Your Response
✓ COMPLETE

2
Learn to Assess Responses
IN PROGRESS (0 OF 2)

### LEARNING TO ASSESS RESPONSES

Before you begin to assess your peers' responses, you'll learn how to complete peer assessments by reviewing responses that instructors have already assessed. If you select the same options for the response that the instructor selected, you'll move to the next step. If you don't select the same options, you'll review the response and try again.

TRAINING ESSAY # 1 OF 2

(optional) To train students to perform peer assessments, replace this text with your own sample response for this assignment. Below, list the names of each of the criteria for this assignment, and then specify the name of the option that you would select for this response. Students will assess this response and compare the rubric options that they select with the rubric options that you specified.

If you don't want to provide sample responses and scores, delete the entire "assessment" element.

▼ DETERMINE IF THERE IS A UNIFYING THEME OR MAIN IDEA.

<input type="radio"/> Poor	Difficult for the reader to discern the main idea. Too brief or too repetitive to establish or maintain a focus.	0 POINTS
<input type="radio"/> Fair	Presents a unifying theme or main idea, but may include minor tangents. Stays somewhat focused on topic and task.	3 POINTS
<input type="radio"/> Good	Presents a unifying theme or main idea without going off on tangents. Stays completely focused on topic and task.	5 POINTS

▼ ASSESS THE CONTENT OF THE SUBMISSION

<input type="radio"/> Poor	Includes little information with few or no details or	0 POINTS
----------------------------	---	----------

The student selects an option for each of the assignment's criteria, and then clicks **Compare your selections with the instructor's selections**. If all of the student's selections match the instructor's selections, the next sample response opens automatically.

If any of the student's selections differs from the instructor's selections, the student sees the response again, and the following message appears above the response:

Learning to Assess Responses

Your assessment differs from the instructor's assessment of this response. Review the response and consider why the instructor may have assessed it differently. Then, try the assessment again.

For each of the criteria, the student sees one of the following two messages, depending on whether the student's selections matched those of the instructor:

Selected Options Differ

The option you selected is not the option that the instructor selected.

Selected Options Agree

The option you selected is the option that the instructor selected.

For example, the following student chose one correct option and one incorrect option.

**LEARNING TO ASSESS RESPONSES**

Your assessment differs from the instructor's assessment of this response. Review the response and consider why the instructor may have assessed it differently. Then, try the assessment again.

**TRAINING ESSAY # 1 OF 2**

(optional) To train students to perform peer assessments, replace this text with your own sample response for this assignment. Below, list the names of each of the criteria for this assignment, and then specify the name of the option that you would select for this response. Students will assess this response and compare the rubric options that they select with the rubric options that you specified.

If you don't want to provide sample responses and scores, delete the entire "assessment name"/"student training" element.

**▼ DETERMINE IF THERE IS A UNIFYING THEME OR MAIN IDEA.****SELECTED OPTIONS DIFFER**

The option you selected is not the option that the instructor selected.

<input checked="" type="radio"/> Poor	Difficult for the reader to discern the main idea. Too brief or too repetitive to establish or maintain a focus.	0 POINTS
<input type="radio"/> Fair	Presents a unifying theme or main idea, but may include minor tangents. Stays somewhat focused on topic and task.	3 POINTS
<input type="radio"/> Good	Presents a unifying theme or main idea without going off on tangents. Stays completely focused on topic and task.	5 POINTS

**▼ ASSESS THE CONTENT OF THE SUBMISSION****SELECTED OPTIONS AGREE**

The option you selected is the option that the instructor selected.

<input type="radio"/> Poor	Includes little information with few or no details or unrelated details. Unsuccessful in attempts to explore any facets of the topic.	0 POINTS
<input type="radio"/> Fair	Includes little information and few or no details. Explores only one or two facets of the topic.	1 POINTS
<input checked="" type="radio"/> Good	Includes sufficient information and supporting details. (Details may not be fully developed; ideas may be listed.) Explores some facets of the topic.	3 POINTS
<input type="radio"/> Excellent	Includes in-depth information and exceptional supporting details that are fully developed. Explores all facets of the topic.	3 POINTS

The student continues to try scoring the sample response until the student's scoring for all criteria matches the instructor's scoring.

For more information, see *Student Training*.

### **Peer Assessment Step**

In the peer assessment step, students review other students' responses and select an option for each criterion in your rubric based on the response. Students can also provide text feedback, or comments, on the response.

**Number of Responses and Assessments** When you specify a peer assessment step, you'll specify the **number of responses** each student has to assess and the **number of peer assessments** each response has to receive.

---

**Note:** Because some students may submit a response but not complete peer assessments, some responses may not receive the required number of assessments. To increase the chance that all responses will receive enough assessments, you must set the number of responses that students have to assess to be higher than the number of assessments that each response must undergo. For example, if you require each response to receive three assessments, you could require each student to assess five responses.

---

If all responses have received assessments, but some students haven't completed the required number of peer assessments, those students can assess responses that other students have already assessed. The student who submitted the response sees the additional peer assessments when he sees his score. However, the additional peer assessments do not count toward the score that the response receives.

**Feedback Options** By default, students see a single comment field below the entire rubric. You can also add a comment field to an individual criterion or to several individual criteria. This comment field can contain up to 300 characters.

The comment field appears below the options for the criterion. In the following image, both criteria have a comment field. There is also a field for overall comments on the response.

Feedback for individual criteria

Feedback for overall response

▼ DETERMINE IF THERE IS A UNIFYING THEME OR MAIN IDEA.

<input type="radio"/> Poor	Difficult for the reader to discern the main idea. Too brief or too repetitive to establish or maintain a focus.	0 POINTS
<input type="radio"/> Fair	Presents a unifying theme or main idea, but may include minor tangents. Stays somewhat focused on topic and task.	3 POINTS
<input checked="" type="radio"/> Good	Presents a unifying theme or main idea without going off on tangents. Stays completely focused on topic and task.	5 POINTS

Comments

▼ ASSESS THE CONTENT OF THE SUBMISSION

<input type="radio"/> Poor	Includes little information with few or no details or unrelated details. Unsuccessful in attempts to explore any facets of the topic.	0 POINTS
<input type="radio"/> Fair	Includes little information and few or no details. Explores only one or two facets of the topic.	1 POINTS
<input type="radio"/> Good	Includes sufficient information and supporting details. (Details may not be fully developed; ideas may be listed.) Explores some facets of the topic.	3 POINTS
<input checked="" type="radio"/> Excellent	Includes in-depth information and exceptional supporting details that are fully developed. Explores all facets of the topic.	3 POINTS

Comments

(OPTIONAL) WHAT ASPECTS OF THIS RESPONSE STOOD OUT TO YOU? WHAT DID IT DO WELL? HOW COULD IT IMPROVE?

I noticed that this response...

Submit your assessment & move to response #2 ▶

For more information, see *Step 3. Add the Rubric and Provide Only Comment Fields for Individual Criteria.*

**Peer Assessment Scoring** Peer assessments are scored by criteria. An individual criterion's score is the median of the scores that each peer assessor gave that criterion. For example, if the Ideas criterion in a peer assessment receives a 10 from one student, a 7 from a second student, and an 8 from a third student, the Ideas criterion's score is 8.

A student's final score for a peer assessment is the sum of the median scores for each individual criterion.

For example, a response may receive the following scores from peer assessors:

Criterion Name	Peer 1	Peer 2	Peer 3	Median
Ideas (out of 10)	10	7	8	<b>8</b>
Content (out of 10)	7	9	8	<b>8</b>
Grammar (out of 5)	4	4	5	<b>4</b>

To calculate the final score, add the median scores for each criterion:

**Ideas median (8/10) + Content median (8/10) + Grammar median (4/5) = final score (20/25)**

Note, again, that final scores are calculated by criteria, not by individual assessor. Thus the response's score is not the median of the scores that each individual peer assessor gave the response.

**Assessing Additional Responses** Students can assess more than the required number of responses. After a student completes the peer assessment step, the step “collapses” so that just the **Assess Peers** heading is visible.

The screenshot shows a vertical list of three assessment steps. Step 1, 'Your Response', is marked as 'COMPLETE' with a green bar. Step 2, 'Assess Peers', is marked as '2 COMPLETED' with a green bar. Step 3, 'Assess Your Response', is marked as 'IN PROGRESS' with a grey bar. Below step 3, there is a section titled 'YOUR RESPONSE' containing a text area with the placeholder text: 'Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas velit felis, malesuada sit amet vehicula ut,'.

If the student clicks the **Assess Peers** heading, the step expands. The student can then click **Continue Assessing Peers**.

The screenshot shows the 'Assess Peers' step expanded. It features a green bar at the top with '2 COMPLETED'. Below this is a light green box containing the text: 'PEER ASSESSMENTS COMPLETE' followed by a message: 'You have successfully completed all of the required peer assessments for this assignment. You may assess additional peer responses if you want to. Completing additional assessments will not affect your final grade.' At the bottom right of the expanded section is a blue button labeled 'Continue Assessing Peers' with a right-pointing arrow.

### Self Assessment Step

In self assessments, the student sees his response followed by your rubric. As with peer assessments, the student compares the rubric to his response and selects an option for each of the criteria.

If you include both peer and self assessments, we recommend that you include the peer assessment before the self assessment.

### Top Responses

You can include a **Top Responses** section that shows the top-scoring responses that students have submitted for the assignment, along with the scores for those responses. The **Top Responses** section appears below the student's score information after the student finishes every step in the assignment.

#### Top Responses

##### Top-Scoring Responses for This Assignment

1

8 POINTS

Sed ut leo nec lorem sollicitudin consectetur id sed diam. Aenean facilisis, nulla et adipiscing consequat, felis ante feugiat velit, in sodales metus mi sed odio. Integer ut amet sagittis felis, in commodo mauris. Pellentesque eget sem ut eros accumsan gravida. Curabitur vestibulum nibh nibh, eget pretium neque adipiscing vitae. Praesent sed tellus ut est feugiat venenatis.

2

8 POINTS

Sed ut leo nec lorem sollicitudin consectetur id sed diam. Aenean facilisis, nulla et adipiscing consequat, felis ante feugiat velit, in sodales metus mi sed odio. Integer ut amet sagittis felis, in commodo mauris. Pellentesque eget sem ut eros accumsan gravida. Curabitur vestibulum nibh nibh, eget pretium neque adipiscing vitae. Praesent sed tellus ut est feugiat venenatis. Aenean at dolor non nec faucibus nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus.

3

3 POINTS

consequat, felis ante feugiat velit, in sodales metus mi sed odio. Integer ut amet sagittis felis, in commodo mauris. Pellentesque eget sem ut eros accumsan gravida. Curabitur vestibulum nibh nibh, eget pretium neque adipiscing vitae. Praesent sed tellus ut est feugiat venenatis.

concomodo mauris. Pellentesque eget sem ut eros accumsan gravida. Curabitur vestibulum nibh nibh, eget pretium neque adipiscing vitae. Praesent sed tellus ut est feugiat venenatis. Aenean at dolor non nec faucibus nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus.

You can allow the **Top Responses** section to show between 1 and 100 responses. Keep in mind, however, that each response may be up to 300 pixels in height in the list. (For longer responses, students can scroll to see the entire response.) We recommend that you specify 20 or fewer responses to prevent the page from becoming too long.

**Note:** It may take up to an hour for a high-scoring response to appear in the **Top Responses** list.

For more information, see [Step 7. Show Top Responses](#).



## 8.25.2 Create an Open Response Assessment Assignment

Creating an open response assessment is a multi-step process:

- *Step 1. Create the Component*
- *Step 2. Add the Prompt*
- *Step 3. Add the Rubric*
- *Step 4. Specify the Assignment Name and Response Dates*
- *Step 5. Select Assignment Steps*
- *Step 6. Specify Step Settings*
- *Step 7. Show Top Responses*
- *Step 8. Test the Assignment*

Each of these steps is covered in detail below.

For more information about the components of an open response assessment, see [Open Response Assessments](#).

### Step 1. Create the Component

To create the component for your open response assessment:

1. In Studio, open the unit where you want to create the open response assessment.
2. Under **Add New Component**, click **Problem**, click the **Advanced** tab, and then click **Peer Assessment**.
3. In the Problem component that appears, click **Edit**.

### Step 2. Add the Prompt

To add the prompt, or question:

1. In the open response assessment component editor, click the **Prompt** tab.
2. Add the text of your question in the text field. Replace any default text, if necessary.

### Add Formatting or Images to the Prompt

Currently, you cannot add text formatting or images inside the Peer Assessment component. If you want to include formatting or images in the text of your prompt, you can add an HTML component that contains your text above the Peer Assessment component and leave the text field in the **Prompt** tab blank. The instructions for the peer assessment still appear above the **Your Response** field.

## CENSORSHIP IN THE LIBRARIES



"All of us can think of a book that we hope none of our children or any other children have taken off the shelf. But if I have the right to remove that book from the shelf -- that work I abhor -- then you also have exactly the same right and so does everyone else. And then we have no books left on the shelf for any of us." -- Katherine Paterson, Author

Write a persuasive essay to a newspaper reflecting your views on censorship in libraries. Do you believe that certain materials, such as books, music, movies, magazines, etc., should be removed from the shelves if they are found offensive? Support your position with convincing arguments from your own experience, observations, and/or reading.

Read for conciseness, clarity of thought, and form.

This assignment has several steps. In the first step, you'll provide a response to the question. The other steps appear below the **Your Response** field.

### 1 | Your Response

IN PROGRESS

Enter your response to the question. You can save your progress and return to complete your response at any time. **After you submit your response, you cannot edit it.**

### Allow Students to Submit Images (optional)

To allow students to submit an image with a response:

1. In the component editor, click the **Settings** tab.
2. Next to **Allow Image Responses**, select **True**.

### Note:

- The image file must be a .jpg or .png file, and it must be smaller than 5 MB in size.
- Currently, course teams cannot see any of the images that students submit. Images are not visible in the body of the assignment in the courseware, and they are not included in the course data package.
- You can allow students to upload an image, but you cannot require it.
- Students can only submit one image with a response.
- All responses must contain text. Students cannot submit a response that contains only an image.

---

### Step 3. Add the Rubric

In this step, you'll add your rubric and provide your students with feedback options.

For each step below, replace any default text with your own text.

---

**Note:** All open response assessments include a feedback field below the rubric so that students can provide written feedback on a peer's overall response. You can also allow or require students to provide feedback for individual criteria. See step 2.4 below for instructions. For more information, see [Feedback Options](#).

---

To add the rubric:

1. In the open response assessment component editor, click the **Rubric** tab.
2. In the first **Criterion** section, enter the name and prompt text of your first criterion.
3. In the first **Option** section, enter the name, explanation, and point value for the first option.
4. In the next **Option** section, enter the name, explanation, and point value for the next option.
5. Repeat step 4 for each option. If you need to add more options, click **Add Option**.
6. Next to **Feedback for This Criterion**, select a value in the drop-down list.
  - If you don't want students to provide feedback for this individual criterion, select **None**.
  - If you want to require students to provide feedback, select **Required**.
  - If you want to allow students to provide feedback, but not require it, select **Optional**.
7. Follow the instructions in steps 2-6 to add your remaining criteria. If you need to add more criteria, click **Add Criterion** at the end of the list of criteria.
8. Include instructions for students to provide overall written feedback on their peers' responses. You can leave the default text in the **Feedback Instructions** field or replace it with your own text.

#### Provide Only Comment Fields for Individual Criteria

When you add a comment field to a criterion, the comment field appears below the options for the criterion. You can also provide a comment field, but no options.

In the following image, the first criterion has a comment field but no options. The second includes options, but does not have a comment field.

Read and assess the following response from one of your peers.

#### ASSESSMENT # 1 OF 5

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor  
 incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud  
 exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure  
 dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.  
 Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit  
 anim id est laborum.

### Criterion 1: Comment field with no options

#### ▼ DESCRIBE THE UNIFYING THEME OR MAIN IDEA IN THE RESPONSE.

Comments

### Criterion 2: Options without comment field

#### ▼ ASSESS THE CONTENT OF THE SUBMISSION

<input type="radio"/> Poor	Includes little information with few or no details or unrelated details. Unsuccessful in attempts to explore any facets of the topic.	0 POINTS
<input type="radio"/> Fair	Includes little information and few or no details. Explores only one or two facets of the topic.	1 POINTS
<input type="radio"/> Good	Includes sufficient information and supporting details. (Details may not be fully developed; ideas may be listed.) Explores some facets of the topic.	3 POINTS
<input type="radio"/> Excellent	Includes in-depth information and exceptional supporting details that are fully developed. Explores all facets of the topic.	3 POINTS

### Overall comments on the response

(OPTIONAL) WHAT ASPECTS OF THIS RESPONSE STOOD OUT TO YOU? WHAT DID IT DO WELL? HOW COULD IT IMPROVE?

I noticed that this response...

To provide a comment field without options:

1. In the criterion, click **Remove** to remove, or delete, all the options.
2. Next to **Feedback for This Criterion**, select **Required** in the drop-down list.

#### Step 4. Specify the Assignment Name and Response Dates

To specify a name for the assignment as well as start and due dates for all student responses:

1. In the component editor, click the **Settings** tab.
2. Next to **Display Name**, type the name you want to give the assignment.
3. Next to **Response Start Date** and **Response Start Time**, enter the date and time when you want students to be able to begin submitting responses. Note that all times are in Universal Coordinated Time (UTC).
4. Next to **Response Due Date** and **Response Due Time**, enter the date and time by which all student responses must be submitted. Note that all times are in Universal Coordinated Time (UTC).

---

**Note:** We recommend that you set the response due date and time at least two days before the peer assessment due date and time. If the response due time and peer assessment due time are close together, and a student submits a response just before responses are due, other students may not have time to perform peer assessments before peer assessments are due.

---

#### Step 5. Select Assignment Steps

Open response assessment assignments can include student training, peer assessment, and self assessment steps. You can include a peer assessment step before a self assessment step and vice versa.

If you include a student training step, you **must** include a peer assessment step. You can also include a self assessment step. The student training step must come before both the peer assessment and the self assessment step.

To add steps to the assignment:

1. In the component editor, click the **Settings** tab.
2. Scroll down past the **Allow Image Responses** field.
3. Locate the following headings:
  - **Step: Student Training**
  - **Step: Peer Assessment**
  - **Step: Self Assessment**

Select the check boxes for the steps that you want the assignment to include.

4. (optional) If you want to change the order of the steps, drag the steps into the order that you want. If you include a student training step, make sure it is the first step in the assignment.

#### Step 6. Specify Step Settings

After you select the steps that you want, you'll specify settings for those steps.

---

**Note:** If you make changes to a step, but then you clear the check box for that step, the step will no longer be part of the assignment and your changes will not be saved.

---

### Student Training

For the student training step, you'll enter one or more responses that you have created, then select an option for each criterion in your rubric.

---

**Note:** You must enter your complete rubric on the **Rubric** tab before you can select options for the student training responses. If you later change one of your criteria or any of its options, you'll also have to update the student training step.

---

To add and score student training responses:

1. Under **Step: Student Training**, locate the first **Scored Response** section.
2. In the **Response** field, enter the text of your example response.
3. Under **Response Score**, select the option that you want for each criterion.

For more information, see [Student Training Step](#).

### Peer Assessment

For the peer assessment step, you'll specify the number of responses that each student must grade, the number of students that must grade each response, and start and due dates. All fields are required.

To specify peer assessment settings:

1. Locate the **Step: Peer Assessment** heading.
2. Next to **Must Grade**, enter the number of responses that each student must grade.
3. Next to **Graded By**, enter the number of students that must grade each response.
4. Next to **Start Date** and **Start Time**, enter the date and time when students can begin assessing their peers' responses. All times are in Universal Coordinated Time (UTC).
5. Next to **Due Date** and **Due Time**, enter the date and time by which all peer assessments must be complete. All times are in UTC.

### Self Assessment

For the self assessment step, you'll specify when the step starts and ends.

1. Locate the **Step: Self Assessment** heading.
2. Next to **Start Date** and **Start Time**, enter the date and time when students can begin assessing their peers' responses. All times are in Universal Coordinated Time (UTC).
3. Next to **Due Date** and **Due Time**, enter the date and time by which all peer assessments must be complete. All times are in UTC.

## Step 7. Show Top Responses

To allow students to see the top-scoring responses for the assignment, you'll specify a number on the **Settings** tab.

1. In the component editor, click the **Settings** tab.
2. In the **Top Responses** field, specify the number of responses that you want to appear in the **Top Responses** section below the student's final score. If you don't want this section to appear, set the number to 0. The maximum number is 100.

**Note:** Because each response can be up to 300 pixels in height, we recommend that you set this number to 20 or lower to prevent the page from becoming too long.

For more information, see [Top Responses](#).

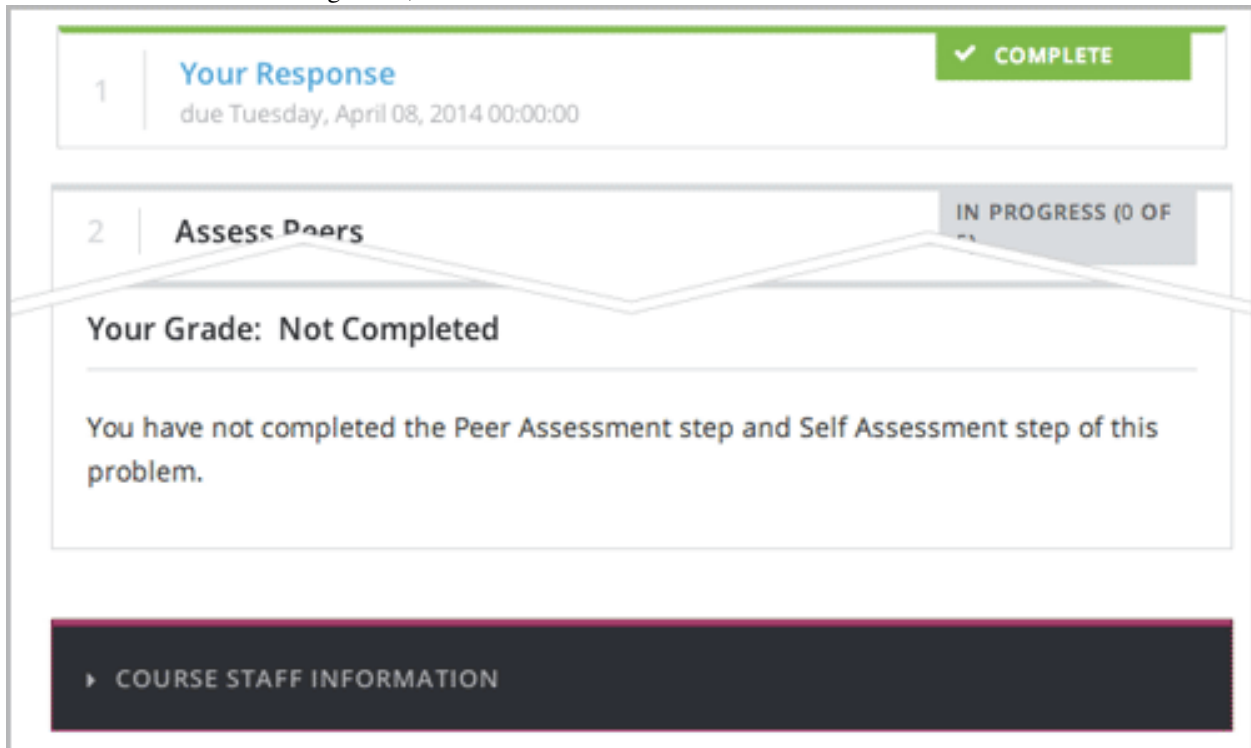
## Step 8. Test the Assignment

To test your assignment, set up the assignment in your course, set the section or subsection date in the future, and ask a group of beta users to submit responses and grade each other. The beta testers can then let you know if they found the question and the rubric easy to understand or if they had any problems with the assignment.

For more information about beta testing, see [Beta Testing a Course](#).

### 8.25.3 Accessing Assignment and Student Metrics

After your open response assessment assignment has been released, you can access information about the number of students in each step of the assignment or the performance of individual students. This information is available in the **Course Staff Information** section at the end of each assignment. To access it, open the assignment in the courseware, scroll to the bottom of the assignment, and then click the black **Course Staff Information** banner.



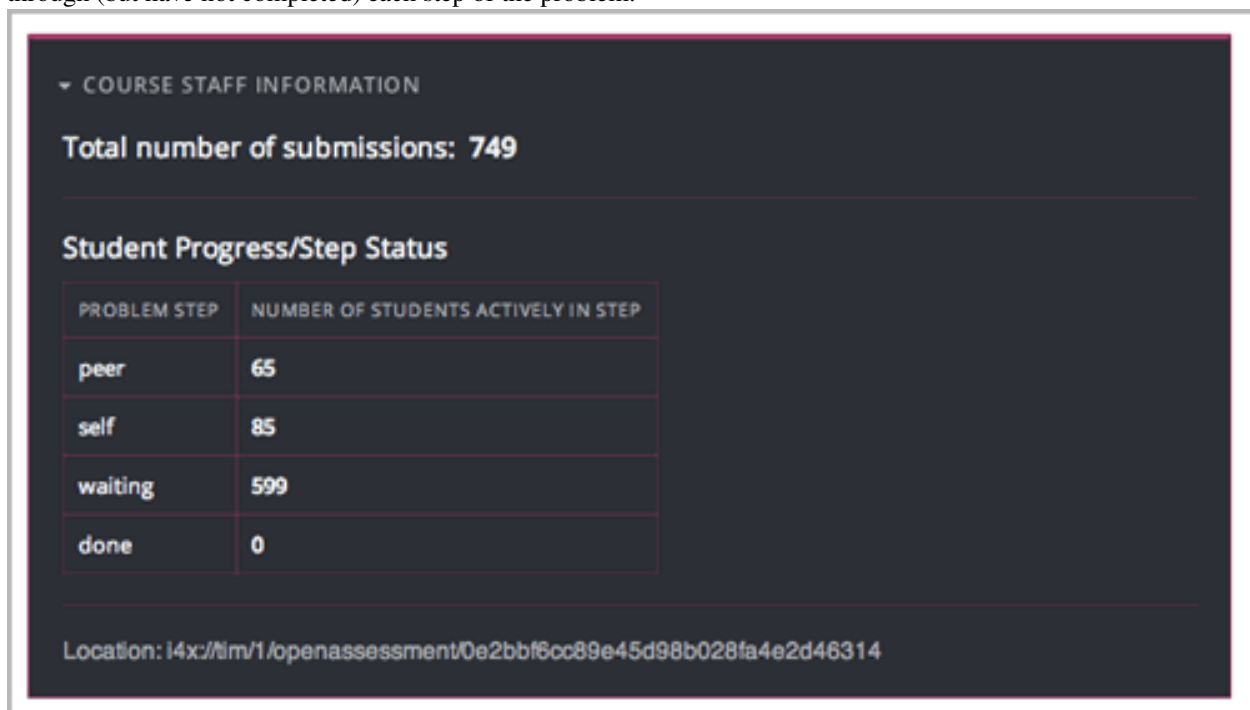
### View Metrics for Individual Steps

You can check the number of students who have completed, or are currently working through, the following steps:

- Submitted responses.
- Completed peer assessments.
- Waiting to assess responses or receive grades.
- Completed self assessments.
- Completed the entire assignment.

To find this information, open the assignment in the courseware, scroll to the bottom of the assignment, and then click **Course Staff Information**.

The **Course Staff Information** section expands, and you can see the number of students who are currently working through (but have not completed) each step of the problem.



The screenshot shows a dark-themed interface with a section titled "COURSE STAFF INFORMATION". Below this, it states "Total number of submissions: 749". A sub-section titled "Student Progress/Step Status" contains a table with two columns: "PROBLEM STEP" and "NUMBER OF STUDENTS ACTIVELY IN STEP". The table lists four steps: "peer" (65), "self" (85), "waiting" (599), and "done" (0). At the bottom, a location path is displayed: "Location: /l4x:/nim/1/openassessment/0e2bbf6cc89e45d98b028fa4e2d46314".

PROBLEM STEP	NUMBER OF STUDENTS ACTIVELY IN STEP
peer	65
self	85
waiting	599
done	0

### Access Information for a Specific Student

You can access information about an individual student's performance on a peer assessment assignment, including:

- The student's response.
- The peer assessments that other students performed on the student's response, including feedback on individual criteria and on the overall response.
- The peer assessments that the student performed on other students' responses, including feedback on individual criteria and on the overall responses.
- The student's self assessment.

In the following example, you can see the student's response. The response received one peer assessment, and the student completed a peer assessment on one other student's response. The student also completed a self assessment.



Get Student Info

11b6417ba114b1882da4b18b64a

Submit

Student Information

Student Response

Maecenas ac leo egetas, pellentesque ante id, tempus lorem. Cras suscipit venenatis ante, ac sodales libero scelerisque eget. Cras fella lectus, commodo vitae fella eget, facilisis bibendum riset. Aenean aliquam odio a rhoncus eleifend. Vivamus ut ipsum congue sapien feugiat semper sit amet et diam. Aenean laculla egetas ante, sit amet fringilla magna trincidunt ullamcorper. Vivamus hendrerit neque ac metus hendrerit, nec placerat ipsum varius. In nulla est, dignissim eu nunc eu, pulvinar vehicula sapien.

Peer Assessments for This Student

Peer 1:

CRITERION	SELECTED OPTION	FEEDBACK	POINTS	POINTS POSSIBLE
Ideas	Fair	Fuace velit neque, ultricies in vehicula id, fermentum quis ante. Pellentesque fella libero, nullitullitn quis tempus eu, ornare in magna. Quisque sagittis ultricies vehicula.	3	5
Content	Fair		1	3

Overall Feedback

Cras suscipit venenatis ante, ac sodales libero scelerisque eget. Cras fella lectus, commodo vitae fella eget, facilisis bibendum riset. Aenean aliquam odio a rhoncus eleifend. Vivamus ut ipsum congue sapien feugiat semper sit amet et diam.

Peer Assessments Completed by This Student

Assessment 1:

CRITERION	SELECTED OPTION	FEEDBACK	POINTS	POINTS POSSIBLE
Ideas	Good	Pellentesque ultricies quis sapien ac scelerisque. Nullam ultricies sapien sit amet dolor congue, vel adipiscing erat lobortis.	5	5
Content	Excellent		3	3

Overall Feedback

Nunc ac ligula vel tortor volutpat volutpat non at ligula.

For an example that shows a student's response with more assessments, see [Access the Student's Information](#).

Accessing information about a specific student has two steps:

1. Determine the student's course-specific anonymized ID.
2. Access information for that student.

### Determine the Student's Course-Specific Anonymized ID

To determine a student's course-specific anonymized ID, you'll need two .csv spreadsheets from the Instructor Dashboard: the grade report (**<course name>\_grade\_report\_<datetime>.csv**) and the list of course-specific anonymized student IDs (**<course name>-anon-ids.csv**).

1. In the LMS, click the **Instructor** tab.
2. On the Instructor Dashboard, click **Data Download**.
3. On the **Data Download** page, locate the **Data Download** section, and then click **Get Student Anonymized IDs CSV**. A spreadsheet named **<course name>-anon-ids.csv** automatically downloads. Click to open the spreadsheet.
4. Scroll down to the **Reports** section, and then click **Generate Grade Report**.

The system automatically begins to generate the grade report. When it's finished, a link to the grade report appears in the list below **Reports Available for Download**.

---

**Note:** Generating a grade report for a large class may take several hours.

---

5. When the link to the grade report appears in the **Reports Available for Download** list, click the link to open the spreadsheet.
6. When you have both spreadsheets open, view the **<course name>\_grade\_report\_<datetime>.csv** spreadsheet. Locate the student that you want by username or e-mail address. Make a note of the number in the ID column (column A) for that student. In the following example, the student ID for e-mail address amydorrit@example.com (username lildorrit) is 18557.

	A	B	C	D	E	F	G
1	id	email	username	grade	HW 01	HW 02	
2	1	audit@example.com	audit	0	0	0	
3	2	honor@example.com	honor	0	0	0	
4	50	staff@example.com	staff	0	0	0	
5	132	verified@example.com	verified	0	0	0	
6	1859	lmanette@example.com	luciemann	0	0	0	
7	18379	otwist@example.com	olliet	0	0	0	
8	18557	amydorrit@example.com	lildorrit	0	0	0	
9	18645	eugenew@example.com	ewray22	0	0	0	
10	18661	philpirrip@example.com	pip	0	0	0	
11	184950	clarapeg@example.com	peggotty	0	0	0	
12							

7. Go to the **<course name>-anon-ids.csv** spreadsheet, locate the user ID that you noted in step 6, and then copy the value in the "Course Specific Anonymized user ID" column (**column C**) for the user. The value in column C is the student's anonymized user ID for the course. In the following example, the anonymized user ID for student ID 18557 is ofouw6265242gedud8w82g16qshsid87.

	A	B	C	D
1	User ID	Anonymized user ID	Course Specific Anonymized user ID	
2	1	c4ca4238a0b923820dcc509a6f75849b	ebf73f54807e3343c0e79e1e4d58dd5e	
3	2	c81e728d9d4c2f636f067f89cc14862c	46f3c6eb4757c52bebbe0479829f9d36	
4	50	eccbc87e4b5ce2fe28308fd9f2a7baf3	7481e23ca0d2e3a7c9506ca9956a03ae	
5	132	a87ff679a2f3e71d9181a67b7542122c	f44068fde1faf623fb2b56acc4447827	
6	1859	3h6k2b4k6b1l8tnejr897352nn2358gn	64kh53mb75ub1464gvvy5239jvves77	
7	18379	a6f75849bebf73f54807e3343c0e79e1	9gshl24680gcdhkh1470192741hjkif	
8	18557	757c52bebbe0479829f9d36eccbc87e4	ofouw6265242gedud8w82g16qshsid87	
9	18645	52nn2358gnf44068fde1faf623fb2b56	1hd7gneov93039375mfkdhsbwtv5wt1b	
10	18661	56acc444782764kh53mb75ub1464gvvy	kdib8ge7wh2emfjdv68dgkhjfeqkn3qr	
11	184950	8djwhd7hkfrde8skgnw61gwj0gkemd	y0dg7986142lhkgs6973124hlgea8y31	
12				

**Note:** Make sure that you don't copy the value in column B. You need the *course-specific* anonymized user ID from **column C**.

### Access the Student's Information

1. In the LMS, go to the peer assessment assignment that you want to see.
2. Scroll to the bottom of the problem, and then click the black **Course Staff Information** banner.
3. Scroll down to the **Get Student Info** box, paste the student's course-specific anonymized user ID in the box, and then click **Submit**.

The student's information appears below the **Get Student Info** box.

The following example shows:

- The student's response.
- The two peer assessments for the response.
- The two peer assessments the student completed.
- The student's self assessment.

For a larger view, click the image so that it opens by itself in the browser window, and then click anywhere on the image that opens.

Get Student Info

11b6417ba114b1882da4b18b64a

Submit

Student Information

Student Response

Maecenas ac leo egetas, pellentesque ante id, tempus lorem. Cras suscipit venenatis ante, ac sodales libero scelerisque eget. Cras fella lectus, commodo vitae fella eget, facilisis bibendum risi. Aenean aliquam odio a rhoncus eleifend. Vivamus ut ipsum congue sapien feugiat semper sit amet et diam. Aenean lacus egetas ante, sit amet fringilla magna tristique ullamcorper. Vivamus hendrerit neque ac metus hendrerit, nec placerat ipsum varius. In nulla est, dignissim eu nunc eu, pulvinar vehicula sapien.

Peer Assessments for This Student

Peer 1:

CRITERION	SELECTED OPTION	FEEDBACK	POINTS	POINTS POSSIBLE
Ideas	Fair	Fuace velis neque, ultricies in vehicula id, fermentum quis ante. Pellentesque fella libero, nullitullin quis tempus eu, ornare in magna. Quisque sagittis ultricies vehicula.	3	5
Content	Fair		1	3

Overall Feedback

Cras suscipit venenatis ante, ac sodales libero scelerisque eget. Cras fella lectus, commodo vitae fella eget, facilisis bibendum risi. Aenean aliquam odio a rhoncus eleifend. Vivamus ut ipsum congue sapien feugiat semper sit amet et diam.

Peer 2:

CRITERION	SELECTED OPTION	FEEDBACK	POINTS	POINTS POSSIBLE
Ideas	Fair	Fuace velis neque, ultricies in vehicula id, fermentum quis ante. Pellentesque fella libero, nullitullin quis temp eu.	3	5
Content	Excellent	Pellentesque ultricies quis sapien ac scelerisque.	3	3

Overall Feedback

## 8.26 Periodic Table Tool

You can create an interactive periodic table of the elements to help your students learn about various elements' properties. In the table below, detailed information about each element appears as the student moves the mouse over the element.

AN INTERACTIVE REFERENCE TABLE

This interactive periodic table of the elements was first used in [3.091x: Introduction to Solid State Chemistry](#). The table reveals detailed information about each element as you mouse over it.

<div><div><div>H</div><div>Hydrogen</div><div>1.00794 g/mol</div></div><div><div>1</div><table><tr><td>Atomic Weight</td><td>1.00794 g/mol</td></tr><tr><td>Atomic Volume</td><td>14.1 cm<sup>3</sup>/mol</td></tr><tr><td>Ionic Radius</td><td>- pm</td></tr><tr><td>Density</td><td>0.0899 g/cm<sup>3</sup></td></tr><tr><td>Melting Point</td><td>-259.34 C</td></tr><tr><td>Boiling Point</td><td>-252.87 C</td></tr><tr><td>Polarizability</td><td>0.667</td></tr><tr><td>Electronegativity</td><td>2.2</td></tr><tr><td>First Ionization Potential</td><td>13.598 eV</td></tr><tr><td>Crystal Structure</td><td>Hex</td></tr><tr><td>Oxidation States</td><td>1</td></tr><tr><td>Electronic Configuration</td><td>1s<sup>1</sup></td></tr><tr><td>Enthalpy of Fusion</td><td>0.0586 kJ/mol</td></tr><tr><td>Enthalpy of Vaporization</td><td>0.449 kJ/mol</td></tr><tr><td>Covariant Radius</td><td>0.32 Å</td></tr><tr><td>Thermal Conductivity</td><td>0.001815 W·cm<sup>-1</sup>·K<sup>-1</sup></td></tr><tr><td>Specific Heat Capacity</td><td>14.304 J·g<sup>-1</sup>·K<sup>-1</sup></td></tr><tr><td>Enthalpy of Atomization</td><td>217.57 kJ/mol</td></tr></table></div></div>																Atomic Weight	1.00794 g/mol	Atomic Volume	14.1 cm <sup>3</sup> /mol	Ionic Radius	- pm	Density	0.0899 g/cm <sup>3</sup>	Melting Point	-259.34 C	Boiling Point	-252.87 C	Polarizability	0.667	Electronegativity	2.2	First Ionization Potential	13.598 eV	Crystal Structure	Hex	Oxidation States	1	Electronic Configuration	1s <sup>1</sup>	Enthalpy of Fusion	0.0586 kJ/mol	Enthalpy of Vaporization	0.449 kJ/mol	Covariant Radius	0.32 Å	Thermal Conductivity	0.001815 W·cm <sup>-1</sup> ·K <sup>-1</sup>	Specific Heat Capacity	14.304 J·g <sup>-1</sup> ·K <sup>-1</sup>	Enthalpy of Atomization	217.57 kJ/mol	<div><div>He</div><div>4</div></div>			
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<div><div>Li</div><div>3</div><div>6.94</div></div> <div><div>Be</div><div>4</div><div>9.01</div></div>		<div><div>B</div><div>5</div><div>10.81</div></div> <div><div>C</div><div>6</div><div>12.01</div></div> <div><div>N</div><div>7</div><div>14.01</div></div> <div><div>O</div><div>8</div><div>16</div></div> <div><div>F</div><div>9</div><div>19</div></div> <div><div>Ne</div><div>10</div><div>20.18</div></div>																																																					
<div><div>Na</div><div>11</div><div>22.99</div></div> <div><div>Mg</div><div>12</div><div>24.30</div></div>		<div><div>Al</div><div>13</div><div>26.98</div></div> <div><div>Si</div><div>14</div><div>28.09</div></div> <div><div>P</div><div>15</div><div>30.97</div></div> <div><div>S</div><div>16</div><div>32.07</div></div> <div><div>Cl</div><div>17</div><div>35.45</div></div> <div><div>Ar</div><div>18</div><div>39.95</div></div>																																																					
<div><div>K</div><div>19</div><div>39.10</div></div>	<div><div>Ca</div><div>20</div><div>40.08</div></div>	<div><div>Sc</div><div>21</div><div>44.96</div></div>	<div><div>Ti</div><div>22</div><div>47.88</div></div>	<div><div>V</div><div>23</div><div>50.94</div></div>	<div><div>Cr</div><div>24</div><div>52</div></div>	<div><div>Mn</div><div>25</div><div>54.94</div></div>	<div><div>Fe</div><div>26</div><div>55.85</div></div>	<div><div>Co</div><div>27</div><div>58.93</div></div>	<div><div>Ni</div><div>28</div><div>58.69</div></div>	<div><div>Cu</div><div>29</div><div>63.55</div></div>	<div><div>Zn</div><div>30</div><div>65.39</div></div>	<div><div>Ga</div><div>31</div><div>69.72</div></div>	<div><div>Ge</div><div>32</div><div>72.61</div></div>	<div><div>As</div><div>33</div><div>74.92</div></div>	<div><div>Se</div><div>34</div><div>78.96</div></div>	<div><div>Br</div><div>35</div><div>79.90</div></div>	<div><div>Kr</div><div>36</div><div>83.80</div></div>																																						
<div><div>Rb</div><div>37</div><div>85.47</div></div>	<div><div>Sr</div><div>38</div><div>87.62</div></div>	<div><div>Y</div><div>39</div><div>88.91</div></div>	<div><div>Zr</div><div>40</div><div>91.22</div></div>	<div><div>Nb</div><div>41</div><div>92.91</div></div>	<div><div>Mo</div><div>42</div><div>95.94</div></div>	<div><div>Tc</div><div>43</div><div>97.91</div></div>	<div><div>Ru</div><div>44</div><div>101.07</div></div>	<div><div>Rh</div><div>45</div><div>102.91</div></div>	<div><div>Pd</div><div>46</div><div>106.42</div></div>	<div><div>Ag</div><div>47</div><div>107.87</div></div>	<div><div>Cd</div><div>48</div><div>112.41</div></div>	<div><div>In</div><div>49</div><div>114.82</div></div>	<div><div>Sn</div><div>50</div><div>118.71</div></div>	<div><div>Sb</div><div>51</div><div>121.76</div></div>	<div><div>Te</div><div>52</div><div>127.60</div></div>	<div><div>I</div><div>53</div><div>126.90</div></div>	<div><div>Xe</div><div>54</div><div>131.29</div></div>																																						
<div><div>Cs</div><div>55</div><div>132.91</div></div>	<div><div>Ba</div><div>56</div><div>137.33</div></div>	<div><div>La</div><div>57</div><div>138.91</div></div>	<div><div>Hf</div><div>72</div><div>178.49</div></div>	<div><div>Ta</div><div>73</div><div>180.95</div></div>	<div><div>W</div><div>74</div><div>183.84</div></div>	<div><div>Re</div><div>75</div><div>186.21</div></div>	<div><div>Os</div><div>76</div><div>190.23</div></div>	<div><div>Ir</div><div>77</div><div>192.22</div></div>	<div><div>Pt</div><div>78</div><div>195.08</div></div>	<div><div>Au</div><div>79</div><div>196.97</div></div>	<div><div>Hg</div><div>80</div><div>200.59</div></div>	<div><div>Tl</div><div>81</div><div>204.38</div></div>	<div><div>Pb</div><div>82</div><div>207.20</div></div>	<div><div>Bi</div><div>83</div><div>208.98</div></div>	<div><div>Po</div><div>84</div><div>208.98</div></div>	<div><div>At</div><div>85</div><div>209.99</div></div>	<div><div>Rn</div><div>86</div><div>222.02</div></div>																																						
<div><div>Fr</div><div>87</div><div>223.02</div></div>	<div><div>Ra</div><div>88</div><div>226.03</div></div>	<div><div>Ac</div><div>89</div><div>227.03</div></div>	<div><div>Rf</div><div>104</div><div>261</div></div>	<div><div>Db</div><div>105</div><div>262</div></div>	<div><div>Sg</div><div>106</div><div>263</div></div>	<div><div>Bh</div><div>107</div><div>262</div></div>	<div><div>Hs</div><div>108</div><div>265</div></div>	<div><div>Mt</div><div>109</div><div>266</div></div>	<div><div>Uun</div><div>110</div><div>269</div></div>	<div><div>Uuu</div><div>111</div><div>272</div></div>	<div><div>Uub</div><div>112</div><div>277</div></div>	<div><div>Uut</div><div>113</div><div>-</div></div>	<div><div>Uuq</div><div>114</div><div>285</div></div>	<div><div>Uup</div><div>115</div><div>-</div></div>	<div><div>Uuh</div><div>116</div><div>289</div></div>	<div><div>Uus</div><div>117</div><div>-</div></div>	<div><div>Uuo</div><div>118</div><div>293</div></div>																																						
<div><div>Ce</div><div>58</div><div>140.12</div></div> <div><div>Pr</div><div>59</div><div>140.91</div></div> <div><div>Nd</div><div>60</div><div>144.24</div></div> <div><div>Pm</div><div>61</div><div>144.91</div></div> <div><div>Sm</div><div>62</div><div>150.36</div></div> <div><div>Eu</div><div>63</div><div>151.97</div></div> <div><div>Gd</div><div>64</div><div>157.25</div></div> <div><div>Tb</div><div>65</div><div>158.93</div></div> <div><div>Dy</div><div>66</div><div>162.50</div></div> <div><div>Ho</div><div>67</div><div>164.93</div></div> <div><div>Er</div><div>68</div><div>167.26</div></div> <div><div>Tm</div><div>69</div><div>168.93</div></div> <div><div>Yb</div><div>70</div><div>173.04</div></div> <div><div>Lu</div><div>71</div><div>174.97</div></div>																																																							
<div><div>Th</div><div>90</div><div>232.04</div></div> <div><div>Pa</div><div>91</div><div>231.04</div></div> <div><div>U</div><div>92</div><div>238.03</div></div> <div><div>Np</div><div>93</div><div>237.05</div></div> <div><div>Pu</div><div>94</div><div>244.06</div></div> <div><div>Am</div><div>95</div><div>243.06</div></div> <div><div>Cm</div><div>96</div><div>247.07</div></div> <div><div>Bk</div><div>97</div><div>247.07</div></div> <div><div>Cf</div><div>98</div><div>251.08</div></div> <div><div>Es</div><div>99</div><div>252.08</div></div> <div><div>Fm</div><div>100</div><div>257.10</div></div> <div><div>Md</div><div>101</div><div>258.10</div></div> <div><div>No</div><div>102</div><div>259.10</div></div> <div><div>Lr</div><div>103</div><div>262.11</div></div>																																																							

### 8.26.1 Create the Periodic Table Tool

To create a periodic table, you need the following files:

- Periodic-Table.js
- Periodic-Table.css
- Periodic-Table-Colors.css

- PeriodicTableHTML.txt

To download all of these files in a .zip archive, click <http://files.edx.org/PeriodicTableFiles.zip>.

To create the periodic table, you need an HTML component.

