

# Learning *Online* Network with CAPA

## *Course Management Manual*

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LON-CAPA Group

Michigan State University

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# 1 System Overview

The LearningOnline Network with a Computer Assisted Personalized Approach (LON-CAPA) is an integrated system for online learning and assessment. It consists of a learning content authoring and management system allowing new and existing content to be used flexibly, a course management system, an individualized homework and automatic grading system, data collection and data mining system, and a content delivery system that will provide gateways to and from NSF's National STEM Digital Library.

In particular:

- The LON-CAPA software provides instructors with a common, scalable platform to assist in all aspects of teaching a course, from lecture preparation to administration of homework assignments and exams. It allows instructors to create educational materials and to share such learning resources with colleagues across institutions in a simple and efficient manner.
- It provides an extremely sophisticated assignment engine that can create unique homework assignments and examinations for each student in a class. Its formative and summative assessment tools grade a broad variety of objective problems and assist in evaluation of essays.
- It provides prompt feedback for students and instructors, as well as statistical information on performance and on effectiveness of materials. Discussion pages attached to every homework assignment encourage communication among students and faculty.

The LON-CAPA software is freely available and free (GNU General Public License), and may be modified and adapted.

LON-CAPA is being developed and implemented by an enthusiastic group of faculty and professionals who recognize that Information Technology can play an important role in improving students' learning and understanding. Current members of the project include faculty from universities, colleges, and K-12 schools in the US, Canada, Asia, Africa, and Europe. The core development group is located at Michigan State University.

## 2 Help

### 2.1 Where to find additional help

You can find additional help about LON-CAPA and download copies of this manual at <http://help.lon-capa.org>. You can also access our FAQ-o-matic page and submit a ticket for additional help to a member of LON-CAPA's tech support staff.

### 2.2 Requesting New Features and Submitting Suggestions

LON-CAPA uses Bugzilla (<http://www.bugzilla.org/>) to report and track bugs and enhancements. You will need to have an account to use Bugzilla. You can create an account at <http://bugs.lon-capa.org> by clicking on the link Open a New Bugzilla Account. To report a bug or request an enhancement, do the following:

1. Open the web page <http://bugs.lon-capa.org>

2. Click on the [Enter a new bug report](#) link.
3. Select the product (LON-CAPA) on which to enter a bug.
4. At the login screen, enter your email address and password.
5. Click the [Login] button.
6. Select the version of LON-CAPA, the LON-CAPA component the bug is in, the platform you're using, and the operating system you're using from the drop-down menus.
7. Enter a summary in the summary text box.
8. Enter a description in the description text box.
9. Click the [Commit] button.

LON-CAPA is open-source software where everyone is free to contribute to the development. If you think of an enhancement request or find a bug in the system, please report it. All reported bugs and enhancement requests posted on Bugzilla will be examined by the core LON-CAPA team. Having the request in Bugzilla makes it much easier to keep track of bugs and enhancement requests, making it less likely such things will be lost or forgotten as requests not in Bugzilla frequently are.

Bugzilla also supports conversation about requests and some workflow and accountability features. You'll be able to see how the developers respond to the bug, who is currently responsible for it, and what the developer's intention is.

## 3 Logging In

### 3.1 Roles Screen

After logging into LON-CAPA with your username and password, you will see a screen where you can select your role. LON-CAPA is a roles-based system. You can always use the same login even though your roles may change. You can be an instructor in one class, a TA for another class, and an author of resources with the same username. Selecting **ROLES** on your Remote Control or on the Main Menu will bring you back to the **Roles** screen. For students, the word **ROLES** is replaced by the word **COURSES**.

NOTE: If you only have one role, you will bypass this screen.

### 3.2 Remote Control and Menu Mode

LON-CAPA can be controlled by either the Remote Control or the combination of the Inline Menu and the Main Menu. In Menu Mode, the Inline Menu will appear at the top of every page in LON-CAPA. Click on the [Main Menu](#) link on the Inline Menu to access the Main Menu. To switch from the Remote Control to the Main Menu, close the Remote window by clicking the 'x' in the upper right-hand corner. To use the Remote Control instead of the menus, click the [Launch Remote Control](#) link on the Inline Menu. Please note that you will not be able to use the Remote Control if your browser is not configured properly. You must have pop-ups, Javascript, and cookies enabled for the Remote Control to work. If your browser is not configured properly for the Remote Control, then LON-CAPA will automatically go into Menu Mode.

## 4 Setting Preferences

### 4.1 Change Password

Depending on how LON-CAPA is authenticating you, you may be able to change your password.

To change your password, do the following:

1. Select **PREF** on the Remote Control or Main Menu.
2. At the **Change Preferences** screen, click the [Change Password] button.
3. Type your current password in the **current password** text box.
4. Type your new password in the **new password** text box.
5. Re-type your new password in the **confirm password** box.
6. Click the [Change Password] button.

If you cannot change your password, please contact your system administrator to find out how. For instance, at Michigan State University, most users authenticate against the campus-wide system. For those users to change the password LON-CAPA uses, they need to change their MSU Net ID (email) password. Your system administrator will know what you need to do.

### 4.2 Nickname and Anonymous Discussion Screen Name

To create or change a screen name or nickname, do the following:

1. Select **PREF** on the Remote Control or Main Menu.
2. At the **Change Preferences** screen, click the Change Screen Name link.
3. Type your new screen name in the text field labeled **New screenname (shown if you post anonymously)**.
4. Type your new nickname in the text field labeled **New nickname (shown if you post non-anonymously)**.
5. Click the  button.

Note: When using post anonymously, the user name is only visible to course faculty.



### 4.3 Message forwarding and notification address

LON-CAPA can forward communication received by a LON-CAPA account to another LON-CAPA account, which is useful if you have multiple LON-CAPA accounts and wish to receive all messages in one account.

LON-CAPA can also send notification of new messages to conventional Internet mail accounts. LON-CAPA can also forward only critical messages or send critical message notifications to a different email account.

To change your message forwarding and notification addresses, do the following:

1. Select **PREF** on the Remote Control or Main Menu.
2. At the **Change Preferences** screen, click the [Change Message Forwarding and Notification Address](#) link.
3. Type your desired forward address or addresses into the text field labeled **New Forwarding Address(es)**. This should be one or more LON-CAPA addresses, like “user:domain”, separated by commas.
4. Type your desired forward address or addresses into the text field labeled **New Message Notification Email Address(es)**. This should be one or more Internet email addresses, like “user@example.com”, separated by commas.
5. Type your desired forward address or addresses into the text field labeled **New Critical Message Notification Email Address(es)**. This should be one or more Internet email addresses, like “user@example.com”, separated by commas.
6. Click the  button.

### 4.4 The 'About Me' Personal Information Screen

When you communicate with other users in the system, your name appears as a link to your About Me page.