1. Upload all of the files listed above *except* *PeriodicTable.txt* to the **Files & Uploads** page in your course.
2. In the unit where you want to create the problem, click **HTML** under **Add New Component**, and then click **HTML**.
3. In the component that appears, click **Edit**.
4. In the component editor, switch to the **HTML** tab.
5. Open the PeriodicTable.txt file in any text editor.
6. Copy all of the text in the PeriodicTable.txt file, and paste it into the HTML component editor. (Note that the PeriodicTableHTML.txt file contains over 6000 lines of code. Paste all of this code into the component editor.)
7. Click **Save**.

## 8.27 Poll Tool

You can run polls in your course so that your students can share opinions on different questions.

POLL QUESTION

All things being equal, should the government use public funds to invest in museums rather than sports arenas?

<input checked="" type="checkbox"/> Yes	<div></div>	5780 (63.6%)
<input type="checkbox"/> No	<div></div>	3308 (36.4%)

---

You responded "Yes" to the poll question. But what would you say to the following: What if public officials expect that more people will make use of and enjoy a sports arena? Should the government still use public funds to invest in museums instead?

Post your answer in the discussion section below, or view the discussion of those who responded "No" to the poll question [here](#).

**Note:** Creating a poll requires you to export your course, edit some of your course's XML files in a text editor, and then re-import your course. We recommend that you create a backup copy of your course before you create the poll. We also recommend that you only edit the files that will contain polls in the text editor if you're very familiar with editing XML.



## 8.27.1 Terminology

Sections, subsections, units, and components have different names in the **Course Outline** view and in the list of files that you'll see after you export your course and open the .xml files for editing. The following table lists the names of these elements in the **Course Outline** view and in a list of files.

Course Outline View	File List
Section	Chapter
Subsection	Sequential
Unit	Vertical
Component	Discussion, HTML, problem, or video

For example, when you want to find a specific section in your course, you'll look in the **Chapter** folder when you open the list of files that your course contains. To find a unit, you'll look in the **Vertical** folder.

## 8.27.2 Create a Poll

1. In the unit where you want to create the poll, create components that contain all the content that you want *except* for the poll. Make a note of the 32-digit unit ID that appears in the **Unit Identifier** field under **Unit Location**.
2. Export your course. For information about how to do this, see [Exporting and Importing a Course](#). Save the .tar.gz file that contains your course in a memorable location so that you can find it easily.
3. Locate the .tar.gz file that contains your course, and then unpack the .tar.gz file so that you can see its contents in a list of folders and files.
  - To do this on a Windows computer, you'll need to download a third-party program. For more information, see [How to Unpack a tar File in Windows](#), [How to Extract a Gz File](#), [The gzip Home Page](#), or the [Windows](#) section of the [How to Open .tar.gz Files](#) page.
  - For information about how to do this on a Mac, see the [Mac OS X](#) section of the [How to Open .tar.gz Files](#) page.
4. In the list of folders and files, open the **Vertical** folder.

---

**Note:** If your unit is not published, open the **Drafts** folder, and then open the **Vertical** folder in the **Drafts** folder.

---

5. In the **Vertical** folder, locate the .xml file that has the same name as the unit ID that you noted in step 1, and then open the file in a text editor such as Sublime 2. For example, if the unit ID is e461de7fe2b84ebeabe1a97683360d31, you'll open the e461de7fe2b84ebeabe1a97683360d31.xml file.

The file contains a list of all the components in the unit, together with the URL names of the components. For example, the following file contains an HTML component followed by a Discussion component.

```
<vertical display_name="Test Unit">
  <html url_name="b59c54e2f6fc4cf69ba3a43c49097d0b"/>
  <discussion url_name="8320c3d511484f3b96bde9fd4a44ac8b"/>
</vertical>
```

6. Add the following poll code in the location where you want the poll. Change the text of the prompt to the text that you want.

```
<poll_question display_name="Poll Question">
  <p>Text of the prompt</p>
  <answer id="yes">Yes</answer>
  <answer id="no">No</answer>
</poll_question>
```

In the example above, if you wanted your poll to appear between the HTML component and the Discussion component in the unit, your code would resemble the following.

```
<vertical display_name="Test Unit">
  <html url_name="b59c54e2f6fc4cf69ba3a43c49097d0b"/>
  <poll_question display_name="Poll Question">
    <p>Text of the prompt</p>
    <answer id="yes">Yes</answer>
    <answer id="no">No</answer>
  </poll_question>
  <discussion url_name="8320c3d511484f3b96bde9fd4a44ac8b"/>
</vertical>
```

7. After you add the poll code, save and close the .xml file.
8. Re-package your course as a .tar.gz file.
  - For information about how to do this on a Mac, see [How to Create a Tar GZip File from the Command Line](#).
  - For information about how to do this on a Windows computer, see [How to Make a .tar.gz on Windows](#).
9. In Studio, re-import your course. You can now review the poll question and answers that you added in Studio.

---

### Note:

- Although polls render correctly in Studio, you cannot edit them in Studio. You will need to follow the export/import process outlined above to make any edits to your polls.
  - A .csv file that contains student responses to the problem is not currently available for polls. However, you can obtain the aggregate data directly in the problem.
- 

## 8.27.3 Format description

The main tag of Poll module input is:

```
<poll_question> ... </poll_question>
```

`poll_question` can include any number of the following tags: any `xml` and `answer` tag. All inner `xml`, except for `answer` tags, we call “question”.

### poll\_question tag

Xmodule for creating poll functionality - voting system. The following attributes can be specified for this tag:

```
name - Name of xmodule.
[display_name| AUTOGENERATE] - Display name of xmodule. When this attribute is not defined - display
[reset | False] - Can reset/revote many time (value = True/False)
```

### answer tag

Define one of the possible answer for poll module. The following attributes can be specified for this tag:



id - unique identifier (using to identify the different answers)

Inner text - Display text for answer choice.

## 8.27.4 Example

### Example of poll

```
<poll_question name="second_question" display_name="Second question">
  <h3>Age</h3>
  <p>How old are you?</p>
  <answer id="less18">&lt; 18</answer>
  <answer id="10_25">from 10 to 25</answer>
  <answer id="more25">&gt; 25</answer>
</poll_question>
```

### Example of poll with unable reset functionality

```
<poll_question name="first_question_with_reset" display_name="First question with reset"
  reset="True">
  <h3>Your gender</h3>
  <p>You are man or woman?</p>
  <answer id="man">Man</answer>
  <answer id="woman">Woman</answer>
</poll_question>
```

## 8.28 Problem with Adaptive Hint

A problem with an adaptive hint evaluates a student's response, then gives the student feedback or a hint based on that response so that the student is more likely to answer correctly on the next attempt. These problems can be text input problems.

If a bat and a ball cost \$1.10 together, and the bat costs \$1.00 more than the ball, how much does the ball cost? Enter your answer in cents, and include only the number (that is, do not include a \$ or a ¢ sign).

10 ✖

Hint: If the ball costs 10 cents, and the bat costs one dollar more than the ball, how much does the bat cost? If that is the cost of the bat, how much do the ball and bat cost together?

Reset Show Answer(s)

### 8.28.1 Create a Problem with an Adaptive Hint

To create the above problem:

1. In the unit where you want to create the problem, click **Problem** under **Add New Component**, and then click the **Advanced** tab.

2. Click **Problem with Adaptive Hint**.
3. In the component that appears, click **Edit**.
4. In the component editor, replace the example code with the code below.
5. Click **Save**.

```
<problem>
  <text>
    <script type="text/python" system_path="python_lib">
def test_str(expect, ans):
    print expect, ans
    ans = ans.strip('"')
    ans = ans.strip('\'')
    return expect == ans.lower()

def hint_fn(answer_ids, student_answers, new_cmap, old_cmap):
    aid = answer_ids[0]
    ans = str(student_answers[aid]).lower()
    print 'hint_fn called, ans=', ans
    hint = ''
    if '10' in ans:
        hint = 'If the ball costs 10 cents, and the bat costs one dollar more than the ball, how much does the bat cost?'
    elif '.05' in ans:
        hint = 'Make sure to enter the number of cents as a whole number.'

    if hint:
        hint = "&lt;font color='blue'&gt;Hint: {0}&lt;/font&gt;".format(hint)
        new_cmap.set_hint_and_mode(aid, hint, 'always')
    </script>
    <p>If a bat and a ball cost $1.10 together, and the bat costs $1.00 more than the ball, how much does the ball cost?</p>
    <customresponse cfn="test_str" expect="5">
      <textline correct_answer="5" label="How much does the ball cost?">
        <hintgroup hintfn="hint_fn">
        </hintgroup>
      </customresponse>
    </p>
  </text>
</problem>
```

## 8.28.2 Problem with Adaptive Hint XML

### Template

```
<problem>
  <text>
    <script type="text/python" system_path="python_lib">
def test_str(expect, ans):
    print expect, ans
    ans = ans.strip('"')
    ans = ans.strip('\'')
    return expect == ans.lower()

def hint_fn(answer_ids, student_answers, new_cmap, old_cmap):
    aid = answer_ids[0]
    ans = str(student_answers[aid]).lower()
    print 'hint_fn called, ans=', ans
```

```

hint = ''
if 'incorrect answer 1' in ans:
    hint = 'hint for incorrect answer 1'
elif 'incorrect answer 2' in ans:
    hint = 'hint for incorrect answer 2'

if hint:
    hint = "<lt;font color='blue'>Hint: {0}<lt;/font>".format(hint)
    new_cmap.set_hint_and_mode(aid, hint, 'always')
</script>
<p>TEXT OF PROBLEM</p>
<p>
    <customresponse cfn="test_str" expect="ANSWER">
        <textline correct_answer="answer" label="LABEL TEXT"/>
        <hintgroup hintfn="hint_fn"/>
    </customresponse>
</p>
</text>
</problem>

```

**Note:** If the hints that you supply include characters, the letters must be lowercase.

## Tags

- `<text>`: Surrounds the script and text in the problem.
- `<customresponse>`: Indicates that this problem has a custom response.
- `<textline>`: Creates a response field in the LMS where the student enters a response.
- `<hintgroup>`: Specifies that the problem contains at least one hint.

**Tag:** `<customresponse>`

Attributes

(none)

Children

- `<textline>`
- `<hintgroup>`

**Tag:** `<textline>`

Attributes

Attribute	Description
label (required)	Contains the text of the problem.
size (optional)	Specifies the size, in characters, of the response field in the LMS.
hidden (optional)	If set to “true”, students cannot see the response field.
cor- rect_answer (optional)	The answer to the problem. To supply a correct_answer value that includes letters, all letters <b>must be lowercase</b> . (Students’ responses to the problem are not case sensitive. They can contain both uppercase and lowercase letters.)

Children

(none)

**Tag:** <hintgroup>

Attributes

At-tribute	Description
hintfn	Must be set to <b>hint_fn</b> (that is, the tag must appear as <hintgroup hintfn="hint_fn"/>).

## 8.29 Problem Written in LaTeX

**Warning:** This problem type is still a prototype and may not be supported in the future. By default, the ability to create these problems is not enabled in Studio. You must change the advanced settings in your course before you can create problems with LaTeX. Use this problem type with caution.

If you have an problem that is already written in LaTeX, you can use this problem type to easily convert your code into XML. After you paste your code into the LaTeX editor, you'll only need to make a few minor adjustments.

**Note:** If you want to use LaTeX to typeset mathematical expressions in problems that you haven't yet written, use any of the other problem templates together with [MathJax](#). For more information about how to create mathematical expressions in Studio using MathJax, see *A Brief Introduction to MathJax in Studio*.

Estimate the energy savings (in J/y) if all the people ( $3 \times 10^8$ ) in the U. S. switched from U. S. code to low flow shower heads.

Energy saved =

✓

0.52

Answer: 0.52

Reset Hide Answer(s)

### 8.29.1 Create a Problem Written in LaTeX

To create a problem written in LaTeX:

1. Enable the policy key in your course.
  - (a) In Studio, click **Settings**, and then click **Advanced Settings**.
  - (b) In the field for the **Enable LaTeX Compiler** policy key, change **false** to **true**.
  - (c) At the bottom of the page, click **Save Changes**.

2. In the unit where you want to create the problem, click **Problem** under **Add New Component**, and then click the **Advanced** tab.
3. Click **Problem Written in LaTeX**.
4. In the component editor that appears, click **Edit**.
5. In the lower left corner of the component editor, click **Launch LaTeX Source Compiler**.
6. Replace the example code with your own code. You can also upload a Latex file into the editor from your computer by clicking **Upload** in the bottom right corner.
7. In the lower left corner of the LaTeX source compiler, click **Save & Compile to edX XML**.

## 8.30 Protex Protein Builder Tool

The Protex protein builder asks students to create specified protein shapes by stringing together amino acids. In the example below, the goal protein shape is a simple line.

### DESIGNING PROTEINS IN TWO DIMENSIONS (1 point possible)

The protein builder allows you string together the building blocks of proteins, amino acids, and see how that string will form into a structure. You are presented with a goal protein shape, and your task is to try to re-create it. In the example below, the shape that you are asked to form is a simple line.

#### Amino Acids

Ala A	+Arg R	Asn N	-Asp D	Cys C
Gln Q	-Glu E	Gly G	+His H	Ile I
Leu L	+Lys K	Met M	Phe F	Pro P
Ser S	Thr T	Trp W	Tyr Y	Val V

#### Amino Acid Sequence

#### Folded Protein

#### Target Shape

Be sure to click "Fold" to fold your protein before you click "Check".

You have used 1 of 10 submissions

### 8.30.1 Create the Protein Builder Tool

To create the protein builder:

1. Under **Add New Component**, click **Problem**, and then click **Blank Advanced Problem**.
2. In the component that appears, click **Edit**.
3. In the component editor, paste the Problem component code from below.
4. Make any changes that you want, and then click **Save**.

### 8.30.2 Protein Builder Tool Code

```
<problem>
  <p>The protein builder allows you string together the building blocks of proteins, amino acids, a
  <p>Be sure to click "Fold" to fold your protein before you click "Check".</p>

<script type="loncapa/python">

def protex_grader(expect,ans):
    import json
    ans=json.loads(ans)
    if "ERROR" in ans["protex_answer"]:
        raise ValueError("Protex did not understand your answer. Try folding the protein.")
    return ans["protex_answer"]=="CORRECT"

</script>

<text>
  <customresponse cfn="protex_grader">
    <designprotein2dinput width="855" height="500" target_shape="W;W;W;W;W;W;W"/>
  </customresponse>
</text>
<solution>
  <p>
    Many protein sequences, such as the following example, fold to a straight line.You can play ar
  </p>
  <ul>
    <li>
      Stick: RRRRRRR
    </li>
  </ul>
</solution>
</problem>
```

In this code:

- **width** and **height** specify the dimensions of the application, in pixels.
- **target\_shape** lists the amino acids that, combined in the order specified, create the shape you've asked students to create. The list can only include the following letters, which correspond to the one-letter code for each amino acid. (This list appears in the upper-left corner of the protein builder.)

A	R	N	D
C	Q	E	G
H	I	L	K
M	F	P	S
T	W	Y	V

## 8.31 Randomized Content Blocks

If your course has *content libraries* enabled and you have access to a library whose content you want to use, you can reference that library to create randomized assignments for students.

To create a randomized assignment, you add one or more randomized content blocks to a course unit. For each randomized content block, specify one or more libraries from which to draw the content, and indicate the number and optionally the type of problem to randomly give each student. If you specify more than one library from which to randomly draw components for the randomized assignment, the content from all specified libraries is combined before the random selection is made.

The libraries that you create or have access to are listed on the **Libraries** tab on the Studio Home page. For details about content libraries, see *Working with Content Libraries*.

For details about using content library components in a course, see these topics:

- *Use Components from Libraries in a Course*
- *Add a Randomized Content Block to Your Course*
- *View the Matching Components in a Randomized Content Block*
- *Editing Components in Randomized Content Blocks*
- *Getting the Latest Version of Library Content*

### 8.31.1 Use Components from Libraries in a Course

To create randomized assignments that make use of components from content libraries, you must have at least **User** level access to the libraries that you want to use. If you do not have access to a library, members of your course team who have **Admin** access to that library can grant you access.

The libraries that you create or have access to are listed on the **Libraries** tab on the Studio Home page. For details about content libraries, see *Working with Content Libraries*.

Using components from content libraries in your course involves two steps.

1. *Enable Content Libraries*
2. *Add a Randomized Content Block to Your Course*

---

**Note:** After adding a randomized content block to your course, be aware that if components in the source library or libraries change, you must manually update the components in the course outline if you want to keep the components synchronized with the version in the library.

---

For details about working with randomized content blocks in your course, see these topics.

- *View the Matching Components in a Randomized Content Block*
- *Editing Components in Randomized Content Blocks*
- *Getting the Latest Version of Library Content*

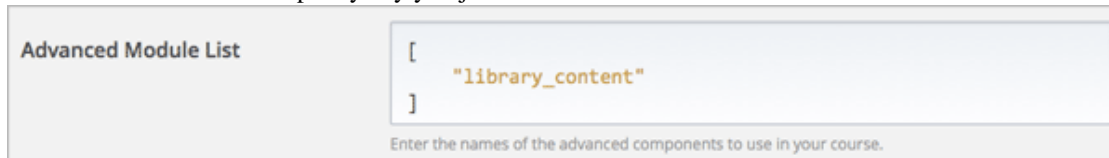
### Enable Content Libraries

You must enable content libraries before you can use randomized components from *content libraries* in your courses.

1. In Studio, open the course in which you want to provide library content.

2. Select **Settings**, then **Advanced Settings**.
3. In the **Advanced Module List** field, place your cursor between the supplied pair of square brackets.
4. Type `"library_content"`.
5. Click **Save Changes**.

Studio reformats the policy key you just entered to indent it on a new line.



Advanced Module List

```
[  
  "library_content"  
]
```

Enter the names of the advanced components to use in your course.

### Add a Randomized Content Block to Your Course

After you [enable content libraries](#) you can add library content to your courses using the Randomized Content Block advanced component.

---

**Note:** Before starting these steps, obtain the Library ID for each library that you intend to reference in the randomized content block. The Library ID is found in the sidebar of each library's page. For details, see [Create a New Library](#).

---

1. In Studio, open the course in which you want to add randomized problems from one or more content libraries.
2. Click **Content** then click **Outline**.
3. In the unit where you want to add a set of randomized problems, click **Add New Component**
4. Click **Advanced**, then click **Randomized Content Block**. The randomized content block is added to your unit.
5. Click the **Edit** icon.
6. In the randomized content block settings, specify the details of the content you want to add in this block.
  - For **Count**, enter the number of problems to display to each student.
  - For **Display Name**, enter the name that you want students to see for this block.
  - For **Libraries**, enter the unique Library ID found in the sidebar of the Library page in Studio. To select problems from more than one content library, click **Add** to enter each additional Library ID.
  - For **Problem Type**, from the drop down list select a specific type of problem to be drawn from the library or libraries. Select **Any Type** if you do not want to select a particular type of problem.



**Editing: Randomized Content Block**

**Count**  
Enter the number of components to display

**Display Name**  
Display name for this module

**Libraries**  
Enter a library ID for each library from

**Problem Type**  
Choose a problem type to fetch from the library. If "Any Type" is selected no filtering is applied.

**Problem Type Dropdown:**

- Any Type
- Annotation Input
- Checkboxes
- Checkboxes With Text Input
- Circuit Schematic Builder
- Code Input
- Custom Evaluated Script
- Dropdown
- External Grader
- Image Mapped Input
- JSMEResponse
- JavaScript Input
- Math Expression Input
- Multiple Choice
- Numerical Input
- Symbolic Math Input
- Text Input
- True/False Choice

**Buttons:** Save, Cancel

- For **Scored**, from the drop down list select **True** or **False** to indicate whether the assignment should be graded.

**Note:** Grading is subject to the setting of this unit's subsection or section. If the subsection or section is not graded, selecting **True** here has no impact. Selecting **False** means that this assignment is not graded even if the subsection or section is graded.

7. Click **Save** when you have finished specifying the details of your randomized content block.

To view the list of components in the source library that match your filter settings, see [View the Matching Components in a Randomized Content Block](#).

To view the entire contents of the library in Studio, see [View the Contents of a Library](#).

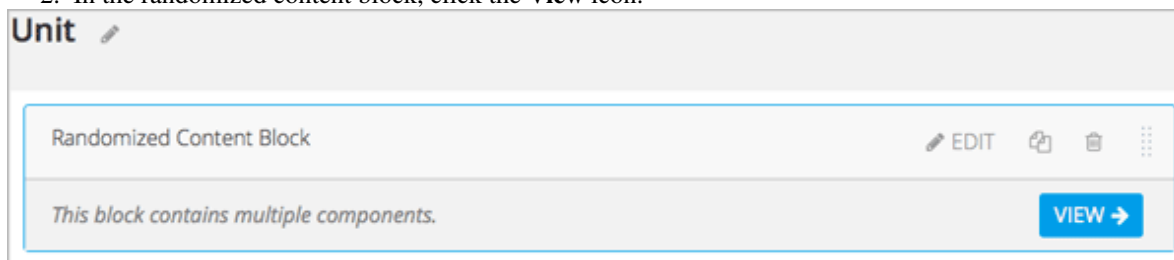
### 8.31.2 View the Matching Components in a Randomized Content Block

In a unit that uses a randomized content block, you can view the list of all components that match the filters specified in that block.

For example, if you have specified in the randomized content block that you want to provide each student with 3 multiple choice problems, you see all the multiple choice problems that exist in the referenced library or libraries. In

other words, you see every problem in the library that could potentially be provided to a student.

1. In Studio, navigate to the unit containing the randomized content block that references your library.
2. In the randomized content block, click the **View** icon.



You see all components that match the specifications in the randomized content block. The text at the top of the list of components indicates how many of these components are randomly selected and provided to each student.

To view the contents of a library in Studio, see [View the Contents of a Library](#).

To view the randomized content as a student would see it, see [View the Randomized Content as a Student](#).

### 8.31.3 View the Randomized Content as a Student

To view the number and type of components from a randomized content block as a student would see them, follow the steps described in the [Preview a Unit](#) topic.

To view the list of matching components in the library, see [View the Matching Components in a Randomized Content Block](#).

To view the entire contents of the library in Studio, see [View the Contents of a Library](#).

### 8.31.4 Editing Components in Randomized Content Blocks

In Studio, in the course unit that uses a randomized content block, you can edit each component within the randomized content block in the same way as you do for any other component in your course.

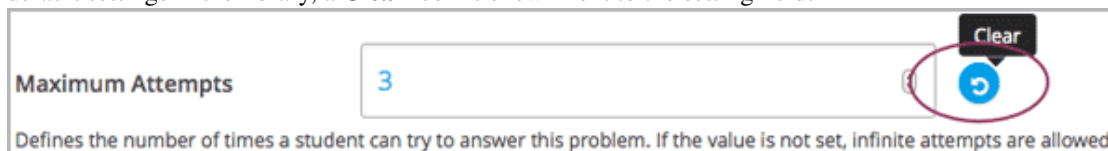
---

**Note:** Be aware that if you make changes on a component's **Editor** tab, if you update the randomized content block with the latest version of components from a library, these changes are overwritten. Only changes to a component's **Settings** tab are retained when you update the component. For details about getting the latest versions of library content in a randomized content block, see [Getting the Latest Version of Library Content](#).

---

The settings of a component that is supplied in a randomized content block are initially inherited from the component in the content library that it is drawn from. In the randomized content block, you can modify component settings so that they are different from the “source” component in the library.

You can also reset a component's settings to the library default. If a component's settings have been changed from the default settings in the library, a **Clear** icon is shown next to the setting field.



Click the **Clear** icon to restore the library default setting for that field.

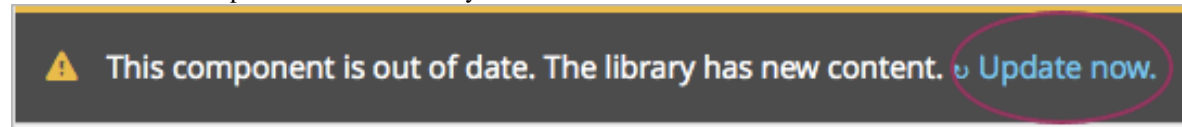
### 8.31.5 Getting the Latest Version of Library Content

If you modify the contents of a library that is referenced by randomized content blocks in one or more courses, those courses do not automatically use the updated content. You can bring the randomized content blocks up to date with the version in the library.

**Warning:** Be careful when you modify problems after they have been released! Changes that you make to published problems can affect the student experience in the course, as well as analysis of course data.

**Note:** Be aware that although you can retain changes to the settings of components in a randomized content block, changes to the **Editor** tab in components are overwritten if you update the component to the latest library version. If you do not want to bring components in the randomized content block up to date with the latest version in the library, you do not need to take any action.

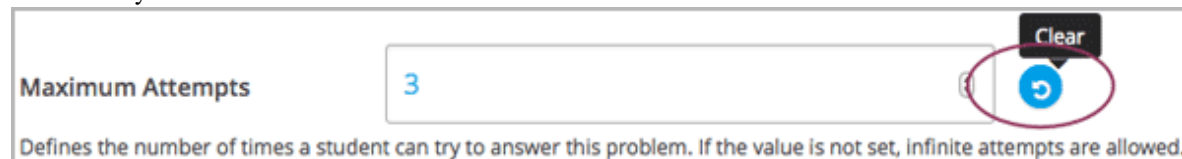
- If the components in the randomized content block have not been edited in the course outline, when you next open the randomized content block in the course outline, you see a message indicating that the component is out of date in comparison with the library.



To update your randomized content block components to the latest versions in the content library, click **Update now**.

The randomized content block is brought up to date with the latest contents of the library or libraries that it references.

- If you edited only the settings of components in the randomized content block in your course so that they are different from the original version in the library, you do not lose your changes if you click **Update now**. In this case, the changes that were made in the randomized content block in the course outline are kept, but a **Clear** button becomes available next to the changed field in the component. However, any changes you made to the **Editor** tab of components in a randomized content block will be lost if you click **Update now** to get the latest library version.



To clear any edits made in the course outline and bring your edited components up to date with the version in the library, click **Clear**.

The value in that component field is reset to the current value in the library.

## 8.32 Student Notes Tool

The Student Notes tool allows students to highlight and make notes about what they read in the body of the course.

Introduction

Week 1: Experiencing Course Content

Week 2: Being Social

Lesson 2: A Social Student

Homework 2: Forum Introduction Homework

Week 3: Completing a Course

Optional: Example Problem Types

### Socializing

So far you've mastered experiencing content on the edX platform and interacting with edX problems. Now it's time to become a social student!

In an edX course, your peers make up a true community. There are thousands of students in the hundreds of thousands. Such as meetups, Facebook study groups, Google Hangouts

edX has tools to encourage collaboration and communication between students. You can use **discussions**, the **course wiki**, and **other social media** to connect with other students and get support from the course staff. Watch the video below to learn more.

**Note:** The Student Notes tool is available for text, including text in HTML components. However, the tool is currently not available for discussions, exercises, video transcripts, or PDF documents.

Students can access their notes either in the body of the course or on a **Notes** tab. On the **Notes** tab, a student can see all the notes that the student has made during the course. It also contains links to the location of the notes in the course content.

Courseware Course Info Discussion Wiki Progress **Notes** Instructor

## Notes

Highlights and notes you've made in course content

Search notes for...

VIEW NOTES BY: **Recent Activity** Location in Course

Make your first post in this demo course by introducing yourself to the edX community.

NOTED IN: [Course Discussions](#)

LAST EDITED: Jan 14, 2015 at 17:43 UTC

You commented...

To do before Friday: write personal intro and browse through / comment on other intros

If you want more information about open response assessments, including step-by-step instructions with illustrations, see Open Response Assessments for Students.

NOTED IN: [Introduction](#)

LAST EDITED: Jan 14, 2015 at 17:16 UTC

You commented...

Quick link to more info for essay questions

For detailed information about the ways students can use student notes, see [SFD Student Notes](#).

### 8.32.1 Enable the Student Notes Tool

The Student Notes tool is disabled by default. You enable or disable student notes on the **Advanced Settings** page in Studio.

**Note:** If you disable student notes after students have made notes in your course, students cannot access the notes that they have made.

To enable or disable the Student Notes tool, follow these steps.

1. On the **Settings** menu, click **Advanced Settings**.
2. In the **Enable Student Notes** field, enter **true** to enable notes, or enter **false** to disable notes.
3. At the bottom of the page, click **Save Changes**.

The page refreshes automatically. At the top of the page, you see a notification that your changes have been saved.

## 8.33 Text Input Problem

In text input problems, students enter text into a response field. The response can include numbers, letters, and special characters such as punctuation marks. Because the text that the student enters must match the instructor's specified answer exactly, including spelling and punctuation, we recommend that you specify more than one attempt for text input problems to allow for typographical errors.

*This exercise first appeared in MITx's 14.73x The Challenges of Global Poverty course, spring 2013.*

What is the technical term that refers to the fact that, when enough people sleep under a bednet, the disease may altogether disappear?

✓ Answer: herd immunity

**EXPLANATION**

The correct answer is **herd immunity**. As more and more people use bednets, the risk of malaria begins to fall for everyone – users and non-users alike. This can fall to such a low probability that malaria is effectively eradicated from the group (even when the group does not have 100% bednet coverage).

### 8.33.1 Create a Text Input Problem

You can create text input problems in the Simple Editor or in the Advanced Editor.

**Note:** All problems must include labels for accessibility. The label generally includes the text of the main question in your problem. To add a label for a common problem, surround the text of the label with angle brackets pointed toward the text (>>label text<<).

---

### Simple Editor

To create a text input problem in the Simple Editor, follow these steps.

1. Under **Add New Component**, click **Problem**.
2. In the **Select Problem Component Type** screen, click **Text Input** on the **Common Problem Types** tab.
3. In the new Problem component that appears, click **Edit**.
4. Replace the default text with the text for your problem.
5. Determine the text of the problem to use as a label, and then surround that text with two sets of angle brackets (>><<).
6. Select the text of the answer, and then click the text input button.



When you do this, an equal sign appears next to the answer.

7. In the component editor, select the text of the explanation, and then click the explanation button to add explanation tags around the text.



8. On the **Settings** tab, specify the settings that you want.
9. Click **Save**.

For the example problem above, the text in the Problem component is the following.

```
>>What is the technical term that refers to the fact that, when enough people
sleep under a bednet, the disease may altogether disappear?<<
= herd immunity

[explanation]
The correct answer is herd immunity. As more and more people use bednets,
the risk of malaria begins to fall for everyone – users and non-users alike.
This can fall to such a low probability that malaria is effectively eradicated
from the group (even when the group does not have 100% bednet coverage).
[explanation]
```

### Advanced Editor

To create this problem in the Advanced Editor, click the **Advanced** tab in the Problem component editor, and then replace the existing code with the following code.

```

<problem>
<p>
  <em>This problem is adapted from an exercise that first appeared in MITx's 14.73x The Challenges of
</p>
<p>What is the technical term that refers to the fact that, when enough people sleep under a bednet,
<stringresponse answer="herd immunity" type="ci regex">
  <additional_answer>community immunity</additional_answer>
  <additional_answer>population immunity</additional_answer>
  <textline size="20" label="What is the technical term that refers to the fact that, when eno
  <hintgroup>
    <stringhint answer="contact immunity" type="ci" name="contact_immunity_hint" />
    <hintpart on="contact_immunity_hint">
      <startouttext />
      In contact immunity, a vaccinated individual passes along his immunity to another per
      <endouttext />
    </hintpart >
    <stringhint answer="firewall immunity" type="ci" name="firewall_immunity_hint" />
    <hintpart on="firewall_immunity_hint">
      <startouttext />
      Although a firewall provides protection for a population, the term "firewall" is used
      <endouttext />
    </hintpart >
  </hintgroup>
</stringresponse>
<solution>
  <div class="detailed-solution">
    <p>Explanation</p>
    <p>The correct answer is <b>herd immunity</b>. As more and more people use bednets, the risk of r
  </div>
</solution>
</problem>

```

### 8.33.2 Multiple Responses in Text Input Problems

You can specify more than one correct response for text input problems. For example, instead of requiring students to enter exactly “Dr. Martin Luther King, Junior,” you can allow answers of “Martin Luther King,” “Doctor Martin Luther King,” and other variations. To do this, you can use the Simple Editor or the Advanced Editor.

#### Simple Editor

To specify additional correct responses in the Simple Editor, include “or=” (without the quotation marks) before each additional correct response.

```

>>What African-American led the United States civil rights movement during the 1960s?<<
= Dr. Martin Luther King, Jr.
or= Dr. Martin Luther King, Junior
or= Martin Luther King, Jr.
or= Martin Luther King

```

#### Advanced Editor

To specify additional correct responses in the Advanced Editor, add an <additional\_answer> for each correct response inside the opening and closing <stringresponse> tags.

```
<problem>

<p>What African-American led the United States civil rights movement during the 1960s?</p>

<stringresponse answer="Dr. Martin Luther King, Jr." type="ci" >
  <additional_answer>Dr. Martin Luther King, Junior</additional_answer>
  <additional_answer>Martin Luther King, Jr.</additional_answer>
  <additional_answer>Martin Luther King</additional_answer>
  <textline label="What African-American led the United States civil rights movement during the 1960s" />
</stringresponse>

</problem>
```

### 8.33.3 Case Sensitivity and Text Input Problems

By default, text input problems do not require a case sensitive response. You can change this and require a case sensitive answer.

To make a text input response case sensitive, you must use *The Advanced Editor*.

In the Advanced Editor, you see that the **type** attribute of the **stringresponse** element equals **ci**, for *case insensitive*. For example:

```
<stringresponse answer="Michigan" type="ci">
  <textline size="20"/>
</stringresponse>
```

To make the response case sensitive, change the value of the **type** attribute to **cs**.

```
<stringresponse answer="Michigan" type="cs">
  <textline size="20"/>
</stringresponse>
```

### 8.33.4 Response Field Length of Text Input Problems

By default, the response field for text input problems is 20 characters long.

You should preview the unit to ensure that the length of the response input field accommodates the correct answer, and provides extra space for possible incorrect answers.

If the default response field length is not sufficient, you can change it using *The Advanced Editor*.

In the advanced editor, in the XML block for the answer, you see that the **size** attribute of the **textline** element equals **20**:

```
<stringresponse answer="Democratic Republic of the Congo" type="ci">
  <textline size="20"/>
</stringresponse>
```

To change the response field length, change the value of the **size** attribute:

```
<stringresponse answer="Democratic Republic of the Congo" type="ci">
  <textline size="40"/>
</stringresponse>
```



### 8.33.5 Hints and Regular Expressions in Text Input Problems

You can provide hints that appear when students enter common incorrect answers in text input problems. You can also set a text input problem to allow a regular expression as an answer. To do this, you'll have to modify the problem's XML in the Advanced Editor.

The regular expression that the student enters must contain the part of the answer that the instructor specifies. For example, if an instructor has specified `<answer="example answer" type="regex">`, correct answers include `example answered`, `two example answers`, or even `==example answer==`, but not `examples` or `example answer`.

You can add `regex` to the value of the `type` attribute, for example: `type="ci regex"` or `type="regex"` or `type="regex cs"`. In this case, any answer or hint are treated as regular expressions.

### 8.33.6 Text Input Problem XML

#### Template

```
<problem>
  <p>Problem text</p>
  <stringresponse answer="Correct answer 1" type="ci regex">
    <additional_answer>Correct answer 2</additional_answer>
    <additional_answer>Correct answer 3</additional_answer>
    <textline size="20" label="label text"/>
    <hintgroup>
      <stringhint answer="Incorrect answer A" type="ci" name="hintA" />
      <hintpart on="hintA">
        <startouttext />Text of hint for incorrect answer A<endouttext />
      </hintpart >
      <stringhint answer="Incorrect answer B" type="ci" name="hintB" />
      <hintpart on="hintB">
        <startouttext />Text of hint for incorrect answer B<endouttext />
      </hintpart >
      <stringhint answer="Incorrect answer C" type="ci" name="hintC" />
      <hintpart on="hintC">
        <startouttext />Text of hint for incorrect answer C<endouttext />
      </hintpart >
    </hintgroup>
  </stringresponse>
  <solution>
    <div class="detailed-solution">
      <p>Explanation or Solution Header</p>
      <p>Explanation or solution text</p>
    </div>
  </solution>
</problem>
```

#### Tags

- `<stringresponse>`: Indicates that the problem is a text input problem.
- `<textline>`: Child of `<stringresponse>`. Creates a response field in the LMS where the student enters a response.
- `<additional_answer>` (optional): Specifies an additional correct answer for the problem. A problem can contain an unlimited number of additional answers.

- `<hintgroup>` (optional): Indicates that the instructor has provided hints for certain common incorrect answers.
- `<stringhint />` (optional): Child of `<hintgroup>`. Specifies the text of the incorrect answer to provide the hint for. Contains answer, type, name.
- `<hintpart>`: Contains the name from `<stringhint>`. Associates the incorrect answer with the hint text for that incorrect answer.
- `<startouttext />`: Indicates the beginning of the text of the hint.
- `<endouttext />`: Indicates the end of the text of the hint.

**Tag:** `<stringresponse>`

Indicates that the problem is a text input problem.

#### Attributes

Attribute	Description
answer (required)	Specifies the correct answer. To designate the answer as a regular expression, add “regex” to the <b>type</b> attribute. If you do not add “regex” to the <b>type</b> attribute, the student’s answer must match the value in this attribute exactly.
type (optional)	Can specify whether the problem is case sensitive and allows regular expressions. If the <code>&lt;stringresponse&gt;</code> tag includes <code>type="ci"</code> , the problem is not case sensitive. If the tag includes <code>type="cs"</code> , the problem is case sensitive. If the tag includes <code>type="regex"</code> , the problem allows regular expressions. A <b>type</b> attribute in a <code>&lt;stringresponse&gt;</code> tag can also combine these values. For example, <code>&lt;stringresponse type="regex cs"&gt;</code> specifies that the problem allows regular expressions and is case sensitive.

#### Children

- `<textline />` (required)
- `<additional_answer>` (optional)
- `<hintgroup>` (optional)

**Tag:** `<textline />`

Creates a response field in the LMS where the student enters a response.

#### Attributes

Attribute	Description
label (required)	Contains the text of the problem.
size (optional)	Specifies the size, in characters, of the response field in the LMS.
hidden (optional)	If set to “true”, students cannot see the response field.
correct_answer (optional)	Lists the correct answer to the problem.

#### Children

(none)

**Tag:** `<additional_answer>`

Specifies an additional correct answer for the problem. A problem can contain an unlimited number of additional answers.

#### Attributes

(none)

#### Children

(none)

**Tag:** <hintgroup>

Indicates that the instructor has provided hints for certain common incorrect answers.

Attributes

(none)

Children

- <stringhint> (required)

**Tag:** <stringhint>

Specifies a common incorrect answer to the problem.

Attributes

Attribute	Description
answer (required)	The text of the incorrect answer.
name (required)	The name of the hint that you want to provide.
type	Specifies whether the text of the specified incorrect answer is case sensitive. Can be set to “cs” (case sensitive) or “ci” (case insensitive).

Children

- <hintpart> (required)

**Tag:** <hintpart>

Associates a common incorrect answer with the hint for that incorrect answer.

Attributes

Attribute	Description
on	The name of the hint. This must be the same as the <b>name</b> attribute of the <stringhint> tag. (The <stringhint> tag provides the name of the hint and the incorrect answer to associate with the hint. The <hintpart> tag contains the name of the hint and the text of the hint.)

Children

- <startouttext /> (required)
- <endouttext /> (required)

**Tags:** <startouttext /> and <endouttext>

Surround the text of the hint.

Attributes

(none)

Children

(none)

## 8.34 Word Cloud Tool

In a word cloud tool, students enter words into a field in response to a question or prompt. The words all the students have entered then appear instantly as a colorful graphic, with the most popular responses appearing largest. The graphic becomes larger as more students answer. Students can both see the way their peers have answered and contribute their thoughts to the tool.

For example, the following word cloud was created from students' responses to a question in a HarvardX course.



### 8.34.1 Create a Word Cloud Tool

To create a word cloud tool:

1. Add the Word Cloud advanced component.
  - (a) On the **Settings** menu, click **Advanced Settings**.
  - (b) In the field for the **Advanced Module List** policy key, place your cursor between the brackets.
  - (c) Enter the following value. Make sure to include the quotation marks.

"word\_cloud"

- (a) At the bottom of the page, click **Save Changes**.

The page refreshes automatically. At the top of the page, you see a notification that your changes have been saved.

- (b) Return to the unit where you want to add the specialized problem. The list of possible components now contains an Advanced component.
4. In the unit where you want to create the problem, click **Advanced** under **Add New Component**.
5. In the list of problem types, click **Word Cloud**.
6. In the component that appears, click **Edit**.
7. In the component editor, specify the settings that you want. You can leave the default value for everything except **Display Name**.
  - **Display Name:** The name that appears in the course ribbon and as a heading above the problem.
  - **Inputs:** The number of text boxes into which students can enter words, phrases, or sentences.
  - **Maximum Words:** The maximum number of words that the word cloud displays. If students enter 300 different words but the maximum is set to 250, only the 250 most commonly entered words appear in the word cloud.
  - **Show Percents:** The number of times that students have entered a given word as a percentage of all words entered appears near that word.
8. Click **Save**.


## 8.35 Write-Your-Own-Grader Problem


In custom Python-evaluated input (also called “write-your-own-grader” problems), the grader uses a Python script that you create and embed in the problem to evaluate a student’s response or provide hints. These problems can be any type. Numerical input and text input problems are the most popular write-your-own-grader problems.

CUSTOM PYTHON-EVALUATED INPUT (2/4 points)


This question has two parts.


Part 1: Enter two integers that sum to 10.

 Answer: 3

 Answer: 7

Part 2: Enter two integers that sum to 20.





EXPLANATION

For part 1, any two numbers of the form  $n$  and  $10-n$ , where  $n$  is any integer, will work. One possible answer would be the pair 0 and 10.

For part 2, any pair  $x$  and  $20-x$  will work, where  $x$  is any real number with a finite decimal representation. Both inputs have to be entered either in standard decimal notation or in scientific exponential notation. One possible answer would be the pair 0.5 and 19.5. Another way to write this would be  $5e-1$  and  $1.95e1$ .

You have used 3 of 5 submissions

Custom Python-evaluated input problems can include the following:

- *Chemical Equation Problem*
- *Custom JavaScript Problem*
- *Gene Explorer Tool*
- *Molecule Editor Tool*
- *Protex Protein Builder Tool*

<code>&lt;script type="loncapa/python"&gt;</code>	Indicates that the problem contains a Python script.
<code>&lt;customresponse cfn="test_add_to_ten"&gt;</code>	
<code>&lt;customresponse cfn="test_add" expect="20"&gt;</code>	
<code>&lt;textline size="10" correct_answer="3"/&gt;</code>	This tag includes the <code>size</code> , <code>correct_answer</code> , and <code>label</code> attributes. The <code>correct_answer</code> attribute is optional.

You can create one of these problems in [Answer Tag Format](#) or [Script Tag Format](#).

### 8.35.1 Answer Tag Format

The answer tag format encloses the Python script in an `<answer>` tag:

```
<answer>
if answers[0] == expect:
    correct[0] = 'correct'
    overall_message = 'Good job!'
else:
    correct[0] = 'incorrect'
    messages[0] = 'This answer is incorrect'
    overall_message = 'Please try again'
</answer>
```

---

**Important:** Python honors indentation. Within the `<answer>` tag, you must begin your script with no indentation.

---

The Python script interacts with these variables in the global context:

- `answers`: An ordered list of answers the student provided. For example, if the student answered 6, `answers[0]` would equal 6.
- `expect`: The value of the `expect` attribute of `<customresponse>` (if provided).
- `correct`: An ordered list of strings indicating whether the student answered the question correctly. Valid values are "correct", "incorrect", and "unknown". You can set these values in the script.
- `messages`: An ordered list of messages that appear under each response field in the problem. You can use this to provide hints to users. For example, if you include `messages[0] = "The capital of California is Sacramento"`, that message appears under the first response field in the problem.
- `overall_message`: A message that appears beneath the entire problem. You can use this to provide a hint that applies to the entire problem rather than a particular response field.

### Create a Custom Python-Evaluated Input Problem in Answer Tag Format

To create a custom Python-evaluated input problem using an `<answer>` tag:

1. In the unit where you want to create the problem, click **Problem** under **Add New Component**, and then click the **Advanced** tab.
2. Click **Custom Python-Evaluated Input**.
3. In the component that appears, click **Edit**.
4. In the component editor, replace the example code with the following code.

5. Click **Save**.

```
<problem>
  <p>What is the sum of 2 and 3?</p>

  <customresponse expect="5">
    <textline math="1" />
  </customresponse>

  <answer>
if answers[0] == expect:
    correct[0] = 'correct'
    overall_message = 'Good job!'
else:
    correct[0] = 'incorrect'
    messages[0] = 'This answer is incorrect'
    overall_message = 'Please try again'
  </answer>
</problem>
```

---

**Important:** Python honors indentation. Within the `<answer>` tag, you must begin your script with no indentation.

---

### 8.35.2 Script Tag Format

The script tag format encloses a Python script that contains a “check function” in a `<script>` tag, and adds the `cfn` attribute of the `<customresponse>` tag to reference that function:

```
<problem>

<script type="loncapa/python">

def test_add(expect, ans):
    try:
        a1=int(ans[0])
        a2=int(ans[1])
        return (a1+a2) == int(expect)
    except ValueError:
        return False

def test_add_to_ten(expect, ans):
    return test_add(10, ans)

</script>

<p>Enter two integers that sum to 10. </p>
<customresponse cfn="test_add_to_ten">
  <textline size="10"/><br/>
  <textline size="10"/>
</customresponse>

</problem>
```

**Important:** Python honors indentation. Within the `<script>` tag, the `def check_func(expect, ans):` line must have no indentation.

The **check** function accepts two arguments:



- `expect` is the value of the `expect` attribute of `<customresponse>` (if provided)
- `answer` is either:
  - The value of the answer the student provided, if the problem only has one response field.
  - An ordered list of answers the student provided, if the problem has multiple response fields.

The **check** function can return any of the following to indicate whether the student's answer is correct:

- `True`: Indicates that the student answered correctly for all response fields.
- `False`: Indicates that the student answered incorrectly. All response fields are marked as incorrect.
- A dictionary of the form: `{ 'ok': True, 'msg': 'Message' }` If the dictionary's value for `ok` is set to `True`, all response fields are marked correct; if it is set to `False`, all response fields are marked incorrect. The `msg` is displayed beneath all response fields, and it may contain XHTML markup.
- A dictionary of the form

```
{ 'overall_message': 'Overall message',
  'input_list': [
    { 'ok': True, 'msg': 'Feedback for input 1'},
    { 'ok': False, 'msg': 'Feedback for input 2'},
    ... ] }
```

The last form is useful for responses that contain multiple response fields. It allows you to provide feedback for each response field individually, as well as a message that applies to the entire response.

Example of a checking function:

```
def check_func(expect, answer_given):
    check1 = (int(answer_given[0]) == 1)
    check2 = (int(answer_given[1]) == 2)
    check3 = (int(answer_given[2]) == 3)
    return { 'overall_message': 'Overall message',
            'input_list': [
                { 'ok': check1, 'msg': 'Feedback 1'},
                { 'ok': check2, 'msg': 'Feedback 2'},
                { 'ok': check3, 'msg': 'Feedback 3'} ] }
```

The function checks that the user entered 1 for the first input, 2 for the second input, and 3 for the third input. It provides feedback messages for each individual input, as well as a message displayed beneath the entire problem.

## Create a Custom Python-Evaluated Input Problem in Script Tag Format

To create a custom Python-evaluated input problem using a `<script>` tag:

1. In the unit where you want to create the problem, click **Problem** under **Add New Component**, and then click the **Advanced** tab.
2. Click **Custom Python-Evaluated Input**.
3. In the component that appears, click **Edit**.
4. In the component editor, replace the example code with the following code.
5. Click **Save**.

**Problem Code:**

```

<problem>
<p>This question has two parts.</p>

<script type="loncapa/python">

def test_add(expect, ans):
    try:
        a1=int(ans[0])
        a2=int(ans[1])
        return (a1+a2) == int(expect)
    except ValueError:
        return False

def test_add_to_ten(expect, ans):
    return test_add(10, ans)

</script>

<p>Part 1: Enter two integers that sum to 10. </p>
<customresponse cfn="test_add_to_ten">
    <textline size="10" correct_answer="3" label="Integer #1"/><br/>
    <textline size="10" correct_answer="7" label="Integer #2"/>
</customresponse>

<p>Part 2: Enter two integers that sum to 20. </p>
<customresponse cfn="test_add" expect="20">
    <textline size="10" label="Integer #1"/><br/>
    <textline size="10" label="Integer #2"/>
</customresponse>

<solution>
    <div class="detailed-solution">
        <p>Explanation</p>
        <p>For part 1, any two numbers of the form n and 10-n, where n is any integer will work.
        <p>For part 2, any pair x and 20-x will work, where x is any real number.
    </div>
</solution>
</problem>

```

## Templates

The following template includes answers that appear when the student clicks **Show Answer**.

```

<problem>

<script type="loncapa/python">
def test_add(expect,ans):
    a1=float(ans[0])
    a2=float(ans[1])
    return (a1+a2)== float(expect)
</script>

<p>Problem text</p>
<customresponse cfn="test_add" expect="20">
    <textline size="10" correct_answer="11" label="Integer #1"/><br/>
    <textline size="10" correct_answer="9" label="Integer #2"/>
</customresponse>

    <solution>

```

```

    <div class="detailed-solution">
      <p>Solution or Explanation Heading</p>
      <p>Solution or explanation text</p>
    </div>
  </solution>
</problem>

```

The following template does not return answers when the student clicks **Show Answer**. If your problem doesn't include answers for the student to see, make sure to set **Show Answer** to **Never** in the problem component.

```

<problem>

<script type="loncapa/python">
def test_add(expect,ans):
    a1=float(ans[0])
    a2=float(ans[1])
    return (a1+a2)== float(expect)
</script>

<p>Enter two real numbers that sum to 20: </p>
<customresponse cfn="test_add" expect="20">
    <textline size="10" label="Integer #1"/><br/>
    <textline size="10" label="Integer #2"/>
</customresponse>

    <solution>
      <div class="detailed-solution">
        <p>Solution or Explanation Heading</p>
        <p>Solution or explanation text</p>
      </div>
    </solution>
</problem>

```

### 8.35.3 Create a Randomized Custom Python-Evaluated Input Problem

You can create a custom Python-evaluated input problem that randomizes variables in the Python code.

**Note:** In the problem settings, you must set the **Randomization** value to something other than **Never** to have Python variables randomized. See [Randomization](#) for more information.

The following example demonstrates using randomization with a Python-evaluated input problem.

**Note:** This example uses the method `random.randint` to generate random numbers. You can use any standard Python library for this purpose.

```

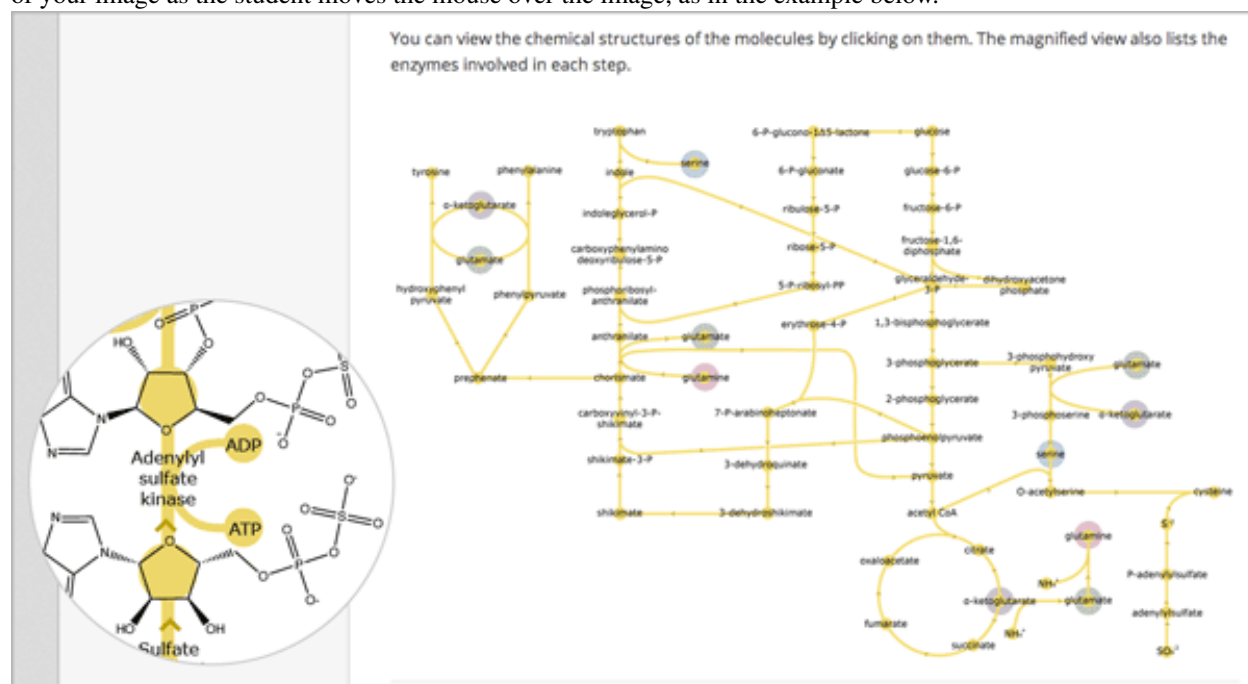
<problem>
  <p>Some problems in the course will utilize randomized parameters.
  For such problems, after you check your answer you will have the option
  of resetting the question, which reconstructs the problem with a new
  set of parameters.</p>
<script type="loncapa/python">
x1 = random.randint(0, 100)
x2 = random.randint(0, 100)
y = x1+x2

```

```
</script>
<p>Let  $(x_1 = \$x1)$  and  $(x_2 = \$x2)$ . What is the value of  $(x_1+x_2)$ ?</p>
<numericalresponse answer="$y">
  <responseparam type="tolerance" default="0.01%" name="tol"
    description="Numerical Tolerance"/>
  <textline size="10"/>
</numericalresponse>
<solution>
  <p><b>Explanation:</b></p>
</solution>
</problem>
```

## 8.36 Zooming Image Tool

You may want to present information to your students as an image. If your image is very large or very detailed, students may not be able to see all the information in the image. You can use the zooming image tool to enlarge areas of your image as the student moves the mouse over the image, as in the example below.



### 8.36.1 Components of a Zooming Image Tool

To create a zooming image tool, you need the following files.

- The image that you want students to see when they access the unit.
- The image that appears in the magnified area when a student clicks the regular image. This image may be larger than the regular image.
- The **jquery.loupeAndLightbox.js** JavaScript file. Every zooming image tool uses this JavaScript file, and you won't make any changes to it. [To download this file, right-click here](#), and then click **Save Link As** to save the file on your computer.

### 8.36.2 Create a Zooming Image Tool

1. Upload your regular-sized image file, your small image file, and the **jquery.loupeAndLightbox.js** file to the **Files & Uploads** page. For more information about how to do this, see *Adding Files to a Course*.
2. Under **Add New Component**, click **html**, and then click **Zooming Image**.
3. In the new component that appears, click **Edit**.
4. In the component editor, replace the default problem text with your own text.
5. Switch to the **HTML** tab.
6. Replace the following placeholders with your own content.

- Replace the following file name and path with the name and path of the image that you want to appear magnified when the user hovers over the regular image.

**`https://studio.edx.org/c4x/edx/DemoX/asset/pathways_detail_01.png`**

For example, your file name and path may be `/static/Image1.jpg`.

- Replace the following file name and path with the name and path of the image that you want to appear when the page opens.

**`https://studio.edx.org/c4x/edx/DemoX/asset/pathways_overview_01.png`**

For example, your file name and path may be `/static/Image2.jpg`.

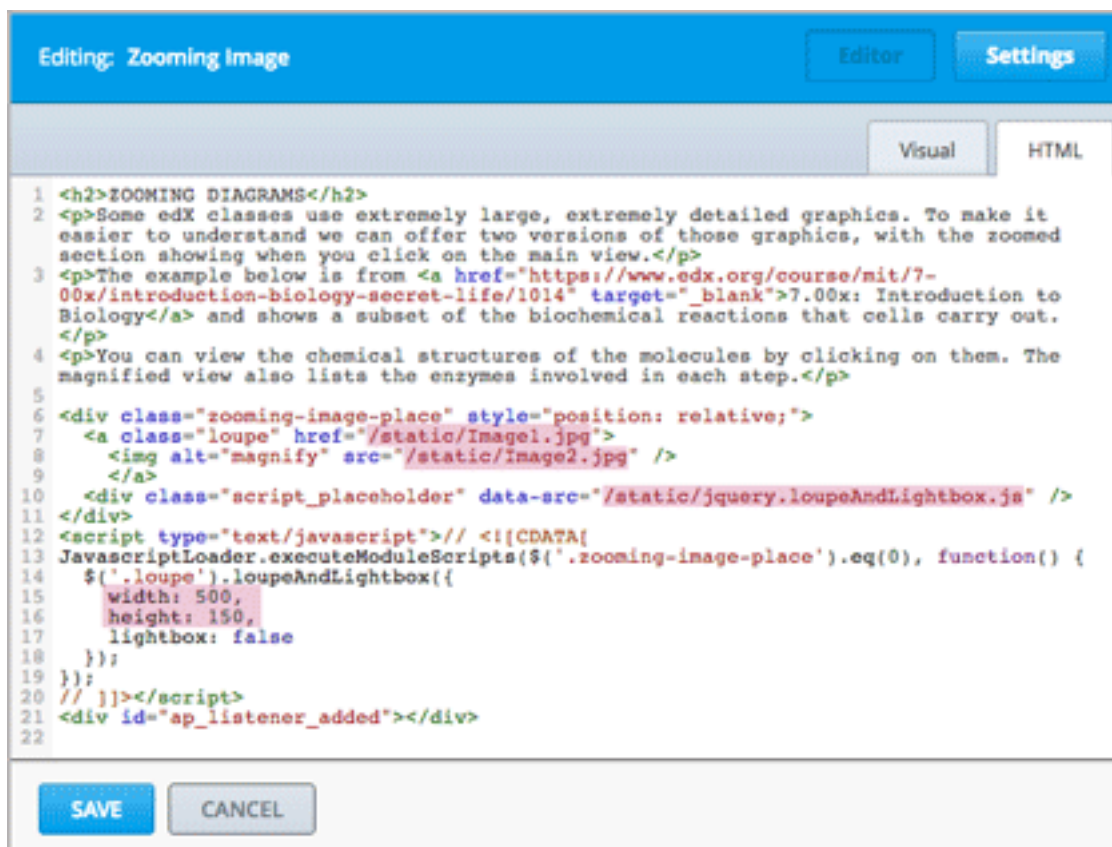
- Replace the following name and file path with the name and path of the JavaScript file for your course.

**`https://studio.edx.org/c4x/edx/DemoX/asset/jquery.loupeAndLightbox.js`**

Because you uploaded the **jquery.loupeAndLightbox.js** file to the **Files & Uploads** page, your file name and path is `/static/jquery.loupeAndLightbox.js`.

- (Optional) If you want the magnified area to be larger or smaller, change the **width** and **height** values from 350 to larger or smaller numbers. For example, you can change both numbers to 450. Or, if you want a horizontal oval instead of a circle, you can change the **width** value to a number such as 500 and the **height** value to a number such as 150.

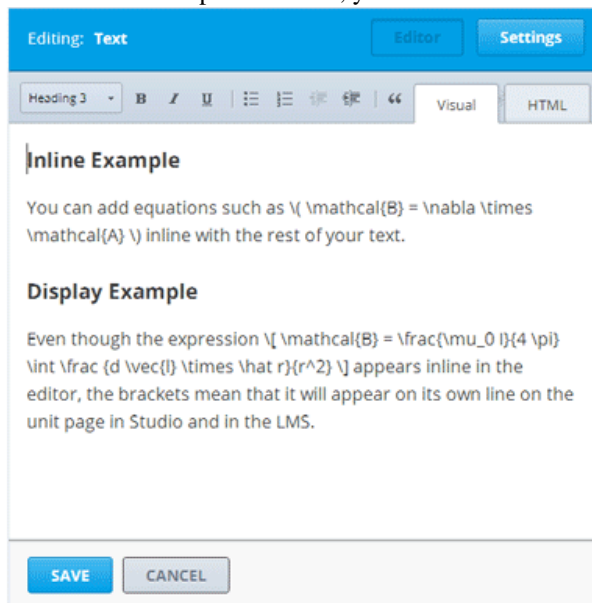
The HTML in your zooming image tool may resemble the following.



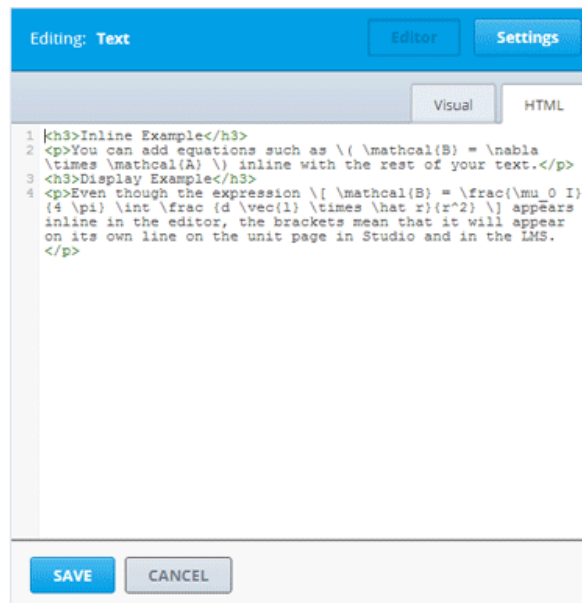
**Note:** Complete MathJax documentation (together with a testing tool) can be found at <http://www.onemathematicalcat.org/MathJaxDocumentation/TeXSyntax.htm>.

### 8.37.1 HTML (Text) Components

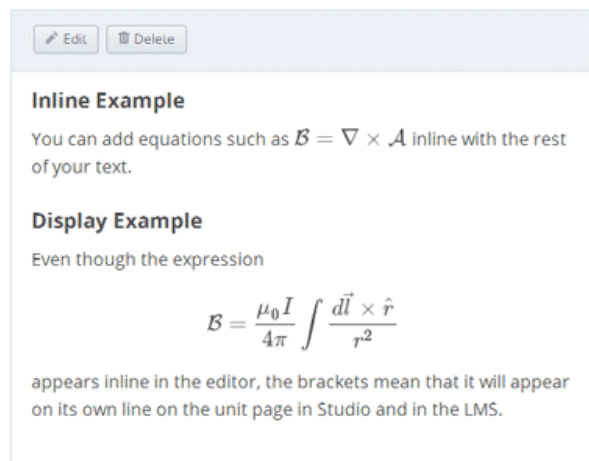
In the HTML component editor, you can use MathJax both in Visual view and in HTML view.



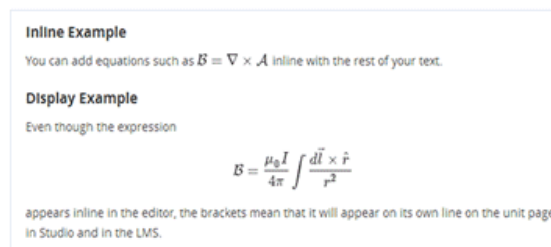
HTML component editor: Visual view



HTML component editor: HTML view



Studio: Unit page



LMS

### 8.37.2 Problem Components

In the Problem component editor, you can use MathJax both in the Simple Editor and in the Advanced Editor.

In the example problem below, note that the Einstein equation in the explanation is enclosed in backslashes and parentheses, so it appears inline with the text. The Navier-Stokes equation is enclosed in backslashes and brackets, so it appears on its own line.



Editing: Multiple Choice Editor Settings

H1 ABC 123 Advanced Editor ?

This nonsensical question is for demonstration purposes only.

Which of the following equations is the most complex?

( )  $E = mc^2$

( )  $A = \pi r^2$

(x)  $\rho \left( \frac{\partial \mathbf{v}}{\partial t} + \mathbf{v} \cdot \nabla \mathbf{v} \right) = -\nabla p + \mu \nabla^2 \mathbf{v} + \mathbf{f}$

( )  $V = IR$

[explanation]  
Although a true understanding of Einstein's equation  $E = mc^2$  relating mass and energy requires years of study, the Navier-Stokes equation  $\rho \left( \frac{\partial \mathbf{v}}{\partial t} + \mathbf{v} \cdot \nabla \mathbf{v} \right) = -\nabla p + \mu \nabla^2 \mathbf{v} + \mathbf{f}$  is computationally more complex (and frequently gives students nightmares).  
[explanation]

SAVE CANCEL

Problem component editor: Simple Editor

Editing: Multiple Choice Editor Settings

```

1 <problem>
2 <p>This nonsensical question is for demonstration
3   purposes only.</p>
4 <p>Which of the following equations is the most
5   complex?</p>
6 <multiplechoiceresponse>
7   <choicegroup type="MultipleChoice">
8     <choice correct="false">( E = m c^2 )</choice>
9     <choice correct="false">( A = \pi r^2 )</choice>
10    <choice correct="true">( \rho \left( \frac{\partial \mathbf{v}}{\partial t} + \mathbf{v} \cdot \nabla \mathbf{v} \right) = - \nabla p + \mu \nabla^2 \mathbf{v} + \mathbf{f} )</choice>
11    <choice correct="false">( V = I R )</choice>
12  </choicegroup>
13 </multiplechoiceresponse>
14 <p></p>
15 <h2>Explanation</h2>
16 <p>Although a true understanding of Einstein's
17   equation ( E = m c^2 ) relating mass and energy
18   requires years of study, the Navier-Stokes equation [
19   \rho \left( \frac{\partial \mathbf{v}}{\partial t} + \mathbf{v} \cdot \nabla \mathbf{v} \right) = - \nabla p + \mu \nabla^2 \mathbf{v} + \mathbf{f} ] is computationally more complex (and
20   frequently gives students nightmares).</p>
21 </problem>

```

SAVE CANCEL

Problem component editor: Advanced Editor

Edit Delete

MULTIPLE CHOICE (1 point possible)

This nonsensical question is for demonstration purposes only.

Which of the following equations is the most complex?

☐  $E = mc^2$

☐  $A = \pi r^2$

☒  $\rho \left( \frac{\partial \mathbf{v}}{\partial t} + \mathbf{v} \cdot \nabla \mathbf{v} \right) = -\nabla p + \mu \nabla^2 \mathbf{v} + \mathbf{f}$

☐  $V = IR$

EXPLANATION

Although a true understanding of Einstein's equation  $E = mc^2$  relating mass and energy requires years of study, the Navier-Stokes equation

$$\rho \left( \frac{\partial \mathbf{v}}{\partial t} + \mathbf{v} \cdot \nabla \mathbf{v} \right) = -\nabla p + \mu \nabla^2 \mathbf{v} + \mathbf{f}$$

is computationally more complex (and frequently gives students nightmares).

Check Save

Studio: Unit page

MULTIPLE CHOICE (1 point possible)

This nonsensical question is for demonstration purposes only.

Which of the following equations is the most complex?

☐  $E = mc^2$

☐  $A = \pi r^2$

☒  $\rho \left( \frac{\partial \mathbf{v}}{\partial t} + \mathbf{v} \cdot \nabla \mathbf{v} \right) = -\nabla p + \mu \nabla^2 \mathbf{v} + \mathbf{f}$

☐  $V = IR$

EXPLANATION

Although a true understanding of Einstein's equation  $E = mc^2$  relating mass and energy requires years of study, the Navier-Stokes equation

$$\rho \left( \frac{\partial \mathbf{v}}{\partial t} + \mathbf{v} \cdot \nabla \mathbf{v} \right) = -\nabla p + \mu \nabla^2 \mathbf{v} + \mathbf{f}$$

is computationally more complex (and frequently gives students nightmares).

Check Save

LMS



---

## Creating Content Experiments

---

### 9.1 Overview of Content Experiments

You use content experiments to show different course content to different groups of students. Also known as “A/B tests” or “split tests”, content experiments enable you to research and compare the performance of students in different groups to gain insight into the relative effectiveness of your course content.

Information on analyzing events from content experiments is included in the [edX Researcher Guide](#).

For more information, see:

- *[Configure Your Course for Content Experiments](#)*
- *[Add Content Experiments to Your Course](#)*
- *[Test Content Experiments](#)*

#### 9.1.1 Courses with Multiple Content Experiments

You can run multiple content experiments in your course. You can set up each experiment to use the same groups of students, or you can set up each experiment to be independent and use a different grouping.

---

**Important:** If your course has multiple experiments, it is critical that you decide in advance if the experiments share the same groups of students or if each experiment has its own unique grouping. If two experiments share the same grouping, then any student that is in Group A for the first experiment will also be in Group A for the second one. If you want the experiments to be independent, then the experiments must use different groupings so that students are randomly assigned for each experiment.

---

To determine the available groupings of students, you set up group configurations *[using Studio](#)* or *[using XML](#)*.

You then select which group configuration to use when you add a content experiment *[using Studio](#)* or *[using XML](#)*.

### 9.2 Configure Your Course for Content Experiments

This chapter describes how to configure your course so that you can use content experiments. See:

- *[Enable Content Experiments](#)*
- *[Overview of Group Configurations](#)*

- *Set up Group Configurations in edX Studio*
- *Guidelines for Modifying Group Configurations*
- *Set Up Group Configuration for OLX Courses*

### 9.2.1 Enable Content Experiments

To enable content experiments in your course, you add `split_test` to the **Advanced Modules List** in Advanced Settings.

---

**Note:** `split_test` is the internal edX Platform name for a content experiment.

---

1. From the **Settings** menu, select **Advanced Settings**.
2. On the **Advanced Settings** page, locate **Advanced Modules List**.
3. In the **Advanced Modules List** field, add `"split_test"`. Be sure that you include the double quotation marks.

If you have multiple values, ensure that they are separated by commas (,).

For example, the text in the **Advanced Modules List** field may resemble the following:

```
[  
  "lti",  
  "word_cloud",  
  "split_test"  
]
```

4. At the bottom of the page, click **Save Changes**.

### 9.2.2 Overview of Group Configurations

Before you can create content experiments, you must specify at least one group configuration for your course.

A group configuration defines how many groups of students are in an experiment. You can have any number of group configurations in your course. When you create a content experiment, you select the group configuration to use.

For example, you may want to do two different experiments at different times during your course. In one content experiment, students either see a video or complete a reading assignment. You can then include problems so that you can see which group learned the material more completely. For this content experiment, you need a group configuration that assigns your students to two experiment groups.

In the other content experiment, you can present the same question using four different types of problems. For this content experiment, you need a group configuration that assigns your students to four experiment groups.

#### Assigning Students to Experiment Groups

The edX Platform assigns students to each experiment group in a group configuration.

Experiment group assignments are:

- Dynamic

The edX Platform assigns a student to an experiment group the first time he or she views a content experiment that uses the group configuration.

- Random

You cannot control which students are assigned to which experiment group.

- Evenly distributed

The edX Platform keeps track of the size of experiment groups, and assigns new students to groups evenly. For example, if you have two experiment groups in a configuration, each group includes 50% of the students in the course; if you have four experiment groups, each group includes 25% of the students.

- Permanent

Students remain in their assigned experiment groups regardless of how many content experiments you set up that use the same group configuration.

### 9.2.3 Set up Group Configurations in edX Studio

**Note:** You must *enable content experiments* before you can set up group configurations.

To set up group configurations, on the **Settings** menu, select **Group Configurations**. The **Group Configurations** page opens.

From this page you can *create*, *edit*, and *delete* group configurations. You can also *view experiments that use a group configuration*.

#### Create a Group Configuration

You can create a group configuration at any time.

1. On the **Group Configurations** page, under **Experiment Groups**, click **New Experiment Group**. The following page opens:

**Group Configuration Name \***

This is the Name of the Group Configuration

Name or short description of the configuration

**Description**

This is the Description of the Group Configuration

Optional long description

**Groups \***

Name of the groups that students will be assigned to, for example, Control, Video, Problems. You must have two or more groups.

Group A	50%	
Group B	50%	

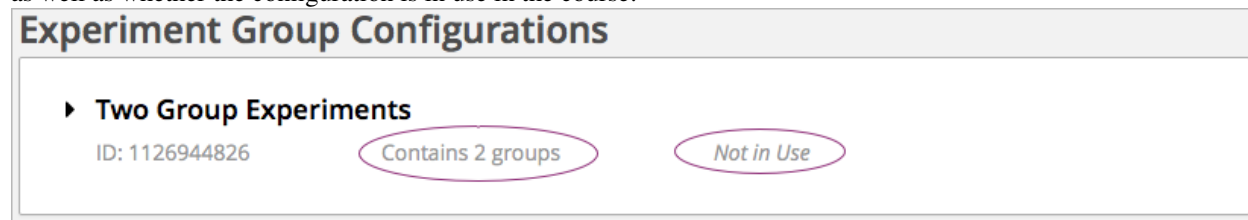
[+ Add another group](#)

**CREATE** **CANCEL**

2. Enter a name in the **Group Configuration Name** field. Use a meaningful name, because you will select from group configuration names when you create content experiments. Students do not see the group configuration name.

1. Optionally, enter a description for the new group configuration.
2. By default, a new configuration already contains two groups. Modify the groups or add and delete groups as needed. A group configuration must have at least one group.
  - Modify group names as needed. You see group names in the unit page in Studio, but group names are not visible to students.
  - Click **Add another group** to include another group as part of the configuration.
  - Click the **X** to the right of an existing group to remove it from the configuration. A group configuration must have at least one group.
5. Click **Create** to save the new group configuration.

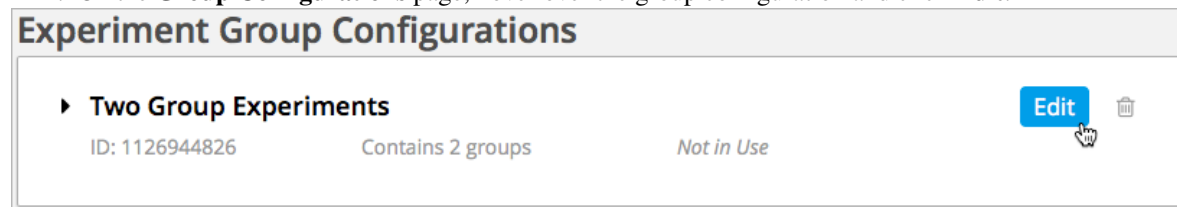
The group configuration is then listed in the page. You can see the number of groups that the configuration contains, as well as whether the configuration is in use in the course:



### Edit a Group Configuration

**Important:** You can change the name of a group configuration at any time. However, before you modify any other characteristics of a group configuration that is currently used in a running course, review [Guidelines for Modifying Group Configurations](#).

1. On the **Group Configurations** page, hover over the group configuration and click **Edit**.



The following page opens:

Group Configuration Name \*
Group Configuration ID 148679814068

Two Group Experiments

Name or short description of the configuration

Description

This is the Description of the Group Configuration

Optional long description

Groups \*

Name of the groups that students will be assigned to, e.g. Control, Video, Problems

Group A
50%

Group B
50%

+ Add another group

SAVE CANCEL

2. Modify the name and description as needed.
3. Modify groups in the configuration as needed. See *Create a Group Configuration* for details.
4. Click **Save** to save your changes.

## Delete a Group Configuration

**Note:** You can only delete a group configuration that is not currently used in a content experiment. You cannot delete a group configuration that is used in a content experiment.

1. On the **Group Configurations** page, hover over the group configuration and click the Delete icon.

▶ Three Group Configuration

Edit

ID: 524593825425

Contains 3 groups

Not in Use

2. When prompted to confirm the deletion, click **Delete**.

## View Experiments that Use a Group Configuration

You can view the experiments that use each of your group configurations.

On the **Group Configurations** page, click the name of a group to see its details. You see links to experiments that use the group configuration:

▼ 2 Group Configuration

ID: 951046592104

2 Group Configuration

Group A	50%
Group B	50%

Edit

This Group Configuration is used in:  
[Introduction: Video and Sequences / Content Experiment](#)

Click a link to go to the unit page that contains the experiment.

## View a Group Configuration from an Experiment

When working with a content experiment, you can view details about the group configuration used by that experiment in two ways:

- In a unit that contains a content experiment, in the content experiment block, click the name of the group configuration.

Content Experiment

EDIT

VIEW →

This block contains multiple components.  
This content experiment uses group configuration ['2 Group Configuration'](#).

- At the top of the content experiment page, click the name of the group configuration.

This content experiment uses group configuration ['2 Group Configuration'](#).

▶ Group A

▶ Group B

In both cases, the group configuration opens:

▼ 2 Group Configuration

ID: 951046592104

2 Group Configuration

Group A	50%
Group B	50%

Edit

This Group Configuration is used in:  
[Introduction: Video and Sequences / Content Experiment](#)

You can use the link in the group configuration to return to the unit that contains the content experiment.

## 9.2.4 Guidelines for Modifying Group Configurations

Review these guidelines if you must modify a group configuration after a course starts. These guidelines apply for courses built in Studio or OLX.

### Modifying a Group Configuration

After the course starts, **do not**:

- Delete group configurations.
- Change the `id` value of a group configuration.

### Modifying Experiment Groups

After the course starts, **do not** change the `id` value of an experiment group.

You can change experiment group names at any time.

### Removing Experiment Groups from Group Configurations

After a course in which you are running a content experiment has started, students in a specific experiment group might have difficulties with the content or with the course experience. In this situation, you can remove the experiment group from the group configuration. Content that was specified for that experiment group is then no longer visible to students.

Students in the removed experiment group are reassigned evenly to one of the other experiment groups in the group configuration. Any problems that these students completed in the removed experiment group content do not count toward their grades. The students must begin the problem set again and complete all the problems in the experiment group content to which they are reassigned.

Removing an experiment group affects event data for the course. Ensure that researchers who are evaluating your course results are aware of the experiment group that you removed and the date on which you removed it.

## 9.2.5 Set Up Group Configuration for OLX Courses

You define group configurations in the `policy.json` file in the `policies` directory of an OLX course.

To specify group configurations, you modify the value for the `user_partitions` policy key.

---

**Note:** `user_partitions` is the internal edX Platform name for group configurations.

---

The value for `user_partitions` is a JSON collection of group configurations, each of which defines the experiment groups of students.

---

**Note:** Use names for group configurations that are meaningful. You select from the list of group configuration names when you add a content experiment.

---

See the following examples for more information.

### Example: One Group Configuration

The following code shows an example JSON object that defines a group configuration with two student segments.

```
"user_partitions": [{ "id": 0,
                      "name": "Name of the group configuration",
                      "description": "Description of the group configuration.",
                      "version": 1,
                      "groups": [{ "id": 0,
                                   "name": "Group 1",
                                   "version": 1},
                                { "id": 1,
                                   "name": "Group 2",
                                   "version": 1}]
                      }
]
```

In this example:

- The "id": 0 identifies the group configuration. For XML courses, the value is referenced in the `user_partition` attribute of the `<split_test>` element in the content experiment file.
- The `groups` array identifies the experiment groups to which students are randomly assigned. For XML courses, each group id value is referenced in the `group_id_to_child` attribute of the `<split_test>` element.

### Example: Multiple Group Configurations

The following code shows an example JSON object that defines two group configurations. The first group configuration divides students into two experiment groups, and the second divides students into three experiment groups.

```
"user_partitions": [{ "id": 0,
                      "name": "Name of Group Configuration 1",
                      "description": "Description of Group Configuration 1.",
                      "version": 1,
                      "groups": [{ "id": 0,
                                   "name": "Group 1",
                                   "version": 1},
                                { "id": 1,
                                   "name": "Group 2",
                                   "version": 1}]}
  { "id": 1,
    "name": "Name of Group Configuration 2",
    "description": "Description of Group Configuration 2.",
    "version": 1,
    "groups": [{ "id": 0,
                  "name": "Group 1",
                  "version": 1},
               { "id": 1,
                  "name": "Group 2",
                  "version": 1},
               { "id": 2,
                  "name": "Group 3",
                  "version": 1}]}
]
```

---

**Note:** As this example shows, each group configuration is independent. Group IDs and names must be unique within



a group configuration, but not across all group configurations in your course.

## 9.3 Add Content Experiments to Your Course

After you *enable content experiments* and *set up group configurations in Studio*, you can add content experiments to your course. See:

- *Add a Content Experiment in Studio*
- *Add a Content Experiment in OLX*

### 9.3.1 Add a Content Experiment in Studio

You can add a content experiment in a unit or container page. In Studio, you create and view content for all groups in the content experiment in a container page for the experiment, as shown in *Create Content for Groups in the Content Experiment*.

When a student views the unit with the content experiment, she has no indication there is a content experiment in the unit, and the content experiment display name is not shown. She sees only the content that you configure for the group she is assigned to. To the student, the unit with the content experiment is no different than any other unit.

To configure a content experiment in Studio, you:

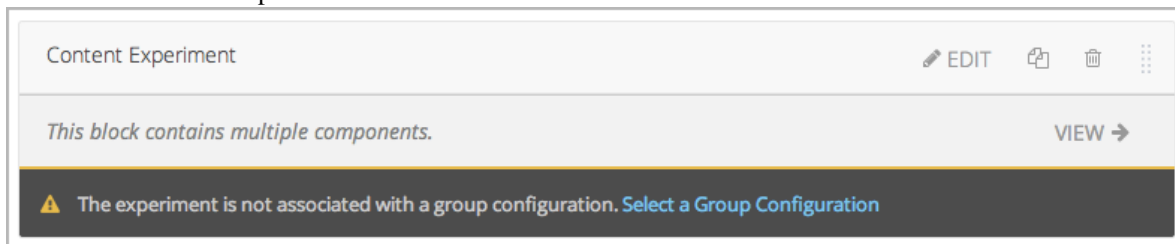
1. *Create the content experiment.*
2. *Create content for groups in the content experiment.*

After you configure a content experiment, you can change its group configuration. See *Change the Group Configuration for a Content Experiment*.

#### Create the Content Experiment

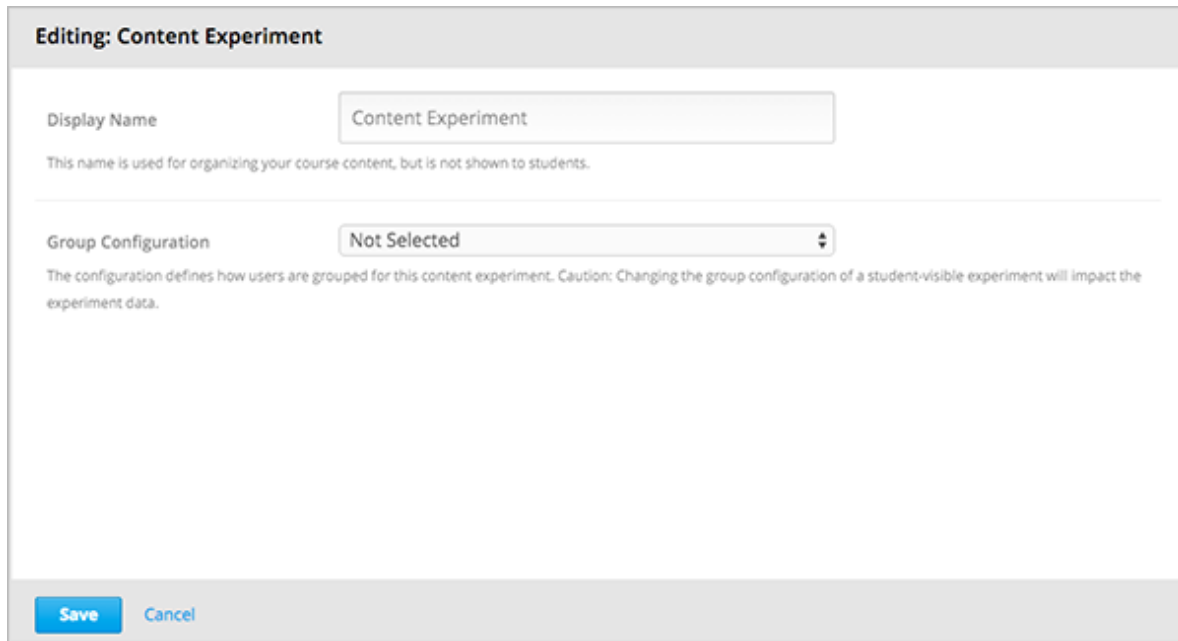
1. In the unit page, under **Add New Component**, click **Advanced**.
2. Select **Content Experiment**.

A new content experiment is added to the unit:



You can work with the content experiment as you can any other component. See *Developing Course Components* for more information.

3. Click either **Select a Group Configuration** or **Edit** to open the content experiment component.



**Editing: Content Experiment**

Display Name

This name is used for organizing your course content, but is not shown to students.

Group Configuration

The configuration defines how users are grouped for this content experiment. Caution: Changing the group configuration of a student-visible experiment will impact the experiment data.

**Save** **Cancel**

4. Next to **Group Configuration**, select a group configuration.
5. In the **Display Name** field, enter the name that the component will use in Studio. The display name is only used in Studio; students do not see this value.
6. Click **Save**.

The content experiment is displayed as a component that contains other components. See [Components that Contain Other Components](#) for more information.

---

**Note:** You cannot duplicate a content experiment.

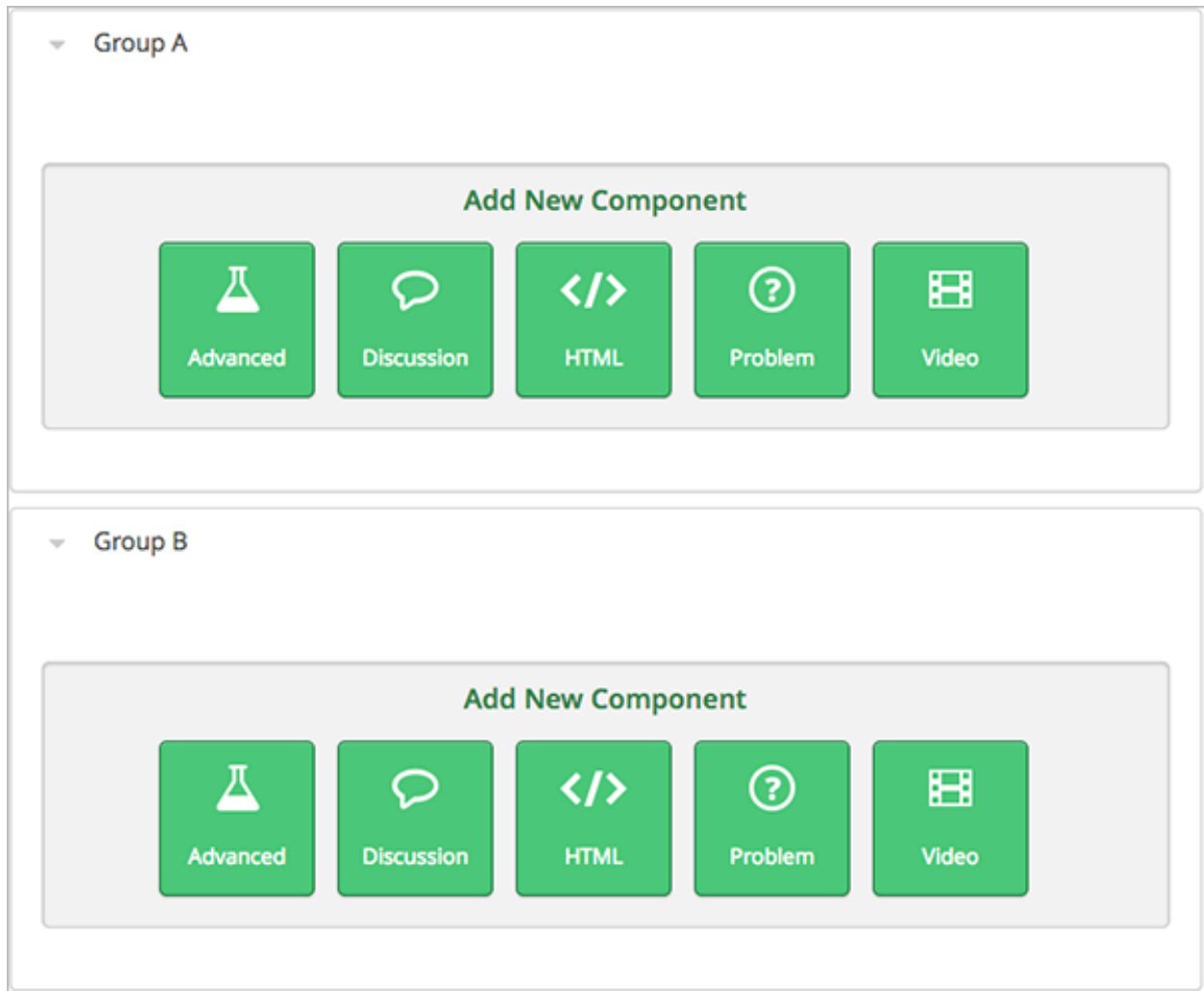
---

You can now create content for the groups in the experiment.

### Create Content for Groups in the Content Experiment

After you select a group configuration, in the content experiment component, click **View**.

The content experiment page that opens automatically includes a container for each group that is defined in the group configuration you selected. For example, if you select a group configuration that defines Group A and Group B, you see the following page:



You add content for both groups as needed, just as you would add content to any container page. See [Components that Contain Other Components](#) for more information.

For example, you can add an HTML component and a video to Group A:


▼ Group A

Text

Welcome to group A.

Video

VIDEO



LYLA FISCHER: Hi, welcome to Edx.

I'm Lyla Fischer, an Edx fellow helping to put together these courses.

As you know, our courses are entirely online.

So before we start learning about the subjects that brought you here, let's learn about the tools that you will use to navigate through the course material.

Let's start with what is on your screen right now.

You are watching a video of me talking.

You have several tools associated

► Group B

**Note:** It is valid, and can be useful, to have no content for a group in the experiment. For example, if one group has a video and another group has no content, you can analyze the effect of the video on student performance.

### Change the Group Configuration for a Content Experiment

You can change the group configuration for a content experiment. When you change the group configuration, you must add components to any new groups that you create. You can use the components from the previous groups, as well as create new components.

**Warning:** Changing the group configuration of a student-visible experiment will affect the experiment data.

To change the group configuration:

1. Open the unit page of the unit that contains the content experiment.
2. In the content experiment component, click **Edit**.

**Editing: Content Experiment**

Display Name: Content Experiment  
This name is used for organizing your course content, but is not shown to students.

Group Configuration: 2 Groups  
The configuration defines how users are grouped for this content experiment. Caution: Changing the group configuration of a student-visible experiment will impact the experiment data.

**Save** Cancel

3. Select a different group configuration.
4. Click **Save**.
5. You must now add components to the new groups in the experiment. Click **View** to open the content experiment.  
You see that groups for the new configuration are empty, and any components that you had added to groups in the previous configuration are now moved to a section called **Inactive Groups**.

The screenshot displays the Open edX course editor interface. At the top, there are three active groups: Group A, Group B, and Group C, each with a right-pointing arrow icon. Below these is a section titled "Inactive Groups" with a grey background. Inside this section, "Group A" is expanded, showing a trash icon in the top right corner. The group contains two components: a "Text" component with the text "Welcome to Group A." and a "Video" component. The video component features a video player showing a woman speaking, with a play button overlay and speed controls (0.75x to 1.50x). To the right of the video player, there is a transcript of the video content.

Group A

Group B

Group C

Inactive Groups

Group A

Text

EDIT

Welcome to Group A.

Video

EDIT

VIDEO

LYLA FISCHER: Hi, welcome to Edx. I'm Lyla Fischer, an Edx fellow helping to put together these courses. As you know, our courses are entirely online. So before we start learning about the subjects that brought you here, let's learn about the tools that you will

6. Drag and drop components from the **Inactive Groups** section into the new groups. You can also create new components in the new groups.

### 9.3.2 Add a Content Experiment in OLX

You work with multiple XML files to configure a content experiment. This section steps through the files involved in a content experiment that shows different content to two different groups of students.

#### Define the Content Experiment in the Sequential File

You reference a content experiment in the file for the subsection, or sequential, in the `sequential` directory. For example:

```
...
<vertical url_name="name for the unit that contains the A/B test" display_name="A/B Test Unit">
  <split_test url_name="name of A/B test file in the split_test folder"/>
</vertical>
.....
```

The `<split_test>` element's `url_name` value references the name of the content experiment file in the `split_test` directory.

**Caution:** You can only define a content experiment in a unit, or vertical, in which different collections of components are associated with different experiment groups. You cannot define a content experiment at a subsection (sequential) or section (chapter) level and have different units or subsections associated with different groups.

#### Define the Experiment Content in the Split Test File

After you define the content experiment in the sequential file, you define the course content you want to test in the file in the `split_test` directory. This is the file referenced in the `<split_test>` element in the sequential file, as shown above.

In the content experiment file, you add elements for the experiment content. For this example, you add two `<vertical>` elements to compare the two different sets of content.

```
<split_test url_name="AB_Test.xml" display_name="A/B Test" user_partition_id="0"
  group_id_to_child='{ "0": "i4x://path-to-course/vertical/group_a",
                      "1": "i4x://path-to-course/vertical/group_b" }'>
  <vertical url_name="group_a" display_name="Group A">
    <html>Welcome to group A.</html>
    <video url_name="group_a_video"/>
  </vertical>
  <vertical url_name="group_b" display_name="Group B">
    <html>Welcome to group B.</html>
    <problem display_name="Checkboxes">
      <p>A checkboxes problem presents checkbox buttons for student input.
        Students can select more than one option presented.</p>
      <choiceresponse>
        <checkboxgroup direction="vertical" label="Select the answer that matches">
          <choice correct="true">correct</choice>
          <choice correct="false">incorrect</choice>
          <choice correct="true">correct</choice>
        </checkboxgroup>
      </choiceresponse>
    </problem>
  </vertical>
</split_test>
```

In this example:

- The `user_partition_id` value references the ID of the experiment defined in the `policy.json` file.
- The `group_id_to_child` value references the IDs of the groups defined in the `policy.json` file and maps the group IDs to specific content.

For example, the value for group 0, `i4x://path-to-course/vertical/group_a`, maps to the `<vertical>` element with the `url_name` equal to `group_a`. Therefore, students in group 0 see the content in that vertical.

For information about the `policy.json` file, see [Set Up Group Configuration for OLX Courses](#).

## 9.4 Test Content Experiments

You should test content experiments in your course before the course starts, to ensure that content is delivered to experiment groups as you intended.

When you view a unit that contains a content experiment in the LMS Staff view, you can select one of the experiment groups from a drop-down list. The unit page then shows the content as the selected group of students sees it.


For example, in the following page, Group 0 is selected, and the HTML component and video that is part of Group 0 is displayed.

Group 0 ▾

Welcome to Group A.

STAFF DEBUG INFO

VIDEO





You can change the experiment group selection to view the content that a different experiment group of students sees.