To change this internal LON-CAPA homepage, do the following:

1. Select **PREF** on the Remote Control or Main Menu.
2. At the **Change Preferences** screen, click the [Edit the 'About Me' Personal Information Screen](#) link.
3. To upload an image to your About Me page, click the  button in the editor and grab an image from your computer. When you have made your selection, click the  button to save the image to your About Me page.

NOTE: If you communicate anonymously, students will not be able to view your About Me page through the normal link, but Course Coordinators will still be able to view the page.

## 4.5 Color Scheme

To change your color scheme preferences, do the following:

1. Select **PREF** on the Remote Control or Main Menu.
2. At the **Change Preferences** screen, click the [Change Color Scheme](#) link.
3. Click on the [Select](#) link next to the description you wish to change.
4. At the pop-up window, select a color and click the [Store](#) link to save your choice.
5. Repeat steps 3 & 4 as necessary.
6. Click the [Change Custom Colors] button to save your changes.

NOTE: To restore the colors to the default scheme, click the [Reset All Colors to Default] button.

## 4.6 Language Preferences

You can change your language preferences from the **Change Preferences** screen. The default language is English. You can change the language of the LON-CAPA system language, but homework problems will remain in the language they were coded in. Changing languages is a new tool and is not fully functional. This tool was put in place for testing purposes. If you would like to help with a language that is not available from the language list, please submit a help ticket through Bugzilla.

# 5 Exploring Your Course

By default, your new LON-CAPA class will be empty except for the syllabus. Select the Course Coordinator role to enter the course by clicking the appropriate [Select](#) button on the **Roles** Screen.

## 5.1 Course Initialization Helper

The first time you enter your course, you will be presented with the Course Initialization Helper. Click the [Next](#) button on each screen to keep the LON-CAPA default settings. When you are done going through the Helper, click the [Finish](#) button. Afterwards, you will be shown the Main Menu page (even if you are using the Remote Control).

## 5.2 Help

On many LON-CAPA pages, you will see small blue and orange boxes with white question marks inside. The blue boxes are links to relevant help documentation. The orange boxes are links to other LON-CAPA support available.

### 5.3 Navigation Screen

Select **NAV** on the Remote Control or Main Menu to explore your course. The **Navigate Course Contents** screen is a table of contents for your course that also displays due dates, status (i.e. solved versus unsolved problems), new discussion notification, and new message notification. Resources with new discussion associated with them will have a little bubble like the ones used in comic strips next to the resource name. Resources that have a message from an individual student about them will have a little envelope next to the resource name. Clicking on this icon will display the message. Clicking on any resource will immediately jump you ahead to that resource. Clicking on a folder icon will open up the folder and show a list of all the resources inside that folder.

### 5.4 Edit Syllabus

By default, the syllabus is placed in your course documents and you can access it from the **Navigate Course Contents** screen or the **Course Documents** screen. There is also a link to your syllabus on the **User Roles** screen.

As a Course Coordinator, you see the syllabus in Edit Mode. Fill in one or more of the text boxes and click any of the  buttons to save changes to your syllabus. Clicking the Show Public View link will show you what the syllabus looks like to your class. You can copy the URL of your syllabus and distribute it to anyone. The syllabus is publicly viewable and anyone can see it without logging in to LON-CAPA.

## 6 DOCS - Course Documents

A LON-CAPA course is managed through the **Course Documents** screen, accessed by selecting **DOCS** on the Remote Control or Main Menu. This screen allows you to arrange LON-CAPA resources from the LON-CAPA network, and create several resources for use in your course.

**Main Course Documents** make up the course itself and are the ones the student will use the navigation controls to move through. Main Course Documents show up on the **Navigate Course Contents** screen. Main Course Documents were added to LON-CAPA in 2003, so courses pre-dating 2003 or deliberately created in the old style by the Domain Coordinator will not have Main Course Documents.

**Supplemental Course Documents** are attached to the course, but do not appear in the main course sequence. Students access these documents by selecting **DOCS** on the Remote Control or Main Menu. Supplemental Course Documents are particularly useful for auxiliary files that may not be directly viewable or usable in a browser, such as PowerPoint presentations or Word documents, which may not work on all students' computers.

Manipulating the two types of Course Documents are essentially identical, except that the Main Course Documents have some options which are not available to the Supplemental Course Documents, as they do not make sense there.

NOTE: These capabilities are provided to allow instructors to extend already existing courses, or personalize courses with their own syllabi or information pages. Main Course Documents and Supplemental Course Documents do not carry over from one course to another. If you would like to create documents that can be used in multiple courses, please talk to your LON-CAPA Domain Coordinator about becoming an Author, which will open

the full power of the Author role to you. For more information about what that means, see the LON-CAPA Author's Manual, which is available online at <http://help.lon-capa.org>.

## 6.1 Main Course Documents

Main Course Documents are the “top-level” documents of your course. They are the documents that make up the course itself and the user will use the navigation controls to move through them. When a user enters the course, they will be taken to the first resource listed in the Main Course Documents, and as they proceed through the course, they will proceed towards the last resource. Main Course Documents also appear on the **Navigate Course Contents** screen. Manipulating Main Course Documents and Supplemental Course Documents is essentially identical, except that Main Course Documents have some options which are not available to the Supplemental Course Documents, such as the ability to add a **Navigate Course Contents** page, a **Simple Page**, or a **Bulletin Board**.

Changes made to the Main Course Documents, such as adding new resources, changing the order, and renaming or removing resources will be visible the next time you log in, or by clicking the re-initializing course button on the **Course Documents** screen, whichever comes first.

## 6.2 Adding Material to Your Course

To add course content, log in to the course you want to add content to. Select **DOCS** on the Remote Control or Main Menu to display the **Course Documents** screen.

There are four ways you can add a new document to the course:

- Import a document from the LON-CAPA network (6.4)
- Create a document from a prepared template (6.7)
- Add an external resource (6.9)
- Upload a document from your hard drive such as a PowerPoint presentation or a PDF file (6.13)

You can also organize documents into folders for structure, (6.3) or add a **Navigate Course Contents** page, which creates a resource in the course that displays the **Navigate Course Contents** screen. This could make a good first page for a course.

The resources are listed in the order they will be viewed. The first resource listed is the starting page a user will see when they access the course. To change the order of the resources, click on the blue up or down arrows next to the resource you wish to move. Repeat this until you have all the resources in the order you want. You can also click the Remove or Rename links to delete or rename resources. Changes made to Main Course Documents, such as changing the order, adding new resources, and renaming or removing resources will be visible the next time you log in, or by clicking the re-initializing course button on the **Course Documents** screen, whichever comes first.