Group 1 ▾

MULTIPLE CHOICE (1 point possible)

A multiple choice problem presents radio buttons for student input. Students can only select a single option presented. Multiple Choice questions have been the subject of many areas of research due to the early invention and adoption of bubble sheets.

One of the main elements that goes into a good multiple choice question is the existence of good distractors. That is, each of the alternate responses presented to the student should be the result of a plausible mistake that a student might make.

What Apple device competed with the portable CD player?

☒

☐ The iPad

☐

☐ Napster

☐

☐ The iPod

☐

☐ The vegetable peeler

Check

Show Answer

SUBMISSION HISTORY

STAFF DEBUG INFO

**Note:** The example course content in this chapter uses content experiment terminology to make the functionality clear. Typically, you would not use terminology in course content that would make students aware of the experiment.



---

## Including Student Cohorts

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### 10.1 Using Cohorts in your Courses

By *setting up cohorts* in a course, you create smaller communities of students. You can design different course experiences for students in different cohorts. In discussion topics that are divided by cohort, students can also communicate and share experiences privately within the cohort that they are assigned to. Cohort-only discussion opportunities can help students develop a sense of community, provide specialized experiences, and encourage deeper, more meaningful course involvement.

If you use cohorts in your course, you define a set of cohorts to reflect communities of students, then select a strategy for *assigning students to cohorts*.

---

**Note:**

- Every student must be assigned to a cohort. This ensures that every student has the ability to read and contribute to course discussion topics.
- Each student can be in one and only one cohort.

To provide students with a consistent experience throughout the course run, do not change a student's cohort assignment after the course begins.

---

For more information about using cohorts in courses, see:

- *Enabling and Configuring the Cohorts Feature*
- *Setting Up Discussions in Courses with Cohorts*
- *Managing Discussions in Courses with Student Cohorts*

For information about discussions in general, see *Managing Course Discussions*.

#### 10.1.1 Options for Assigning Students to Cohorts

You can configure the cohort feature so that students are assigned to cohorts automatically or manually. You can also use a combination of both assignment methods. Typically, your purpose in including the cohort feature in your course determines which assignment option you will use for your course.

- *Automated Assignment: Making MOOC Discussions Manageable*
- *Manual Assignment: Grouping by Common Characteristics*
- *Hybrid Assignment: Accommodating Small Groups Within a Course*

- *Ensuring That All Students Are Assigned: The Default Cohort*

### Automated Assignment: Making MOOC Discussions Manageable

In very large courses, the number of posts made to course discussion topics can make for a daunting amount of daily reading. In such courses, dividing the enrollees into separate cohorts makes the volume of posts, responses, and comments by the members of each one more manageable, and is more likely to foster community feeling.

To implement this assignment strategy, you enable the cohort feature and create a set of “auto” (automated) cohorts. The first time a student views the course **Discussion** page or any of the content-specific discussion topics, he or she is randomly assigned to one of the auto cohorts. Together, all of the students who are assigned to the same group form a cohort.

These guidelines, which are based on the experiences of MOOC teams that have used the cohort feature in this way, are suggested to help you determine how many automated cohorts to define for your course.

- Each cohort should be large enough to inspire lively participation and diverse points of view, but small enough to allow a sense of community to develop. Cohorts formed by random assignment tend to be successful if they include between 200 and 500 members.
- For every 10,000 students who enroll, approximately 200 to 400 students remain active in the discussions throughout the course run.
- Divide the estimated total enrollment of the course run by 10,000.
- Use the result as the number of automated cohorts to create.

For example, two days before it starts, a course has an enrollment of 80,000 students. To create small communities within the discussions, the course team enables the cohort feature and creates eight automated cohorts. As they visit the **Discussion** page and view the discussion components in the course content, students are assigned to one of the cohorts. In divided discussion topics, students read and respond to contributions made by other members of the same cohort only.

For more information, see *Implementing the Automated Assignment Strategy*.

### Manual Assignment: Grouping by Common Characteristics

In SPOCs and other courses with small- to medium-sized enrollments, known existing commonalities can be used to identify cohorts. An example is a course that enrolls students from different companies or with different educational backgrounds, or members of alumni or parent groups. When students are assigned to cohorts on the basis of a characteristic that they share, they can privately discuss applications for what they are learning and explore resources and ideas that are of particular interest.

To implement this assignment strategy, you identify the “real-world” cohorts that your students belong to already. You enable the cohort feature and create a “manual” cohort to represent each of those cohorts. You then assign each student to one of the manual cohorts. Every student who enrolls, including those who enroll after the course starts, must be assigned to a cohort.

---

**Note:** To ensure that every student is assigned to a cohort, you can set up a single automated cohort, as described for the *hybrid assignment strategy*. If you do not create an automated cohort, the system automatically creates a *default cohort* and assigns students to it if necessary.

---

For more information, see *Implementing the Manual Assignment Strategy*.

## Hybrid Assignment: Accommodating Small Groups Within a Course

For some courses, the manual assignment strategy isn't feasible to execute, and the automated assignment strategy doesn't accommodate the existing cohorts that exist in the student body. The enrollment may be too large to complete manual assignments effectively, or only some of the students may have strong defining characteristics among an otherwise diverse student body. For these courses, you can use a hybrid of the two strategies to implement the cohort feature.

An example is a course that enrolls members of an alumni association. The alumni want an opportunity for private interactions, so manual assignment of those students to a cohort makes sense. For other students in the class, manual assignment isn't needed: you create one or more automated cohorts for those students.

Before you implement the hybrid strategy, you identify the characteristics that define existing cohorts in the student body. You also decide whether you want the rest of the students in the course to be divided into their own, similarly-sized cohorts, or if you want them all to be in just one other cohort.

After you enable the cohort feature, you create a manual cohort for each cohort that you identified. You manually assign students who belong to those cohorts to the corresponding cohorts. You also set up automated cohorts for the other students in the course, or rely on the default cohort. The students who are not assigned to a manual cohort are automatically assigned to one of the automated cohorts, or to the default cohort if you choose to use it, when they view the **Discussion** page or a discussion topic in the course content. (For best results when you use this strategy, you complete all manual assignments before the course starts and students begin viewing discussion topics.)

For more information, see [Implementing the Automated Assignment Strategy](#) and [Implementing the Manual Assignment Strategy](#).

## Ensuring That All Students Are Assigned: The Default Cohort

In a course that has the cohort feature enabled, all students must be assigned to a cohort. To assure that all students are assigned, the system automatically creates a default cohort and assigns students to it if necessary. Creation of the default cohort only occurs if you do not define any automated cohorts for your course. Any student who is not assigned to a manual cohort is assigned to the default cohort automatically when they visit the **Discussion** page or a discussion topic in the course content.

Students who are assigned to the default cohort see a cohort name of “Default Group” in discussion posts.



If you want students to see a different cohort name when your course starts, you can add an automated cohort with the name that you prefer. See [Define Auto Cohorts](#). (Adding an automated cohort to your course for this purpose is not recommended after your course starts.)

You can check the [student profile information report](#) for your course to see if any students are assigned to the default cohort in your course, and change their cohort assignments. Note, however, that in divided discussion topics students can only see posts by members of their currently assigned cohort: when a student is reassigned, posts “disappear”. As a result, any cohort assignment changes should be done as early in the course run as possible so that students see discussion posts and contributions that remain consistent over time.

## 10.2 Enabling and Configuring the Cohorts Feature

To support cohorts in your course, you select a strategy for assigning your students to cohorts: automated assignment, manual assignment, or a hybrid approach. See [Options for Assigning Students to Cohorts](#). You also decide whether course-wide and content-specific discussion topics should be divided by cohort or unified for all students.

After you select a strategy, you complete these configuration steps (as applicable):

1. [Enable cohorts](#).
2. Determine the method you want to use to assign students to cohorts:
  - [Define automatic cohorts](#)
  - [Define manual cohorts](#) and [manually assign students](#) to them
  - [Use a combination of automated and manual assignment](#).
3. Optionally, identify the discussion topics that you want to be divided by cohort.
  - If you want [course-wide discussion topics to be divided by cohort](#), you need to complete some configuration tasks.
  - In contrast, if you want content-specific discussion topics to be divided by cohort, you do not need to take any action. Instead, you need to complete some configuration tasks only if you want [content-specific discussion topics to be unified](#).

You complete these procedures in Studio and on the Instructor Dashboard. For an optimal student experience, you should make sure that configuration of the cohort feature is as complete as possible prior to the start date of your course.

If you need to make changes to the way you have configured the cohort feature while your course is running, please see [Altering Cohort Configuration in a Running Course](#).

### 10.2.1 Enabling the Cohort Feature

1. Open the course in Studio.
2. Select **Settings**, then **Advanced Settings**.
3. In the **Cohort Configuration** field, place your cursor between the supplied pair of braces.
4. Type `"cohorted": true`.
5. Click **Save Changes**. Studio reformats the name:value pair you just entered to indent it on a new line.



You can then [implement the automated assignment strategy](#), [implement the manual assignment strategy](#), or both.

For a report that includes the cohort assignment for every enrolled student, review the student profile information for your course. See [Download or View Student Data](#).

## 10.2.2 Implementing the Automated Assignment Strategy

To implement automated assignment of students to cohorts, you define auto cohorts in the **Cohort Configuration** advanced setting field.

You complete this procedure if you are using either the automated or hybrid assignment strategy for your course. For more information, see [Automated Assignment: Making MOOC Discussions Manageable](#) or [Hybrid Assignment: Accommodating Small Groups Within a Course](#).

### Define Auto Cohorts

Before you define your auto cohorts, note that students can see the name of the cohort that they are assigned to. The message “This post is visible only to {cohort name}” appears with each post in discussion topics that are divided by cohort. See [Read the Cohort Indicator in Posts](#).

**Note:** You cannot delete cohorts or change their names. If you need to make changes to the way you have configured cohorts feature while your course is running, please see [Altering Cohort Configuration in a Running Course](#).

1. Open the course in Studio.
2. Select **Settings**, then **Advanced Settings**.
3. In the **Cohort Configuration** field, place your cursor after the opening brace character ( { ) and press Enter.
4. On the new line, you define the "auto\_cohort\_groups": policy key, followed by one or more cohort names enclosed by square brackets ( [ ] ). You can define a set of auto cohorts or just one.

To define a set of cohorts, you type each cohort name on a new line, enclose it within quotation marks ( " " ), and separate the quoted name values with commas. For example:

```
"auto_cohort_groups": [
    "Example Cohort Name A",
    "Example Cohort Name B",
    "Example Cohort Name C"
]
```

5. Type a comma after the closing square bracket character ( ] , ). You must include a comma to separate each of the policy keys that you define.
6. Click **Save Changes**. Studio resequences and reformats your entry. Scroll back to the **Cohort Configuration** field to verify that your entry was saved as you expect. Entries that do not contain all of the required punctuation characters revert to the previous value when you save, and no warning is presented.



Any student who is not already assigned to a cohort will be randomly assigned to one of the auto cohorts when she visits any of the course discussion topics.

### 10.2.3 Implementing the Manual Assignment Strategy

To implement manual assignment of students to cohorts, you define manual cohorts and then assign students to them.

You complete these procedures if you are using either the manual or hybrid assignment strategy for your course. For more information, see *Manual Assignment: Grouping by Common Characteristics* or *Hybrid Assignment: Accommodating Small Groups Within a Course*.

You must *enable the cohort feature* for your course before you can complete these procedures.

#### Define Manual Cohorts

Before you define your manual cohorts, note that students can see the name of the cohort they are assigned to. The message “This post is visible only to {cohort name}” appears with each post in discussion topics that are divided by cohort. See *Read the Cohort Indicator in Posts*.

---

**Note:** You cannot delete cohorts or change their names. If you need to make changes to the way you have configured the cohort feature while your course is running, please see *Altering Cohort Configuration in a Running Course*.

---

1. View the live version of your course. For example, in Studio click **View Live**.
2. Click **Instructor**, then click **Membership**.
3. Scroll to the **Cohort Management** section at the bottom.
4. Click **Add Cohort**.
5. Supply a name for the cohort, and then click **Save** below the **New Cohort Name** field.

#### Assign Students to Cohorts Manually

---

**Note:** Manual assignments should be as complete as possible before your course starts. If student enrollment continues after your course starts, you should continue to assign new students to cohorts.

---

1. View the live version of your course. For example, in Studio click **View Live**.
2. Click **Instructor**, then click **Membership**.
3. Scroll to the **Cohort Management** section at the bottom.
4. Select a cohort from the drop down list.
5. In the **Add students** field, enter the username or email address of a single student, or enter multiple names or addresses separated by commas or new lines. You can copy data from a CSV file of email addresses and paste it into this field.
6. Click **Add Students**. The students are assigned to the selected manual cohort. A message appears to indicate the number of students who were added to the cohort. Because students can belong to only one cohort, the message also indicates the number of students whose assignment to another cohort was changed by this procedure.

For a report that includes the cohort assignment for every enrolled student, review the student profile information for your course. See *Download or View Student Data*.



## Assign Students to Cohorts by Uploading a CSV File

In addition to assigning students to cohorts by entering usernames or email addresses directly on the Membership page in the Instructor Dashboard, you can also upload a .csv file containing a list of students and the cohorts that you want to assign them to.

Any assignments to cohorts that you specify in the .csv files you upload will overwrite or change existing cohort assignments. The configuration of your cohorts should be complete and stable before your course begins. You should also complete manual cohort assignments as soon as possible after any student enrolls, including any enrollments that occur while your course is running. To understand the effects of changing cohort assignments after your course has started, see [Altering Cohort Configuration in a Running Course](#).

**Note:** Be aware that the contents of the .csv file are processed row by row, from top to bottom, and each row is treated independently.

For example, if your .csv file contains conflicting information such as Student A being first assigned to Cohort 1, then later in the spreadsheet being assigned to Cohort 2, the end result of your .csv upload is that Student A is assigned to Cohort 2. However, the upload results file will count Student A twice in the “Students Added” count: once when they are added to Cohort 1, and again when they are added to Cohort 2. Before submitting a file for upload, check it carefully for errors.

The requirements for the .csv file are summarized in this table.

Requirement	Notes
Valid .csv file	The file must be a properly formatted comma-separated values file: <ul style="list-style-type: none"> <li>The file extension is .csv.</li> <li>Every row must have the same number of commas, whether or not there are values in each cell.</li> </ul>
File size	The file size of .csv files for upload is limited to a maximum of 2MB.
UTF-8 encoded	You must save the file with UTF-8 encoding so that Unicode characters display correctly. See <a href="#">Creating a Unicode-encoded CSV File</a> .
Header row	You must include a header row, with column names that exactly match those specified in “Columns” below.
One or two columns identifying students	You must include at least one column identifying students: either “email” or “username”, or both. If both the username and an email address are provided for a student, the email address has precedence. In other words, if an email address is present, an incorrect or non- matching username is ignored.
One column identifying the cohort	You must include one column named “cohort” to identify the cohort to which you are assigning each student. The specified cohorts must already exist in Studio.
	Columns with headings other than “email”, “username” and “cohort” are ignored.

Follow these steps to assign students to cohorts by uploading a .csv file.

1. View the live version of your course. For example, in Studio, click **View Live**.
2. Click **Instructor**, then click **Membership**.
3. Scroll to the **Cohort Management** section at the bottom.

4. Under **Assign students to cohorts by uploading a CSV file**, click **Browse** to navigate to the .csv file you want to upload.
5. Click **Upload File and Assign Students**. A status message displays above the **Browse** button.
6. Verify your upload results on the **Data Download** page.

Under **Reports Available for Download**, locate the link to a .csv file with “cohort\_results” and the date and time of your upload in the filename. The list of available reports is sorted chronologically, with the most recently generated files at the top.

The results file provides the following information:

Column	Description
Cohort	The name of the cohort to which you are assigning students.
Exists	Whether the cohort was found in the system. TRUE/FALSE. If the cohort was not found (value is FALSE), no action is taken for students you assigned to that cohort in the .csv file.
Students Added	The number of students added to the cohort during the row by row processing of the .csv file.
Students Not Found	A list of email addresses or usernames (if email addresses were not supplied) of students who could not be matched by either email address or username and who were therefore not added to the cohort.

For a report that includes the cohort assignment for every enrolled student, review the student profile information for your course. See [Download or View Student Data](#).

### Creating a Unicode-encoded CSV File

Make sure the .csv files that you upload are encoded as UTF-8, so that any Unicode characters are correctly saved and displayed.

---

**Note:** Some spreadsheet applications (for example, MS Excel) do not allow you to specify encoding when you save a spreadsheet as a .csv file. To ensure that you are able to create a .csv file that is UTF-8 encoded, use a spreadsheet application such as Google Sheets, LibreOffice, or Apache OpenOffice.

---

## 10.2.4 Altering Cohort Configuration in a Running Course

The configuration of the cohort feature should be complete and stable before your course begins. Manual cohort assignments should be completed as soon as possible after any student enrolls, including any enrollments that occur while your course is running.

If you decide that you must alter cohort configuration after your course starts and activity in the course discussion begins, be sure that you understand the consequences of these actions:

- [Change Student Cohort Assignments](#)
- [Rename a Cohort](#)
- [Delete a Cohort](#)
- [Disable the Cohort Feature](#)

## Change Student Cohort Assignments

After your course starts and students begin to contribute to the course discussion, each post that they add is visible either to everyone or to the members of a single cohort. When you change the cohort that a student is assigned to, there are three results:

- The student continues to see the posts that are visible to everyone.
- The student sees the posts that are visible to his new cohort.
- The student no longer sees the posts that are visible only to his original cohort.

The visibility of a post and its responses and comments does not change, even if the cohort assignment of its author changes. To a student, it can seem that posts have “disappeared”.

To verify the cohort assignments for your students, download the [student profile report](#) for your course. If changes are needed, you can [assign students](#) to different cohorts manually on the **Membership** page of the Instructor Dashboard.

## Rename a Cohort

Name changes for cohorts are not supported. The **Membership** page of the Instructor Dashboard does not offer an option to rename your manual cohorts.

It is possible to change the value for the `auto_cohort_groups` policy key on the **Advanced Settings** page in Studio. However, changing the names in the listed name:value pairs **does not** result in any renamed auto cohorts. Instead, changing the value for the `auto_cohort_groups` policy key has these results.

- The system uses the new value that you saved for the `auto_cohort_groups` policy key to create one or more additional auto cohorts.
- The system begins to assign students who do not have a cohort assignment to the newly defined cohort or cohorts. Students also continue to be assigned to any auto cohorts that were not affected by your changes.

The system uniformly distributes students among all of the auto cohorts that exist when an assignment is needed. The size of each cohort is not considered.

- The original cohort or cohorts remain in the system. Any students who were assigned to the original cohorts remain assigned to them.

For the results of assigning any students who remain in the original cohorts to other cohorts, see [Change Student Cohort Assignments](#).

- The system converts the original auto cohorts, which are no longer listed as values for `auto_cohort_groups`, into manual cohorts. The system no longer assigns students to those cohorts automatically. These cohorts are listed as manual cohorts on the **Membership** page of the Instructor Dashboard.

## Delete a Cohort

Deletion of cohorts is not supported. The **Membership** page of the Instructor Dashboard does not offer an option to delete your manual cohorts.

It is possible to change the value for the `auto_cohort_groups` policy key on the **Advanced Settings** page in Studio. However, removing any of the listed name:value pairs **does not** result in the deletion of any cohorts. Instead, changing the value for the `auto_cohort_groups` policy key has these results.

- The cohorts that you removed from the policy key remain in the system.
- Any students who were assigned to those cohorts remain assigned to them.

For the results of assigning any students to other cohorts, see [Change Student Cohort Assignments](#).

- The system no longer assigns students to the cohorts automatically.
- The cohorts are listed as manual cohorts on the **Membership** page of the Instructor Dashboard, and you can continue to assign students to them manually.

### Disable the Cohort Feature

You can disable the cohort feature for your course. Follow the instructions for *enabling the cohort feature*, but set `"cohorted": false`. All discussion posts immediately become visible to all students.

If you do re-enable the cohort feature by setting `"cohorted": true`, all previous student cohort assignments are reenabled, and all visibility settings for posts are reapplied. However, any posts created while the cohort feature was disabled will remain visible to all users.

## 10.3 Creating Cohort-Specific Courseware

If you have *cohorts enabled* in your course, you can create different course experiences for students in different cohorts.

You can design your course so that some students are given different content than others. You do this by creating *content groups* in Studio, and designating specific components in your course as visible only to one or more content groups. Then, if you associate one or more cohorts with a content group, only the students in cohorts associated with that content group can see course content that you have designated for it.

For more details about content groups, see *Content Groups*. For an example of cohort-specific course content, see *Example: Cohort-Specific Courseware*.

Complete these steps to create cohort-specific content in your course.

In Studio:

1. *Enable cohorts in your course.*
2. *Create content groups.*
3. *Specify components in courseware as visible only to particular content groups.*

In the LMS:

1. *Assign students to cohorts.*
2. *Associate one or more cohorts with a content group.*
3. *Preview cohort-specific courseware.*

### 10.3.1 Example: Cohort-Specific Courseware

Suppose that you create two *cohorts* in your course: University Alumni and Current University Students. Students who are not in either of these cohorts are automatically placed into a third cohort, the default cohort, when they access the courseware or discussion tabs in the course. For more information about enabling cohorts in your course and assigning students to cohorts, see *Enabling and Configuring the Cohorts Feature*.

You intend all students to have substantially the same course experience, with the exception that only students in the two university-related cohorts will receive content that is specific to your university and therefore only of interest to them.

At the end of every section, you intend to include a video message from various university officials, including the university president and the dean of your college. These videos will be shown only to students in the university and

alumni cohorts. Also at the end of each section, you intend to include a quiz to test knowledge of the concepts taught in that section. The quiz will be shown to all students enrolled in the course.

To achieve this, on the **Group Configurations** page in Studio you create one content group called “University-Specific Content”. In the Instructor Dashboard, on the **Membership** tab, you associate both the “University Alumni” and the “Current University Students” cohorts with the “University-Specific Content” content group.

Then, in your course outline, you change the visibility settings for the video component at the end of each section so that it is visible only to the “University-Specific Content” content group. You do not need to edit the visibility settings of the quiz component, because if no content group is specified in a component’s visibility settings, it is visible to all students.

As a final step, you preview the course in the LMS to ensure that students see the content that is intended for them. You confirm that when you view the course in the role of **Student** (in other words, any student not in a content group), you see a quiz at the end of each section, but do not see the university-related videos. When you view the course as a student in the “University-Specific Content” group, you see a university-related video as well as the quiz at the end of each section.

### 10.3.2 Content Groups

Content groups are virtual groupings of students who will see a particular set of course content. You can use content groups to designate specific course content as visible to particular *cohorts* of students.

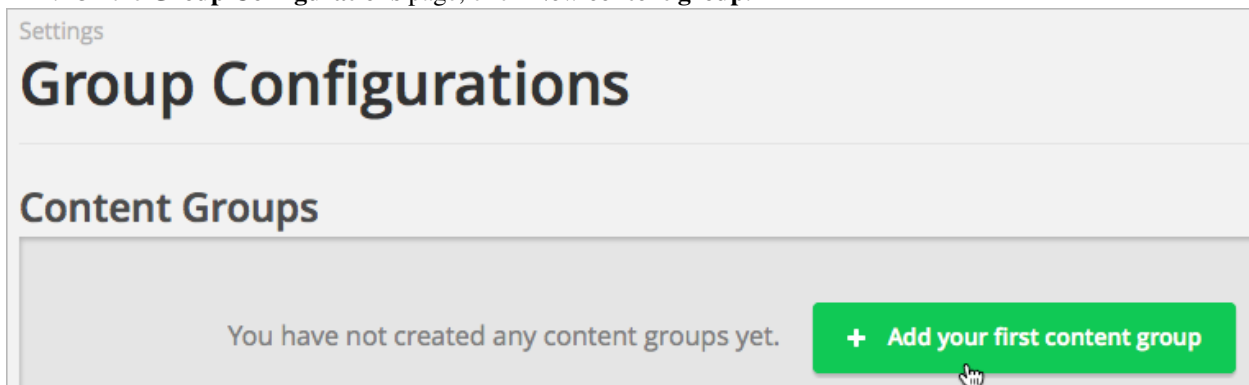
You create content groups in Studio, and in your course outline you use the **Visibility Settings** to designate whether a component is selectively visible only to one or more content groups. Any course components that do not have an explicitly restricted visibility setting remain visible to all students, regardless of their cohort.

Content groups do not have an actual impact on the visibility of a course component until you associate them with one or more cohorts. If you have designated certain course content as visible to a content group, and in addition have associated that content group with one or more cohorts, then those cohorts will see the designated content.

For an example of using content groups to create cohort-specific courseware, see [Example: Cohort-Specific Courseware](#).

### 10.3.3 Create Content Groups

1. In Studio, select **Settings**, then select **Group Configurations**.
2. On the **Group Configurations** page, click **New content group**.



3. Enter a meaningful name for the content group, then click **Create**. The page refreshes to show the name of your new content group.
4. Repeat this step to create as many content groups as you want.

After you create a content group, you can work with your course outline to specify which components are visible to specific content groups. For details, see [Specify Components in Courseware as Visible Only to Particular Content Groups](#).

On the Instructor Dashboard, you associate each content group with one or more cohorts. For details, see [Associate Cohorts with Content Groups](#).

---

**Note:** Once a content group is created, you cannot delete it. You can remove the association between a content group and its cohorts by changing the association to **Not Selected**.

---

### 10.3.4 Specify Components in Courseware as Visible Only to Particular Content Groups

After you create at least one content group, you can edit your course in Studio and modify the visibility settings of components that you want to make visible only to particular content groups.

---

**Note:** You do not need to edit the visibility settings of components that are intended for all students. Components that you do not explicitly indicate as visible to a group are visible to all students enrolled in your course, regardless of the cohort that they belong to.

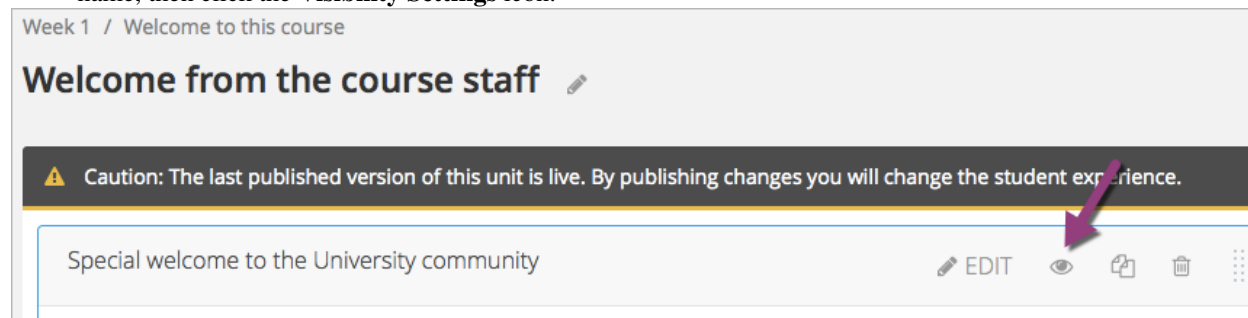
---

You can specify content as visible to content groups only at the component level in a unit. You cannot specify entire units, subsections, or sections for visibility to content groups.

In a separate task, you create cohorts and associate content groups with cohorts. Then, only the cohorts associated with content groups which you selected in a component's visibility settings can view the component. See [Associate Cohorts with Content Groups](#) for details about associating cohorts with content groups.

To specify components as visible only to particular content groups, follow these steps.

1. In Studio, select **Content**, then select **Outline**.
2. For each component that you want to make visible only to a particular content group or groups, click the unit name, then click the **Visibility Settings** icon.



3. In the **Editing visibility** dialog, select **Specific Content Groups**, then select the checkbox for each content group for which you want the current component to be visible.

### Editing visibility for: Checkbox Problem

Make visible to:

☐ All Students and Staff

☒ Specific Content Groups

☒ University-Specific Content

**Save** Cancel

4. Click **Save**.

The **Visibility Settings** icon for the component is now black, and the publishing details for the course section in the sidebar refresh to indicate that some content is visible only to particular groups.



**Draft (Unpublished changes)**

Draft saved on Jan 14, 2015 at 21:40 UTC by staff

RELEASE:  
Jan 01, 2013 at 00:00 UTC  
with Section "Section"

WILL BE VISIBLE TO:  
**Staff and Students**

☒ Some content in this unit is visible only to particular content groups

☐ Hide from students

For details about previewing your course to ensure that students in a cohort correctly see the content intended for them, see *Preview Cohort-Specific Courseware*.

---

**Note:** In addition to visibility settings for content groups, a student's ability to see a course component also depends on whether it is hidden from students, whether the unit is published, and the course's release date. For details about previewing courseware in general, see *Preview Course Content*.

---

### 10.3.5 Associate Cohorts with Content Groups

After you create a content group, you can associate it with one or more cohorts with which you want to share the same special content in your course.

---

**Note:** A content group can be associated with more than one cohort; a cohort cannot be associated with more than one content group.

---

To associate a cohort with a content group, follow these steps:

1. In the LMS, select **Instructor**, then select **Membership**.
2. Scroll to the **Cohort Management** section at the bottom.
3. From the drop down list, select the cohort to which you want to associate your content group.
4. Click the **Settings** tab for the selected cohort.
5. Under **Associated Content Group**, choose the **Select a Content Group** option.
6. From the drop down list, select the content group that you want your cohort to be associated with.



**Cohort Name \***

University Alumni

**Associated Content Group**

☐ No Content Group

☒ Select a Content Group **University-Specific Content**

**+ Save** Cancel

7. Click **Save**.

You have now associated your content group with a cohort. Any course content that you *designate as visible to that content group* is visible to students in the associated cohort or cohorts.

You can associate additional cohorts with the same or a different content group by repeating steps 3 to 7.

For an example of using content groups to create cohort-specific courseware, see [Example: Cohort-Specific Courseware](#).

### 10.3.6 Preview Cohort-Specific Courseware

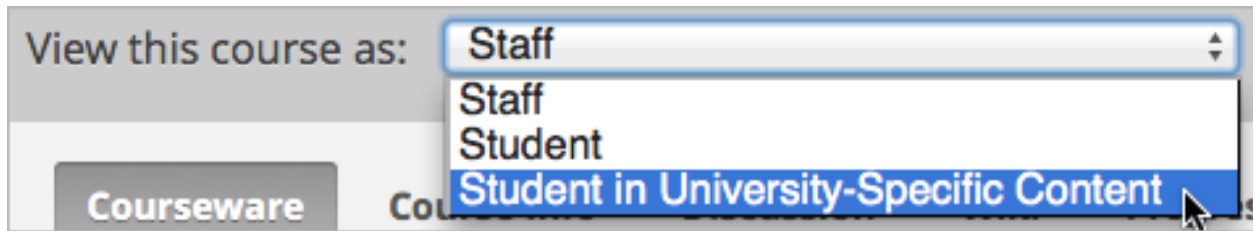
After you designate components in your course as being visible only to certain content groups, you can preview your courseware to ensure that each group correctly sees the content intended for them.

**Note:** In addition to visibility settings for content groups, a student's ability to see a course component also depends on whether it is hidden from students, whether the unit is published, and the course's release date. For details about previewing courseware in general, see [Preview Course Content](#).

You can view the course as a member of these groups:

Role	When You "View As" This Role
Staff	You see all content in the course, including content that is hidden from students.
Student	You see any content that is intended for all students.
Student in <Content Group Name>	You see content that is intended for all students, as well as any content specifically set to be visible to this content group.

1. In Studio, in the course outline, click **Preview Changes**. You see your course section in the **Courseware** section of the LMS.
2. In the navigation bar at the top of the page, select one of the options in the **View this course as** drop down list, as described in the table above.



The course view refreshes and the content is presented as a member of the selected content group would see it.

After your course is live, you can also see the live version as a student would see it, by clicking **View Live** from Studio. For more information, see [View Your Live Course](#).

## 10.4 Setting up Discussions in Courses with Cohorts

In courses that have cohorts enabled, you can set up discussion topics to be either divided by cohort, or unified and accessible to all students.

When you first enable cohorts in your course, the initial behavior for course-wide discussion topics is different from the behavior of content-specific (inline) discussion topics.

By default, course-wide discussion topics are unified, but content-specific discussion topics are divided by cohort. You can configure either type of discussion to be divided or unified.

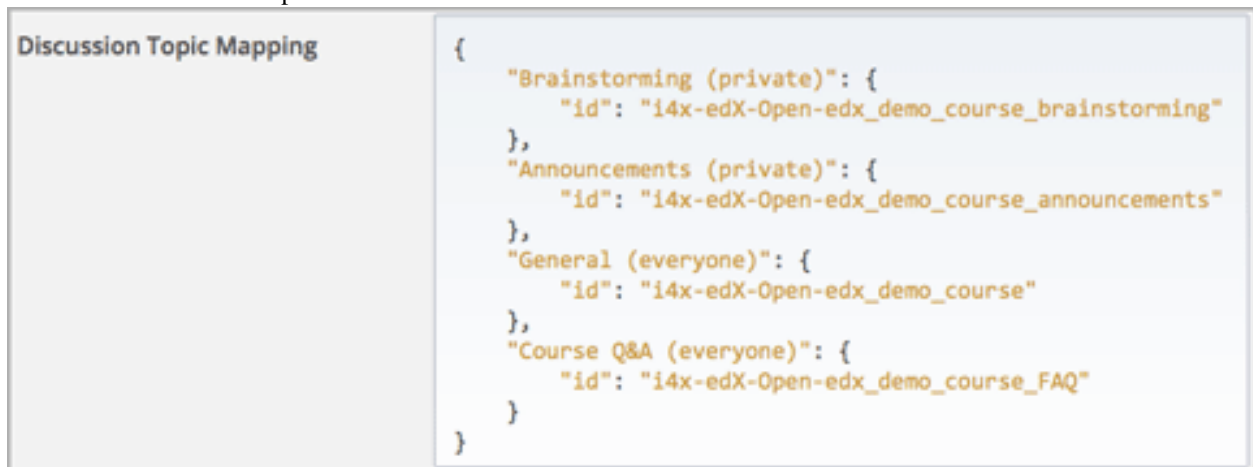
For overview information about discussions in a course, see [Managing Course Discussions](#). For information about using cohorts in a course, see [Using Cohorts in your Courses](#) and [Enabling and Configuring the Cohorts Feature](#).

### 10.4.1 Course-Wide Discussion Topics and Cohorts

When you first *create a course-wide discussion topic*, it is unified, and all students in the course can post, read, respond, and comment in the topic without regard to their cohort assignments. After you add a course-wide topic, you can configure it so that it is divided by cohort instead.

#### Example: Configuring Course-Wide Discussion Topics As Divided

This example assumes that you previously added three course-wide discussion topics called Course Q&A, Announcements, and Brainstorming to your course, so that in addition to the system-supplied General topic, you have four course-wide discussion topics.



You have enabled cohorts for your course to take advantage of that feature as it applies to discussion topics.

The posts that you intend to make to the Course Q&A and General topics, and the subjects you expect students to explore there, are appropriate for a unified student audience. However, you also want to give students some course-wide topics that are divided by cohort. You decide that the Announcements and Brainstorming course-wide topics should be divided by cohort.

You also decide to apply a naming convention so that students will know the audience for the discussion topics before they add any posts. For information on how to achieve this, see [Apply Naming Conventions to Discussion Topics](#).

## Configure Course-Wide Discussion Topics as Divided

This procedure describes how you configure the Brainstorming and Announcements course-wide discussion topics (from the example in [Example: Configuring Course-Wide Discussion Topics As Divided](#)) so that they are divided by cohort.

On the Studio **Advanced Settings** page, details of the two topics appear as follows in the **Discussion Topic Mapping** field.

```
"Brainstorming (private)": {
  "id": "i4x-edX-Open-edx_demo_course_brainstorming"
},
"Announcements (private)": {
  "id": "i4x-edX-Open-edx_demo_course_announcements"
}
```

You use the ID for each discussion topic to identify it in the steps that follow.

1. Open the course in Studio.
2. Select **Settings**, then **Advanced Settings**.
3. In the **Cohort Configuration** field, place your cursor after the opening brace character ( { ) and press **Enter**.
4. On the new line, you define the "cohorted\_discussions": policy key, followed by one or more course-wide discussion topic IDs enclosed by square brackets ( [ ] ). You can define just one discussion topic or a set of discussion topics.

For example, to define a single discussion topic, type "cohorted\_discussions": [ "discussion-topic-ID" ], putting your discussion topic's ID inside the double quotation marks in place of the example ID. Press Enter.

To define a set of topics, type the ID for each discussion topic on a new line, enclose it within quotation marks ( " " ), and separate the quoted ID values with commas. For example:

```
"cohorted_discussions": [
  "i4x-edX-Open-edx_demo_course_announcements",
  "i4x-edX-Open-edx_demo_course_brainstorming"
]
```

5. If "cohorted\_discussions" is followed by other policy keys within the **Cohort Configuration** field, make sure there is a comma after the closing square bracket character ( ] , ). You must include a comma to separate each of the policy keys that you define.
6. Click **Save Changes**. Studio resequences and reformats your entry.



7. Scroll back to the **Cohort Configuration** field to verify that your entry was saved as you expect. Entries that do not contain all of the required punctuation characters revert to the previous value when you save, and no warning is presented.

### 10.4.2 Content-Specific Discussion Topics and Cohort Groups

When you enable the cohort feature for a course, and *create content-specific discussion topics* by adding discussion components to units in Studio, these content-specific discussion topics are divided by cohort by default. A student who is assigned to one cohort cannot read or add to the posts, responses, or comments contributed by the members of another cohort.

If you want all content-specific discussion topics in your course to remain divided by cohort, you do not need to take any further action. However, if you want one or more content-specific discussion topics to be unified (accessible to all students regardless of cohort), you must complete some configuration tasks.

#### Example: Configuring Content-Specific Discussion Topics as Unified

In this example, you decide that you want all content-specific discussion topics you add to your course to be unified rather than divided by cohort. To achieve this, you follow the steps to *Make All Content-Specific Discussion Topics Unified by Default*.

Later, while designing one of the final sections in the course, you add a content-specific discussion topic that you decide should be divided by cohort, rather than unified like all other discussion components. To achieve this, you follow the steps to *Specify Exceptions to Unified Discussion Topics*.

#### Make All Content-Specific Discussion Topics Unified by Default

---

**Note:** If you want all content-specific discussion topics in your course to be divided by cohort, you do not need to perform any configuration.

---

This procedure shows how to make all content-specific discussion topics in a course unified by default. When you complete these steps, any content-specific discussion topics that you add to your course are accessible to all students regardless of their cohort.

1. Open your course in Studio.
2. Select **Settings**, then **Advanced Settings**.

3. In the **Cohort Configuration** field, place your cursor after the opening brace character ( { ) and after any existing policy key definitions, then press **Enter**.
4. Press **Enter** to create a new line. On the new line, type
 

```
"always_cohort_inline_discussions": false
```
5. Click **Save Changes**. Studio resequences and reformats your entry.

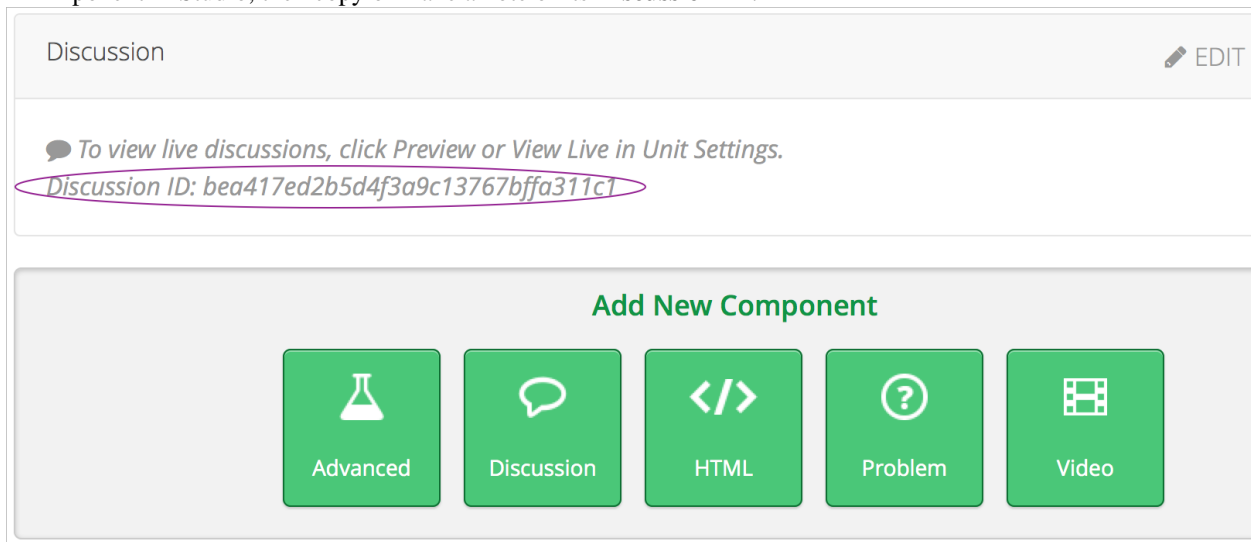


6. Scroll back to the **Cohort Configuration** field to verify that your entry was saved as you expect. Entries that do not contain all of the required punctuation characters revert to the previous value when you save, and no warning is presented.

### Specify Exceptions to Unified Discussion Topics

If you have made all content-specific discussion topics in your course unified by default, this procedure describes how you can specify exceptions and configure particular content-specific discussion topics in your course as divided by cohort.

1. Open your course in Studio.
2. For each content-specific discussion topic that you want to make divided by cohort, locate the discussion component in Studio, then copy or make a note of its **Discussion ID**.



3. Select **Settings**, then **Advanced Settings**.
4. In the **Cohort Configuration** field, if the `cohorted_discussions` policy key does not already exist, type `"cohorted_discussions":`, followed by a pair of square brackets ( [ ] ).
5. Between these opening and closing square brackets ( [ ] ) add one or more IDs for the discussion topics that you want to specify as being unified.

If you are specifying only one discussion topic as divided by cohort, your entry looks like this example.

```
"cohorted_discussions": [c2293fa2538a41eca7224b8a07c3d09d]
```

If you are specifying multiple discussion topics as divided by cohort, use a new line for each discussion topic ID that you add, and enclose each ID within double quotation marks ("), followed by a comma if there are additional IDs following.

```
"cohorted_discussions": [  
    "c2293fa2538a41eca7224b8a07c3d09d",  
    "a9823gt3187i38itp2893a8d27f8f20c"  
]
```

6. If "cohorted\_discussions" is followed by other policy keys within the **Cohort Configuration** field, make sure there is a comma after the closing square bracket character (], ). You must include a comma to separate each policy key that you define.

### Cohort Configuration

```
{  
    "always_cohort_inline_discussions": false,  
    "cohorted_discussions": [  
        "c2293fa2538a41eca7224b8a07c3d09d",  
        "a9823gt3187i38itp2893a8d27f8f20c"  
    ],  
    "cohorted": true  
}
```

7. Click **Save Changes**. Studio resequences and reformats your entry.
8. Scroll back to the **Cohort Configuration** field to verify that your entry was saved as you expect. Entries that do not contain all of the required punctuation characters revert to the previous value when you save, and no warning is presented.

## 10.5 Managing Discussions in Courses with Student Cohorts

In courses that have the cohort feature enabled, every post has an indicator of who can read it: either everyone, or only the members of a single cohort. For students, this is the only noticeable difference between discussions in courses that include cohorts when compared to courses that do not. You can share the examples in the [Read the Cohort Indicator in Posts](#) section with your students, along with the [Participating in Course Discussions](#) section of this guide.

Staff members who have the discussion admin, discussion moderator, or community TA role see the same indicator of who can read each post. Unlike the students, however, the discussion staff members can read and contribute to every post, regardless of the cohort assignment of the student who posted it.

---

**Note:** Students who have the Community TA role can read and contribute to all posts.

---

In courses with the cohort feature enabled, members of the discussion staff can also:

- Choose who will be able to see the posts that they add to divided topics. See [Choosing the Visibility of a Post](#).
- Filter the posts that are listed on the **Discussion** page by cohort. See [Viewing the Posts of a Cohort](#).

All of the other options and features described in the [Managing Course Discussions](#) section continue to be available to the discussion staff.

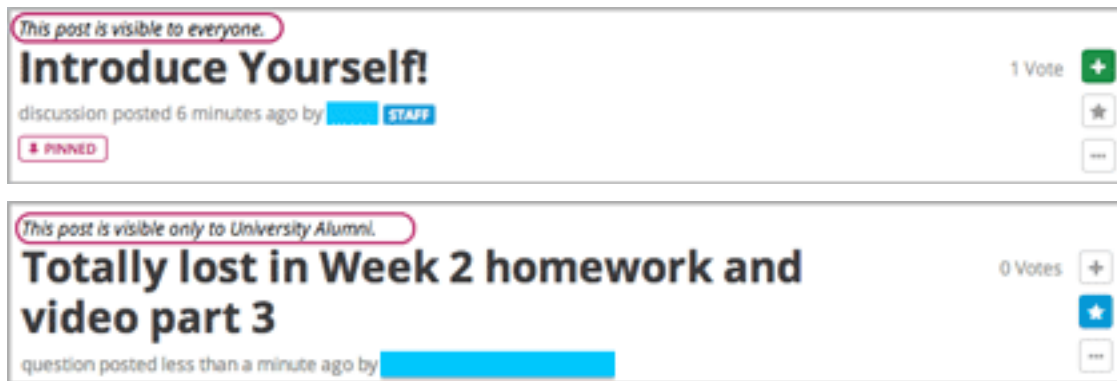
## 10.5.1 Identifying Who Can Read a Post

In a course that includes cohorts, all posts include a cohort indicator above the title. This indicator appears after any student or staff member adds a post. Other than naming the cohorts carefully when you add them, no configuration is necessary to include this identifier.

Optionally, you can name your discussion topics to show students who will be able to view their posts. See [Apply Naming Conventions to Discussion Topics](#).

### Read the Cohort Indicator in Posts

Every post includes a sentence that identifies whether everyone can see and contribute to it, or only the members of a cohort in the course. Examples follow.



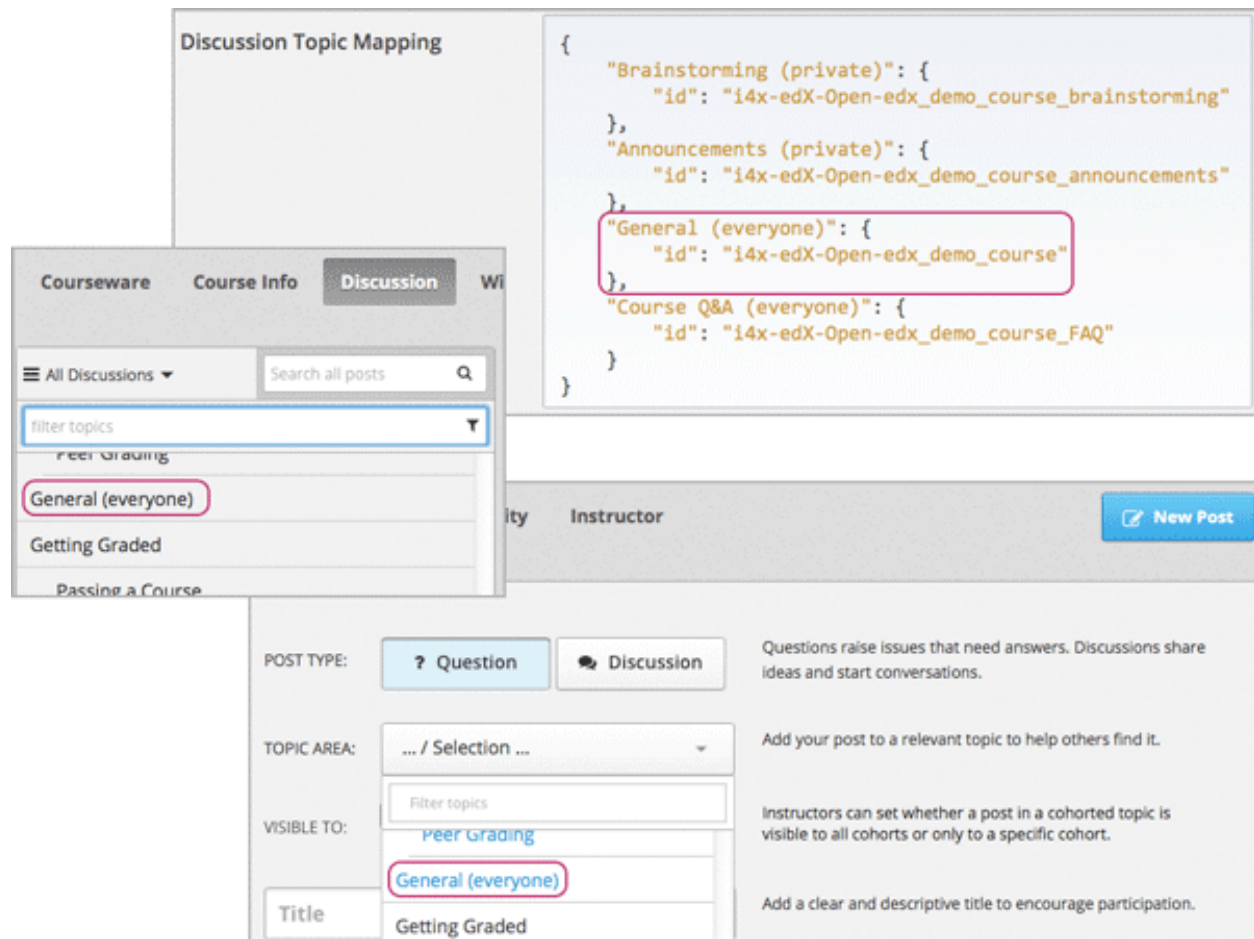
You see this identifier after you add your post. All of the responses and comments that other contributors add to a post are visible to the same group of people as the post itself.

### Apply Naming Conventions to Discussion Topics

Optionally, course team members can give students the audience context of their posts before they add them. Indicating who will be able to read posts in the names of the topics themselves can be useful when a cohort is particularly sensitive about the privacy of their conversations.

For example, you add “(everyone)” to the names of the unified course-wide discussion topics in your course.





When students visit the **Discussion** page and use dropdown lists to select a course-wide topic, the topic names indicate who can see the posts, responses, and comments.

(In the illustration above, every topic name includes either “(everyone)” or “(private)”. You may only find it necessary to explicitly identify topics that have a unified audience for all posts.)

For more information about adding and configuring course-wide discussion topics, see [Creating Discussion Topics for Your Course](#) or [Example: Configuring Course-Wide Discussion Topics As Divided](#).

If desired, you could also apply a naming convention to the content-specific discussion topics that you add as Discussion components in Studio. For example, you could include an identifier like “(private)” or “(small group)” in the **Subcategory** name of every Discussion component that you add.



The image shows two overlapping screenshots of the Open edX discussion interface. The top screenshot is the 'Editing: Pointing on a Picture: Let's Discuss!' form, and the bottom screenshot is the 'edX Community' post creation sidebar.

**Editing: Pointing on a Picture: Let's Discuss!**

Category:

A category name for the discussion. This name appears in the left pane of the discussion forum for the course.

Display Name:

Display name for this module

Subcategory:

A subcategory name for the discussion. This name appears in the left pane of the discussion forum for the course.

**edX Community**

POST TYPE:   Questions raise issues that need answers. Discussions share ideas and start conversations.

TOPIC AREA:  Add your post to a relevant topic to help others find it.

Title:  Add a clear and descriptive title to encourage participation.

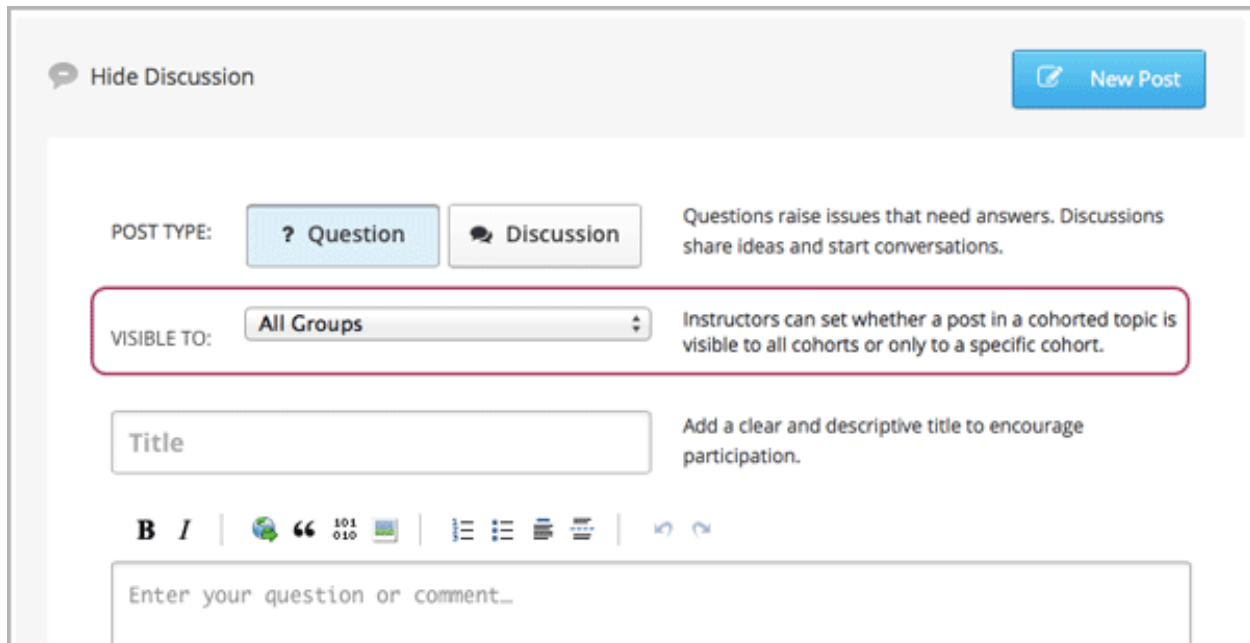
Basic Question Types

Enter your

## 10.5.2 Choosing the Visibility of a Post

If you have the discussion admin, discussion moderator, or community TA role, you can make posts to divided discussion topics visible to everyone who is enrolled in the course or to the members of a selected cohort only. When you *add a post*, the **Visible to** dropdown list appears above the **Title** field.

This example shows a new post being added to a content-specific discussion topic.



The screenshot shows the 'New Post' form in Open edX. At the top left is a 'Hide Discussion' link with a speech bubble icon. At the top right is a blue 'New Post' button with a pencil icon. Below this is the 'POST TYPE' section with two buttons: '? Question' (highlighted in light blue) and 'Discussion'. To the right of these buttons is a text box explaining: 'Questions raise issues that need answers. Discussions share ideas and start conversations.' Below the post type section is the 'VISIBLE TO:' section with a dropdown menu set to 'All Groups'. To the right of this dropdown is a text box explaining: 'Instructors can set whether a post in a cohorted topic is visible to all cohorts or only to a specific cohort.' Below this is a 'Title' text input field with a text box to its right explaining: 'Add a clear and descriptive title to encourage participation.' Below the title field is a rich text editor toolbar with icons for bold (B), italic (I), link, quote, code, image, list, and other formatting options. At the bottom is a large text area with the placeholder text 'Enter your question or comment...'.

As a discussion staff member, you can choose the visibility of your posts in topics that are divided by cohort. This means that you can add a single post with information that you want everyone to see, rather than having to write a separate post for each cohort. It also means that it is possible for you to unintentionally share information with a different audience than you intended.

**Note:** Students do not choose the visibility of their posts. The visibility of student posts is determined by the configuration of the topic they post in. See *Identifying Who Can Read a Post*.

Posts that discussion staff members add to unified discussion topics are always visible to all students, regardless of cohort assignment.

### Considerations When Editing Posts

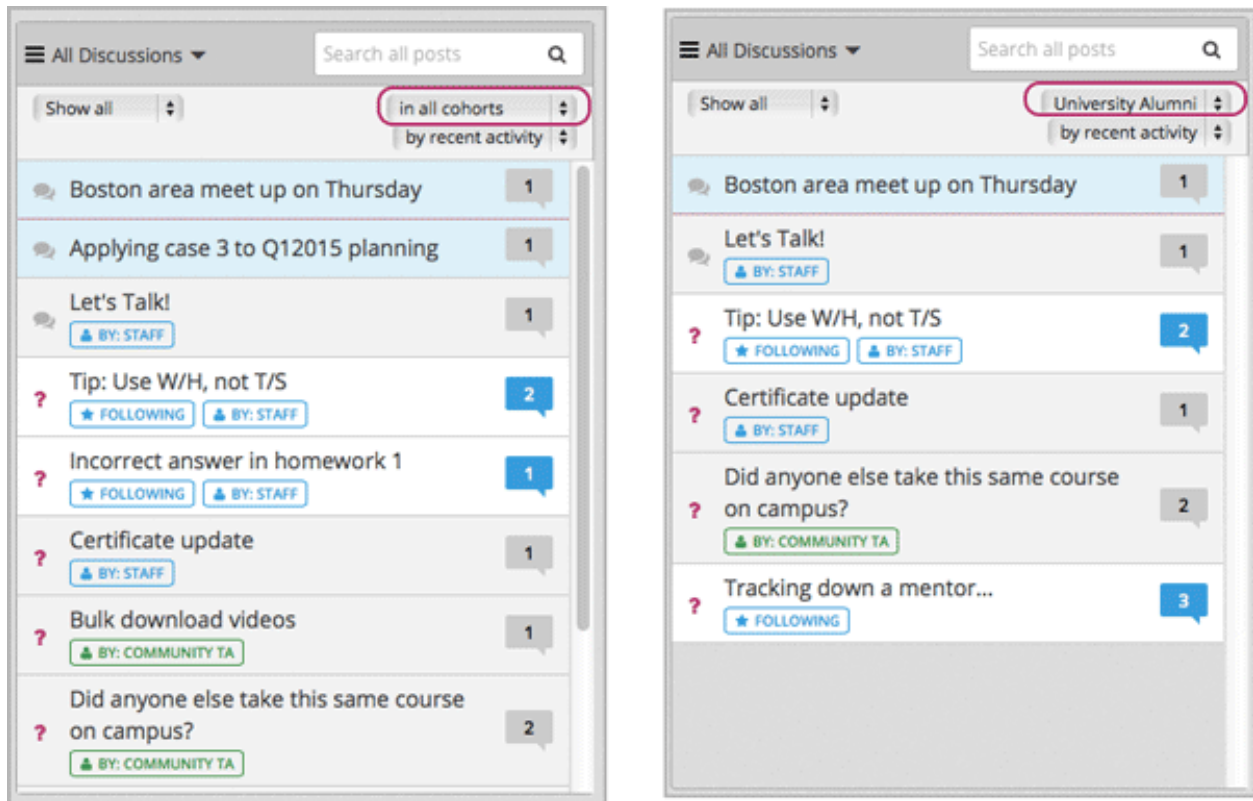
It may be helpful to keep these additional considerations in mind when you edit posts in a course that includes cohorts.

- You cannot change the visibility of a post after it has been added. If you notice that a post contains information that is not appropriate for the cohort who can read it, edit the content of the post or delete the post.
- If you change the topic that a post appears in, the visibility of the post and its responses and comments **does not change**. This ensures that students who are following the post, or who have contributed responses or comments to it, will still be able to read it.
- All of the responses and comments that are contributed to a post will be visible to the same group of people as the post itself. You cannot change the visibility of individual responses or comments.

### 10.5.3 Viewing the Posts of a Cohort

When a course includes student cohorts, you can view posts and monitor discussion activity for one cohort at a time. You can also view all posts.

Above the list of posts on the **Discussion** page, the **in all cohorts** filter is selected by default. You see every post when you make this selection, as shown in the illustration on the left. To limit the list so that you can view the same set of posts as the members of a cohort, select the name of that cohort as shown on the right.



Note that both of these lists include posts that are visible to everyone. When you filter the list by cohort, you see the same, complete set of posts that the members of the cohort see.

For other options that you can use to view posts, see [Find Posts](#).



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## Releasing Your Course

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### 11.1 Beta Testing a Course

When a course is being designed in Studio, the course team can choose **View Live** to assess their progress in designing the course, test their work, find gaps and errors, and mimic the student experience. To gather information about the overall experience of taking a course, you can also conduct a beta test of the course.

- *The Beta Testing Process*
- *The Beta Testing Role*
- *What to Test*
- *How Beta Testers See Course Content*
- *Adding Beta Testers*
- *Add Multiple Beta Testers*
- *Reporting Issues During a Course*

#### 11.1.1 The Beta Testing Process

During a beta test, you gather information about the experience of taking your course in an effort to improve its quality. The phases of the beta testing process, and some questions that you may find useful to consider as you prepare for each phase, follow.

1. **Planning:** What are your objectives for the test? What is the schedule for testing?
2. **Recruitment:** How many testers do you need? How much time do you expect testers to spend? When do you need them to complete their feedback?
3. **Provide access to your course:** Can testers access your entire course immediately, or are its sections and subsections available at different times? How will that affect the schedule?
4. **Collect feedback:** How do you want testers to provide feedback? Who checks for feedback, and how often?
5. **Evaluate feedback:** How is feedback evaluated? Who decides what changes to make as a result, and on what schedule?
6. **Conclusion:** How do you acknowledge the efforts of your testers? What do you share with them about the results of their efforts?

There is no one answer to any of these questions. They are included here as background on the role that beta testing can play in the preparation of your course.

### 11.1.2 The Beta Testing Role

Beta testers have early access to the course. Beta testers are not members of the course team or staff: they don't have information about "how it's supposed to work". They use their own computers and Internet connections to view videos, follow links, and complete problems. They interact with the course as students will to find, and make, mistakes.

However, beta testers are not the same as other students in the course, either. They have privileged access to the course and have more time to review and complete the course materials than the enrolled students do. Course discussions are not open before the course start date, so beta testers cannot participate in community conversations. As a result of these differences, beta testers do not receive certificates when they complete a course.

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**Note:** If one of your beta testers wishes to earn a certificate for the course, she must create a separate user account with a different username and email address. She can then use that separate, non-privileged user account to enroll in the course and repeat the work, completing assignments and exams when they are available to all students.

---

#### Qualities of Good Beta Testers

A beta test is valuable in part because it is unscripted. Your beta testers are not following a predetermined series of steps, or using a particular computer environment, when they access your course. When you recruit beta testers, however, you may find these skills and characteristics to be helpful.

- Curiosity.
- Attention to detail for identifying problems and inconsistencies.
- Solid communication skills for reporting problems to course staff.

Your beta testers should also have varying levels of knowledge about the course content:

- To recognize when material is wrong or missing, at least one tester should know the content well.
- To identify material that is unclear, at least one tester should be less familiar with the content.

Depending on the objectives you set for your beta test, you may want to consider recruiting testers who use assistive technologies, who have different native languages, or who have varying levels of familiarity with computer software.

#### Using Course Staff as Beta Testers

Course staff can provide valuable feedback about your course. However, they are typically stakeholders in the success of your course and have a significant amount of knowledge about it. As a result, they can be too close to the course to interact with it in the same way as students will. They can also be either reluctant to provide feedback, or overly zealous.

If you do want a staff member to be a beta tester, a different, second email address must be used for this additional role. The privileges of the course staff role override those of a beta tester, so a second registration on the site, activation, and enrollment in the course are necessary using this second email address. The staff member must log in using the second email address (with the beta tester role) in order to experience the course as a student.

### 11.1.3 What to Test

Beta testers should interact with everything in the course.

- Click all links.
- Watch all videos.

- Download video transcripts and other files.
- Complete all problems.

As they work, beta testers log issues and questions for the course team.

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**Note:** Beta testers cannot read or make discussion posts or contribute to the course wiki.

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### 11.1.4 How Beta Testers See Course Content

To beta test a course, you:

- Define a number of days before section and subsection release days for testing to begin.
- Identify beta testers.

Designated beta testers see course content before students can. The matrix that follows shows the course content that beta testers can access earlier than other students.

	Yes	No
Before the Course Enrollment Date	X	
Before the Course Start Date	X	
Before the section Release Day	X	
Before the subsection Release Day	X	
Before the unit is Public		X
Before a draft replaces a live unit		X

The course team can continue to add content in Studio after the beta test begins. When new content is ready for testing, be sure to *publish the unit*.

#### Define When the Beta Test Starts

To define the start of the beta test, you use Studio to specify a number of days before the release day that is defined for each section and subsection in your course.

1. In Studio, from the **Settings** menu select **Advanced Settings**.
2. In the field for the **Days Early for Beta Users** policy key, enter the number of days before each section and subsection release day for beta testers to have access.
3. Click **Save Changes**.

#### Example

Beta tester access to courseware for a course with **Days Early for Beta Users** = 20 and 2 sections:

Course Enrollment Date = 31 August	31 August; earlier if enrolled by course staff
Course Start Date = 15 September	26 August
section 1 Release Day = 15 September	26 August
section 2 Release Day = 22 September	2 September
subsection 1 Release Day = 22 September	2 September
subsection 2 Release Day = 24 September	4 September
subsection 2, unit 1 Visibility = Public	4 September
subsection 2, unit 2 Visibility = Public; draft in progress	4 September for Public version; No access to draft
subsection 2, unit 3 Visibility = Private	No access

In this example, the beta testers cannot access all of the courseware when the beta test starts on 26 August: they can access section 1 but not section 2. You may want to provide a schedule of section availability to your testers so that they can plan their time appropriately. Future release dates do not display to the beta testers in the courseware.

### 11.1.5 Adding Beta Testers

Before you can add beta testers:

- You need the email address or username of each beta tester.
- Each beta tester must register and activate a user account for that email address/username.

When you add beta testers, note the following.

- If the beta test starts before the course **Enrollment Start Date**, testers cannot enroll themselves in your course. However, you can enroll the beta testers prior to the **Enrollment Start Date**.
- If you add the beta testers after the defined start of the beta test, and they are enrolled in the course, they see your course on their **Current Courses** dashboards when they log in.
- If you add beta testers before the test starts, or if they are not enrolled, they do not see your course on their dashboards. You can enroll the beta testers in the course yourself, and you may want to send an email message to remind them when the test begins.

#### Add Multiple Beta Testers

If you have a number of beta testers that you want to add, you can use the “batch add” option to add them all at once, rather than individually. With this feature, you have options to enroll the beta testers in the course (before or after the **Enrollment Start Date**) and send an email message to notify the beta testers that they have been added.

To add multiple beta testers:

1. View the live version of your course.
2. Click **Instructor**, and then click **Membership**.
3. In the **Batch Beta Tester Addition** section of the page, enter one or more addresses or usernames separated by commas or line feeds (the Enter key). You can also copy data from a CSV file of email addresses and paste it here.
4. To enroll the beta testers in your course, leave **Auto Enroll** selected. If the beta test starts before the course **Enrollment Start Date**, testers cannot enroll themselves in your course.
5. To send an email message to the beta testers, leave **Notify users by email** selected. An example of the message that is sent to a beta tester who is not enrolled (or auto enrolled) in the course follows.

Dear twobeta

You have been invited to be a beta tester for [redacted] at [edge.edx.org](https://edge.edx.org) by a member of the course staff.

Visit [https://edge.edx.org/courses/\[redacted\]/about](https://edge.edx.org/courses/[redacted]/about) to join the course and begin the beta test.

6. Click **Add beta testers**.

To remove the Beta Tester role from one or more users, enter their email addresses in the **Batch Add Beta Testers** field and then click **Remove beta testers**.



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**Note:** The **Auto Enroll** option has no effect when you click **Remove beta testers**. The user's role as a beta tester is removed; course enrollment is not affected.

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### Add Beta Testers Individually

To add a single beta tester:

1. View the live version of your course.
2. Click **Instructor** then **Membership**.
3. In the **Administration List Management** section, use the drop-down list to select **Beta Testers**.
4. Under the list of users who currently have that role, enter an email address or username and click **Add Beta Tester**.

If the beta test starts before the **Enrollment Start Date** of your course, you can also enroll the beta tester. See [Enrollment](#).

To remove the Beta Tester role from users individually, find the user in the list of beta testers, and then click **Revoke access** to the right of that user's email address.

## 11.1.6 Reporting Issues During a Course

Despite the efforts of the course team and the beta testers, additional problems, questions, and issues can occur while a course is running.

- Often, students report issues by asking questions in a discussion. Your discussion administration team can watch for posts that indicate problems.
- To let students know the best way to report problems, you can post information on the **Course Info** page or post it in a discussion.

## 11.2 Course Launching Activities

To launch a course, you prepare the course itself, the staff, and the students. This chapter includes a [Course Launch Checklist](#) to use as a model for your schedule of activities.

To help you communicate to the course staff or to all course participants before the course launches and while it is running, you can send email messages from the Instructor Dashboard. See [Bulk Email](#). The chapter on bulk email also includes a set of [example messages to students](#) that you can use as guidelines when you write your own email messages.

### 11.2.1 Course Launch Checklist

As the start date for your course approaches, a checklist or timeline of activities can help you make sure that your course, and your students, are ready to begin. Suggestions for activities to complete before your course starts follow.

#### Verify Course Settings

- Check the course start date and time in Studio. See [Set Important Dates for Your Course](#).
- Review the grading policy, and set a grace period for homework assignment due dates. See [Establishing a Grading Policy](#).

- Confirm that any optional features that you want your course to include, such as implementing student cohorts, are enabled and configured. See *Using Cohorts in your Courses*.

### Review First Week Content

- Verify that all units are present and published. See *Developing Course Units*.
- Check all assignments for completeness and verify their due dates. See *Working with Problem Components*.
- Verify that videos, transcripts, and download links are in place and working.
- Review feedback from the course team and beta testers to be sure that the content has been thoroughly reviewed and tested.

### Welcome Students

- Two months before the course start date, prepare and send a welcome email message to currently enrolled students. See *Pre-launch Reminder* and *Send Email Messages to Course Participants*.
- Compose a welcome message and add it to the **Course Info** page. See *Add a Course Update*.
- Verify that a syllabus and other references are available on the **Course Handouts** page. See *Add Course Handouts*.
- One month before the course start date, prepare and send a welcome email message to currently enrolled students.
- One week before the course start date, prepare and send a welcome email message to currently enrolled students.
- Add an “Introduce Yourself” post to a discussion topic. For a MOOC, you may want to manage the size of the thread by distributing student responses across multiple threads. For example, you can start different threads for introductions based on geographical location, such as “Introduce Yourself: Europe”, “Introduce Yourself: North America”, etc. See *Run a Discussion*.
- On the course start date, prepare and send a launch email message to currently enrolled students. See *Launch Day Welcome*.

### Prepare Staff

- Define communication methods for all course contributors, including staff, instructors, and the discussion team. For example, set up a course-specific email address.
- Verify that all course contributors know how to record their work, report issues, and collaborate on tasks.
- Verify that the instructors and course staff selected for your course have the correct role assignments in the LMS. See *Staffing*.
- Verify that discussion admins, discussion moderators, and community TAs have registered and activated their user accounts, enrolled in the course, and been assigned their roles on the Instructor Dashboard. See *Assign Discussion Administration Roles*.
- Define methods for managing discussions and guidance for discussion moderators, and distribute to the discussion team. See *Moderate Discussions* and *Guidance for Discussion Moderators*.

## 11.3 Staff Debug Info

The edX system keeps track of students’ progress through a course – recording when the student watches videos, responds to problems, and so on. If you are a staff member on a course, some of that data is visible to you for debugging purposes. Under every problem is a **Staff Debug Info** button: clicking this button opens a popup with metadata about the problem.

None of this information should be necessary for day-to-day usage of edX, but for the sake of clarity, some of these fields are documented here:

**is\_released** Indicates whether the problem is visible to students.

**location** An internal unique identifier that corresponds to this problem. If you are having trouble with a problem, and need assistance from the edX support team, including this value will make it easier for them to track down the issue you're having with the problem.

**markdown** The text of the problem, in Markdown format. This is often written using Studio.

**display\_name** The name of the problem, as shown to the student.

**max\_attempts** The maximum number of times that a student can attempt to answer the problem correctly.

**attempts** The number of times that the currently logged in student has attempted to answer the problem correctly, so far. Every time this student attempts to answer this question, this number will go up, until it reaches `max_attempts`.



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## Running Your Course

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### 12.1 Staffing

You can designate a team of people to help you run your course. Two roles are available to give your administrative team members access to different options for working with students, grades, and other members of the staff.

- Course Staff
- Instructors

You can assign these privileged roles when you work in either the LMS or in Studio, and the users who have these roles can work on your course in both the LMS and Studio. For more information on setting up a team in Studio, see [Add Course Team Members](#).

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**Note:** The LMS “Course Staff” role is the same as the Studio “Staff” role, and the LMS “Instructors” role is the same as the Studio “Admin” role.

---

You can also designate teams of people to beta test your course and to moderate and manage its discussions by assigning other LMS roles. The beta testers and discussion administrators must be enrolled in your course, but they do not need to have the Course Staff or Instructors role or a Studio role. For more information, see [Beta Testing a Course](#) and [Assign Discussion Administration Roles](#).

#### 12.1.1 Administrative Team Roles

To provide access to features on the LMS Instructor Dashboard you assign the Course Staff role or the Instructors role.

**Course Staff** can:

- View the course before the Course Start Date.
- Enroll and unenroll students.
- Access student grades.
- Reset student attempts to answer a question correctly.
- See course HTML errors.
- Send email messages to course participants.

**Instructors** have access to all of the same options for running the course as the course staff. They can also:

- Add and remove Course Staff.

- Add and remove other Instructors.
- Add and remove Beta Testers.
- Add and remove Discussion Admins, Discussion Moderators, and Discussion Community TAs.

### 12.1.2 Assign Staff Roles

Before you can assign the Course Staff or Instructors role to a team member:

- You need the email address or username of each team member.
- Each team member must register a user account for that email address/username, activate the account, and enroll in your course.

To assign a staff role:

1. View the live version of your course.
2. Click **Instructor**, then click **Membership**.
3. In the **Administration List Management** section, use the drop-down list to select **Course Staff** or **Instructors**.
4. Under the list of users who currently have that role, enter an email address or username and click **Add** for the role type.

To remove an assigned role, view the list of users and then click **Revoke access**.

## 12.2 Enrollment

Course authors and instructors can enroll students in a course, see how many people are enrolled, and, when necessary, unenroll students on the Instructor Dashboard.

Students can enroll themselves in a course during its defined enrollment period. For a `www.edx.org` course, enrollment is publicly available to anyone who registers an edX account. For other courses, such as those on `edge.edx.org`, enrollment is limited to students who know the course URL and students you explicitly enroll.

- *Registration and Enrollment*
- *Enroll Students in a Course*
- *View an Enrollment Count*
- *Unenroll Students from a Course*

Data about course enrollment is also available from edX Insights. You access Insights from the Instructor Dashboard for your live course: after you click **Instructor**, click the link in the banner at the top of each page. For more information, see [Using edX Insights](#).

### 12.2.1 Registration and Enrollment

Before a student can enroll in a course, he or she must:

1. Register a user account, which includes supplying a valid email address, on `www.edx.org`, `edge.edx.org`, or your implementation of the edX platform. Each platform requires a separate user account.
2. Activate the registered account by following the emailed instructions.

As long as the course **Enrollment End Date** has not passed, students who have registered and activated user accounts can enroll themselves in [www.edx.org](http://www.edx.org) courses, or can enroll in other courses if they know the URL. For a more detailed description of this process from a student's point of view, see Sample Student Login Guide.

Course authors and instructors, however, can enroll students in a course either before or after the students register their user accounts.

To work on a course, all course staff members must also have registered and activated user accounts and be enrolled in the course.

## 12.2.2 Enroll Students in a Course

You enroll students, and other course staff members, in your course by supplying their email addresses. After the **Enrollment End Date** for a course students can no longer enroll themselves; however, you can still explicitly enroll students.



When you enroll people in a course you have these options:

- **Auto Enroll.** When you choose this option, the people who you enroll do not need to complete an explicit course enrollment step. Of the list of email addresses that you supply, those that correspond to a registered user account are immediately enrolled in the course, and your course displays on the **Current Courses** dashboard for those users on log in. Email addresses on the list that do not match a registered user account are enrolled as soon as that account is registered and activated.




If you do not select **Auto Enroll**, the people who you enroll must also actively locate your course and enroll themselves in it. These students see the course on their dashboards after they have done so.

- **Notify students by email.** When you choose this option, an email message is automatically sent to each of the email addresses that you supply. The message includes the name of the course and, for students who are not already enrolled, a reminder to use that same email address to enroll.

An example of the email message that a student received when this option was selected during enrollment follows. In this example, the student already had a registered and activated [edx.org](http://edx.org) account, and both **Auto Enroll** and **Notify students by email** were selected.

You have been enrolled in Introduction to Computer Science and Programming  

 Inbox x


 no-reply@registration.edx.org via amazonses.com 10:36 AM (4 minutes ago) ☆  

to me ▾

Dear 

You have been enrolled in Introduction to Computer Science and Programming at [courses.edx.org](http://courses.edx.org) by a member of the course staff. The course should now appear on your [courses.edx.org](http://courses.edx.org) dashboard.

To start accessing course materials, please visit [https://courses.edx.org/courses/MITx/6.00x/2013\\_Spring/](https://courses.edx.org/courses/MITx/6.00x/2013_Spring/)

-----  
This email was automatically sent from [courses.edx.org](http://courses.edx.org) to 

To enroll students or staff members:

1. View the live version of your course.
2. Click **Instructor**, then click **Membership**.
3. In the **Batch Enrollment** section of the page, enter the username or email address of the student, or enter multiple names or addresses separated by commas or new lines.

You can copy and paste data from a CSV file of email addresses. However, note that this feature is better suited to courses with smaller enrollments, rather than courses with massive enrollments.

4. To streamline the course enrollment process, leave **Auto Enroll** selected.
5. To send students an email message, leave **Notify students by email** selected.
6. Click **Enroll**.

### 12.2.3 View an Enrollment Count

After you create a course, you can access the total number of people who are enrolled in it. When you view an enrollment count, note that:

- In addition to students, the enrollment count includes the course author, course team members, instructors, and course staff. (To work with a course in Studio or the LMS, you must be enrolled in that course.)
- Students can unenroll from courses, and course authors and instructors can unenroll students when necessary.

**Note:** The enrollment count displays the number of currently enrolled students and course team staff. It is not a historical count of everyone who has ever enrolled in the course.

The total number of current enrollees is shown as the sum of the number of people who selected each of the certification tracks (verified, audit, or honor) that are available for your course.

To view the enrollment count for a course:

1. View the live version of your course.
2. Click **Instructor**, then click **Course Info** if necessary.

The **Enrollment Information** section of the page that opens shows the number of people who are currently enrolled in your course and in each of the certification tracks.

You can also view or download a list of the people who are enrolled in the course. See [Student Data](#).

### 12.2.4 Unenroll Students from a Course

You can remove students from a course by unenrolling them. To prevent students from re-enrolling, course enrollment must also be closed. You use Studio to set the **Enrollment End Date** for the course to a date in the past. See [Set Important Dates for Your Course](#).

**Note:** Unenrollment does not delete data for a student. An unenrolled student's state remains in the database and is reinstated if the student does re-enroll.

To unenroll students, you supply the email addresses of enrolled students.

1. View the live version of your course.
2. Click **Membership**.
3. In the **Batch Enrollment** section of the page, enter a username or an email address, or multiple names or addresses separated by commas or new lines.
4. To send students an email message, leave **Notify students by email** selected.

---

**Note:** The **Auto Enroll** option has no effect when you click **Unenroll**.

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5. Click **Unenroll**. The course is no longer listed on the students' **Current Courses** dashboards, and the students can no longer contribute to discussions or the wiki or access the courseware.



## 12.3 Managing Course Discussions

Discussions, or discussion forums, foster interaction among your students and between students and course staff. You can set up different topics to guide these interactions when you create your course, and then run and moderate discussions throughout the course to encourage participation and develop course community.

Discussions are also excellent sources of feedback and ideas for the future.

For options you can use to run and moderate discussions, see the following sections:

- [Overview](#)
- [Creating Discussion Topics for Your Course](#)
- [Assign Discussion Administration Roles](#)
- [Run a Discussion](#)
- [Moderate Discussions](#)
- [Close Discussions](#)

For information about how enabling the cohort feature for a course affects options for moderating course discussions, see [Managing Discussions in Courses with Student Cohorts](#).

### 12.3.1 Overview

Students and staff use course discussions to share ideas, exchange views, consider different viewpoints, and ask questions. In a discussion, there are three hierarchical levels of interaction.

- A *post* is the first level of interaction. A post opens a new subject. Posts are often posed as questions, either to start a conversation or to surface an issue that requires some action. When you add a post, you categorize it as a **Question** or as a **Discussion**.
- A *response* is the second level of interaction. A response is a reply made directly to a post to provide a solution or continue the conversation.
- A *comment* is the third level of interaction. A comment is often a clarification or side note made to a specific response, rather than to the post as a whole.

The dialogue created by a post, its responses, and the comments on those responses is sometimes called a thread.

All course staff members and enrolled students can add posts, responses, and comments, and view all of the posts, responses, and comments made by other course participants. Members of the course community, both staff and students, can be given permission to moderate or administer course discussions through a set of discussion administration roles. Discussion threads are saved as part of the course history.

---

**Note:** The [Participating in Course Discussions](#) chapter describes features that are available to all discussion participants, and may be useful to students who are new to online discussion forums. You can share the chapter with your students by, for example, adding a “Never Used a Discussion Forum Before?” post that includes the information you think will be most useful to them.

---

### 12.3.2 Creating Discussion Topics for Your Course

Discussions in an edX course include both broad topics on course-wide areas of interest such as “Feedback”, “Troubleshooting”, or “Technical Help”, and the content-specific topics that you add to course units as discussion components. You create both types of discussion topics in Studio.

For details about creating discussion topics, see *Create Course-Wide Discussion Topics* and *Create Content-Specific Discussion Topics*. For details about configuring discussion topics in courses with cohorts enabled, see *Setting up Discussions in Courses with Cohorts*.

### Create Course-Wide Discussion Topics

All courses include a page named **Discussion**. When you create a course, a discussion topic named “General” is available for you to include by default. You can add more course-wide discussion topics to guide how students share and find information during your course. Such course-wide topics might include Feedback, Troubleshooting, or Technical Help. Discussions in these topics can begin as soon as your course is available.

To create a course-wide discussion topic:

1. Open your course in Studio.
2. Select **Settings**, then **Advanced Settings**.
3. Scroll down to the **Discussion Topic Mapping** policy key. By default, its value is:

Discussion Topic Mapping	<pre>{   "General": {     "id": "i4x-edX-Open-edx_demo_course"   } }</pre>
--------------------------	--

4. Copy the three lines provided for the General topic and paste them above the closing brace character (}):

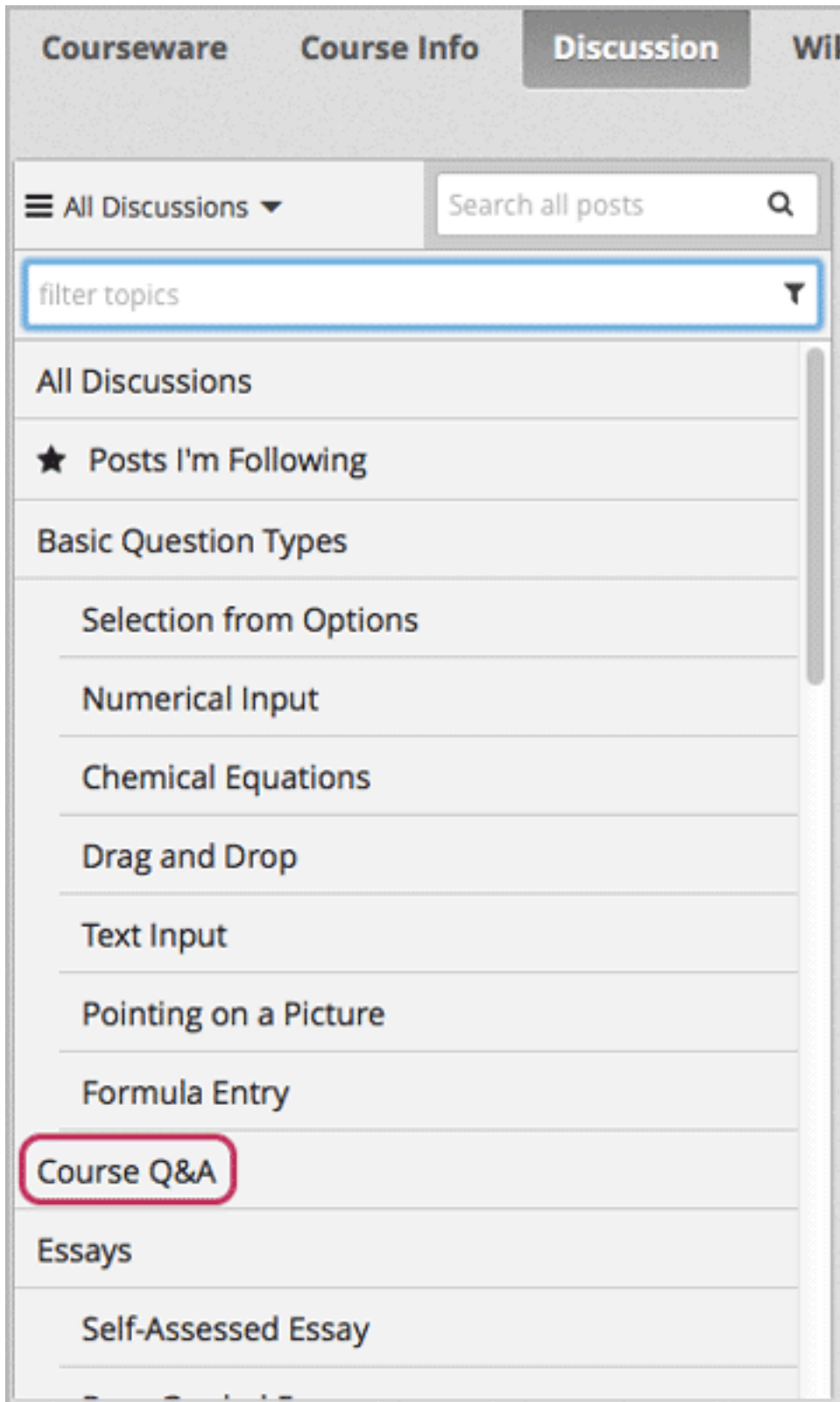
Discussion Topic Mapping	<pre>{   "General": {     "id": "i4x-edX-Open-edx_demo_course"   }   "General": {     "id": "i4x-edX-Open-edx_demo_course"   } }</pre>
--------------------------	--

5. Replace the second “General” with the quoted name of your new topic.
6. Change the value for the second “id” to a unique identifier. For example, append a reference to the name of the topic.
7. Add a comma after the first closing brace (}, ).

Discussion Topic Mapping	<pre>{   "General": {     "id": "i4x-edX-Open-edx_demo_course"   },   "Course Q&amp;A": {     "id": "i4x-edX-Open-edx_demo_course_FAQ"   } }</pre>
--------------------------	--

8. Click **Save Changes**. Studio resequences and reformats your entry. Scroll back to the **Discussion Topic Mapping** field to verify that your entry was saved as you expect. Entries that do not contain all of the required punctuation characters revert to the previous value when you save, and no warning is presented.

When students click the **Discussion** page for your course, the drop-down Discussion list now includes the topic you added.



---

**Note:** In courses with cohorts enabled, the course-wide discussion topics that you add are unified. All of the posts can be read and responded to by every student, regardless of their assignment to a cohort. You have the option to configure these topics to be divided by cohort. See [Example: Configuring Course-Wide Discussion Topics As Divided](#).

---

### Create Content-Specific Discussion Topics

To create a content-specific discussion topic, you add a discussion component to a unit. Typically, you do this while you are designing and creating your course in Studio. Follow the instructions in [Working with Discussion Components](#). The result is a discussion topic associated with a unit and its content.

A content-specific discussion topic is subject to the release date of the section that contains it. Students cannot contribute to a content-specific discussion topic until the containing section has been released.

---

**Note:** In courses with cohorts enabled, all content-specific discussion topics are divided by cohort when you first add them. Student posts to divided discussion topics can only be read and responded to by members of the same cohort. You can change the configuration of content-specific discussion topics to make them unified and available to all students in the course. See [Make All Content-Specific Discussion Topics Unified by Default](#).

---

### 12.3.3 Assign Discussion Administration Roles

You can designate a team of people to help you run course discussions.

---

**Note:** The course team that you set up in Studio (or the course staff and instructors you add on the Instructor Dashboard) are not automatically granted discussion administration roles. Discussion administration roles must be explicitly granted to members of the course team for them to moderate or administer course discussions. The course author, team members with Admin access (Studio), and Instructors (Instructor Dashboard) can grant discussion administration roles.

---

Different options for working with discussions are available through these roles:

- *Discussion moderators* can edit and delete messages at any level, review messages flagged for misuse, close and reopen posts, pin posts, and endorse responses. Posts made by moderators are marked as “By: Staff” in the list of posts. Responses and comments made by moderators have a colored “Staff” identifier. This role is often given to course team members who already have the Course Staff role.
- *Discussion community TAs* have the same options for working with discussions as moderators. Posts made by community TAs are marked as “By: Community TA” in the list of posts on the **Discussion** page. Responses and comments made by community TAs have a colored “Community TA” identifier. This role is often given to students.
- *Discussion admins* have the same options for working with discussions as moderators, and their posts, responses, and comments have the same “Staff” identifiers. This role can be reserved for assignment to course team members who have the Instructor role only: the discussion admins can then both moderate discussions and give other users these discussion management roles whenever necessary.

Before you can assign roles to your discussion team, you need their email addresses or usernames.

- To get this information for a course team member, on the Instructor Dashboard click **Membership** and then select **Course Staff** or **Instructor** from the drop-down list.

- To get this information for an enrolled student, on the Instructor Dashboard click **Data Download**, then **Download profile information as a CSV**.

## Assign Roles

To assign a discussion administration role, you must be the course author or an Instructor (that is, you are identified in Studio as a team member with Admin access).

1. View the live version of the course.
2. Click **Instructor**, then click **Membership**.
3. In the Administration List Management section, use the drop-down list to select Discussion Admins, Discussion Moderators, or Discussion Community TAs.
4. Under the list of users who currently have that role, enter an email address or username and click **Add** for the role type.
5. To remove an assigned role, view the list of users and then click **Revoke access**.

### 12.3.4 Run a Discussion

On an ongoing basis, the members of your discussion team run the course discussion by making contributions, endorsing responses, marking answers as correct, and guiding student messages into pertinent threads. Techniques that you can use throughout your course to make discussions successful follow.

#### Use Conventions in Discussion Subjects

To identify certain types of messages and make them easier to find, you can define a set of standard tags to include in the subject of a post or in the body of a response or comment. Examples follow.

- Use “[OFFICIAL]” at the start of announcements about changes to the course.
- Provide information about corrected errors with a subject that begins “[CORRECTIONS]” or “[ERRORS]”.
- Ask students to use “[STAFF]” in the subject of each post that needs the attention of a course staff member.

Both your discussion team and your students can use tags like these to search the discussions more effectively.

When a post is created its type must be selected: either “question” or “discussion”. Members of the discussion team should be thoughtful when selecting the type for their posts, and encourage students to do the same. See [Find Questions and Discussions](#).

#### Seed Discussion Topics

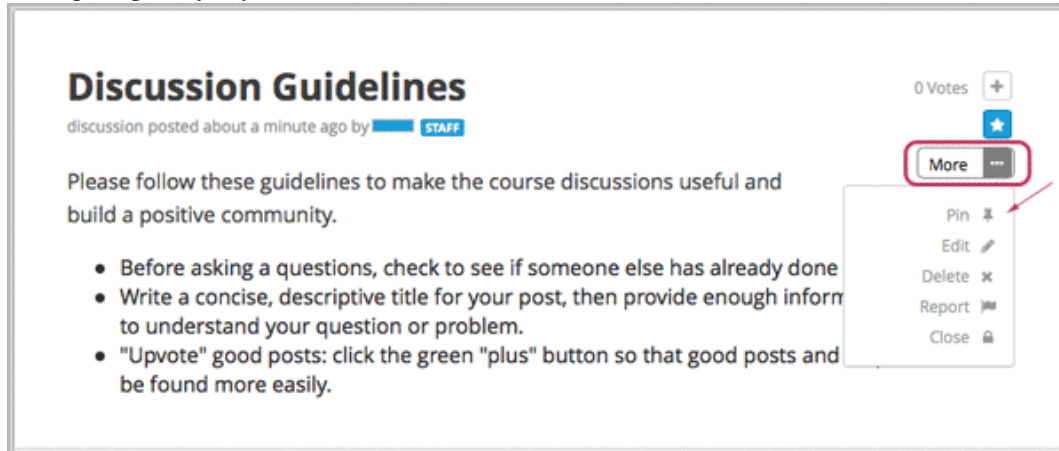
To help students learn how to get the most out of course discussions, and find the best discussion topic to use for their questions and conversations, you can seed discussion topics by adding posts before your course starts. Some examples follow.

- In the General topic (which is included in every course by default), add an [INTRO] post to initiate a thread for student and staff introductions.
- For each topic that you create, add the first post to it to describe the way you intend it to be used. In addition to providing guidance, these initial messages can also act as models for students to follow when they create their own posts.
- If you include discussion components along with problem components in a unit, you can add a post that encourages students to use the topic to ask for help with the problems, but reminds them not to post the answers.

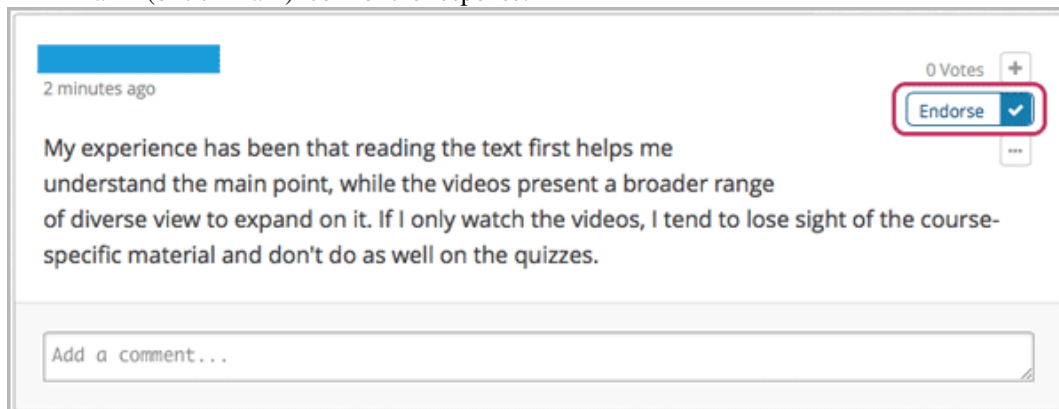
### Minimize Thread Proliferation

To encourage longer, threaded discussions rather than many similar, separate posts, the discussion team can use these techniques. However, be aware that long threads (with more than 200 responses and comments) can be difficult to read, and can therefore result in an unsatisfactory experience in the discussion.