### 6.3 Special Documents: Folders

You can add folders to your **Course Documents** screen to organize your course. Folders can act as sequences, chapters, modules, or homework sets. To add folders to your course, do the following:

1. Log in to the course you wish to add folders to.
2. Select **DOCS** on the Remote Control or Main Menu.
3. At the **Course Documents** screen, click the  button in the **Special Documents** column.
4. Type the name of the new folder in the pop-up window and click OK.  
The folder will appear at the bottom of the course document area you added it to.
5. To add resources to the folder, click on the folder you created. A new **Course Documents** screen will open, but you should see that under the **Main Course Documents** label, there is a new label **Folder:**, followed by the folder name. The folder is currently empty. You can now add resources to the folder, exactly as they are added in the "top-level" Course Documents area (6.2).

NOTE: Your new folders will be visible the next time you log in, or by clicking the  button on the **Course Documents** screen, whichever comes first.

### 6.4 Imported Documents: Import

Any resource from the LON-CAPA network that you have permission to use can be imported into your course documents. You must be the Course Coordinator to import resources into your course. Any resource from the LON-CAPA network can be imported into your course documents.

To import a resource, do the following:

1. At the **User Roles** screen, select the role **Course Coordinator**.
2. Select **DOCS** on the Remote Control or Main Menu.
3. At the **Course Documents** screen, click the  button in the **Import a Published Document** area.
4. The **Browse Resources** screen will open with a view of the LON-CAPA network. Navigate to find the desired resource.

NOTE: If you don't know exactly what resource you want, you can click the  button to pull up the LON-CAPA search interface.

5. Check the boxes next to the resources you wish to import.
6. Click the  button at the top of the screen.

7. If more than one document was selected, you can re-arrange the order prior to insertion into the course document sequence, click the **Go Back** button to collect more resources, or cancel the process. Click the **Finish Import** button to add the resources to your course documents.

NOTE: Your new resources will be visible the next time you log in, or by clicking the **re-initializing course** button on the **Course Documents** screen, whichever comes first.

## 6.5 Imported Documents: Search

Clicking on the **Search** button on the **Course Documents** screen will allow you to search the LON-CAPA resource pool and select published documents to add to your course.

## 6.6 Imported Documents: Load Map

You can load all the resources from an existing LON-CAPA sequence into the current folder in your **Course Documents** area. This allows you to easily fill a folder with existing resources, and subsequently manipulate the folder, such as by deleting or reordering the resources.

Note: If you have no intention of changing the order, it's easier to directly load the sequence using the **Import** button.

Load a map's resources into the current folder by doing the following:

- Click **Select Map** next to the text entry area under the **Import a published document** area on the **Course Documents** screen.
- Navigate to the desired sequence, and click the **Select** button next to it.
- Click the **Load Map** button. The map will be loaded into your **Course Documents**.

## 6.7 Special Documents: Templates

Several templates are available for you to fill out and add to your course.

To add a templated document to your course, click on the button for the templated page you wish to add: **Syllabus**, **Simple Page**, **Bulletin Board**, or **My Personal Info**. Clicking on **Simple Page** and **Bulletin Board** will pop up a window asking you to give a title (if necessary). Once you've titled the page, it will be added to the end of the current **Course Documents** folder.

NOTE: Your new resources will be visible the next time you log in, or by clicking the **re-initializing course** button on the **Course Documents** screen, whichever comes first.

To edit templated pages:

- Click on the page's link on the **Course Documents** screen.
- Each template behaves in much the same way: Several labeled fields are provided, with text boxes below them. Fill out the ones that apply to your course. Leave the rest blank, and they will not be displayed to students.

- Click one of the  buttons to save your work. When you click the  button, *all* changes made to any textbox on the screen are saved. Thus, you do not need to click the  button for every single textbox; the  buttons are shown next to each box for your convenience only.

To see how the page looks without the text boxes, click the [Show Public View](#) link near the top of the page. This will show you how the page looks to everyone else.

### 6.7.1 Special Documents: Syllabus

The  button adds a traditional syllabus template page, which can be filled out with standard syllabus information. To create a syllabus using the syllabus template, do the following:

1. Select **DOCS** on the Remote Control or Main Menu.
2. At the **Course Documents** screen, click the  button listed in the **Special documents** column.
3. Click the  button to make changes active for the current session.  
NOTE: The file will appear in the main course document list, where the user can move, rename, or remove it. If the user does not click re-initialize course the changes will become active the next time the user logs in.
4. Click the [Syllabus](#) link listed in the **Main Course Documents** column.
5. At the **Syllabus** screen, fill out the various syllabus information. For more information about using LON-CAPA's templated text entry system, please see 6.7.
6. Click the  button to save your changes.

NOTE: To see the student view, click the [Show Public View](#) link.

If your syllabus is already anywhere on the web (in or outside of LON-CAPA), you can specify the URL for inclusion in the bottom field of the syllabus template.

In general, resources inside of LON-CAPA are only accessible under login control. A syllabus, however, can be accessed without logging in, since students want to be able to access a course syllabus before enrollment. Copy and paste the link provided for external access to this document.

### 6.7.2 Special Documents: Simple Page

**Simple Page** allows you to add a simple HTML page to the course with an area for text and an area to add web references. Give the page a **Title**, type plain text into the **Content** textbox, and add any links to other resources in the **Web References** section, where they will be turned into HTML links for the students. Simple Pages allow you to upload a graphic into them. On the editing screen, either type the path to the photo, or click the  button to select the file to upload, and then click the  button.

### 6.7.3 Special Documents: Bulletin Board

**Bulletin Board** allows you to add a dedicated Bulletin Board page to the course. By default, *all* pages can host discussion, but you may wish to centralize the discussion, or provide a place for general course-related discussion.

### 6.7.4 Special Documents: My Personal Info

**My Personal Info** will add your personal information page, which is the same across all LON-CAPA courses you may be an instructor for. This is a place to provide a general introduction of yourself to your students. **My Personal Info** will allow you to upload a photo into it. On the editing screen, either type the path to the photo, or click the **Browse...** button to select the file to upload, and then click the **Upload** button.

To create a **My Personal Info** using the template, do the following:

1. Select **DOCS** on the Remote Control or Main Menu.
2. At the **Course Documents** screen, click the **My Personal Info** button listed in the **Special documents** column.
3. Click the **re-initializing course** button to make changes active for the current session.

NOTE: The file will appear in the Main Course Document column, where the user can move, rename, or remove it. If the user does not click the **re-initializing course** button, the changes will become active the next time the user logs in.

1. Click the link listed in the Main Course Documents column.
2. At the **Personal Information** screen, fill out the various information.
3. Click the **Store** button to save your changes.

NOTE: The **My Personal Info** page is a special page in that it belongs to you, not the course. Everywhere you insert that page will have the same contents, and all changes made to one will propagate to all others. Bear that in mind as you fill it in; since it may appear for multiple courses, you may not wish to add course-specific information.