- Pin a post. Pinning a post makes it appear at the top of the list of posts on the **Discussion** page. As a result, it is more likely that students will see and respond to pinned posts. You can write your own post and then pin it, or pin a post by any author. Select the “More” icon and then **Pin**.



- Endorse a response. Endorsing a response indicates that it provides value to the discussion. Click the “check mark” (or tick mark) icon for the response.



- Mark a question as answered. You use the same procedure to mark a response as the correct answer to a question as you do to endorse contributions to a discussion: click the “check mark” (or tick mark) icon for correct answers.
- Close a post. You can respond to a redundant post by (optionally) pasting in a link to the post that you prefer students to contribute to, and prevent further interaction by closing the post. Select the “More” icon and then **Close** to close it.
- Provide post/response/comment guidelines. You can post information from the [overview](#) in this chapter, or the [anatomy of edX discussions](#) in the next chapter, in a course-wide discussion topic (such as General) to provide guidance about when to start a new thread by adding a post, responding to an existing post, or commenting on a response.

### 12.3.5 Moderate Discussions

The members of a course discussion team monitor discussions and keep them productive. They can also collect information, such as areas of particular confusion or interest, and relay it to the course staff.

Developing and sustaining a positive discussion culture requires that sufficient moderator time is dedicated to reviewing and responding to discussions. Keeping up-to-date with a large MOOC forum requires a commitment of 5 or more hours per week, and involves reading threads, replying to and editing posts, and communicating with the rest of the discussion team and course staff.

For information on setting up moderators for your course, see [Assign Discussion Administration Roles](#).

#### Provide Guidelines for Students

You can develop a set of best practices for discussion participation and make them available to students as a course handout file or on a defined page in your course. These guidelines can define your expectations and optionally introduce features of edX discussions.

You can also share the [Participating in Course Discussions](#) chapter with your students. It describes features that are available to all discussion participants, and may be useful to students who are new to online discussion forums.

#### Develop a Positive Discussion Culture

Discussion monitors can cultivate qualities in their own discussion interactions to make their influence positive and their time productive.

- Encourage quality contributions: thank students whose posts have a positive impact and who answer questions.
- Check links, images, and videos in addition to the text of each message. Edit offensive or inappropriate posts quickly, and explain why.
- Review posts with a large number of votes and recognize “star posters” publicly and regularly.
- Stay on topic yourself: before responding to a post, be sure to read it completely.
- Maintain a positive attitude. Acknowledge problems and errors without assigning blame.
- Provide timely responses. More time needs to be scheduled for answering discussion questions when deadlines for homework, quizzes, and other milestones approach.
- Discourage redundancy: before responding to a post, search for similar posts. Make your response to the most pertinent or active post and then copy its URL and use it to respond to the redundant threads.
- Publicize issues raised in the discussions: add questions and their answers to an FAQ topic, or announce them on the Course Info page.

For a template that you can use to develop guidelines for your course moderators, see [Guidance for Discussion Moderators](#).

#### Find Questions and Discussions

When students create posts, they specify the type of post to indicate whether they are asking for concrete information (a question) or starting an open-ended conversation (a discussion).

On the **Discussion** page, a question mark image identifies posts that ask questions, and a conversation bubble image identifies posts that start discussions. When an answer is provided and marked as correct for a question, a check or tick mark image replaces the question mark image. See [Answer Questions and Mark Questions as Answered](#).

In addition to these visual cues, filters can help you find questions and discussions that need review. Above the list of posts on the **Discussion** page, the **Show all** filter is selected by default. You can also select:

- **Unread**, to list only the discussions and questions that you have not yet viewed.
- **Unanswered**, to list only questions that do not yet have any responses marked as answers.

### Edit Messages

Discussion moderators, community TAs, and admins can edit the content of posts, responses, and comments. Messages that include spoilers or solutions, or that contain inappropriate or off-topic material, should be edited quickly to remove text, images, or links.

1. Log in to the site and then select the course on your **Current Courses** dashboard.
2. Open the **Discussion** page and then open the post with the content that requires editing. You can select a single topic from the drop-down list of discussion topics, apply a filter, or search to locate the post.
3. For the post or for the response or comment that you want to edit, click the “More” icon and then **Edit**.
4. Remove the problematic portion of the message, or replace it with standard text such as “[REMOVED BY MODERATOR]”.
5. Communicate the reason for your change. For example, “Posting a solution violates the honor code.”

### Delete Messages

Discussion moderators, community TAs, and discussion admins can delete the content of posts, responses, and comments. Posts that include spam or abusive language may need to be deleted, rather than edited.

1. Log in to the site and then select the course on your **Current Courses** dashboard.
2. Open the **Discussion** page and then open the post with the content that requires deletion. You can select a single topic from the drop-down list of discussion topics, apply a filter, or search to locate the post.
3. For the post or for the response or comment that you want to delete, click the “More” icon and then **Delete**.
4. Click **OK** to confirm the deletion.

---

**Important:** If a message is threatening or indicates serious harmful intent, contact campus security at your institution. Report the incident before taking any other action.

---

### Respond to Reports of Misuse

Students have the option to report contributions that they find inappropriate. Moderators, community TAs, and admins can check for messages that have been flagged in this way and edit or delete them as needed.

1. View the live version of your course and click **Discussion** at the top of the page.
2. In the list of posts on the left side of the page, use the filter drop-down list (set to **Show all** by default) to select **Flagged**.
3. Review listed posts. A post is listed if it or any of its responses or comments has been reported. The reported contribution includes a **Reported** identifier.
4. Edit or delete the post, response, or comment. Alternatively, remove the flag: click the “More” icon and then **Unreport**.



## Block Users

For a student who continues to misuse the course discussions, you can unenroll the student from the course. See *Unenroll Students from a Course*. If the enrollment period for the course is over, the student cannot re-enroll.

### 12.3.6 Close Discussions

You can close the discussions for your course so that students cannot add messages. Course discussions can be closed temporarily, such as during an exam period, or permanently, such as when a course ends.

When you close the discussions for a course, all of the discussion topics in course units and all of the course-wide topics are affected.

- Existing discussion contributions remain available for review.
- Students cannot add posts, respond to posts, or comment on responses. However, students can continue to vote on existing threads, follow threads, or report messages for misuse.
- Course Staff, Instructors, Discussion Admins, Discussion Moderators, and Discussion Community TAs are not affected when you close the discussions for a course. Users with these roles can continue to add to discussions.

---

**Note:** To make sure your students understand why they cannot add to discussions, you can add the dates that discussions are closed to the **Course Info** page and post them to a General discussion.

---

### Start-End Date Format Specification

To close course discussions, you supply a start date and time and an end date and time in Studio. You enter the values in this format:

```
[ "YYYY-MM-DDTHH:MM", "YYYY-MM-DDTHH:MM" ]
```

where:

- The dates and times that you enter are in the Universal Coordinated (UTC) time zone, not in your local time zone.
- You enter an actual letter **T** between the numeric date and time values.
- The first date and time indicate when you want course discussions to close.
- The second date and time indicate when you want course discussions to reopen.
- If you do not want the discussions to reopen, enter a date that is far in the future.
- Quotation marks enclose each date-time value.
- A comma and a space separate the start date-time from the end date-time.
- Square brackets enclose the start-end value pair.
- You can supply more than one complete start and end value pair. A comma and a space separate each pair.

For example, to close course discussions temporarily for a final exam period in July, and then permanently on 9 August 2014, you enter:

```
[ "2014-07-22T08:00", "2014-07-25T18:00" ], [ "2014-08-09T00:00", "2099-08-09T00:00" ]
```

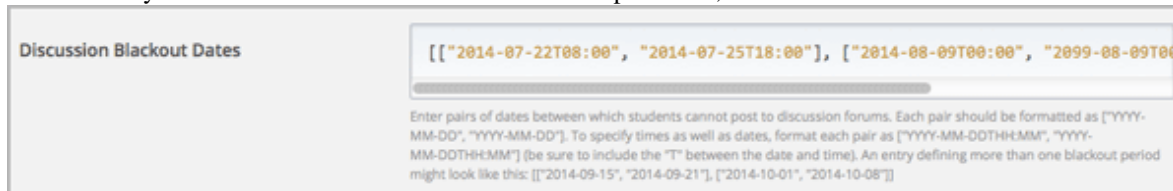
You enter these values between an additional pair of square brackets which are supplied for you in Studio.

### Define When Discussions Are Closed

To define when discussions are closed to new contributions and when they reopen:

1. Open your course in Studio.
2. Select **Settings**, then **Advanced Settings**.
3. Scroll down to the **Discussion Blackout Dates** policy key.
4. In the field for the value, place your cursor between the supplied square brackets. Use the required date format specification to enter the start and end dates for each time period during which you want discussions to be closed.

When you enter the dates and times from the example above, the value field looks like this:



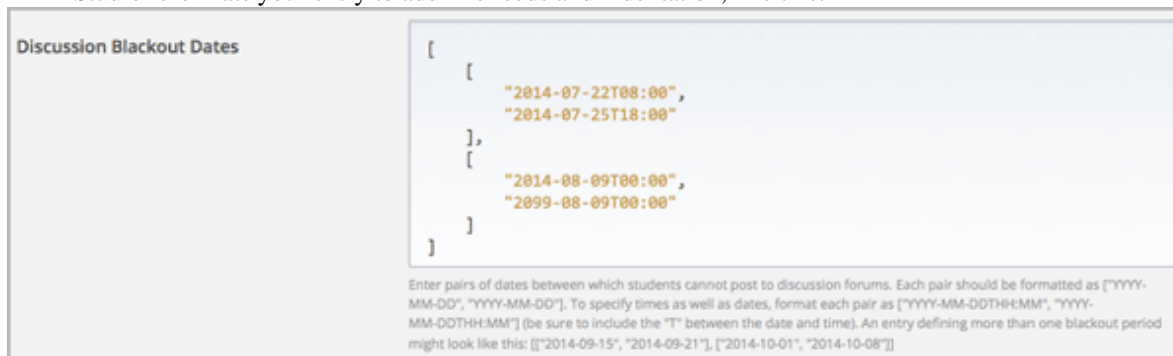
Discussion Blackout Dates

[["2014-07-22T08:00", "2014-07-25T18:00"], ["2014-08-09T00:00", "2099-08-09T00:00"]]

Enter pairs of dates between which students cannot post to discussion forums. Each pair should be formatted as ["YYYY-MM-DD", "YYYY-MM-DD"]. To specify times as well as dates, format each pair as ["YYYY-MM-DDTHH:MM", "YYYY-MM-DDTHH:MM"] (be sure to include the "T" between the date and time). An entry defining more than one blackout period might look like this: [["2014-09-15", "2014-09-21"], ["2014-10-01", "2014-10-08"]]

5. Click **Save Changes**.

Studio reformats your entry to add line feeds and indentation, like this:



Discussion Blackout Dates

[  
 [  
 "2014-07-22T08:00",  
 "2014-07-25T18:00"  
 ],  
 [  
 "2014-08-09T00:00",  
 "2099-08-09T00:00"  
 ]  
]

Enter pairs of dates between which students cannot post to discussion forums. Each pair should be formatted as ["YYYY-MM-DD", "YYYY-MM-DD"]. To specify times as well as dates, format each pair as ["YYYY-MM-DDTHH:MM", "YYYY-MM-DDTHH:MM"] (be sure to include the "T" between the date and time). An entry defining more than one blackout period might look like this: [["2014-09-15", "2014-09-21"], ["2014-10-01", "2014-10-08"]]

For examples of email messages that you can send to let students know when the course discussions are closed (or open), see [Example Messages to Students](#).

## 12.4 Participating in Course Discussions

Course discussions give you the opportunity to start conversations with other students, ask questions of the course team, and participate in the course community. If you have not previously participated in an online discussion forum, see the introductory *"anatomy"* section.

This chapter also describes features of edX discussions that can make your participation more effective. These include ways to:

- *Find Posts*
- *Add a Post, Response, or Comment*
- *Keep Up with New Activity*
- *Provide Feedback on Contributions*

## 12.4.1 Anatomy of edX Course Discussions

### Posts, Responses, and Comments

Post: "Please introduce yourself."

- Reponse: "My name is Lee and I teach secondary school maths in Canberra, Australia."
- Reponse: "Hello everyone, I am Sumei from Hong Kong, China."
  - Comment: "Hi Sumei, I am taking this course in Hong Kong too. Maybe we should make a study group!"
  - Comment: "I'd like to join the Hong Kong study group too, I think it will help me keep up with the homework."
- Response: "Hi from Johannesburg! I am taking the course to prepare for my matric exams."

This example shows the different ways that you can contribute to a discussion. The *post* initiates the conversation, *responses* are replies to the post, and *comments* expand on specific responses. Before you add a post, response, or comment, take a moment to consider which of these options best suits the contribution that you want to make. This helps keep course discussions organized and easy to follow.

### Discussion Topics

Most edX courses include opportunities to discuss specific video lectures, reading assignments, homework problems, or other course content. Each of these content-specific discussion opportunities is called a *topic*. When these discussion topics are included in a course, they typically appear below the content they apply to.

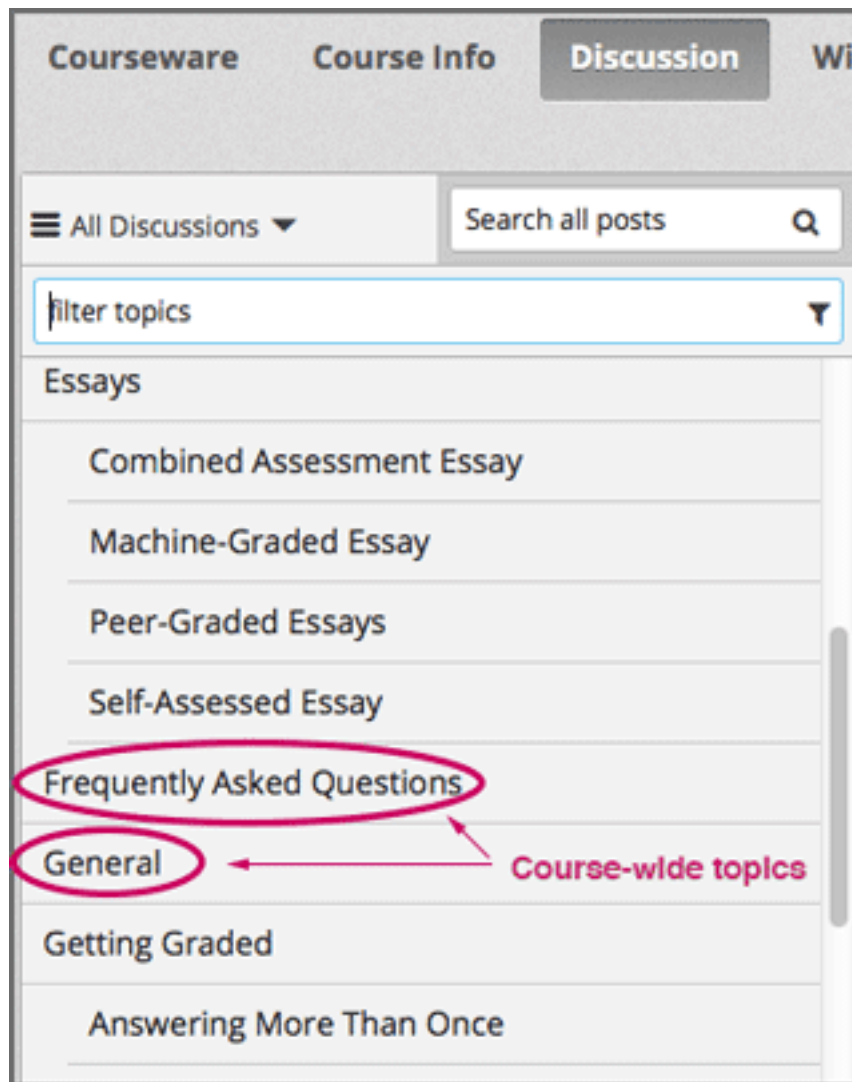
The screenshot shows the edX Open\_DemoX edX Demonstration Course interface. The top navigation bar includes links for Courseware, Course Info, Discussion, Wiki, Progress, and Instructor. The left sidebar lists course sections: Introduction, Example Week 1: Getting Started, Example Week 2: Get Interactive, Example Week 3: Be Social (selected), Lesson 3 - Be Social, Homework - Find Your Study Buddy, and About Exams and Certificates. The main content area is titled "DISCUSSION FORUMS" and contains the following text:

The discussion forum for each course is found at the top of the course page. You might come across a subset of the discussion forum inside the course (see below), where you can talk with fellow students about the course in context. Go ahead and be social! Make your first post in this demo course.

Keep an eye out for posts with a green check mark. The green check means the post has been recognized by a staff member or forum moderator as a great post. You can also actively upvote a post. Others can search on user "upvoted" posts. They tend to be very helpful.

At the bottom of the section, there is a "Show Discussion" button (circled in red) and a "New Post" button.

Most courses also include one or more topics for course-wide discussions, such as "Frequently Asked Questions" and "Troubleshooting". You access these topics on the **Discussion** page of the course: click the **All Discussions** drop-down.



When you visit the **Discussion** page, you can read and add to any of the discussion topics.

- Course-wide topics do not have other topics indented below them.
- Content-specific topics are indented under an identifying category name.

Notice that you can access content-specific topics both on the **Discussion** page and also while you are navigating through course content on the **Courseware** page. However, you can only access the course-wide topics on the **Discussion** page.

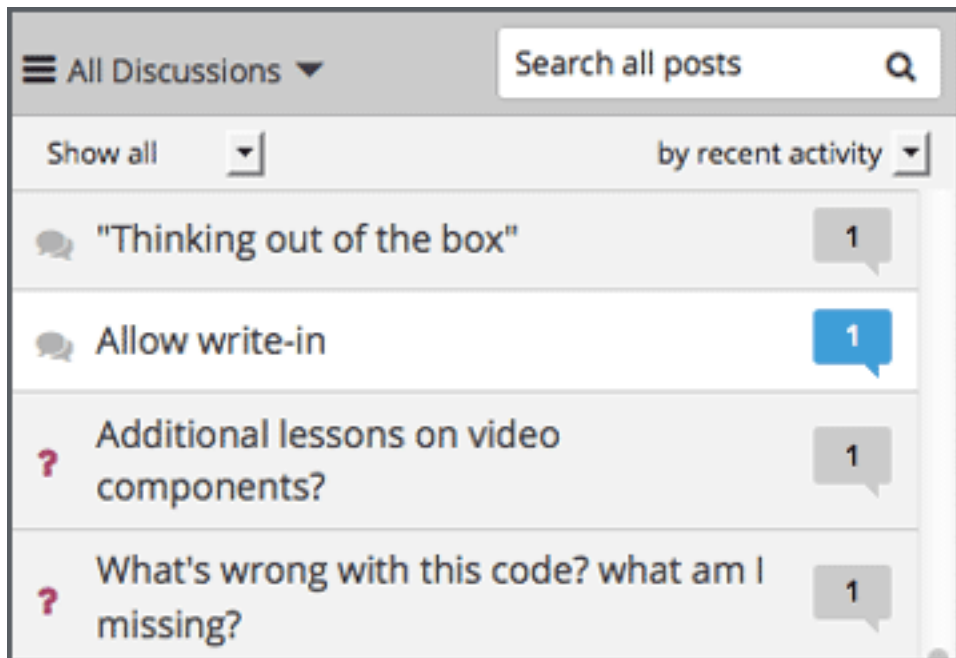
Before you add a post, look through the topics. When you add your post to the most appropriate topic, others with the same interest can find, read, and respond to it more easily.

### Types of Discussion Posts

When you make a contribution to a course discussion topic, it can typically be categorized as either a question or a discussion.

- A *question* post raises an issue so that the course staff and community can provide answers.
- A *discussion* post starts a conversation by sharing thoughts and reflections, and inviting community participation.

When you add a post to a discussion topic, you specify whether it is a question or a discussion. When you visit the **Discussion** page for your course, a question mark image identifies posts that ask questions and a conversation bubble image identifies posts that start discussions.



If you have any difficulty deciding which type of post you want to add, think about whether you want to get concrete information (a question) or start an open-ended conversation (a discussion).

### 12.4.2 Find Posts

Finding out whether someone else has already asked the same question or initiated a conversation about the same subject that interests you, and then reading and contributing to that exchange instead of starting a new one, helps make the time that everyone spends with the course discussion more productive. You can search for something specific, or you can browse through the posts in a single discussion topic.

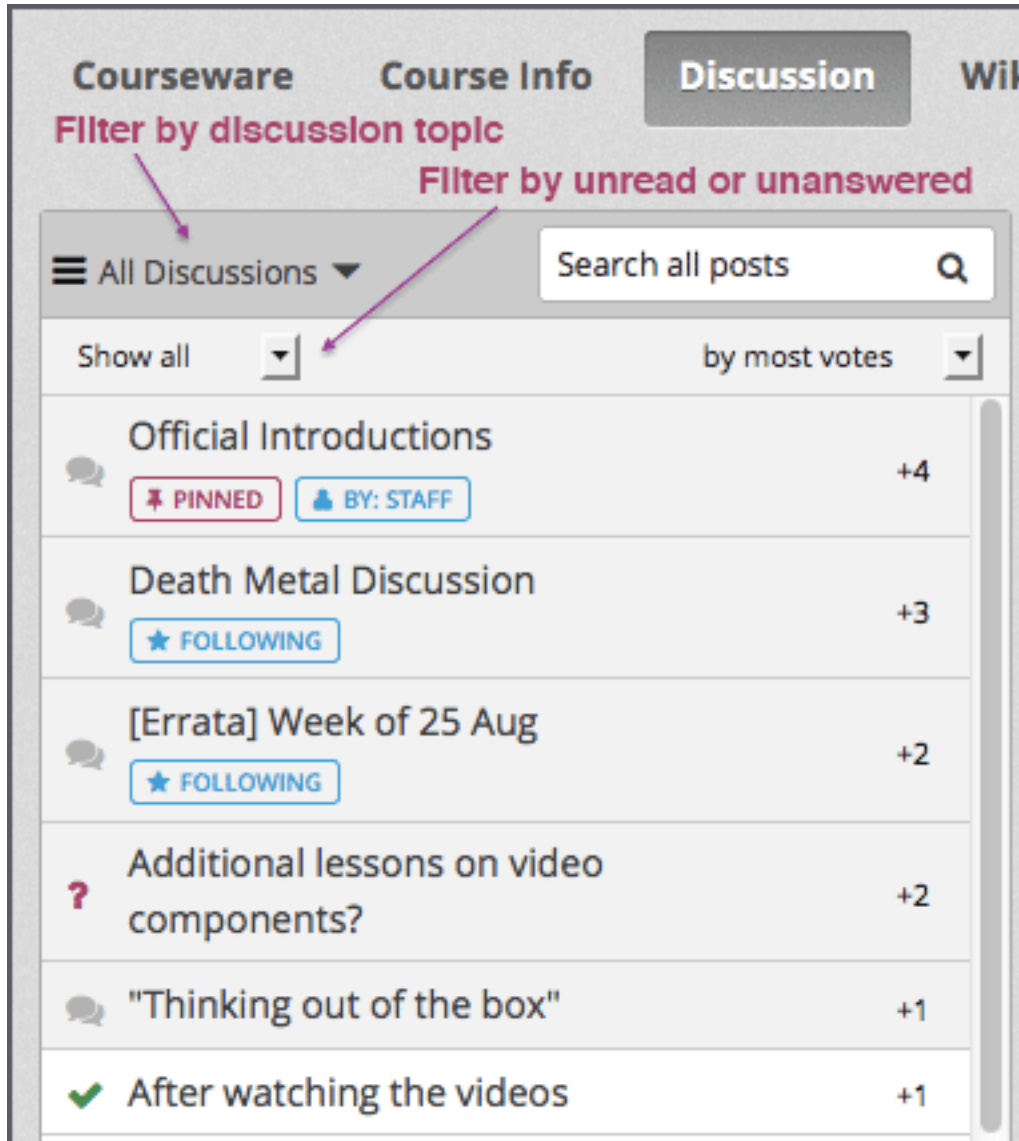
#### Search the Discussions

To search for text, click **Discussion** and enter a phrase, a word, or part of a word in the **Search all posts** field above the list of posts. When you press Enter, the search tries to find:

- A match or close match to your text in any post, response, or comment. The display updates to show a list of the posts that have a match at any level of interaction.
- A similar value in any post, response, or comment (if no exact matches are found). A “No results found for {text}”. Showing results for {similar}” message displays above the posts that have similar text at any interaction level.
- Any usernames that are an exact match to your text. A “Show posts by {username}” option displays above any posts that have an exact text match at any interaction level. Click the username in the message to read that user’s posts, responses, and comments.

## Review Posts About a Single Topic

To review posts about a particular part of the course or type of issue, click **Discussion** at the top of the page and then select a topic from the drop-down list. (**All Discussions** is selected by default.) Only posts about the topic you select appear in the list of posts.



## Review Only Unread or Unanswered Posts

To limit the posts shown on the **Discussion** page, you can select one of the filter options. Above the list of posts, the **Show all** filter is selected by default.

- To list only the discussions and questions that you have not yet viewed, select **Unread**.
- To list only question posts that do not yet have any responses marked as answers, select **Unanswered**.

## 12.4.3 Add a Post, Response, or Comment

### Add a Post

To make sure that other students and the course team can find and respond to your post, try to select the correct type for your post: either question or discussion.

#### Add a Post to a Content-Specific Discussion Topic

1. Click **Courseware**.
2. Open the part of the course that includes the discussion topic that you want to add to.
3. To read what others have already contributed to the conversation, click **Show Discussion**.

You can scroll through the posts that have already been added: the title and the first sentence or two of each post appear. To read an entire post, view the responses to it, and see any comments, click **Expand discussion**.

4. To add a post, click **New Post**.

The screenshot shows the Courseware interface with a sidebar on the left containing navigation links: Introduction, Example Week 1: Getting Started, Example Week 2: Get Interactive (selected), Lesson 2 - Let's Get Interactive!, Homework - Labs and Demos, Homework - Essays, Example Week 3: Be Social, and About Exams and Certificates. The main content area displays 'AN INTERACTIVE REFERENCE TABLE' with a periodic table of elements. The element Uranium (U, atomic number 92) is highlighted, showing its properties: Atomic Weight (238.0289 g/mol), Atomic Volume (12.49 cm<sup>3</sup>/mol), Ionic Radius (100.0 pm), Density (19.05 g/cm<sup>3</sup>), Melting Point (1135.0 °C), Boiling Point (4131.0 °C), Polarizability (27.4), Electronegativity (1.38), First Ionization Potential (6.05 eV), Crystal Structure (Ortho), Oxidation States (3,4,5,6), and Electronic Configuration ([Rn]5f<sup>6</sup>7s<sup>2</sup>). At the bottom of the interface, there is a 'Show Discussion' button and a 'New Post' button, which is highlighted with a red circle.

5. Select the type of post: click **Question** or **Discussion**.



6. Enter a short, descriptive identifier for your post in the **Title** field. The title is the part of your post that others see when they are browsing on the **Discussion** page or scrolling through one of the content-specific topics.
7. Enter the complete text. Options for formatting the text and for adding links or images are available: click the buttons above the text field.

### Add a Post to a Course-Wide Discussion Topic

You can also use this procedure to add a post to any of the content-specific discussion topics.

1. Click the **Discussion** page.
2. Click **New Post**.
3. Select the type of post: click **Question** or **Discussion**.
4. Select the most appropriate discussion topic for your post.

The screenshot shows the 'Discussion' tab selected in the top navigation bar. On the left, there is a sidebar with a search bar and a list of discussion topics, each with a count of posts. The main area displays the 'New Post' form. The 'POST TYPE' section has two buttons: '? Question' (highlighted) and 'Discussion'. The 'TOPIC AREA' dropdown menu is open, showing a list of topics: 'General' (selected), 'Filter topics', 'Self-Assessed Essay', 'Peer-Graded Essays', 'Combined Assessment Essay', 'Machine-Graded Essay', 'General' (highlighted), 'Getting Graded', and 'Passing a Course'. Below the dropdown, there is a 'Title' field and a text area labeled 'Enter your'.

5. Supply a short, descriptive **Title**. The title is the part of your post that others see when they are browsing on the **Discussion** page or scrolling through one of the content-specific topics.
6. Enter the complete text. Options for formatting the text and for adding links or images are available: click the buttons above the text field.



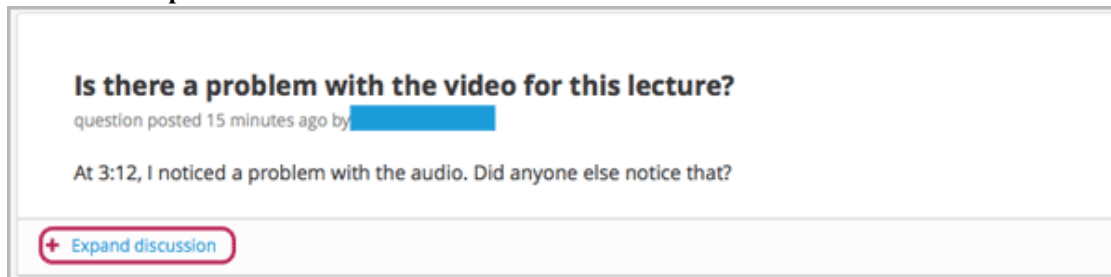
## Add a Response or Comment

To participate in an ongoing discussion, you reply to the initial post by adding a response, or expand on a particular response by adding a comment.

The same options for formatting the text and for adding links or images are available for responses and comments as for posts.

### Add a Response or Comment to a Content-Specific Discussion Topic

1. Click **Courseware**.
2. Open the part of the course with the discussion topic where you want to make your contribution.
3. Click **Show Discussion**.
4. Scroll to the post where you want to add your thoughts.
5. Click **Expand discussion**.

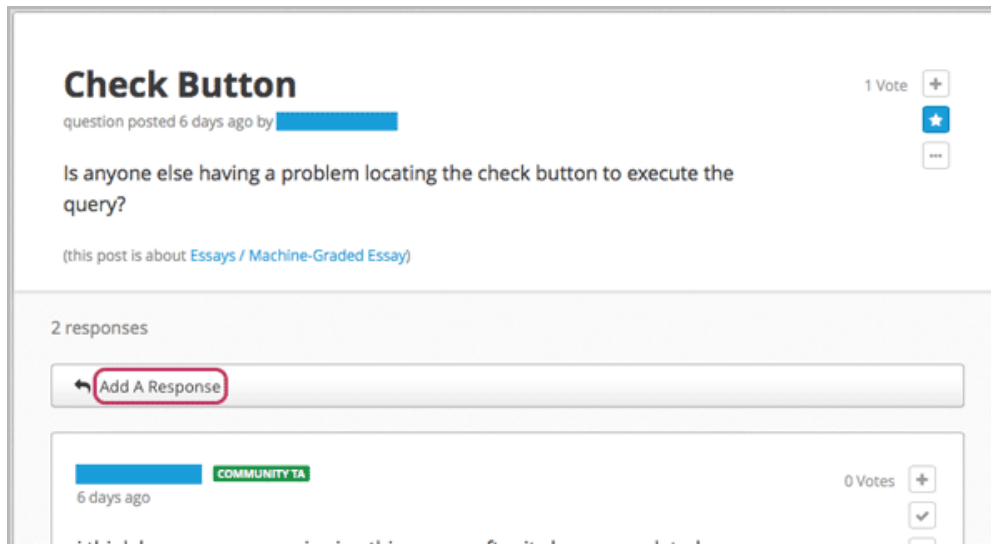


6. Add a response or comment.
  - To add a response to the post, click **Add A Response**. When your response is complete, click **Submit**.
  - To add a comment to a response, click in the **Add a comment** field below the response. When your comment is complete, click **Submit**.

### Add a Response or Comment to a Course-Wide Discussion Topic

You can also use this procedure to add a response or comment to any of the content-specific discussion topics.

1. Click the **Discussion** page.
2. Find the post that you want to contribute to. To help you decide where to add your thoughts, review the current responses and their comments.
3. Add a response or comment.
  - To add a response to the post, click **Add A Response**. When your response is complete, click **Submit**.



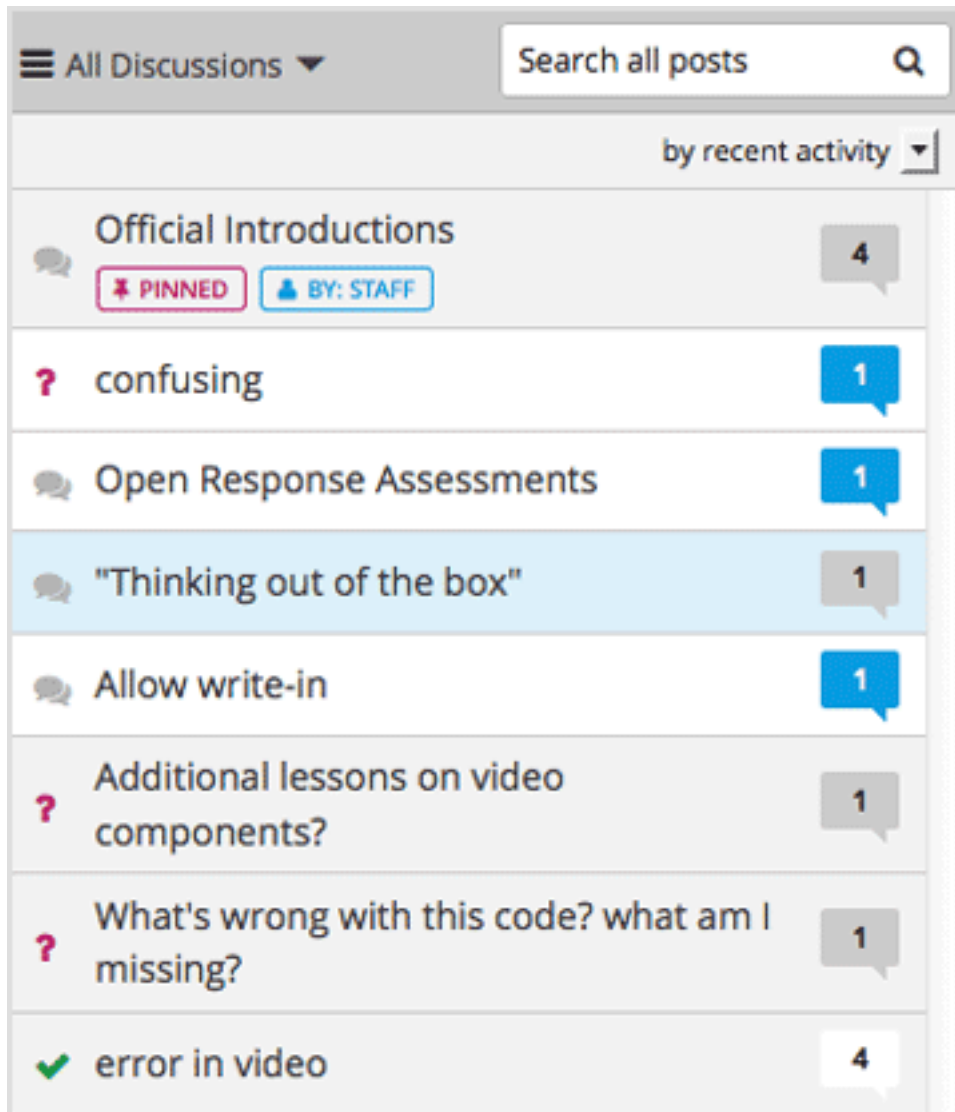
- To add a comment to a response, click in the **Add a comment** field below the response. When your comment is complete, click **Submit**.

## 12.4.4 Keep Up with New Activity

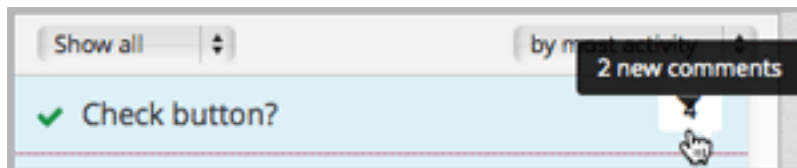
### Read New or Updated Posts

The list of posts on the **Discussion** page provides visual cues to help you identify posts that are new, or that have responses or comments that you have not read yet, and to distinguish them from exchanges that you have already read completely.

- Posts that you have not read yet have a blue callout image.
- Posts that you have read, but with responses or comments that you have not read yet, have a white callout image.
- Exchanges that you have read completely have a gray callout image and background.



The total number of contributions in the exchange (the post and its responses and comments) appears in each callout image. To see the number of contributions that you haven't read yet, move your cursor over the callout image.



The color-coded callout images appear when you sort the list of posts **by recent activity** or **by most activity**. If you sort the list of posts by most votes instead, the number of votes that the post has received appears in place of the callouts. See [Vote for Posts or Responses](#).

### Receive Daily Digests

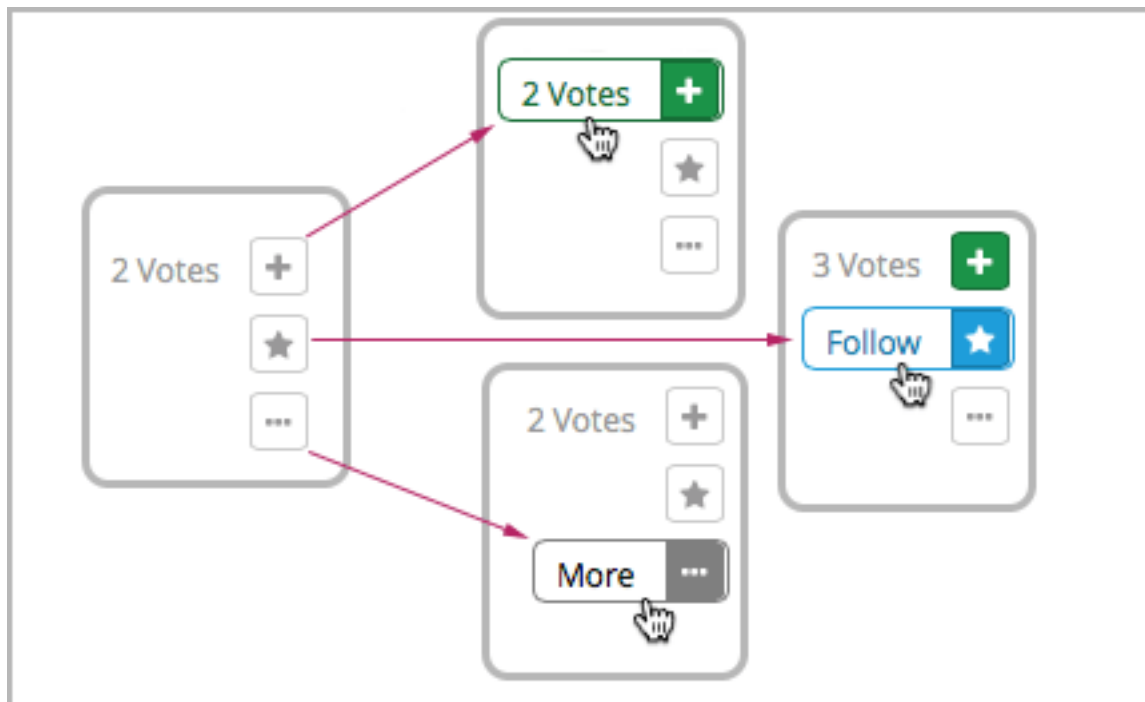
You have the option to receive an email message each day that summarizes discussion activity for the posts you are following. To receive this daily digest, click **Discussion** and then select the **Receive updates** checkbox.

## 12.4.5 Provide Feedback on Contributions

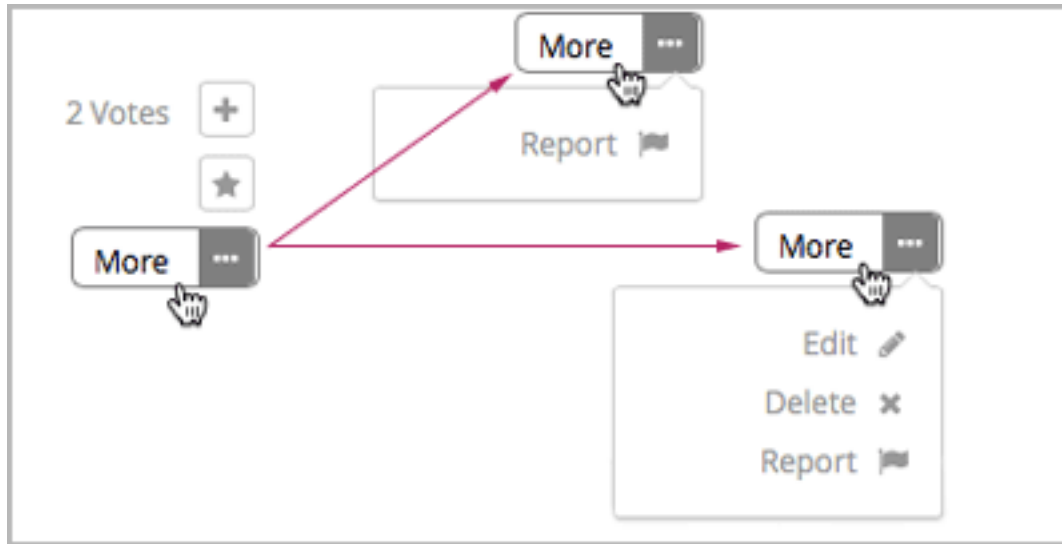
As you read the contributions that other students and staff make to discussion topics, you can provide feedback without writing a complete response or comment. You can:

- *Vote for posts and responses* to provide positive feedback.
- *Follow posts* so that you can check back in on interesting conversations and questions easily.
- *Answer questions, and mark your questions as answered.*
- *Report a contribution* that is inappropriate to the course staff.

To select a feedback option, you use the icons at the top right of each post, response, or comment. When you move your cursor over these icons a label appears.



When you click the “More” icon, a menu of the options that currently apply appears.

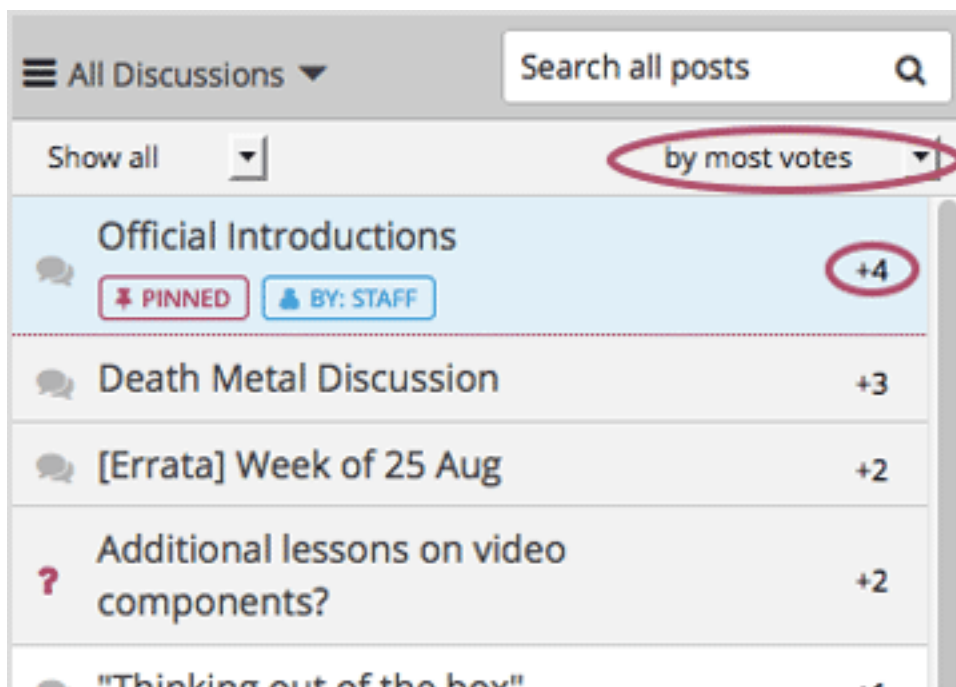


### Vote for Posts or Responses

If you like a post or one of its responses, you can vote for it: view the post or response and click the “Vote” icon at top right.



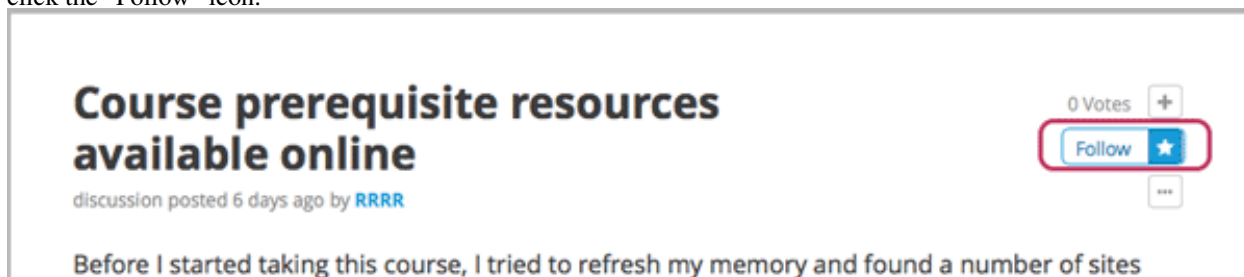
You can sort the list of posts so that the posts with the most votes appear at the top: click the drop-down list of sorting options and select **by most votes**.



The number of votes that each post has received displays in the list of posts. (Votes for responses are not included in the number.)

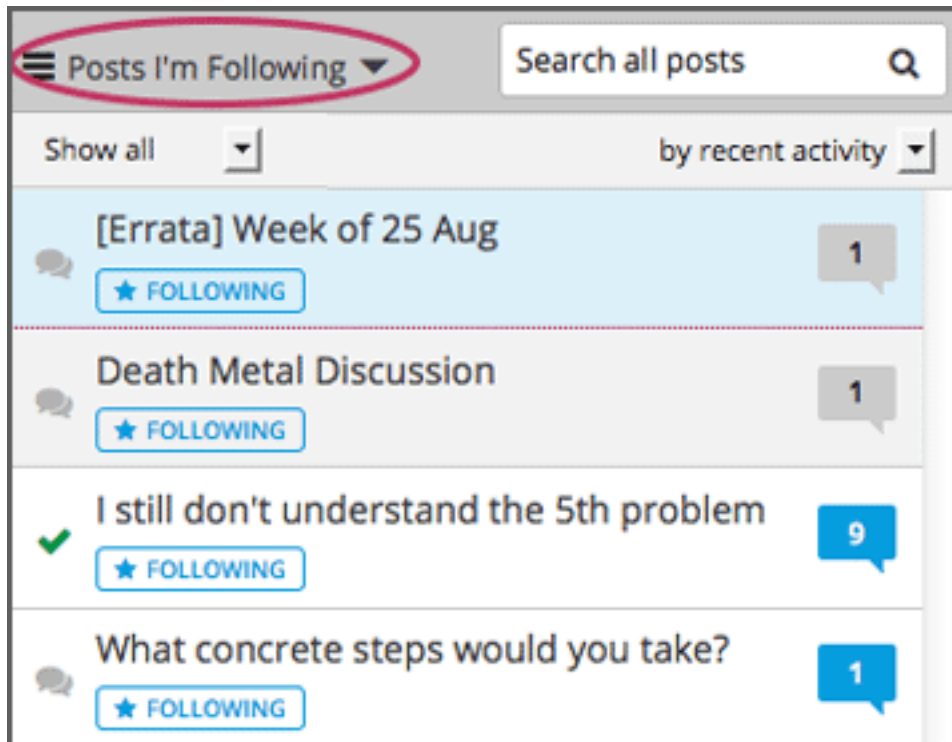
### Follow Posts

If you find a post particularly interesting and want to return to it in the future, you can follow it: view that post and click the “Follow” icon.