### 6.7.5 Alternatives

All of these document types are provided for your convenience; you are not required to use them. If, for instance, you prefer to create your own Syllabus, you can create an HTML page and either upload it into the course like any other document (see 6.13), or host it on another web server and add it as an External Resource (see 6.9).

## 6.8 Special Documents: Navigate Content

A **Navigate Content** page will display the exact same page as the **NAV** button on the Remote Control or Main Menu. This page displays the resources in the Main Course Sequence. They are the documents that make up the course itself and the user will use the navigation controls to move through them. Putting a **Navigate Course Contents** page allows you to place that screen on the sequence the students will see. Some instructors like to use this as the first page in the course.



## 6.9 Special Documents: External Resource

To add resources not included in the LON-CAPA content network, do the following:

1. Click the  button on the **Course Documents** screen.
2. Type in the title of the web resource you wish to add in the **Title** text box.
3. Type in the URL of the web resource in the **URL** text box.
4. Click the  button to see if the web resource is in the frame below the entry fields.
5. Click the  button to add the web resource to the course.

NOTE: Your new resources will be visible the next time you log in, or by clicking the  button on the **Course Documents** screen, whichever comes first.

## 6.10 Special Documents: Score Upload Form

A **Score Upload Form** is a page in LON-CAPA that stands in for a score in an assignment external to LON-CAPA. You can insert a Score Upload Form into your course, and use it to enter student's scores for an exam, project, or any other assignment. The easiest way to do this is via the **PGRD Grading** screen ??, which allows you to upload a CSV file containing students' scores.

To create a Score Upload Form, do the following:

1. Log in to the course you wish to add a score upload form to.
2. Select **DOCS** on the Remote Control or Main Menu.
3. At the **Course Documents** screen, click the  button in the **Special documents** column.
4. At the window pop-up, type the name of the Score Upload Form and click the  button.

The page will be added to the end of the current course document folder.

## 6.11 Special Documents: Simple Problem

To add a Simple Problem to your course documents, do the following:

1. Select **DOCS** on the Remote Control or Main Menu.
2. Click on the  button in the **Special documents** column.
3. Click the  button.
4. Click on the problem link in the **Course Documents** column to open the problem.
5. Click the Simple Problem Editor link to edit your problem. Choose one of the question types from the drop-down menu and then click the  button.
6. Edit the problem and click the  button to view your changes.

The following four subsections describe each question type.

### 6.11.1 1 out of N Multiple Choice

This is a question where students can choose only one correct answer out of a selection. Each selection choice is called a foil because the majority of the selection choices try to foil the student. Only one foil is correct. LON-CAPA will randomly display the foils to your students. If you choose to set the max number of displayed foils to 4 but only have 6 foils then LON-CAPA will choose one of the True foils and fill in the rest of the foils with false foils up to a maximum of four foils. To edit the 1 out of N multiple choice problem, enter your question text into the appropriate box. Then enter one foil statement in each foil box that you would like to use. You do not have to use all 10 of the foil boxes. For each foil that you do use, you will need to assign it a value of True or False. You can assign a foil a location if you choose. For example, the foils will appear in random order for your students. If you have a foil statement of “None of the above” then you will want this statement to always appear at the bottom. After entering all of the correct foil text, you can add an optional hint. The hint text will appear under your student’s view of the problem after getting one incorrect submission. The hint text will remain displayed on your students view of the problem after it is correct for study purposes. At any point in the editing process, you can choose to store your changes. Each time you click  , the current view of your problem will appear in box at the top of the edit screen. When you are done editing, click the  button and close the window by selecting the “x” in the upper right-hand corner of the window.

### 6.11.2 Option Response

The Option Response question type is a matching question. Instead of students selecting one true foil from a list, each foil has a drop-down box in front of it where students have to select the correct option for each statement. The editing of this problem type is very similar to editing the 1 out of N multiple choice problem. Enter your question text into the appropriate location. In the add a new option text, add one of the drop-down box options and then click the  button. Repeat adding options until you have added all that you want to use. If you make a mistake, you can select an option that you want to delete and then click  to save your changes. After adding all of your options, type in the text for each foil and assign each option the correct value and location. You can add an optional hint if you want. When you are done editing, click the  Store Changes button and close the window by selecting the “x” in the upper right-hand corner of the window.

### 6.11.3 Essay

Enter your question text into the appropriate location and click the  button when you are done. Students will see your question text and be given a text block to enter in their short answer essay. Using the parameters, you can allow students to submit their essays in groups and allow your students to upload a file to give to you, such as a Word document.

### 6.11.4 Short String Response

This question type gives your students a small text box where they can enter in their answer in the form of any string, most appropriately a word, but a number or short phrase will work

as well. You can choose to have your string response be case sensitive or case insensitive.

## 6.12 Special Documents: Composite Page

You can add composite pages to your **Course Document** screen to combine separate content items together for display in a single web page. Composite pages can contain uploaded files, homework problems imported from the resource repository, and/or simple problems created using the problem editor. To add a composite page to your course, do the following:

- Log in to the course to which you wish to add a page.
- Click **DOCS** on the remote control.
- In the **Course Documents** screen, click the **New Composite Page** button in the **Special documents** column.
- In the pop up window, type the name of the new page and click OK.  
The page will appear at the bottom of the course document area to which you added it.
- To add resources to the page, click on the page you created.

The course document screen will refresh, and the updated display will include the name of the new page appended to the end of the breadcrumb trail, that extends to the right of the **Main Course Documents** label. The page is currently empty. Add new resources to the page as you would add resources to a Folder or to the "top-level" Course Documents area (6.2), except that only a subset of the "Special documents" that may be placed in a folder, can be placed in a composite page. Also, if you use "Import" to include a published sequence in a page, then when the page is displayed the sequence will be opened and all of its contents will appear as elements of the composite page (i.e., no "folder" will appear in the page). If you wish to be able to hide selected elements from the sequence, you should use "Select Map" and "Load Map" to unpack the sequence prior to import.

Note: Your new composite page will be active the next time you log in, or after clicking the **re-initializing course** button on the course document screen, whichever comes first.

## 6.13 Uploading a New Main Course Document

Any file you can create on your hard drive can be uploaded into your course, such as PowerPoint presentations or PDF files.

To upload a file from your hard drive into the course, do the following:

1. Create the document and save it to your hard drive.
2. Log in to the course you wish to add content to.
3. Select **DOCS** on the Remote Control or Main Menu.
4. In the **Upload a new main course document** or **Upload a new supplement course document** area, either type the path to your document or click the Browse... button to find the document on your hard drive.

5. Type the title in the Title text box.
6. Click the  button.

NOTE: Your new file will be visible the next time you log in, or by clicking the  button on the **Course Document** screen, whichever comes first.

## 6.14 Verify Content

Click the  button at the top of the **Course Documents** screen to view warnings and errors in resource code. Warnings in html pages will not affect your students' scores.

## 6.15 Check/Set Resource Versions

To check or set the versions of your resources, do the following:

1. Select **DOCS** on the Remote Control or Main Menu.
2. Click the  button at the top of the **Course Documents** screen to see which resources have been updated over a specific time frame.

NOTE: By default, when you import a resource, you always get the latest resource and that resource will update to the latest if the author publishes changes. Using the Check/Resource Version tool, you can lock all of your resources in their current version. You can also view which changes have occurred in a particular time frame by choosing a this time frame from the drop-down box and clicking the  button. From here, you can choose to lock one or more individual resources in place. It is recommended that you leave the default settings to keep all resources up-to-date because most resource changes are improvements by the author.

## 6.16 Dump Course Docs to Construction Space

If you have authoring privileges, you will see the  button. This feature will let you copy the material you created with the tools in the **Course Documents** screen to your construction space. You can then add this material to the LON-CAPA resource pool by publishing it. *Dumping problems created with the Simple Problem Editor currently is not supported. The feature will be supported in the future and you will eventually be able to copy these problems to constructions space.*

## 6.17 Supplemental DOCS

Supplemental Course Documents are auxiliary files the Course Coordinator wants the student to have access to that are not necessarily part of the course, such as reference material, handouts, etc. This is also useful for files that may not be directly viewable or usable in a browser, such as PowerPoint presentations and Word documents. Supplemental course documents differ in how the material is presented to the student. The student will not

see the supplemental documents unless they select **DOCS** on the Remote Control or Main Menu.

Like the Main Course Documents, you can still add a **New Folder** (6.3), an **External Resource** (6.9), a **Syllabus** (6.7), or a **My Personal Info** page (6.7).

Changes made to Supplemental Course Documents, such as adding new resources, changing the order, or renaming or removing resources will be visible the next time you log in, or by clicking the re-initializing course button on the **Course Documents** screen, whichever comes first.

## 7 Managing the Class List

To modify the class list you must be the Course Coordinator for that class and do the following:

1. Select **ENRL** on the Remote Control or Main Menu.
2. Click on the Upload a class list link.
3. Type the path to the file that contains the class list, or click the [Browse...] button to locate the file on your machine.
4. Select the appropriate file type from the drop-down menu (usually **CSV spreadsheet**).
5. Click the [Upload class list] button. To see how to generate a CSV file, see 7.1.
6. The next screen allows you to associate the uploaded spreadsheet's columns with the necessary student fields, such as: **Last Name**, **First Name**, etc. Use the drop-down menus to make an association for each of the spreadsheet's columns.

NOTE: If you wish to associate a particular column to more than one field (if, for example, you wish to make the students' initial passwords the same as their student numbers), click the Reverse Association button. Then you can assign columns of the spreadsheet to more than one field. You can also set the login type and the start/end dates for the students from this page.

7. Once you have the enrollment information set, click the Update class list button to finish.

### 7.1 Converting to CSV

To upload an Excel spreadsheet into LON-CAPA, you must convert the Excel spreadsheet into a *Comma Separated Value* file as follows:

1. Open the spreadsheet in Excel.
2. Choose **File** and **Save As...**
3. Select **CSV (Comma delimited)(\*.csv)** from the **Save as type:** drop-down menu, remembering where you saved it.
4. Click **Save**.

5. Click **Ok**, or **Yes** for any windows that may appear in order to create the \*.csv file.

You can then upload the CSV file generated, as described in 7.

Other spreadsheet programs can also export CSV files. Many of them follow procedures very similar to Excel. Consult your spreadsheet program's documentation for more information.

## 7.2 Enroll a Single Student

To modify the class list, you must be the Course Coordinator for that class and do the following:

1. Select **ENRL** on the Remote Control or Main Menu.
2. Click the [Enroll a single student](#) link.
3. Enter the student's user name and click the [Begin Enrollment] button.
4. Enter the relevant student information, login type, and start/end dates for the student.
5. Click the [Enroll as Student] button to complete the process.

### 7.2.1 Password Authentication

People are authenticated with a standard username and password scheme. LON-CAPA ships with support for the following authentication scheme:

1. internally authenticated: LON-CAPA specific passwords, choose this when in doubt.
2. system authentication: authentication using the UNIX authentication scheme on the server.
3. Kerberos authenticated: authentication based on either a Kerberos 4 or 5 server.
4. external authentication: custom authentication integrated with an authentication server other than Kerberos.

If the student or user you are adding to LON-CAPA will be using the same account as another system, e.g. email, then your system administrator can tell you which authentication type you should choose. If you are creating a user that is unique only to LON-CAPA, then select internally authenticated.

## 7.3 Modify Student Data

To modify student data, the user must be the Course Coordinator for the course and do the following:

1. Select **ENRL** on the Remote Control or Main Menu.
2. At the **Enrollment Manager** screen, click the [Modify student data](#) link. The screen will then display the current class list. (The user may also use the pull down menu to display previously enrolled or any enrollment status for the class.)

3. Select a username to modify the student's information. The screen will display the student name and data.
4. Modify the student data.
5. Click the  button to finish.

## 7.4 View Class List

To view your class list, do the following:

1. Click **ENRL** on the remote control.
2. At the **Enrollment Manager** screen, select the **View Class List** link.
3. At the **Current Class List** screen, select the student status you wish to view from the student status pulldown menu.

Note: You also have the choice to output the class list to CVS format or Excel format. To do this, select the **CVS** or **Excel** links.

## 7.5 Drop a Student

To modify the class list, you must be the Course Coordinator for that class and do the following:

1. Select **ENRL** on the Remote Control or Main Menu.
2. Click the Drop Students link.
3. Next you will see the list of students your course has been assigned to. Click the boxes next to the names of the students you wish to drop.
4. Click the  button to finish.

## 7.6 Automated Enrollment Manager

If your system administrator was able to configure your LON-CAPA server for automatic course enrollment updates, then you can edit how these updates occur using the Automated Enrollment Manager.

1. Select **ENRL** on the Remote Control or Main Menu.
2. Click on the Automated Enrollment Manager link.
3. The Automated Enrollment Manager will walk you through configuring your automatic enrollment updates.

## 8 Course Parameters

As Course Coordinator, select **PARM** on the Remote Control or Main Menu to set your course parameters. From that screen, you can either edit the course environment or the course parameters.

The course environment contains several parameters that apply directly to the course as a whole.

The other parameters in the course apply with varying granularities to the components of the course, such as maps, problems, and students.