Each post that you follow appears with a “Following” indicator in the list of posts.

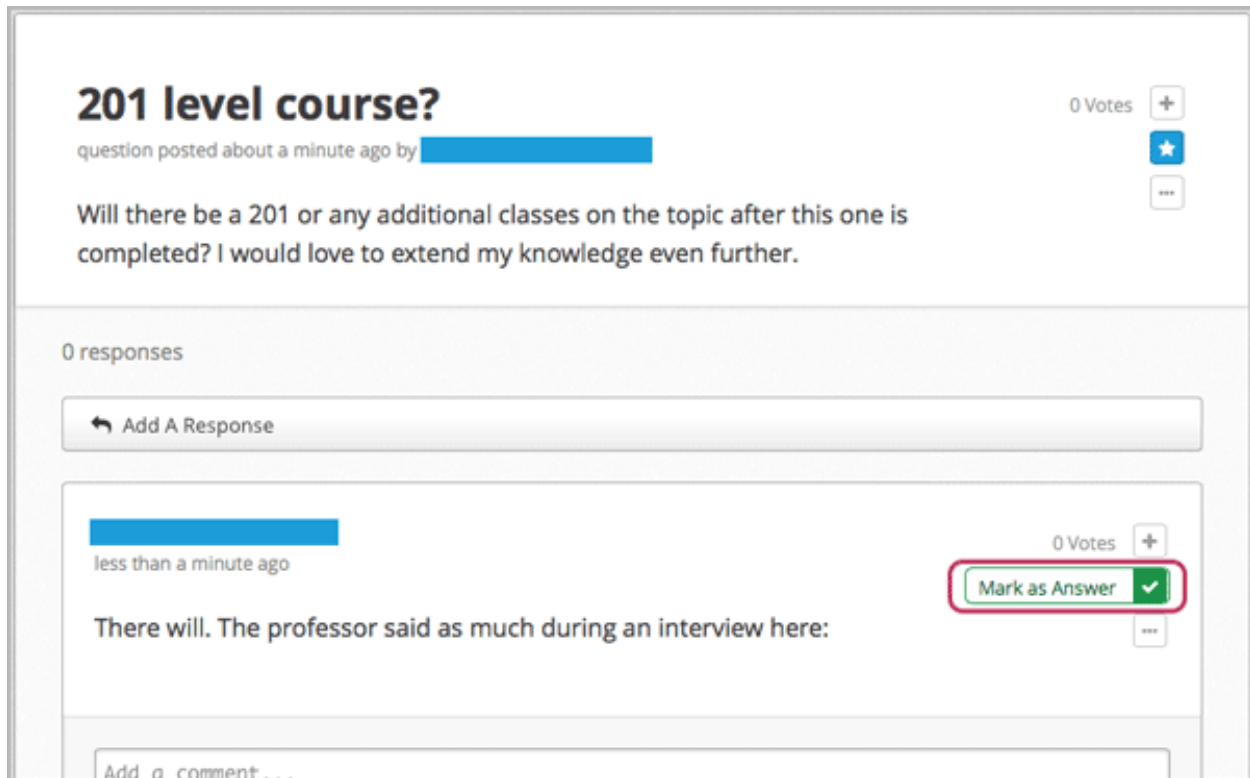
To list only the posts that you are following, regardless of the discussion topic they apply to, click the drop-down Discussion list and select **Posts I'm Following**.



### Answer Questions and Mark Questions as Answered

Anyone in a course can answer questions. Just add a response to the question post with your answer.

The person who posted the question (and staff members) can mark responses as correct: click the “Mark as Answer” icon that appears at upper right of the response.



After at least one response is marked as the answer, a check or tick mark image replaces the question mark image for the post in the list on the **Discussion** page.



☰ All Discussions ▾

Search all posts 🔍

by most activity ▾

- ✓ I still don't understand the 5th problem 9
- ✓ error in video 4  
★ FOLLOWING
- I disagree with the choices the couple in the example made. What do others think? 3
- ✓ After watching the videos 2
- ? Organizational culture 2
- ? What's wrong with this code? what am I missing? 1  
★ FOLLOWING
- What concrete steps would you take? 1

### Report Discussion Misuse

You can flag any post, response, or comment for a discussion moderator to review: view the contribution, click the “More” icon, and then click **Report**.

The screenshot shows a discussion forum interface. The top post is titled "Get my product for only \$19.99/month for 12 months!" and is marked as "REPORTED" with a red box and arrow. It includes a "More" menu with a "Report" option, also highlighted with a red box. Below this is a response from "staff" titled "Off-topic complaint about getting spam in a discussion forum!", which also has a "More" menu with a "Report" option highlighted by a red box. The interface includes vote counts, a star icon, and a "Report" button with a flag icon.

## 12.5 Guidance for Discussion Moderators

Discussion forums are hugely important tools in running a successful MOOC; they allow for substantive community development, in addition to being excellent sources of feedback and ideas for future iterations of the course.

Moderators are the key to effectively managing these online communities. Moderators keep the discussions productive and relay important information (errors, student confusion with or interest in particular topics, and so on) to the rest of the course staff. Discussions can be moderated by any of a number of members of the course team, but dedicating enough time to moderation is the best way to cultivate a successful discussion culture.

Please feel free to use some or all of the information in this chapter to guide the contributions of your discussion moderators.

### 12.5.1 Responsibilities

- Answer basic questions posed by students, and direct students with questions to the right resources: syllabi, course documents, course updates, useful lecture segments, example problems, etc.
- Relay reports of errata, common misconceptions and questions, highly disruptive participants, bugs, and amusing or interesting posts to the most appropriate course staff.
- Enforce the Honor Code by editing or deleting problem answers, or requests for answers, promptly.
- Edit out offensive content from the discussion, and remind the originators of discussion etiquette and expectations.

- Communicate problems and successes to your fellow moderators.
- Identify students whose presence in the discussions has a strongly positive impact. These students can be promoted to community TA role and publicly acknowledged.
- Add helpful items to the FAQ or Course Info page.

### **12.5.2 Qualities of good discussion moderators**

- Good or great content knowledge: stellar students from previous years often make good moderators.
- Solid communication skills: the ability to organize positive, consistent, and effective communication with students, other moderators, and course staff.
- Time: keeping up-to-date with the discussions for a large MOOC requires at least 5 hours per week for reading posts, replying to or editing posts, and communicating with the other moderators and course staff.
- Enthusiasm: this is the best predictor of moderator excellence!

### **12.5.3 Best practices for discussion moderation**

- Always maintain a positive attitude. Keeping a positive attitude is crucial to encouraging participation in the discussion community.
- Encourage discussion between students. Actively thank students who answer the questions of others.
- Use the course's FAQ and Course Info pages as resources. Provide links to these pages in your responses when appropriate. Suggest that information be added to these resources when necessary to respond to a common question or fix confusion.
- Always make it obvious that you have read the student's question. When posting a response, make sure that you are on topic. Respond in the context of the thread.
- Develop a discussion persona. Try to answer your questions in your own slightly unique way.

### **12.5.4 Guidelines for specific types of posts**

Certain types of posts require more attention from the moderators than others, or may need to be handled in a particular way.

#### **Time sensitive problems**

- Try to be present on discussion threads when assignment due dates are approaching or new content is being released. The discussions tend to be extra busy at these times.
- Please alert the course staff about problems that need to be dealt with quickly, such as problems with a graded assignment. Setting up a course email address that is checked frequently is a good way to manage these alerts.

#### **Content Questions**

- Assist with content questions sensitively, but be careful not to post spoilers. Do not ask students to post their solutions!
- A good guiding question can be better than an answer.

### Redundant posts

- When possible, help discourage redundancy by responding to such posts with links to an earlier or higher quality thread that asks the same question.
- When responding to a post, search for similar posts and respond to the most pertinent thread. Redirect the other posts to the thread with your response and then close the redundant threads.

### Off topic, inappropriate, or offensive posts

- Don't simply delete them; instead, edit and explain why they were edited. Inappropriate posts include spoilers, solutions, and information on how to pirate educational materials.
- Check links that students post. If offensive sites and materials are found, they need to be edited quickly.

### Bugs or errors

- Check if there is in fact an error.
- If not, suggest to the students that they check their work.
- If so, contact course staff, and notify the thread that the error has been reported.
- Use language that does not assign blame or discourage users from the platform.

You might say: “Thanks for letting us know about that issue. We are working with edX to get it fixed as quickly as possible.”

### Feature requests

- Keep an organized collection of feature requests cultivated by the course team. That list can subsequently be shared with an edX product manager, who will log those requests internally.
- Reply to the post to let the person know that their request was heard, without promising that the feature will be implemented.

You might say: “Thanks for your suggestion. I've logged it for review by edX staff, who will prioritize feature requests on the development roadmap.”

- Search the discussions for other similar requests, and respond to and close those as well.

## 12.6 Bulk Email

For courses on edx.org, you can send bulk email messages to course participants directly from the Instructor Dashboard. Messages can use HTML styling, and can include links to videos, social media pages for the course, and other material. All course contributors who are assigned the course staff or instructor role can use bulk emails to communicate with course participants before, during, and after the course run.

For templates that you can use when preparing your own messages, see [Example Messages to Students](#).

## 12.6.1 Message Addressing

When you send an email message from the Instructor Dashboard, you choose its recipients by selecting one of these predefined groups:

- **Myself**, to test out a message before sending it to a larger group.
- **Staff and Instructors**, to contact other members of the administrative team.
- **All (students, staff and instructors)**, to communicate with currently enrolled students and the administrative team.

Email messages are sent to all enrolled students with these exceptions:

- Students who have not replied to the account activation email message that is sent when they registered on edx.org.
- Students who have opted out of receiving email messages through the **Email Settings** link, which is present for each course on the **Current Courses** dashboard.

Before you use the bulk email feature, consider that messages **cannot be cancelled** after they are sent. If you plan to send a message to all course participants, be sure to review each draft carefully, and send the message to yourself first for thorough testing.

## 12.6.2 Send Email Messages to Course Participants

To send an email message to course participants:

1. View the live version of your course.
2. Click **Instructor** then click **Email**.
3. Select who you want to send the message to from the **Send to** dropdown list. You can select:
  - **Myself**
  - **Staff and Instructors**
  - **All (students, staff and instructors)**
4. Enter a **Subject** for the message. A subject is required.
5. Enter the text for the message. Message text is required.

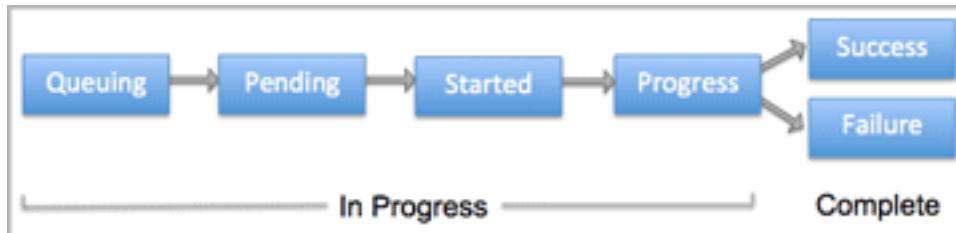
Messages can use HTML styling, including text formatting and links. The email message editor offers the same formatting options as the HTML component editor in Studio. See [Working with HTML Components](#).

6. Click **Send Email**. You can perform other tasks on the Instructor Dashboard or navigate to other pages while you wait for your message to be sent.

After you send a message, a bulk email task is queued for processing. Multiple courses use the same queue to complete these tasks, so it can take some time for your message to be sent to all of its recipients. If your course is a MOOC, consider limiting the number of messages that you send to all course participants to no more than one per week.

## 12.6.3 Message Workflow States

When you click **Send Email** for a message, the server begins to process a bulk email task. The server assigns a series of different workflow states to the task.



The workflow states for a bulk email task are:

- **Queuing:** The bulk email task is created and being queued for background processing.
- **Pending:** The task is queued and is waiting to run.
- **Started:** Background processing is in progress to create emailing subtasks.
- **Progress:** The emailing subtasks are in progress.
- **Success:** All emailing subtasks are complete. Note that the bulk email task can be in this state even if some or all of its emailing subtasks failed.
- **Failure:** An error occurred and task processing did not complete successfully.

While the bulk email task is in progress, you can find out how far it has gotten in the workflow by checking the **Pending Instructor Tasks** section on the **Email** page.

PENDING INSTRUCTOR TASKS								
Email actions run in the background. The status for any active tasks - including email tasks - appears in a table below.								
Task Type	Task inputs	Task ID	Requester	Submitted	Duration (sec)	State	Task Status	Task Progress
bulk_course_email	{"email_id": 2, "to_option": "myself"}	e7321ef6-8be6-4f29-94a3-a5b5e7eb5f4c		2014-03-17T14:55:37+00:00	0	PROGRESS	Incomplete	Progress: emailed 0 of 0 so far (out of 1)

When the bulk email task is complete, you can find its final state by checking the Email Task History report. See [Email Task History Report](#).

## 12.6.4 Review Sent Messages

You can review a list of all of the messages that have been sent for the course. For any listed message, you can review the subject, the username of the person who sent it, the date and time sent, its selected recipients, and the message text.

1. View the live version of your course.
2. Click **Instructor** then click **Email**.
3. In the **Email Task History** section of the page, click **Sent Email History**. The list of sent messages displays.

**EMAIL TASK HISTORY**

To see the content of all previously sent emails, click this button:

[Sent Email History](#)

To read an email, click its subject.

Subject	Sent By	Time Sent	Number Sent
<a href="#">Doc215x Exam Info</a>		Aug 06, 2014 at 17:53 UTC	4
<a href="#">Doc215x Announcements</a>		Jun 17, 2014 at 14:46 UTC	Unknown
<a href="#">Doc215x Starts Soon!</a>		May 14, 2014 at 15:00 UTC	1
<a href="#">Doc215x Starts Soon! (test)</a>		Apr 29, 2014 at 15:04 UTC	1

4. To review additional information for a message, click its subject. The message opens in a dialog box.

**SUBJECT: DOC215X STARTS SOON! (TEST)**

**SENT BY:** [REDACTED]

**TIME SENT: AUG 26, 2014 AT 10:35 UTC**

**SENT TO: ALL**

**MESSAGE:**

Hello Doc215x student,

We are excited that you are joining us for Doc215x, offered by edX. Class begins on Monday, July 25 at 12:00 UTC (which is 8:00am EDT). Note that edX courses use Coordinated Universal Time (UTC) for due dates and release times.

[Copy Email To Editor](#)

5. Optionally, use the message as the basis for a new message: click **Copy Email to Editor**. The dialog box closes and you can edit the text, links, and formatting that were duplicated into the **Subject** and **Message** fields.

When you create a message by copying a previously-sent message, be sure to review and test it thoroughly before you send it to all course participants.

## 12.6.5 Email Task History Report

The Email Task History report can help you keep track of who sent messages, when, and to how many people. For each message sent, the report includes the username of the requester, the date and time it was submitted, the duration and state of the entire task, the task status, and the task progress.

You can use this history to investigate questions relating to bulk email messages that have been sent, such as:

- How frequently students are sent course-related email messages.
- Whether a message was sent successfully.
- The change in the number of people who were sent course-related messages over time.

To produce the Email Task History report:

1. View the live version of your course.
2. Click **Instructor** then click **Email**.
3. In the **Email Task History** section of the page, click **Show Email Task History**. A report like the following example displays on the Instructor Dashboard.

EMAIL TASK HISTORY								
To see the status for all bulk email tasks ever submitted for this course, click on this button:								
<a href="#">Show Email Task History</a>								
Task Type	Task inputs	Task ID	Requester	Submitted	Duration (sec)	State	Task Status	Task Progress
bulk_course_email	{"email_id": 2, "to_option": "myself"}	e7321ef6-8be6-4f29-94a3-a5b5e7eb5f4c		2014-03-17T14:55:37+00:00	6	SUCCESS	Complete	Message successfully emailed for 1 recipients

### 12.6.6 Review Email Task History

For tasks with a **State** of Success, the **Task Progress** column shows an informational message. These messages can have a format such as “Message successfully emailed for 13457 recipients (skipping 29) (out of 13486)”. To interpret this message, note that:

- The first number (“recipients”) indicates the number of messages sent to the selected recipients.
- The second number (“skipping”) indicates the number of enrolled and activated users who were not sent the message. This count is of students who have opted not to receive course email messages.
- The final number (“out of”) indicates the number of users in the set of recipients you selected who were enrolled in the course (and had activated their user accounts) when you sent the email message.

Note that the **Total number of enrollees** shown on the **Course Info** page includes all currently enrolled students, regardless of account activation status, and as a result can be different than this number.

If the “recipients” and “out of” numbers are the same, the message reads “Message successfully emailed for 13457 recipients” instead.

Other **Task Progress** messages for tasks with a **State** of Success indicate that some or all of the emailing subtasks did not successfully send email:

- “Message emailed for {number succeeded} of {number attempted} recipients”
- “Message failed to be emailed for any of {number attempted} recipients”
- “Unable to find any recipients to be emailed”

No **Task Progress** messages display for tasks that have a **State** of Failure.

### 12.6.7 Example Messages to Students

You can use these example messages, prepared for delivery before typical course milestones, as models for your own course communications.

- *Pre-launch Reminder*
- *Launch Day Welcome*
- *Reminder to Register for Verified Certificate*



- *Weekly Highlights*
- *Mid-Course Encouragement*
- *Mid-Course Event*
- *Technical Issue*
- *Course Farewell and Certificates*
- *New Course Run Announcement*

These messages are styled as email messages, but you could also post this information in a course discussion topic or on the **Course Info** page.

---

**Important:** Revise these message templates carefully to include facts for your own course, meet the needs of your students, and reflect your own objectives and personality. Search for the “{” and “}” characters to locate prompts and replace them with course-specific values.

---

## 12.6.8 Pre-launch Reminder

Pre-launch reminders raise awareness of the course start date, publicize the course, and generate excitement. In addition to the course start date and time, the example that follows also lets students know that:

- UTC is used in edX courses. Alternatively, you could include information about your course or the edX platform that will contribute to your students’ success.
- The course has a companion social media site. Alternatively, you might include information about planned meetups or other community-building opportunities.

You may want to send out more than one message before the course launches: use this template as a starting point for crafting the different messages you want to deliver. Replace values enclosed by {braces} with information that applies to your course.

Subject: {course number} Starts Soon!

Hello {course name} student,

We are excited that you are joining us for {course number} {course name}, offered by {organization name} through edX. Class begins on {day}, {date} at {time} UTC (which is {time} {local time zone}). Note that edX courses use Coordinated Universal Time (UTC) for due dates and release times.

In case you haven't already found it, {course number} has its own official Facebook page {add link}. You can find videos and photos posted there before the course even begins.

If this is your first edX course, consider enrolling in edx101 {add link}, the edX Demo course. This course gives you an opportunity to explore the edX platform and learn how to answer problems and track your progress, before {course number} begins.

Your {course number} course staff

### 12.6.9 Launch Day Welcome

On your course start date, you can send an email message that both welcomes students and gives them specific actions to accomplish. This example directs students to two of the course pages to encourage exploration and discovery, and personally introduces the course team leader. Search for the values enclosed by {braces} in this template and replace them with information for your course.

```
Subject: {course number} Starts Today!

Hello everyone!

At this time, edX course {course number} is available from your Dashboard
{add link}, and the staff would like to officially welcome you to the course!
You'll find materials for the first week on the Courseware page,
including both video lectures and problem sets.

Please take some time to go to the Course Info page to read the handouts
and get familiar with course policies and philosophy.

I will be your course lead and I hope you will all have a great time learning
{subject}! It may be challenging, it may be frustrating, but it will be
rewarding and you will learn a ton.

On behalf of the staff, welcome, good luck, and have fun!

{name} and the {course number} staff
```

### 12.6.10 Reminder to Register for Verified Certificate

After your course has launched, you can send an email to remind students that the last day to register for a verified certificate is approaching. You can use this template as a starting point for your own message; search for the values enclosed by {braces} and replace them with information for your course.

```
Subject: Earn an edX verified certificate for {course name}!

Dear students,

Interested in using an edX certificate to bolster a college application or to
advance your career? With an edX verified certificate, you can demonstrate to
colleges, employers, and colleagues that you successfully completed a
challenging edX course, while helping to support the edX mission.

We would like to remind you that {date} is the last day to register for a
verified certificate in {course name}. Registering for a certificate is easy!
Just go to this course on your edX dashboard and click "Challenge Yourself".

Good luck!

{name} and the {course number} staff
```

### 12.6.11 Weekly Highlights

Sending a weekly email to students can be a great way to keep them engaged and provide encouragement. At the end of each week you might send students an email that summarizes the content covered, and reminds students about

upcoming assessments or milestones in the course. Optionally, to encourage participation in the discussion forums, you might also highlight particularly interesting or important discussions, and provide links to the discussion topics.

You can use this template as a starting point for designing your own message, omitting the discussion highlights if they are not appropriate for your course (the example discussion highlights are from a course about urban solutions to the global water crisis). Search for the values enclosed by {braces} and replace them with information for your course.

Subject: {Course Name} Week 1 Highlights

We hope you all had a great week! Below, we have provided links to some exciting discussions that have been going on, and a Q&A video with {Professor} that recaps some of the questions that have come up this week.

We'd also like to remind you to take this week's quiz by {date} at {time} UTC. The next module will be available on {Time and Date}.

{Link to Video}

Here are a few highlights from the discussion forum this week. Please join us online and keep the conversation going!

- \* There has been quite a debate over whether urban stream restoration is possible and what types of restoration are desirable. How can we improve restoration practice and its outcomes? {Link to the Discussion}
- \* Please continue to share your stories of urban stream restoration - there are many great examples here of what is possible! {Link to the Discussion}

See you next week,  
{name} and the {course number} staff

## 12.6.12 Mid-Course Encouragement

While your course is running, you can send messages to promote community, remind students of upcoming due dates, and address any recurring issues.

This example gives students guidance on how to keep up with the course schedule and encourages contributions to the discussions. You may want to send out more than one message while the course is running. You can use this template as a starting point for your own messages; search for the values enclosed by {braces} and replace them with information for your course.

Subject: {course name} Announcements

Dear students,

We hope that you are learning a lot in {course number}! Remember that problem set {number} is due on {date} at {time} UTC. You can always check the schedule {add link} on the Course Info page to plan ahead.

The contributions to the course discussions have been amazing. You'll also see on the Course Info page that we have made several of you community TAs to thank you for your thoughtful contributions. Keep those conversations going!

We have a few additional announcements.

- \* Week {number} on {subject} is now available on the Courseware page.

```
* Problem set {number} is also available. It is due on {date} at {time} UTC.

* Remember that the due dates for problem sets and exams are in UTC (the GMT
  time zone). See the current UTC time here {add link}. Please convert the
  times given to your own time zone!
```

Wishing you continued success in the course,

{name} and the {course number} staff

### 12.6.13 Mid-Course Event

Before an exam or other significant course event, messages can provide practical information about the exam, communicate expectations regarding conduct, and also encourage students to continue working toward course completion. This example lets students know:

- How long they have to complete the exam, and when they can see answers to questions.
- How to communicate any errors or other issues found during the exam to the course staff.
- Whether the course discussions will be open or closed during the exam. (In the example that follows, the discussions will remain **open**.)
- What constitutes an honor code violation.
- What technical limitations, if any, are imposed by external tools such as graders.

Be sure to search for the values enclosed by {braces} and replace them with information for your course.

```
Subject: {course number} Exam Info
```

```
Hello {course name} student,
```

```
Great job working through week {number}! As you know, the {course number}
exam is next week. If you missed a problem set, you can still earn a
certificate. Each problem set is worth only {number}% of the overall grade,
but this exam is worth {number}%.
```

```
Please read this important information about the exam before you begin taking
it.
```

- ```
* The exam starts on {date} at {time} UTC and must be finished by {date} at
  {time} UTC. Plan your schedule accordingly.

* Be sure that you know what time the UTC deadline is in your time zone. See
  the current UTC time {add link}. No extensions will be given.

* The exam is not timed. You can start, stop, and come back to it until the
  deadline.

* Each exam question allows only one answer submission. If you accidentally
  click "Check", that problem cannot be reset for you.

* The exam covers everything (video lectures, reading, and problem sets) from
  weeks {number}-{number}. If you missed any of these materials, you will
  want to review them before you take the exam.

* You can use the textbook and the Internet to clarify your knowledge of exam
  topics, as long as you are not deliberately looking up answers to exam
```

questions.

- \* Course discussions will remain open during the exam, but anyone who posts an answer to an exam question will be violating the honor code and risk being removed from the class, forfeiting the certificate.
- \* If you need to alert the staff to an issue with the exam while the exam is open, add a post to the General discussion topic and include [EXAM] in the subject line.
- \* Check the Course Info page periodically. It is the fastest way the staff has to communicate any delays, corrections, or changes.

Good luck!

{name} and the {course number} staff

### 12.6.14 Technical Issue

In the event of an unanticipated system failure, a message can both alert students to the problem and reassure them that the issue is either resolved or being addressed. The message can also provide information about any changes made to the course as a result.

Technical issues can arise during a course for many different reasons, so this example is likely to need revision to apply to an issue that you encounter. Keep in mind that to reassure the students who are affected by the problem, the message should have a positive tone, and calmly and briefly identify the problem, the status of its solution, and any after effects.

Dear students,

We've encountered a technical problem with {video, assignment, etc. name}.  
{We are working to resolve it now. / This issue has been fixed.}

As a result of this issue, we have {extended the deadline for / rescored}  
this assignment so that it will not affect your grade.

Thanks for your patience, and we look forward to continuing the course with you.

{name} and the {course number} staff

### 12.6.15 Course Farewell and Certificates

In the last few days before your course ends, a message can direct students to a course survey, answer questions about certificates, and provide information about future access to course materials. Be sure to replace values enclosed by {braces} with information for your course.

Subject: {course number} Final Remarks

Dear students,

Thank you for making {course number} so much fun these last few months! We had a great time getting to know you through the course discussions. We appreciate the effort that you put into this course, and we hope that you enjoyed learning {subject} through edX. With or without a certificate, you

should be proud of your accomplishments.

- \* Please take a few minutes to answer the exit survey, now available under Courseware. We will use your responses to improve the course in the future.
- \* If you qualify for a certificate (overall score {number}% or higher), the edX dashboard will include a link to your certificate in the near future. While you may see the link in a few days, it can take up to two weeks edX to generate all of the course certificates.
- \* As an enrolled student, you will have access to the lecture videos even after the course ends. The problem sets and exams will be removed from the course when it is archived.
- \* The {course number} discussions close on {date} at {time} UTC. You will not be able to add to the discussions after that time, but you will be able to continue viewing all of the conversations that took place during the course.

We hope that you share what you learned in {course number} with your colleagues, friends, and family.

Good luck on the final exam and beyond!

{name} and the {course number} staff

### 12.6.16 New Course Run Announcement

When you prepare a course for a new run, you can use the bulk email feature in its previous run (or runs) to inform an engaged and knowledgeable audience: your former students. Announcing a new run to students of an earlier run gives you the opportunity to highlight key aspects of the course, such as the quality and variety of its discussions, or the global interest and relevance of the subject, as demonstrated by past enrollment. You can also reveal new features or content that have been added to the new course run. By emphasizing the value of the course, you get people thinking and talking about their experiences, build excitement, and encourage re-enrollment.

This message template offers students who did not complete the course, or who did not previously choose the verified certificate track, the opportunity to do so. It also invites students to share the course with colleagues and friends.

When preparing a message from this template, search for values enclosed by {braces} and replace them with information that applies to your course.

Subject: Announcing a new run of {course name}

Hello {course number} learners,

The next run of {course number} {course name} begins on {date}! We are glad to share this news with you, the students who made the earlier run{s} of {course number} so successful.

{Success story from the previous run.}

{New content or features for the upcoming run.}

Perhaps you want to share the {course name} experience with a friend or colleague, earn an ID-verified certificate of achievement, or work through course content that you weren't able to complete before. When {course number} is offered in {time frame}, we welcome you to join the community of learners

again.

To learn more and to enroll, visit the {course name} page {add link}.

We hope to see you in the course,

The {course number} Staff

## 12.7 Using the Course Wiki

Wikis provide a way for course staff and students to access, share, and collaboratively edit information both about, and for, your course.

Every course has a wiki that you can set up in a way appropriate for your course. You can influence how students (and staff) use it by *seeding the wiki* with specific content, by explaining how you want it to be used at the beginning of the course, and by providing clear instructions and guidelines for its use.

Common uses for the course wiki might be:

- Sharing answers to course FAQs and collecting new FAQs.
- Sharing editable course information, such as download and installation instructions for software required for the course
- Providing shared access to student-created resources, perhaps as part of a collaborative exercise.
- Sharing errata for the course.
- Collecting suggestions for future runs of the course.

As students and staff create and edit wiki articles, they contribute to a repository of information about your course that can be immediately useful to other students, or useful for you and your course team as you develop other courses or future runs of the same course.

The wiki for each course is a “child” wiki of the edX-wide wiki. From within any course wiki, clicking the top level **Wiki** link in the breadcrumb trail at the top of the page takes you to the edX-wide wiki.

### 12.7.1 Managing the Course Wiki

Keep these points in mind as you design the wiki for your course:

- Be clear about the purpose for the wiki or for different parts of the wiki. For example, are some parts of the wiki only for disseminating information? If that is the case, then make sure that only your course team has write access for those articles.
- Decide whether some parts of the wiki are intended for student collaboration or student input. Make sure that students are able to create and edit wiki articles in those sections, and use text to clearly indicate to students that these pages can be edited.
- Think about the different tasks that will be performed by people in different roles. Typically you want your course team to have some privileges that students do not have. For example, course staff can delete wiki articles, but students cannot.

Course staff can perform these tasks to manage the wiki:

- *Show or Hide the Wiki*
- *Control Wiki Access*

- [Seed the Wiki](#)
- [Lock a Wiki Article](#)
- [Delete a Wiki Article](#)
- [Purge a Wiki Article](#)
- [Restore a Deleted Wiki Article](#)

All users, including students, can perform the following tasks, depending on the permissions that you set for an article:

- [Add a Wiki Article](#)
- [Edit a Wiki Article](#)
- [Manage Versions of a Wiki Article](#)
- [Search for Wiki Articles](#)

### 12.7.2 Showing or Hiding the Wiki

When you create a course, a wiki is included by default, and a **Wiki** tab is visible at the top of the course page. If you do not want to use the course wiki, you can hide the **Wiki** tab at the top of the course.

Follow these steps to show or hide the wiki in the course tabs.

1. Open your course in Studio.
2. Select **Content**, then **Pages**.
3. Click the eye icon in the **Wiki** row. The **Wiki** tab is hidden when the eye icon has a slash through it. You can show the **Wiki** tab again by clicking the eye icon.

When you hide the wiki in your course, any existing articles remain in the edX- wide wiki, but the **Wiki** tab is removed from your course pages.

### 12.7.3 Controlling Access to the Wiki

You can control access to the wiki in various ways: by changing access to the wiki as a whole, by changing the read/write permissions settings of articles within the wiki, or by locking articles.

To change access to the course wiki:

1. Open your course in Studio.
2. Select **Settings**, then **Advanced Settings**.
3. Scroll down to the **Allow Public Access to Wiki** field. This Boolean setting is set to False by default, meaning that only course team members and enrolled students can see the course wiki. If you change the value of this field to True, then any registered edX user can access the course wiki, even if they are not enrolled in your course. However, public users would have to explicitly navigate to your wiki via the edX-wide wiki structure, or a link that has been provided to them.

To modify viewing or editing permissions for specific groups of users by article, see [Setting Permissions for Wiki Articles](#).

To lock an article and prevent further editing, see [Locking a Wiki Article](#).



## 12.7.4 Setting Permissions for Wiki Articles

To prevent certain groups of users from being able to add or edit articles, you need to modify the read/write permissions for articles. For example, as a course instructor, you likely want to prevent students from creating wiki articles at the top level, so you should remove write access to course-level wiki articles for most users. (Top-level wiki articles are children of the edX-wide wiki, and cannot be found within the course wiki).

To modify the permissions for wiki articles, follow these steps.

1. View the live version of your course.
2. Click **Wiki**.
3. Navigate to the article whose permissions you are modifying, then click **Settings**.
4. In the **Permissions** section of the **Settings** page, select or clear the checkboxes for read or write access for **Group** or **Other**.
5. At the bottom of the page, click the **Save changes** button for the **Permissions** section.

Note that there are two different **Save changes** buttons, one near the top of the page for the **Notifications** section, and one at the bottom of the page for the **Permissions** section. If you are modifying permissions, make sure you click the **Save changes** button at the bottom of the page for your changes to be saved.

### Groups Used in Wiki Permissions

There are three groups for each course, managed by adding users to these groups on the **Membership** page of the Instructor Dashboard:

- Beta testers (by default there are no beta testers until you add them)
- Instructors (by default, the course author is always in the instructor group)
- Staff (these are course team members)

The permissions for the **Others** group apply to users who are not in the three course groups, including students.

## 12.7.5 Seeding the Wiki

To ensure that students get the most out of your course wiki, design the wiki space before the course starts by seeding the course wiki with articles that give it the desired structure.

For example, you could create wiki articles to mirror the course outline. At the top level, you could provide a course outline, FAQs, and links to the main articles for each section. In the child articles for each section, you could provide information specific to the units and components in that section, and a page for students to share their feedback and experiences.

## 12.7.6 Adding a Wiki Article

When you add an article to the wiki, be aware of what level you are currently viewing, to make sure that you add your new article to the correct level in the course wiki.

To move down a level in the wiki, click the **See all children** link; to move up, click the appropriate level in the wiki breadcrumb trail links at the top of the page.

### Add Articles at the Same Level

Follow these steps to add a wiki article at your current level. If you do not have permissions to add an article, when you click the **Add Article** button, a message indicates “Permission Denied” .

1. In your course, click **Wiki**.
2. Navigate to the level where you want to add a new article.
3. Click the **Add Article** button near the top right of the page.
4. On the new article page, add a title for the page, and optionally a few keywords to create a “slug” that provides a more specific location identifier for your article.
5. Add contents to the article. You can enter plain text and use Markdown syntax to add formatting. For help with Markdown syntax, click the link to the cheat sheet at the upper right corner of the **Contents** field.
6. When you have finished entering content for your wiki article, click **Create Article**.

### Add Articles Below the Current Level

Follow these steps to add a child article to your current article. If you do not have permissions to add an article, when you click the **Add Article** button, a message indicates “Permission Denied” .

1. In your course, click **Wiki**.
2. Navigate to the level above where you want to add the new child article.
3. Click **See all children**.
4. Click the **Add Article** button under the wiki title.
5. On the new article page, add a title for the page, and optionally a few keywords to create a “slug” that provides a more specific location identifier for your article.
6. Add contents to the article. You can enter plain text and use Markdown syntax to add formatting. For help with Markdown syntax, click the link to the cheat sheet at the upper right corner of the **Contents** field.
7. When you have finished entering content for your wiki article, click **Create Article**.

### 12.7.7 Editing a Wiki Article

If you have permissions to edit an article, you see an **Edit** button and icon to the right of the article content.

Follow these steps to make changes to a wiki article.

1. In your course, click **Wiki**.
2. Navigate to the article you want to edit.
3. Click **Edit**.
4. Make your changes. For help with Markdown syntax, click the link to the cheat sheet at the upper right corner of the **Contents** field.
5. In the **Summary** field at the bottom left, below the **Contents** field, enter a short description of the changes you made. This description appears in the **Changes** list, and helps other users of the wiki understand what changes you made to the article.
6. When you have finished making edits, click **Save changes**.

## 12.7.8 Searching for Wiki Articles

A **Filter** field is available only if any level of the wiki contains multiple articles.

Enter a text string in the **Filter** field to find a list of all articles with that text string in their titles.

## 12.7.9 Managing Versions of Wiki Articles

The wiki includes a change history for each article. You can view each past version of the article, roll back to a selected earlier version of the article, or merge the current version of the article with a selected earlier version.

### View a List of Previous Versions of a Wiki Article

1. In your course, click **Wiki**.
2. Navigate to the wiki article for which you want to see the change history.
3. Click **Changes**. Previously saved versions of the current article are listed, with the most recent at the top.

### View a Previous Version of a Wiki Article

1. On the **Changes** page for your wiki, select the revision of the article that you want to view.
2. Click **Preview this revision** to see the article as it appeared after the revision was made.

### See Line by Line Changes in a Previous Version

1. On the **Changes** page for your wiki, select the revision of the article that you want to view.
2. Click the linked date, time, and author information to see the line-by-line changes made in that revision. Text that is highlighted in red has been replaced by the text that is highlighted in green below it.

### Replace a Current Version with a Previous Version

1. On the **Changes** page for your wiki, select the revision of the article that you want to roll back to.
2. Click **Switch to selected version** to replace the current version with the selected one.

### Combine a Current Version with a Previous Version

1. On the **Changes** page for your wiki, select the revision of the article that you want to merge with the current version.
2. Click **Merge selected with current** to combine the current and the selected versions.

## 12.7.10 Locking a Wiki Article

Locking a wiki article prevents further changes from being made to it. Follow these steps to lock a wiki article either after you create it, or after you make specific edits.

1. View the live version of your course.
2. Click **Wiki**.

3. Navigate to the article you want to lock, then click **Settings**.
4. In the **Permissions** section of the **Settings** page, select the **Lock article** checkbox.
5. At the bottom of the page, click the **Save changes** button for the **Permissions** section.

### 12.7.11 Deleting a Wiki Article

Only course team members can delete articles. In addition, you can only delete an article if you have permissions to edit that article. If you have the required permissions, you see a **Delete article** button at the bottom of the **Edit** page.

Follow these steps to delete an article:

1. View the live version of your course.
2. Click **Wiki**.
3. Navigate to the article you want to delete, then click **Edit**.
4. Click **Delete article**.
5. On the deletion confirmation page, select **Yes, I am sure**.
6. Optionally, also select the **Purge** checkbox. For details, see [Purging a Wiki Article](#).
7. Click **Delete article** to confirm the deletion.

### Purging a Wiki Article

When you delete and purge an article, it is completely removed from the wiki, with no option to undo the deletion. Select this option only if you are sure you will not want to restore the content.

To purge an article as you delete it, select the **Purge** checkbox on the deletion confirmation page.

### Restoring a Deleted Wiki Article

Articles that have been deleted but not purged can be restored. A link to the article remains visible at the level at which it was created.

To restore a deleted article, click the link to the article and click **Restore**.

## 12.8 Course Data

After you create a course, you can access information about it from the Instructor Dashboard. You can find:

- Identifying information for the course.
- Whether the course has started or ended.
- The defined grade cutoff for passing or failing.

Additional data about the course and its students is available from other pages in the Instructor Dashboard, and from edX Insights. You also access Insights from the Instructor Dashboard: click the link in the banner at the top of each page. For more information, see [Using edX Insights](#).

## 12.8.1 Review Course Data

To view course data:

1. View the live version of your course.
2. Click **Instructor**, then click **Course Info** if necessary.

The **Basic Course Information** section of the page that opens lists information about the course.

### BASIC COURSE INFORMATION

- Organization: **edX**
- Course Number: **edx204**
- Course Name: **2014\_Q2**
- Course Display Name: **Introduction to Data Analytics**
- Has the course started? **No**
- Has the course ended? **No**
- Grade Cutoffs: **Pass: 0.5**

## 12.8.2 Sources in Studio of the Basic Course Information

The course data that displays on the Instructor Dashboard is defined in Studio, or derived from data that you define in Studio.

- **Organization:** Specified in Studio when you create the course. Becomes part of the course URL, and cannot be changed.
- **Course Number:** Specified in Studio when you create the course. Becomes part of the course URL, and cannot be changed.
- **Course Name:** Specified in Studio when you create the course. Becomes part of the course URL, and cannot be changed. In Studio, this field is labeled **Course Run**.
- **Course Display Name:** Specified in Studio when you create the course. In Studio, this field is labeled **Course Name**.

This name can be changed in Studio (not recommended if your course is live): From the **Settings** menu select **Advanced Settings**. The value for the **Course Display Name** policy key defines the course name that appears in the LMS only.

The illustration that follows shows the information collected by Studio for a new course side-by-side with the same information in the **Basic Course Information** section of the Instructor Dashboard.

## Create a New Course (Studio)

Course Name \*

Introduction to Data Analytics

The public display name for your course.

Organization \*

edX

The name of the organization sponsoring the course. **Note: This is part of your course URL, so no spaces or special characters are allowed.** This cannot be changed, but you can set a

Course Number \*

edx204

The unique number that identifies your course within your organization. **Note: This is part of your course URL, so no spaces or special characters are allowed and it cannot be changed.**

Course Run \*

2014\_Q2

The term in which your course will run. **Note: This is part of your course URL, so no spaces or special characters are allowed and it cannot be changed.**

### BASIC COURSE INFORMATION (LMS)

- Organization: **edX**
- Course Number: **edx204**
- Course Name: **2014\_Q2**
- Course Display Name: **Introduction to Data Analytics**
- Has the course started? **No**
- Has the course ended? **No**
- Grade Cutoffs: **Pass: 0.5**

- **Has the course started:** Derived from the **Course Start Date** and the current date. This date can be changed in Studio (not recommended if your course is live): select **Settings > Schedule & Details**.
- **Has the course ended:** Derived from the **Course End Date** and the current date. This date can be changed in Studio (not recommended if your course is live): select **Settings > Schedule & Details**.
- **Grade Cutoffs:** Specified in Studio when you define the cutoff for a failing grade. Students who earn exactly the cutoff value pass the course. Grading can be changed in Studio (not recommended if your course is live): select **Settings > Grading**.

## 12.9 Student Data

You can access data about the individuals who are enrolled in your course at any time after you create the course.

For information about student data, see the following topics:

- [Guidance for Working with Personal Information](#)
- [Access Student Data](#)
- [Access Anonymized Student IDs](#)
- [Track Student Activity](#)

To supplement the student data available from the Instructor Dashboard, you can use the charts and reports that are available from edX Insights. For more information, see [Using edX Insights](#).

### 12.9.1 Guidance for Working with Personal Information

The information that edX collects from site registrants includes personal information that can be used to identify, contact, and locate individuals. This information is available to course authors for the students who are enrolled in

their courses.

Course staff should follow the policies established by their organizations and comply with the legal requirements of their locales to prevent public distribution or misuse of this information.

## **12.9.2 Access Student Data**

You can download data about the students who are currently enrolled in your course in a CSV (comma-separated values) file. For courses that have fewer than 200 students enrolled, you can also view data for enrolled students on the Instructor Dashboard.

### **Student-Reported Data**

When students register with edX, they select a public username and supply information about themselves. Most of this information is optional, so not all of the students who are enrolled in your course provide it.

### Create your own edX account below

Required fields are noted by bold text and an asterisk (\*).

**E-mail \***

  
**Full Name \***

Needed for any certificates you may earn

**Public Username \***

  
Will be shown in any discussions or forums you participate in (cannot be changed later)

**Password \***

**Country \***

Highest Level of Education Completed

Gender

Year of Birth

Mailing Address

Please share with us your reasons for registering with edX

Students then enroll in as many individual courses as they choose, which enrolls them in each selected course.

You can access this self-reported information for all of the students who are enrolled in your course:

- username
- name



- email
- year\_of\_birth
- gender
- level\_of\_education
- mailing\_address
- goals

The student data that is available to course staff always reflects the set of live, current enrollments. Students can enroll in your course throughout the defined enrollment period, and they can unenroll from a course at any time. Students can also change their email addresses and full names at any time. As a result, you may want to download student data periodically to gain insights into how the student population changes over time.

---

**Note:** In the future, edX may also request that students select a language and location. This data is not collected at this time.

---

### Download or View Student Data

You can download a report of student data to learn about the individuals who are enrolled in your course. In addition to the self-reported data collected at registration, this report includes the user account ID numbers that edX assigns to each registrant. For courses that include student cohorts, this report includes the cohort group that is assigned to each student.

When you choose to download student data, a process starts on the edX servers. The number of students enrolled in your course, and whether your course has the cohort feature enabled, affect how long this process takes. You can download a report of student profile information in a CSV (comma-separated values) file after the process is complete.

For courses with fewer than 200 students enrolled, you also have the option to view student data on the Instructor Dashboard.

---

**Note:** In addition to the data for enrolled students, data for the course staff is included in the file or display.

---

To download student data:

1. View the live version of your course.
2. Click **Instructor**, then click **Data Download**.
3. To download data about enrolled students in a CSV file, click **Download profile information as a CSV**.

A status message indicates that report generation is in progress. This process can take some time to complete, but you can navigate away from this page and do other work while it runs.

To track the progress of the report process, reload the page in your browser and scroll down to the **Pending Instructor Tasks** section.

4. To open or save a student data report, click the `{course_id}_student_profile_info_{date}.csv` file name at the bottom of the page.

All student-supplied data is included in this file without truncation.

To view student data:

---

**Note:** This option is available only for courses with an enrollment of less than 200.

---

1. View the live version of your course.
2. Click **Instructor**, then click **Data Download**.
3. To display data about enrolled students, click **List enrolled students' profile information**.

A table of the student data displays, with one row for each enrolled student. Longer values, such as student goals, are truncated.

| List enrolled students' profile information |          |      |       |          |          |            |        |                   |                 |       |
|---------------------------------------------|----------|------|-------|----------|----------|------------|--------|-------------------|-----------------|-------|
| User ID                                     | Username | Name | Email | Language | Location | Birth Year | Gender | Level of Educa... | Mailing Address | Goals |
|                                             |          |      |       |          |          |            |        |                   |                 |       |
|                                             |          |      |       |          |          |            |        |                   |                 |       |

For courses that have the cohorts feature enabled, this report also includes a Cohort column with each student's assigned cohort group.

---

**Note:** The columns for language and location are included in this report for backward compatibility only. This data is no longer collected during student registration.

---

### 12.9.3 Access Anonymized Student IDs

Some of the tools that are available for use with the edX platform, including external graders and surveys, work with anonymized student data. If it becomes necessary for you to deanonymize previously anonymized data, you can download a CSV file to use for that purpose.

To download a file of assigned user IDs and anonymized user IDs:

1. View the live version of your course.
2. Click **Instructor**, then click **Data Download**.
3. Click **Get Student Anonymized IDs CSV**.

You are prompted to open or save the {course-id}-anon-id.csv file for your course. This file contains the user ID that is assigned to each student at registration and its corresponding edX-wide anonymized user ID and course specific anonymized user ID. Values are included for every student who ever enrolled for your course.

To research and deanonymize student data, you can use this file together with the {course\_id}\_student\_profile\_info\_{date}.csv file of student data or the {course\_id}\_grade\_report\_{date}.csv file of grades.

### 12.9.4 Track Student Activity

To monitor student activity during your course, you can review the number of students who, each week, interacted with your course. To be considered active, students must visit pages, play videos, add to discussions, submit answers to problems, or complete other course activities. The active student count is updated weekly.

To display the number of active students:

1. View the live version of your course.

2. Click **Instructor**, then click **Analytics**. The count of active students appears at the top of the page.

## 12.10 Answer Data

To review student answers to the problems in your course, you can review the answer submitted by a selected student for a specific problem, download a course-wide report of answer data, or review a histogram of student answers for a selected problem.