You can display parameters for the entire course (top-level map) or just select the enclosing map. After the parameters display, you can choose to set parameters (example: due dates) on three levels:

1. Entire course - everything in the top-level sequence. Click on the bar "--" in any of the problems under the **general** heading.
2. Enclosing map. Click on the bar "--" in one of the problems in the enclosing map under **for Enclosing Map** heading.
3. One particular resource. Click on the bar "--" in the particular problem you want to set parameters for under the **for Resource** heading.

The last heading says **Parameter in Effect**. Under this heading is the actual parameter being used. The *most specific* parameter is what will be used for any given resource.

### 8.1 Parameter Helper

The easiest way to set parameters is to use the Helper. The Helper will give you step-by-step instructions for setting the open date, due date, answer display date, tries, or problem weight. With the helper, you can choose to set parameters for the course default, for a particular folder, or for a particular problem. Please note that a parameter set for a folder overrides the default and a parameter set for a problem overrides the folder settings and the default settings. You can set the following parameters with the Helper:

- Open Date (section 8.1.1)
- Due Date (section 8.1.2)
- Answer Date (section ??)
- Tries (section 8.1.4)
- Weight (section 8.1.5)

#### 8.1.1 Open Date

The open date is the date and time when to first allow the students to view and work on the problems. By default, all problems are viewable immediately after being added with the DOCS Screen. You can change this default setting by deleting the course level open date. Note that parameters only control access to problems. Webpages are always viewable.



### 8.1.2 Due Date

The due date is when the problems are due. The student will not be able to view the problems again until the answer date.

### 8.1.3 Answer Date

The answer date is when the problem and answers are viewable to the student after the due date. If the answer date is mistakenly set for a time before the due date, the answer date defaults to the due date. If the answer date is not set, then students will not be able to see the problems after they are due.

### 8.1.4 Tries

Tries can be set to any integer value. The default value is 99 tries. If you set the course level tries to 10, then every student gets 10 tries for every problem in the course.

### 8.1.5 Problem Weight

By default, the problem weight is equal to the amount of points the problem is worth. If the problem is made up of multiple parts each with their own submit button, then those parts behave as if they were separate problems and each have their own weight.

If you want to edit the default (i.e award points based on problem weight and tries), you will need to edit the LON-CAPA Spreadsheet 15.1 and the change the Course Environment Parameters **??**. In this case, you may want to think of a problem's weight in comparison to other problems. For example, all problems with a weight of 1 means that both easy and difficult problems are given the same weight. If you choose to customize the spreadsheet, then the problem weight and points may not equal each other for your course.

The default weight of all problems and problem parts is 1.

## 8.2 Parameter Overview

You can see an overview of all the parameters you have set with the overview mode.

## 8.3 Table Mode

Select **PARM** on the Remote Control or Main Menu to set your course parameters. From that screen, choose the link for [Table Mode](#).

The other parameters in the course apply with varying granularities to the components of the course, such as folders (maps/sequences/pages), problems, and students.

You can display parameters for the entire course or just select the enclosing folder (map). Then choose which of the three levels you want to set parameters for.

The three levels are: levels:

1. Course level: The course default, will apply the parameter to every resource in the course.
2. Map/Folder level: Will apply the parameter to all resources in a particular folder or map and will override the course defaults.

3. Resource level: Parameters apply only to one particular problem and it overrides the map/folder level and course level parameters. You may want to use the Problem Parameter functionality, PPRM instead ??.

If you choose the map/folder level or resource level, you be given options to choose which folder/map you want to display.

To set parameters, click on the underscore link in the appropriate location to add your parameter. *Note, when setting resource level parameters, you must make changes under the "for Resource" column only.*

### 8.3.1 Parameters for an Individual Student

To set the course parameters for a selected user, it is recommended that you use the Parameter Helper. However, if you need to use the Table Mode, then do the following:

- Click **PARM** on the remote control.
- Click on the link to use the Table Mode.
- At the **Set Course Parameter** screen, type the **username** or **id** of the desired user. If you do not know the username or id, then click the **Select User** link.
- Select the **Parameter level** from the pull down menu. (See discussion of parameter levels in ??.)
- Select the enclosing map or folder from the pull down menu. If you choose course level you will skip this step.
- Click **Set Course Assessment Parameters**.
- For **Course Level** and **Map Level** parameters:
  - At the default value column, click "-" for the parameter you want to set for the selected user. A new window will open.
  - Update the selected parameter.
  - Click **Store**.  
The default value will now reflect the new parameter setting for the selected user. **Parameter in Effect** will reflect the parameter settings for all other users in the course. Repeat the previous three steps as necessary.
- For **Resource Level**:
  - Within the **User \_\_\_\_ at Domain \_\_\_\_** column, click on the "-" for the parameter setting you want to assign. A new window will open.
  - Update the selected parameter.
  - Click **Store**.  
The Parameter in Effect column reflects the parameter setting that is in effect for the selected user. The last column reflects the value for your user name and does incorporate complete cascading within a problem for your user name. Repeat the previous three steps as necessary.

The parameters priorities are shown lowest to highest, left to right in the tables.

## 8.4 Course Environment

The Course Environment button on the Parameters Screen will take you to your course settings that you originally set with the Course Initialization Helper that you saw when you first viewed your course.

# 9 Problem Parameters

## 9.1 Overview

Go to a problem resource and click on PPRM on the Remote Control or on the Inline Menu to set parameters for the current problem. The screen is similar to the resource level parameter setting in table format except information only shows up for the one particular problem you are currently at. *Make sure to only make changes in the "for Resource" column.* If the interface seems confusing, then it is suggested that you use PARM and choose the Helper Mode.

## 9.2 Allowing Collaboration on an Essay Problem

To set the Maximum Number of Collaborators for a specific problem, do the following:

- Select the role of Course Coordinator.
- Click **NAV** on the remote control, or select **navigate contents** from the Main Menu.
- Click on the essay problem you would like to set the maximum number of collaborators.
- Click **PPRM** on the remote control, or select **problem parms** from the menu. At the **Set Course Parameter** screen a table will append to the page with all the parameters that can be set for the specific problem.
- Scroll down to the **Maximum Number of Collaborators** field in the **Parameter Name** column.
- In the Course Columns, click "-" in the general column for entire course, click "-" in the for enclosing map or folder for a specific map or folder, click "-" in the resource column for a particular resource. A new window will open.
- Update the selected parameter.
- Click **Store**.

# 10 Course Communication System

Select COM on the Remote Control or Main Menu to be brought to the Communication Screen. If you use the remote control interface, you will know when you have a message waiting for you because the LED light on the upper right-hand corner will continuously blink. All new unread messages will be displayed at the bottom of the main Communication Screen. In addition, on the **NAV** page, you see a letter icon next to any resource for which you received unread feedback messages. The subsections below describe the options available to you on the Communication Screen.

## 10.1 View All Messages

This option brings you to a screen to view all messages in your inbox. Check the boxes next to the message you want to delete and click the [Delete Checked] button to proceed.

## 10.2 View Critical Messages

Similar to viewing all message but only your critical message are displayed.

## 10.3 Send Messages to User(s)

To send internal LON-CAPA email messages, do the following:

1. Click **COM** on the remote control.
2. At the **Communication and Message** screen, select **Send Message to User(s)**.
3. Type the username you want to send email to.  
**Note:** If you don't know the user name you can click on the Select User link. Another screen will open and you can select a user from the list.
4. Enter any additional recipients.
5. Type the **Subject** in the subject text box.
6. Type the message in the text box.
7. If this is a critical message, select send as critical message or send as a critical message and return receipt, 10.7. (Only instructors can send critical messages.)
8. Click **Send New Mail**.

## 10.4 Broadcast Message to Course

A Broadcast Message is sent to all members of a course.

To send a Broadcast Message to the course, do the following:

1. Click **COM** in the remote control.
2. At the **Communication and Message** screen, select **Broadcast Message to Course**.
3. Type your message in the text box.
4. Add any additional recipients if necessary.
5. If this is a critical message check to send as a critical message 10.7.
6. Select the students you want the message sent to.
7. Click **Send Mail**.

## 10.5 Distribute Messages from Uploaded File to Course

Create a file with the specified format and send it to students in your class:

```
username1@domain1: text
username2@domain2: text
username3@domain1: text
```

For example:

```
kjohnson123@msu:You received B- on your midterm
gsmith98765@msu:Please stop by office hours so we can discuss your grade on your
midterm
```

```
cblack567891@msu:Congratulations, you received an A on your midterm
```

You can choose to send this message as critical.

## 10.6 Recording Notes and Face-To-Face Communication

To save records of face-to-face discussions, which will only be visible to course faculty and staff, do the following:

1. Select **COM** on the Remote Control or Main Menu.
2. At the **Communication and Messages** screen, click the User notes, record of face-to-face discussion link.
3. Type the username in the **Username** field and choose the domain using the **Domain** pull down.  
NOTE: You can also click the Select User link and a new window will open with a list of all the users in the course. Select the user. This will populate the Username field and close the window.
4. Click the Retrieve discussion and message records button. The screen will show any records previously entered for the user.
5. Enter text in the text box.
6. Click the Post this record button.

## 10.7 Critical Messages

A “Critical Message” is a message that will appear immediately after the recipient user logs in. The user must acknowledge receipt to continue; it is not possible to use the rest of LON-CAPA until they do so.

Only the Course Coordinator can send Critical Messages.

To send a Critical Message, do the following:

1. Select **COM** on the Remote Control or Main Menu.
2. On each of the message sending screens (**Send message to user(s)**, **Broadcast message to course**, and **Upload message to course**), there are two checkboxes, **Send as critical message** and **Send as critical message and return receipt**.

3. **Send as critical message** will send this message as a critical message. **Send as critical message and return receipt** will send the message as a critical message, but additionally return a message to you each time a user acknowledges receipt of the message.

## 11 Discussion Posts and Feedback

### 11.1 Resource Discussion

Unless banned by an instructor, all resources in the course can host discussion, which means students may post comments that will appear for all viewers on the resource. Course members will see new discussion on their Navigation screens. Instructors may allow course members to post anonymously or not, and course personnel can see who posted the anonymous messages. Anonymous only prevents students from seeing the poster. (Sometime instructors or TAs post anonymously to discreetly help the students.) Course personnel may hide or delete inappropriate messages.

To participate in a discussion on the a resource click the [Post Discussion](#) link at the bottom of a resource. If you want to reply back to a particular post, then click the appropriate [Reply](#) link.

### 11.2 Giving Feedback

To submit feedback for a specific page, do the following:

1. Open the resource page you want to submit feedback for.
2. Click **FDBK** on remote control.
3. At the **Resource and Feedback Discussion** screen, check at least one of the listed feedback types to direct where your feedback is sent (see 11.2.1, ??, 11.2.3, 11.2.4, and 11.2.5 for further explanation).
4. Type feedback comment or question in text box.
5. If applicable, add attachment.
6. Click **Send**.

#### 11.2.1 Feedback to resource author

Only the author of the resource can view this feedback. The author receives the feedback as a message on their Communication Screen. The feedback automatically becomes part of the problems metadata. Feedback understands smilies,  $\LaTeX$ , and HTML. Instructors can change feedback and discussion options in the course environment.

### 11.2.2 Question about resource content

The feedback sent with this option is posted privately to the instructor specified in the Course Environment as the person to receive resource content questions. If no instructor is defined in the Course Environment, this option does not appear in the feedback window. The instructor is notified that a question is waiting for her with a little envelope link near the problem on the Navigation Screen. The instructor can also see the message from her Communication Screen. The student's version of the problem along with previous submissions is attached to the message. When the instructor replies to the message, the student is notified that a reply is waiting for him with the same envelope link next to the problem name on the Navigation Screen.

### 11.2.3 Question/Comment/Feedback about course policy

Similar to the option above except the message does not include the student's view of the problem. This option is also dependent on whether the correct field is defined in the Course Environment.

### 11.2.4 Contribution to course discussion of resource

Instead of the text sent as a message to an instructor, the text is displayed publicly at the bottom of the resource. Course Coordinators and Instructors can hide or delete discussion postings. The student's name in the posting is a link to his About Me page. Everyone in the class is notified of new discussion with a little bubble icon next to the problem name on the Navigation Screen.

### 11.2.5 Anonymous contribution to course discussion of resource

Same as above except that the student's real name is not visible to other students and is replaced by the word "anonymous" or the student's screen name. Instructors and Course Coordinators can see the student's name.

## 11.3 Change the way Discussion Posts are Displayed

In a bulletin board or resource in which there has been discussion, display settings will determine: (a) which posts are displayed, and (b) which are marked as 'NEW'.

The default is for all posts to be displayed, and for new posts to remain marked as 'NEW' until you explicitly mark them as read.

You can set a personal preference that will apply to your display of **All** discussions in **All** courses. If you change the display settings in an individual board or resource, by using the **Change** link beneath the postings, those settings will override the default or a global preference you set using your Preferences screen. To set/change your global discussion display preferences:

1. Click **PREF** on the remote control.
2. At the **Change your Preferences** screen, click the **Change Discussion Display** link.
3. Check one or both 'Change' checkboxes in the **Action** column.

4. Click **Store Changes** button.

## 11.4 Feedback Adresses

To specify who gets which feedback (**FDBK**) messages, do the following:

1. Select **PARM** on the Remote Control or Main Menu.
2. At the **Set Course Parameters** screen, click the Set Course Environment Parameters button.
3. Scroll down to each feedback type and enter a comma-separated list of "username:domain", for example, "fred:msu,susie:ohiou". This will specify who gets which feedback messages.
4. Check the **set** field if not checked.
5. Click the Set Course Environment Parameters button.