- *Check a Student's Answer Submission and Submission History*
- *Student Answer Distribution*
- *View a Histogram of Scores for a Single Problem*

### 12.10.1 Check a Student's Answer Submission and Submission History

For a single student and problem, you can review the exact response submitted, the number of attempts made, and the date and time of the submission. You identify the student by supplying a username.

To review a response submitted by a student:

1. View the live version of your course.
2. Click **Courseware** and navigate to the unit that contains the problem you want to review.
3. Display the problem and then click **Submission History** below the problem.
4. Enter the username for the student whose work you want to review, then click **View History** at the end of the page.

Information about the response or responses provided by the student displays.

To close the Submission History Viewer, click on the browser page outside of the viewer.

### 12.10.2 Student Answer Distribution

For certain types of problems in your course, you can download a CSV file with data about the distribution of student answers. Student answer distribution data is included in the file for problems of these types:

- Checkboxes (<choiceresponse>)
- Dropdown (<optionresponse>)
- Multiple choice (<multiplechoiceresponse>)
- Numerical input (<numericalresponse>)
- Text input (<stringresponse>)
- Math expression input (<formularesponse>)

The file includes a row for each problem-answer combination selected by your students. For example, for a problem that has a total of five possible answers the file includes up to five rows, one for each answer selected by at least one student. For problems with **Randomization** enabled in Studio (sometimes called rerandomization), there is one row for each problem-variant-answer combination selected by your students. See *Problem Settings*.

The CSV file contains the following columns:

| Column               | Description                                                                                                                                                                                                                                                                                                                                           |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ModuleID             | The internal identifier for the Problem component.                                                                                                                                                                                                                                                                                                    |
| PartID               | For a Problem component that contains multiple problems, the internal identifier for each individual problem. For a Problem component that contains a single problem, the internal identifier of that problem.                                                                                                                                        |
| Correct Answer       | 0 if this <b>AnswerValue</b> is incorrect, or 1 if this <b>AnswerValue</b> is correct.                                                                                                                                                                                                                                                                |
| Count                | The number of times that students entered or selected this answer as their most recent submission for the problem or problem variant. For problems with the number of <b>Attempts</b> set to a value greater than 1, this means that each student contributes a maximum of 1 to this count, even if the same answer is provided in multiple attempts. |
| ValueID              | The internal identifier of the answer choice for checkboxes and multiple choice problems. Blank for dropdown, numerical input, text input, and math expression input problems.                                                                                                                                                                        |
| AnswerValue          | The text label of the answer choice for checkboxes, dropdown, and multiple choice problems. The value entered by the student for numerical input, text input, and math expression input problems.                                                                                                                                                     |
| Variant              | For problems that use the <b>Randomization</b> setting in Studio, contains the unique identifier for a variant of the problem. Blank for problems that do not use the <b>Randomization</b> setting, or that use the <b>Never</b> option for this setting.                                                                                             |
| Problem Display Name | The <b>Display Name</b> defined for the problem.                                                                                                                                                                                                                                                                                                      |
| Question             | The label for accessibility that appears above the answer choices or the text entry field for the problem. In Studio's Simple Editor, this text is surrounded by two pairs of angle brackets (>>Question<<). Blank for questions that do not have an accessibility label defined.                                                                     |

Entries are sorted by the value in each column, starting with the ModuleID on the left and continuing through the columns to the right.

## Download the Student Answer Distribution Report

An automated process runs periodically on the edX servers to update the CSV file of student answer data. A link to the most recently updated version of the CSV file is available on the Instructor Dashboard.

To download the most recent file of student answer data:

1. View the live version of your course.
2. Click **Instructor**, then click **Data Download**.
3. At the bottom of the page, click the {course\_id}\_answer\_distribution.csv file name. You may have to scroll down to find this file.

## Frequently Asked Questions about the Student Answer Distribution Report

Answers to questions about the student answer distribution report follow.

### My course doesn't have a student answer distribution report. How can I generate it?

Student answer distribution reports are generated automatically, and refreshed several times each day. The {course\_id}\_answer\_distribution.csv file displays after all of the {course\_id}\_grade\_report\_{date}.csv files. Be sure to scroll to the end of the list of available reports.

**Why are some problems missing from this report?** The ones that are missing do have the problem types listed under [Answer Data](#).

This report includes only problems that at least one student has answered since early March 2014. For those problems, this report only includes activity that occurred after October 2013.

#### Why don't I see an AnswerValue for some of my problems?

For checkboxes and multiple choice problems, the answer choices actually selected by a student after early March 2014 display as described in the previous answer. Answer choices selected by at least one student after October 2013, but not selected since early March 2014, are included on the report but do not include an **AnswerValue**. The **ValueID** does display the internal identifiers, such as choice\_1 and choice\_2, for those answers.

#### Why don't I see a Question for some of my problems?

The value in the **Question** column is the accessibility label for the problem. For more information about how to set up labels for problems, see [Creating Exercises and Tools](#).

Also, for problems that use the **Randomization** setting in Studio, if a particular answer has not been selected since early March 2014, the **Question** is blank for that answer.

#### My students are saying that they answered a question, but it isn't showing up in the report. How can that be?

Only questions that have a **Maximum Attempts** setting of 1 or higher are included on the report.

#### I made a correction to a problem after it was released. How can I tell which students tried to answer it before I made the change?

Problem **Count** values reflect the entire problem history. If you change a problem after it is released, it may not be possible for you to determine which answers were given before and after you made the change.

#### Why is the same answer showing up in two different rows when I view the report in a spreadsheet?

Some spreadsheet applications can alter the data in the CSV report for display purposes. For example, for different student answers of "0.5" and ".5" Excel correctly includes the two different lines from the CSV, but displays the **AnswerValue** on both of them as "0.5". If you notice answers that appear to be the same on separate lines with separate counts, you can review the actual, unaltered data by opening the CSV file in a text editor.

#### Why are there strange characters in the report when I view it in a spreadsheet?

The CSV file is UTF-8 encoded, but not all spreadsheet applications interpret and render UTF-8 encoded characters correctly. For example, a student answer distribution report with answer values in French displays differently in Microsoft Excel for Mac than in OpenOffice Calc.

Answer Values in Microsoft Excel for Mac:

| ValueID  | AnswerValue                                               |
|----------|-----------------------------------------------------------|
| choice_0 | J'ai particip_ la discussion.                             |
| choice_0 | J'ai regard_ la vid_o: "Une focale sur la non-democratie" |
| choice_2 | le politique                                              |
| choice_0 | le pouvoir                                                |
| choice_1 | l'conomie                                                 |

Answer Values in OpenOffice Calc:

| ValueID  | AnswerValue                                               |
|----------|-----------------------------------------------------------|
| choice_0 | J'ai participé à la discussion.                           |
| choice_0 | J'ai regardé la vidéo: "Une focale sur la non-democratie" |
| choice_2 | le politique                                              |
| choice_0 | le pouvoir                                                |
| choice_1 | l'économie                                                |

If you notice characters that do not display as expected in a spreadsheet, try a different spreadsheet application such as LibreOffice or Apache OpenOffice to open the CSV file.

### Interpret the Student Answer Distribution Report

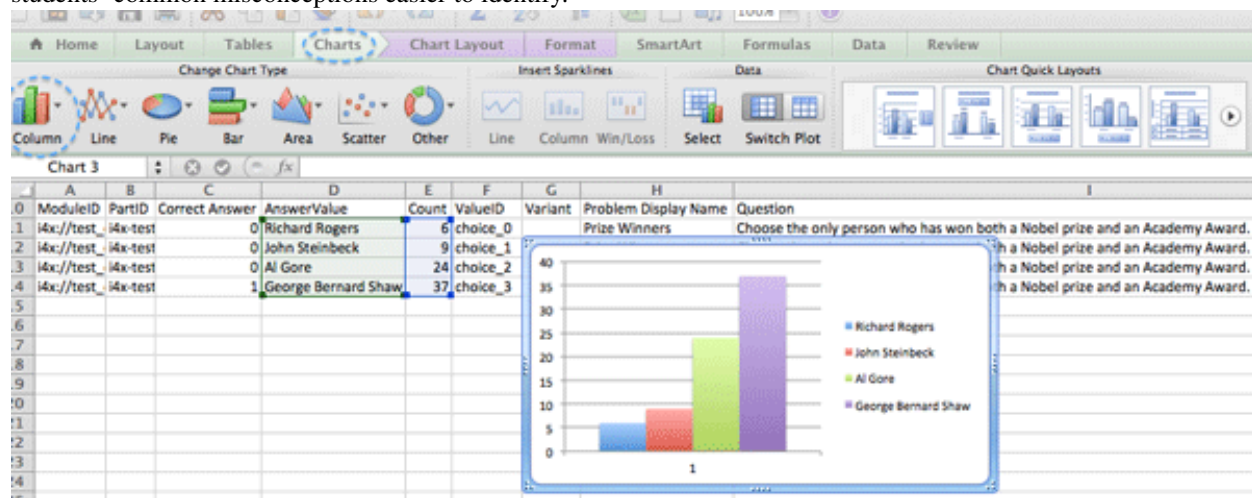
You can use the Student Answer Distribution report to review student responses to assignments, which can then help you evaluate the structure and completeness of your courseware and problem components.

As an example, you define a text input question in Studio to have a single correct answer, “Warfarin”. When you produce the Student Answer Distribution report, you verify that this answer was in fact marked correct: there is a 1 in the **Correct Answer** column for this **AnswerValue**.

| A           | B    | C              | D     | E     | F                    | G       | H                    | I                                                                                                        |
|-------------|------|----------------|-------|-------|----------------------|---------|----------------------|----------------------------------------------------------------------------------------------------------|
| Mod         | Part | Correct Answer | Count | Value | AnswerValue          | Variant | Problem Display Name | Question                                                                                                 |
| i4x://i4x-t |      | 0              | 107   |       | Coumadin             |         | Other Danger Name    | an anticoagulant that is now used to prevent thrombosis, but that originally was used to poison rodents. |
| i4x://i4x-t |      | 0              | 55    |       | Warfarin or Coumadin |         | Other Danger Name    | an anticoagulant that is now used to prevent thrombosis, but that originally was used to poison rodents. |
| i4x://i4x-t |      | 1              | 6454  |       | Warfarin             |         | Other Danger Name    | an anticoagulant that is now used to prevent thrombosis, but that originally was used to poison rodents. |
| i4x://i4x-t |      | 0              | 1     |       | Cubicin              |         | Other Danger Name    | an anticoagulant that is now used to prevent thrombosis, but that originally was used to poison rodents. |
| i4x://i4x-t |      | 0              | 3     |       | Coufarin             |         | Other Danger Name    | an anticoagulant that is now used to prevent thrombosis, but that originally was used to poison rodents. |

However, as you view the report you notice other student answers that you did not set up to be marked as correct in Studio, but that you might (or might not) also consider to be correct, such as “Warfarin or Coumadin”. The **Correct Answer** column shows that the other answers were marked incorrect (0), but for future iterations of your course you may want to revise the question or update the problem to evaluate additional variations of the answer as correct.

Many spreadsheet applications offer data visualization options, such as charts or graphs. Charts can help make your students’ common misconceptions easier to identify.



In this example, the Student Answer Distribution report is open in Microsoft Excel. To create a chart that shows how many of your students chose various answers to a multiple choice question, you move the **AnswerValue** and **Count** columns next to each other. After you click and drag to select the report cells that contain the data you want to chart, you click the Charts toolbar and then click the type of chart you want.

**Note:** Refer to the help for the spreadsheet application that you use for information on using these options. You may have to make changes to your spreadsheet, such as reordering columns. Save a copy of the file you originally downloaded as a backup before you begin.

You can adjust your course content based on common student mistakes. While most students in this example selected the correct answer, the number of incorrect answer(s) can guide future changes to the courseware.

### 12.10.3 View a Histogram of Scores for a Single Problem

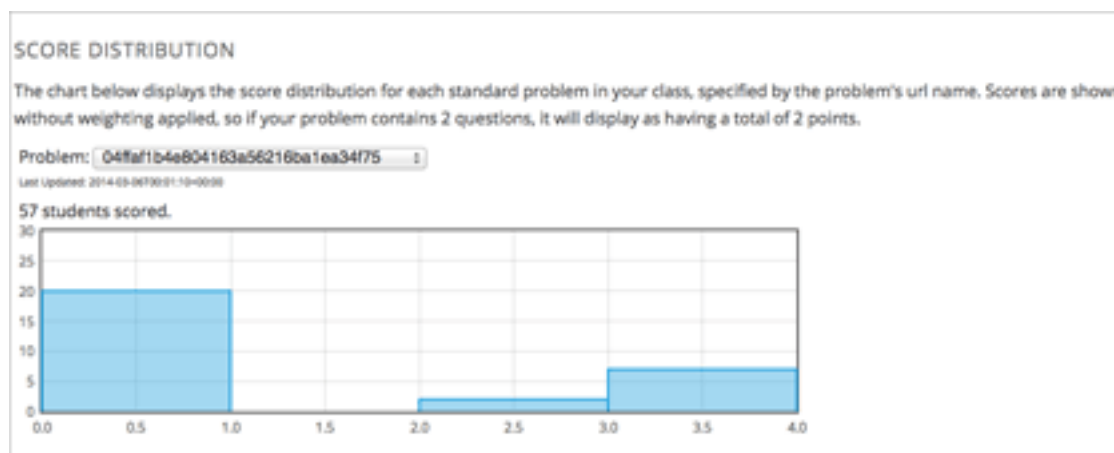
You can view a chart of the score distribution for a specified problem.

**Note:** To view the score distribution for a problem, you need its unique identifier. You can display a histogram for problems that have the `/problem/` prefix in the unique identifier. See [Find the Unique Location Identifier for a Problem](#).

To display the distribution of scores for a problem:

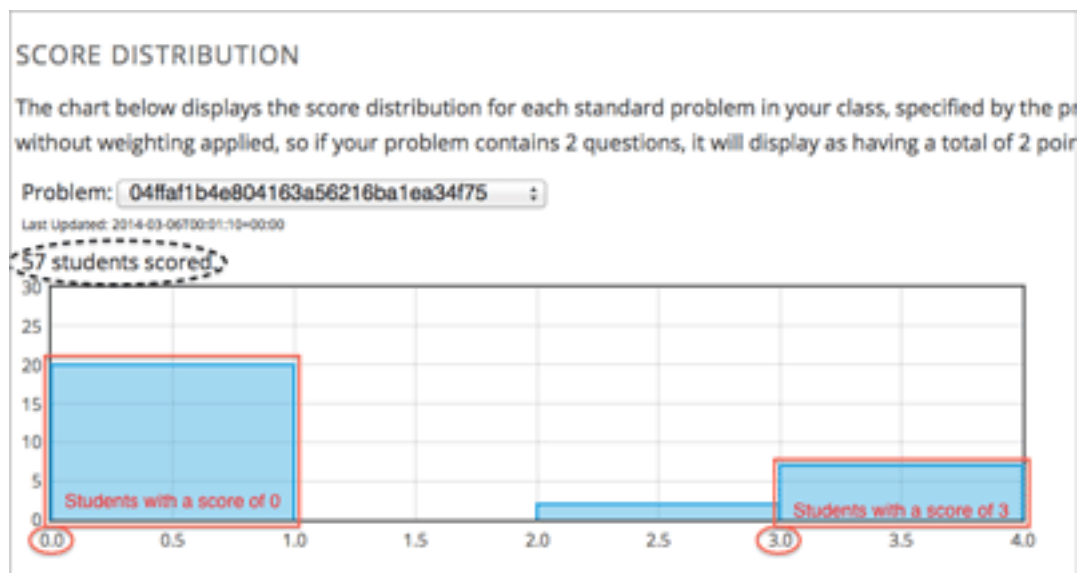
1. View the live version of your course.
2. Click **Instructor**, then click **Analytics**.
3. In the Score Distribution section, select a problem by using its unique identifier.

The **Analytics** page updates to display a histogram of scores for that problem.



#### Interpret a Score Histogram

The histogram of scores for a selected problem provides the following information.





- The x-axis indicates the number of points that students can receive for the problem, unweighted. Although decimal values are marked on the x-axis, each score is a whole number. The whole number value at the left of a plotted bar is the score that applies to it.
- The y-axis indicates the number of students who have answered and checked the problem.
- Above the graph, a number of **students scored** displays. This number indicates the total number of database records that exist for the problem: it includes not only students who have answered and checked the problem to receive a score, but also students who have opened the problem but not yet completed it.
- An automated process runs approximately weekly on the edX servers to update score histograms. This process runs less frequently than the process that updates the student answer distribution report: at certain times during a course the number of students shown in a score histogram can be quite different than the **Count** for the same problem in a student answer distribution report.

## 12.11 Student Grades and Grading

You can review information about how grading is configured for your course, and access student grades, at any time after you create the course. You can also make adjustments to student grading for a problem, for a single student or all students. For information about the grading data that you can access and the changes you can make, see the following topics:

- [Review How Grading Is Configured for Your Course](#)
- [Generate Grades for Enrolled Students \(All Courses\)](#)
- [Review Grades for Enrolled Students \(Small Courses\)](#)
- [Check the Progress of a Single Student](#)
- [Adjust Grades](#)

To review student answers to the problems in your course, you can check the answer submitted by a specified student for a selected problem, download course-wide answer data, or review a graph of all answer data for a selected problem. See [Answer Data](#).

For information about how you establish a grading policy and work with the Problem components in your course, see [Establishing a Grading Policy](#) or [Working with Problem Components](#).

### 12.11.1 Review How Grading Is Configured for Your Course

You can review the assignment types that are graded and their respective weights on the Instructor Dashboard.

You establish a grading policy for your course when you create it in Studio. While the course is running, you can view an XML representation of the assignment types in your course and how they are weighted to determine students' grades.

1. View the live version of your course.
2. Click **Instructor**, then click **Data Download > Grading Configuration**.

A list of the assignment types in your course displays. In this example, Homework is weighted as 0.3 (30%) of the grade.



```

=====
Course grader:
<class 'xmodule.graders.WeightedSubsectionsGrader'>

Graded sections:
  subgrader=<class 'xmodule.graders.AssignmentFormatGrader'>, type=Homework, category=Homework, weight=0.3
  subgrader=<class 'xmodule.graders.AssignmentFormatGrader'>, type=Midterm Exam, category=Midterm Exam, weight=0.3
  subgrader=<class 'xmodule.graders.AssignmentFormatGrader'>, type=Final Exam, category=Final Exam, weight=0.4
=====
Listing grading context for course test_doc/SB101/2014_Jan
graded sections:
[u'Midterm Exam', u'Homework']
--> Section Midterm Exam:
  Second Verse (format=Midterm Exam, Assignment=Midterm 01)
--> Section Homework:
  Line 1 (format=Homework, Assignment=HW 01)
  Dusk (format=Homework, Assignment=HW 02)
  Parsing the distinctions (format=Homework, Assignment=HW 03)
  Verse 2 (format=Homework, Assignment=HW 04)
  Line 2 (format=Homework, Assignment=HW 05)
all descriptors:
length=37

```

In Studio, you define this information by selecting **Settings > Grading**. For more information, see [Configure the Assignment Types](#).

|                                             |                                         |                                                     |
|---------------------------------------------|-----------------------------------------|-----------------------------------------------------|
| Assignment Type Name                        | Abbreviation:                           |                                                     |
| <input type="text" value="Homework"/>       | <input type="text" value="HW"/>         |                                                     |
| <small>e.g. Homework, Midterm Exams</small> | <small>e.g. HW, Midterm</small>         |                                                     |
| Weight of Total Grade                       | Total Number                            | Number of Droppable                                 |
| <input type="text" value="30"/>             | <input type="text" value="7"/>          | <input type="text" value="1"/>                      |
| <small>as a percent, e.g. 40</small>        | <small>total exercises assigned</small> | <small>total exercises that won't be graded</small> |

**Important:** Any changes that you make to the course grading policy, to graded subsections, or to graded components after the course begins will affect the student experience in the course and analysis of its data. Unavoidable changes should be announced to students, on the **Course Info** page for example, and carefully tracked for researchers.

### 12.11.2 Generate Grades for Enrolled Students (All Courses)

For any course, you can generate grades and then download a file with the results for each enrolled student.

When you initiate calculations to grade student work, a process starts on the edX servers. The complexity of your grading configuration and the number of students enrolled in your course affect how long this process takes. You can download a report of the calculated grades in a CSV (comma-separated values) file when the grading process is complete.

For courses with fewer than 200 students enrolled, you also have the option to review student grades on the Instructor Dashboard. See [Review Grades for Enrolled Students \(Small Courses\)](#).

To generate the grade report for the students who are currently enrolled in your course:

1. View the live version of your course.
2. Click **Instructor**, then click **Data Download**.
3. To start the grading process, click **Generate Grade Report**.

A status message indicates that the grading process is in progress. This process can take some time to complete, but you can navigate away from this page and do other work while it runs.

4. To track the progress of the grading process, reload the page in your browser and scroll down to the **Pending Instructor Tasks** section.

## Download Grades for Enrolled Students

After you request a grade report for your students, the result is a time-stamped CSV file that includes columns to identify each student: id, email, and username. It also includes a column for every assignment that is included in your grading configuration: each homework, lab, midterm, final, and any other assignment type you added to your course. If your course includes *cohorts* or *content experiments*, the grade report includes additional columns indicating the name of the cohort or experiment group that each student belongs to.

---

**Important:** Because this file contains confidential, personally identifiable data which may be subject to the Family Educational Rights and Privacy Act (FERPA), be sure to follow your institution's data stewardship policies when you open or save this file.

---

To download a file of student grades:

1. View the live version of your course.
2. Click **Instructor**, then click **Data Download**.
3. To open or save a grade report file, click the {course\_id}\_grade\_report\_{date}.csv file name at the bottom of the page.

---

**Note:** To prevent the accidental distribution of student data, you can only download these files by clicking the links on this page. Do not copy these links for reuse elsewhere, as they expire within 5 minutes. The links on this page also expire if the page is open for more than 5 minutes: if necessary, refresh the page to generate new links.

---

## Interpret the Grade Report

Grade reports provide a snapshot of cumulative course scores, by assignment, of every currently enrolled student.

You can open {course\_id}\_grade\_report\_{date}.csv files in a spreadsheet application to sort, graph, and compare data.

| id | email | username | grade | HW 01 | HW 02 | HW 03 | HW 04 | HW 05 | HW 06 | HW 07 | HW Avg      | Midterm     | Final |
|----|-------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------------|-------------|-------|
|    |       |          | 0.43  | 1     | 1     | 1     | 1     | 0     | 0     | 0     | 0.666666667 | 0.75        | 0     |
|    |       |          | 0.05  | 0     | 1     | 0     | 0     | 0     | 0     | 0     | 0.166666667 | 0           | 0     |
|    |       |          | 0.38  | 1     | 1     | 1     | 0.5   | 0     | 0     | 0     | 0.583333333 | 0.666666667 | 0     |
|    |       |          | 0.3   | 1     | 1     | 0     | 0     | 0     | 0     | 0     | 0.333333333 | 0.666666667 | 0     |
|    |       |          | 0.13  | 0     | 0     | 0     | 0.5   | 0     | 0     | 0     | 0.083333333 | 0.333333333 | 0     |

The CSV file contains one row of data for each student, and columns that provide the following information.

- Student identifiers, including an internal **id**, **email** address, and **username**.
- The overall **grade**, with the total score a student has currently attained in the course. This value is expressed as a decimal: a student with a grade of 0.65 has earned 65% of the credit in the course, and a student with a grade of 1 has earned 100%.
- Each {assignment type} {number} defined in your grading configuration, with the score a student attained for that specific assignment. For example, column HW 03 shows the scores for the third homework assignment.
- An {assignment type} **Avg** with each student's current average score for that assignment type: for example, HW Avg.
- If *cohorts* are used in the course, a **Cohort Name** column indicates the name of the cohort that each student belongs to, including the default cohort. The column is empty for students who are not yet assigned to a cohort.
- If *content experiments* are used in the course, an **Experiment Group** column indicates the name of the experiment group that each student belongs to within a group configuration. The column heading includes the name

of the group configuration. The column is empty for students who are not assigned to an experiment group. If you have more than one experiment group configuration in your course, you see one column for each group configuration.

**Note:** The grade reports do not include information about individual questions within the assignments, or include student answer distributions.

### 12.11.3 Review Grades for Enrolled Students (Small Courses)

For courses with enrollments of up to 200 students, you can review a gradebook on the Instructor Dashboard.

1. View the live version of your course.
2. Click **Instructor**, then click **Student Admin**. For courses with fewer than 200 students enrolled, this tab includes a **Student Gradebook** section.
3. Click **View Gradebook**. Grades are calculated and the gradebook displays.

Gradebook

| Search students | HW 01 | HW 02 | HW 03 | HW 04 | HW 05 | HW 06 | HW 07 | HW Avg | Midterm |
|-----------------|-------|-------|-------|-------|-------|-------|-------|--------|---------|
| [Student Name]  | 17    | 100   | 0     | 0     | 0     | 0     | 0     | 19     | 67      |
| [Student Name]  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0       |
| [Student Name]  | 0     | 100   | 0     | 0     | 0     | 0     | 0     | 17     | 0       |
| [Student Name]  | 100   | 100   | 100   | 100   | 0     | 0     | 0     | 67     | 100     |
| [Student Name]  | 17    | 100   | 100   | 100   | 0     | 0     | 0     | 53     | 100     |
| [Student Name]  | 0     | 0     | 0     | 50    | 0     | 0     | 0     | 8      | 33      |

The gradebook includes the following features.

- You can click the student username in each row to review that student's **Course Progress** page. See [Check the Progress of a Single Student](#).
- There is a column for each **{assignment type} {number}** defined in your grading configuration, with the scores your student attained for that specific assignment.  
The gradebook does not have a scroll bar, but it is draggable: to see columns that are hidden at one side of the grade book, click the gradebook and then drag left or right to reveal those columns.
- For assignment types that include more than one assignment, an **{assignment type} Avg** column displays each student's current average score for that assignment type.
- The **Total** column presents the total score a student has currently attained in the course. This value is expressed as a whole number: a student with a grade of 65 has earned 65% of the credit in the course, and a student with a grade of 100 has earned 100%.
- If cohorts are used in the course, a **Cohort Name** column indicates the name of the cohort that each student belongs to, including the default cohort. The column is empty for students who are not yet assigned to a cohort.
- If content experiments are used in the course, an **Experiment Group** column indicates the name of the experiment group that each student belongs to within a group configuration. The column heading includes the name

of the group configuration. The column is empty for students who are not assigned to an experiment group. If you have more than one experiment group configuration in your course, you see one column for each group configuration.

- To filter the data that displays you can use the **Search students** option. This option is case-sensitive and limits the rows shown in the gradebook to usernames that match your entry.

### 12.11.4 Check the Progress of a Single Student

To check a single student's progress, you can locate the specific row on the grade report or review the student's **Progress** page. The **Progress** page includes a chart that plots the score the student has earned for every graded assignment and the total grade as of the current date. Below the chart, each assignment and the score attained are listed.

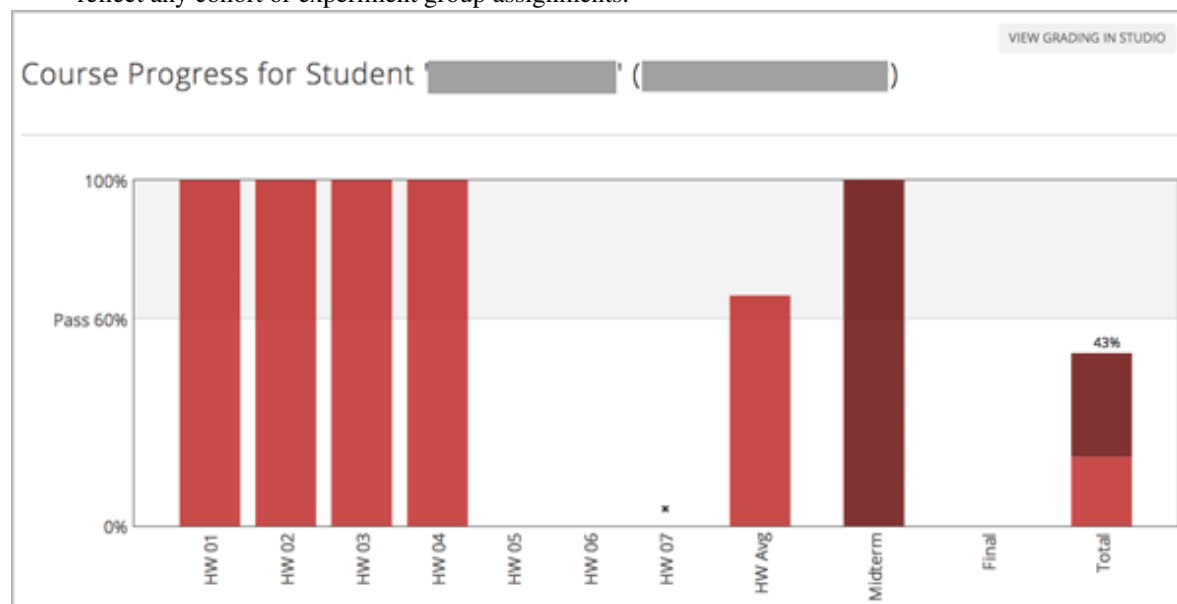
To review a student's **Progress** page, you supply an email address or username. You can check the progress for students who are either enrolled in, or who have unenrolled from, the course.

Students can view a similar chart and assignment list (of their own progress only) when they are logged in to the course. See *A Student's View of Course Progress*.

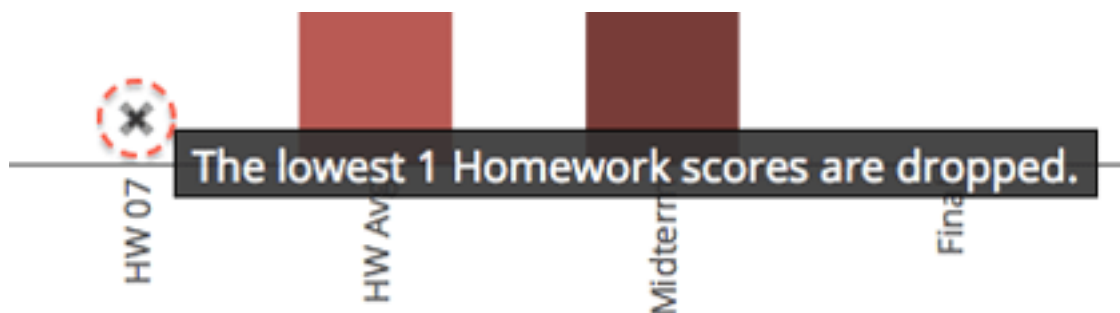
To view the **Progress** page for a student:

1. View the live version of your course.
2. Click **Instructor**, then click **Student Admin**.
3. In the Student-Specific Grade Inspection section, enter the student's email address or username.
4. Click **Student Progress Page**.

The **Progress** page for the student displays a chart with the grade for each homework, lab, midterm, final, and any other assignment types in your course, and the total grade earned for the course to date. The chart does not reflect any cohort or experiment group assignments.



To learn more about a particular assignment, move the cursor onto the value in the chart. A brief description displays.



Below the chart, subsections are listed on the left and the units that contain assignments are listed on the right. The student's individual problem scores display.

|              |                                     |
|--------------|-------------------------------------|
| First stanza | Line 1 (1/1) 100%                   |
|              | Homework                            |
|              | Problem Scores: 1/1                 |
|              | Dusk (1/1) 100%                     |
|              | Homework                            |
|              | Problem Scores: 1/1                 |
|              | Parsing the distinctions (5/5) 100% |
|              | Homework                            |
|              | Problem Scores: 5/5                 |
|              | Second Verse (3/4) 75%              |
|              | Midterm Exam                        |
|              | Problem Scores: 1/1 0/1 1/1 1/1     |

### Interpret the Student Progress Page

The chart of a student's scores on the **Progress** page and the rows of data on the grade report present assignment scores in a similar order. However, the total, cumulative score earned for the course is placed in a different position on the **Progress** page.

In this example grade report, the indicated student has a current grade of 0.43 (43%).

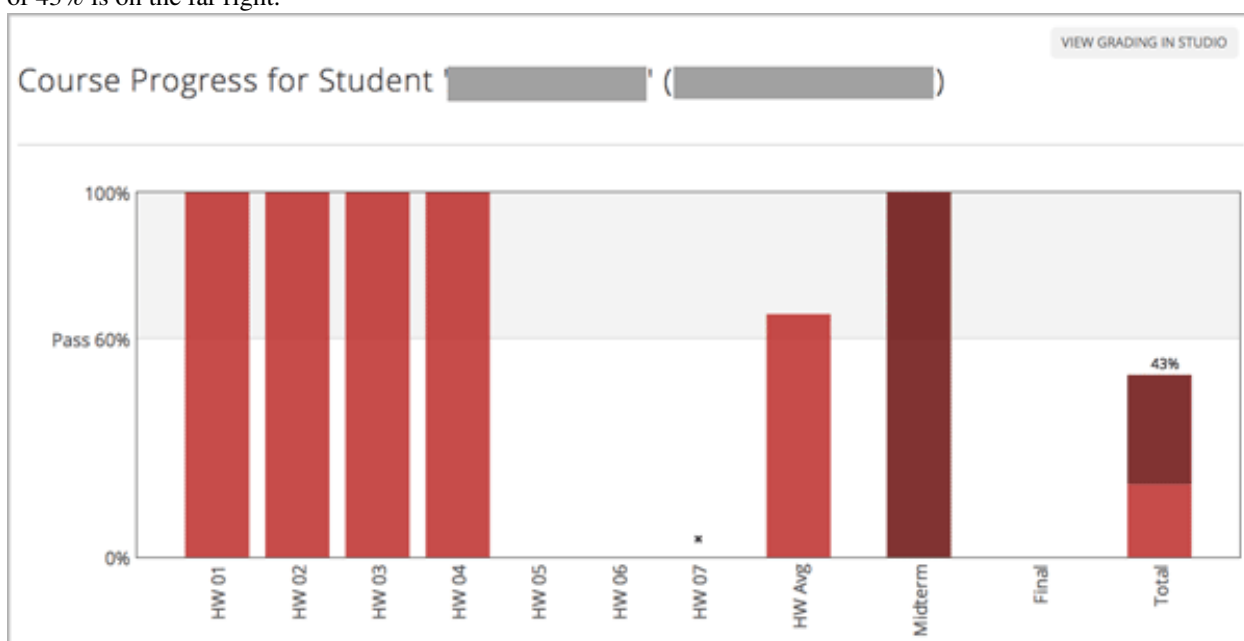
| id | email | username | grade | HW 01 | HW 02 | HW 03 | HW 04 | HW 05 | HW 06 | HW 07 | HW Avg     | Midterm    | Final |
|----|-------|----------|-------|-------|-------|-------|-------|-------|-------|-------|------------|------------|-------|
|    |       |          | 0.43  | 1     | 1     | 1     | 1     | 0     | 0     | 0     | 0.66666667 | 0.75       | 0     |
|    |       |          | 0.05  | 0     | 1     | 0     | 0     | 0     | 0     | 0     | 0.16666667 | 0          | 0     |
|    |       |          | 0.38  | 1     | 1     | 1     | 0.5   | 0     | 0     | 0     | 0.58333333 | 0.66666667 | 0     |
|    |       |          | 0.3   | 1     | 1     | 0     | 0     | 0     | 0     | 0     | 0.33333333 | 0.66666667 | 0     |
|    |       |          | 0.13  | 0     | 0     | 0     | 0.5   | 0     | 0     | 0     | 0.08333333 | 0.33333333 | 0     |

- On each of the first four homework assignments the student scored 1 (100%), but currently has a 0 (0%) on each of the remaining three assignments.

Notice, however, that the student's current average score for homework assignments is listed as 0.66666667 (67%): in this course, the homework assignment with the lowest score is dropped, so this average is over six assignments rather than all seven.

- The student has a score of 0.75 (75%) on the midterm, and a score of 0 (0%) on the final.

On the student's **Progress** page, you see the same information graphically represented; however, the student's "total" of 43% is on the far right.

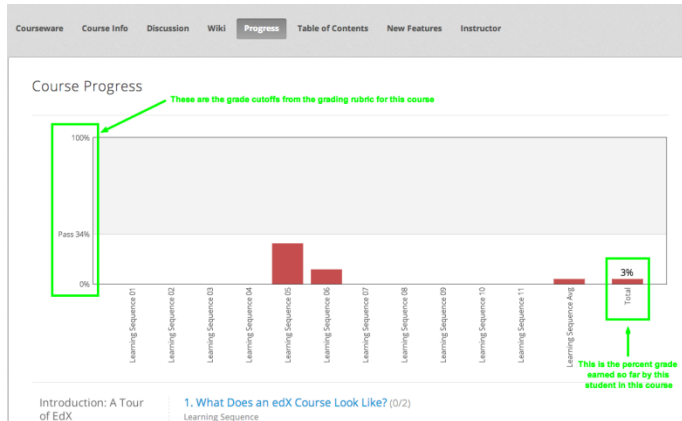


The chart on the **Progress** page includes y-axis labels for the grade ranges defined for the course. In this example, Pass is set to 60%, so at the end of the course students with a grade of 0.60 or higher can receive certificates.

**Note:** Student scores on the **Progress** page are a snapshot of the current state of the problem score database. They can, at times, be out of sync with actual problem scores. For example, asynchronicities can occur if the weight of a live problem was changed during an assignment, and not all students have resubmitted their answers for that problem.

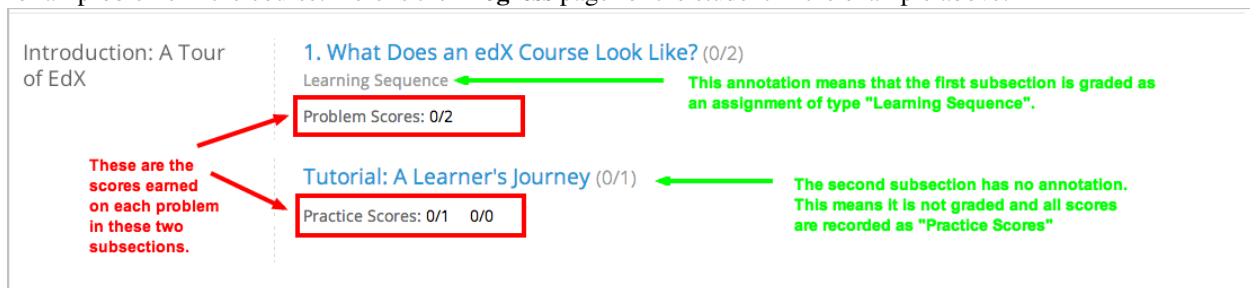
### A Student's View of Course Progress

Students can check their progress by clicking **Progress** in the course navigation bar. The student's progress through the graded part of the course displays at the top of this page, above the subsection scores. Progress is visualized as a chart with entries for all the assignments, total percentage earned in the course so far, and percent needed for each grade cutoff. Here is an example of a student's progress through edX101.



The student can see from this page that edX101 was graded as a Pass/Fail course with a cutoff of 34% and that the grading rubric contained one assignment type, called Learning Sequence, consisting of 11 assignments total. Furthermore, this particular student has only submitted correct responses to two assignments, and that her current total percent grade in the course is 6%. By hovering over each progress bar, the student can get further statistics of how much each assignment was counted as.

Further down on the **Progress** page is a list of all the subsections in the course, with the scores recorded for the student for all problems in the course. Here is the **Progress** page for the student in the example above:



Note that point scores from graded sections are called “Problem Scores”, while point scores from ungraded sections are called “Practice Scores”.

### 12.11.5 Adjust Grades

If you modify a problem or its settings after students have attempted to answer it, student grades can be affected. For information about making changes to problems in Studio, see [Modifying a Released Problem](#).

To recalculate the grades of affected students when a correction or other change is unavoidable, you can make the following adjustments.

- Rescore the submitted answer to reevaluate student work on the problem. You can rescore a problem for a single student or for all of the students enrolled in the course. See [Rescore Student Submissions for a Problem](#).
- Reset the number of times a student has attempted to answer the problem to zero so that the student can try again. You can reset the number of attempts for a single student or for all of the students enrolled in the course. See [Reset Student Attempts for a Problem](#).
- Delete a student’s database history, or “state”, completely for the problem. You can only delete student state for one student at a time. For example, you realize that a problem needs to be rewritten after only a few of your students have answered it. To resolve this situation, you rewrite the problem and then delete student state for the affected students only so that they can try again. See [Delete Student State for a Problem](#).

To make adjustments to student grades, you need the unique location identifier of the modified problem. See [Find the Unique Location Identifier for a Problem](#).

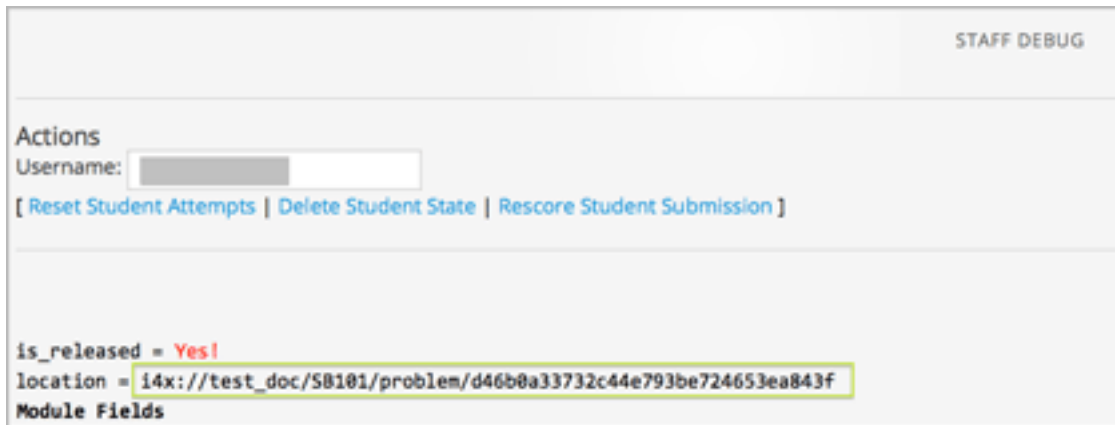
### Find the Unique Location Identifier for a Problem

When you create each of the problems for a course, edX assigns a unique location to it. To make grading adjustments for a problem, or to view data about it, you need to specify the problem location.

To find the unique location identifier for a problem:

1. View the live version of your course.
2. Click **Courseware** and navigate to the unit that contains the problem.
3. Display the problem and then click **Staff Debug Info**.

Information about the problem displays, including its **location**.



4. To copy the location of the problem, select the entire location, right click, and choose **Copy**.

To close the Staff Debug viewer, click on the browser page outside of the viewer.

### Rescore Student Submissions for a Problem

Each problem that you define for your course includes a correct answer, and may also include a tolerance or acceptable alternatives. If you decide to make a change to these values, you can rescore any responses that were already submitted. For a specified problem, you can rescore the work submitted by a single student, or rescore the submissions made by every enrolled student.

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**Note:** You can only rescore problems that have a correct answer entered in edX Studio. This procedure cannot be used to rescore problems that are scored by an external grader.

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### Rescore a Submission for an Individual Student

To rescore a problem for a single student, you need that student's username or email address.

1. View the live version of your course.
2. Click **Courseware** and navigate to the component that contains the problem you want to rescore.
3. Display the problem, then click **Staff Debug Info**. The Staff Debug viewer opens.
4. In the **Username** field, enter the student's email address or username, then click **Rescore Student Submission**. A message indicates a successful adjustment.
5. To close the Staff Debug viewer, click on the browser page outside of the viewer.



### Rescore Submissions for All Students

To specify the problem you want to rescore, you need its location identifier. See *Find the Unique Location Identifier for a Problem*. To rescore a problem:

1. View the live version of your course.
2. Click **Instructor**, then click **Student Admin**.
3. In the **Course-Specific Grade Adjustment** section of the page, enter the unique problem location, and then click **Rescore ALL students' problem submissions**.
4. When you see a dialog box that notifies you that the rescore process is in progress, click **OK**.

This process can take some time to complete for all enrolled students. The process runs in the background, so you can navigate away from this page and do other work while it runs.

6. To view the results of the rescore process, click either **Show Background Task History for Student** or **Show Background Task History for Problem**.

A table displays the status of the rescore process for each student or problem.

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**Note:** You can use a similar procedure to rescore the submission for a problem by a single student. You work in the **Student-Specific Grade Adjustment** section of the page to enter both the student's email address or username and the unique problem identifier, and then click **Rescore Student Submission**.

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### Reset Student Attempts for a Problem

When you create a problem, you can limit the number of times that a student can try to answer that problem correctly. If unexpected issues occur for a problem, you can reset the value for one particular student's attempts back to zero so that the student can begin work over again. If the unexpected behavior affects all of the students in your course, you can reset the number of attempts for all students to zero.

#### Reset Attempts for an Individual Student

To reset the number of attempts for a single student, you need that student's username or email address.

1. View the live version of your course.
2. Click **Courseware** and navigate to the component that contains the problem you want to reset.
3. Display the problem, then click **Staff Debug Info**. The Staff Debug viewer opens.
4. In the **Username** field, enter the student's email address or username, then click **Reset Student Attempts**. A message indicates a successful adjustment.
5. To close the Staff Debug viewer, click on the browser page outside of the viewer.

#### Reset Attempts for All Students

To reset the number of attempts that all enrolled students have for a problem, you need the unique identifier of the problem. See *Find the Unique Location Identifier for a Problem*. To reset attempts for all students:

1. View the live version of your course.
2. Click **Instructor**, then click **Student Admin**.

3. To reset the number of attempts for all enrolled students, you work in the **Course-Specific Grade Adjustment** section of the page. Enter the unique problem location, then click **Reset ALL students' attempts**.
4. A dialog opens to indicate that the reset process is in progress. Click **OK**.

This process can take some time to complete. The process runs in the background, so you can navigate away from this page and do other work while it runs.

5. To view the results of the reset process, click either **Show Background Task History for Student** or **Show Background Task History for Problem**.

A table displays the status of the reset process for each student or problem.

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**Note:** You can use a similar procedure to reset problem attempts for a single student. You work in the **Student-Specific Grade Adjustment** section of the page to enter both the student's email address or username and the unique problem identifier, and then click **Reset Student Attempts**.

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### Delete Student State for a Problem

To delete a student's entire history for a problem from the database, you need that student's username or email address.

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**Important:** Student state is deleted permanently by this process. This action cannot be undone.

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You can use either the Staff Debug viewer or the Instructor Dashboard to delete student state.

To use the Staff Debug viewer:

1. View the live version of your course.
2. Click **Courseware** and navigate to the component that contains the problem.
3. Display the problem, then click **Staff Debug Info**. The Staff Debug viewer opens.
4. In the **Username** field, enter the student's email address or username, then click **Delete Student State**. A message indicates a successful adjustment.
5. To close the Staff Debug viewer, click on the browser page outside of the viewer.

To use the Instructor Dashboard, you need the unique identifier of the problem. See *Find the Unique Location Identifier for a Problem*.

1. Click **Instructor**, then click **Student Admin**.
2. In the **Student-Specific Grade Adjustment** section of the page, enter both the student's email address or username and the unique problem identifier, and then click **Delete Student State for Problem**.

## 12.12 Assign Final Grades and Issue Certificates

As you prepare for the end of your course, you can send students a *course farewell* email message.

To assign a final grade to each student enrolled in a course, you generate grades after the **Course End Date and Time** have passed. See *Generate Grades for Enrolled Students (All Courses)*.

The final grades of a student in the course and the grading configuration you set in Studio are used to determine whether the student has earned a Certificate of Mastery for the course.

The process of issuing certificates is completed at edX: work with your edX program manager to schedule a date to issue certificates and complete this process.