NOTE: Your changes will be visible the next time you log in, or by clicking the re-initializing course button on the **Course Documents** screen, whichever comes first.

## 11.5 Disabling Discussion

By default, all users of a course can use the discussion features LON-CAPA provides. Only Course Coordinators have permission to disable discussion for a course. A Course Coordinator can also disallow resource discussion for specific roles or specific users.

To disable discussion, do the following:

1. Select **PARM** on the Remote Control or Main Menu.
2. At the **Set Course Parameters** screen, click the Set Course Environment button.
3. Scroll down to **Disallow Resource Discussion for Roles** or **Disallow Discussion for User**.
4. To disallow resource discussion for specific roles, enter a comma-separated list of roles, for example: **st**, **ts**. This will disable course discussion for the specified roles. To disallow discussion for a specific user, enter **username:domain**.
5. Check the **Set** field if not checked.
6. Click the Set Course Environment button.

NOTE: Your changes will be visible the next time you log in, or by clicking the re-initializing course button on the **Course Documents** screen, whichever comes first.

## 12 Chart Student Progress

The chart is designed to give you quick access to your students performance data. It has many output options (see 12.7) and output formats (see 12.6).



## 12.1 Homework Performance Overview

To get an overview of how well the students are performing on their homework in a course, select the **CHRT** button on the Remote Control or Main Menu.

Click the [Generate Chart] button to see the default chart for your class. The default chart displays a line for each student's username with the scores for each problem grouped by folder and the total scores for each folder. Read below for more information about the settings you can change from the chart default.

## 12.2 Sections

You can limit your chart display to one or more sections. Click on a section and drag your mouse down to select multiple sections in a row. To select multiple sections that are not in a row, hold down the Ctrl key on your keyboard while selecting the sections with your mouse.

## 12.3 Student Data

By default, only the student's username appears on each line. You can choose to see additional information about each student per line by selecting from this menu. Click on a selection and drag your mouse down to select multiple selections in a row. To select multiple selections that are not in a row, hold down the Ctrl key on your keyboard while selecting your choices with your mouse.

## 12.4 Enrollment Status

The default is to see students who are currently enrolled in your class. You can choose to view dropped students by selecting previous enrolled. You can also choose to view all students (currently enrolled, dropped students, and students who are in the course but have not reached their enrollment date).

## 12.5 Sequences and Folders

The default is to view all folders. You can choose to view one or more specific folders if you wish. Click on a selection and drag your mouse down to select multiple selections in a row. To select multiple selections that are not in a row, hold down the Ctrl key on your keyboard while selecting your choices with your mouse.

## 12.6 Output Format

### Output Formats

The following are the output formats currently available for the chart.

- **HTML, with links** Output HTML with each symbol linked to the problem which generated it. Problems the students have not attempted are not linked to. By including links, the output web page can become very large. If your browser crashes on the full display, try selecting less folders to view or choose to output the HTML without links.

- **HTML, with all links** Output HTML with each symbol linked to the problem which generated it. This includes links for unattempted problems. By including links, the output web page can become very large. If your browser crashes on the full display, try selecting less folders to view or choose to output the HTML without links.
- **HTML, without links** Output HTML without any links to any of the students homework problems.
- **Excel** Output an Excel 95 compatible file. Excel is limited to 256 columns, so you may be asked to reduce the number of sequences or folders you have selected. There is currently a 7 megabyte limit on the size of the Excel files LON-CAPA can generate.
- **CSV** Output a comma separated values file suitable for import into a spreadsheet program. This method does not have any limitations on the size or number of columns that can be exported.

## 12.7 Output Data

### Output Data

The data which can be output by the chart is described below.

- **Scores Summary** The overall scores on each sequence are displayed.
- **Scores Per Problem** The students scores on every assessment in the selected sequences are displayed. student received that many points on the problem. A '\*' indicates the score was not a single digit. The Excel output does not have this limitation and shows all scores properly.

<b>0-9</b>	Current student score on the problem.
<b>*</b>	Student score on the problem was not a single digit (Excel and CSV output not have this limitation).
<b>u</b>	Student answer has been submitted but has not been graded.
<b>d</b>	Student saved a draft solution but has not submitted a solution.
<b>x</b>	Student was excused from the problem.
<b>blank</b>	Student has not attempted the problem.

- **Tries** The number of tries a student required to complete each problem successfully is displayed. The values are displayed as follows:
  - 1-9** Number of attempts before the student got the problem right.
  - \*** Student required 10 or more attempts to successfully complete the problem.
  - .** Student attempted the problem but was not able to solve it.
  - x** Student was excused from the problem.
  - +** Problem was marked correct by override.
  - Problem was marked incorrect by override.
  - u** Student has submitted to a handgraded problem which has not been graded.
  - blank** Student did not attempt the problem.
- **Parts Correct** The total number of correct problem parts in each sequence will be displayed.

## 13 Grades and Submissions

LON-CAPA automatically grades all online homework problems by default except for essay problems. However, the Instructor or Course Coordinator have permission to override the computer scores and submit their own grades. To access the PGRD screen:

1. Navigate to the problem or a problem within a sequence you want to grade.
2. Click **PGRD** on the Remote Control or Inline Menu.
3. For manual grading, use the left hand side of the screen.
  - (a) Optionally, select the desired section and student status from the drop down menus.
  - (b) Select one of the following:
    - i. **Current Resource: For one or more students:** For Grading of Viewing Submissions for one of more students. After selecting this option, perform the following steps:
      - A. Select the students you want to limit your selection from using one of the following choices:
        - students with any status: any student in the course or selected section
        - students with submissions: any student who submitted an answer
        - students with ungraded submissions: any student who submitted an answer or essay to a hand-graded problem which you have yet to grade.
        - students with incorrect submissions: any student who has made a submission which the computer or instructor has marked incorrect.
      - B. Click the [Next] button.
      - C. Go to section ?? for further instructions.
    - ii. **Current Resource: For all students in selected section or course:** A shortcut for grading an entire class or particular section at a time. Click the [Next] button and then go to section 13.1.2.
    - iii. **The complete Set/Page/Sequence: For one student:** Grade an entire folder or sequence for one student. For example, grading a make-up exam or grading homework for a student with no internet access. Click the [Next] button and then go to section 13.1.3.
4. Click the [Grade] button to grade a Scantron Exam. Go to section 13.3.
5. Click the [Upload] button to grade a Score Upload From. Go to section 13.2.
6. Type in a receipt number and click the [Verify] button to Verify a receipt. Go to section 13.4 for more information.

### 13.1 Hand Grading and Viewing Submissions

#### 13.1.1 Current Resource: For one of more students (use this for essay grading)

1. At the top of the **View/Grade/Regrade Submission for a Student or a Group of Students** screen, select from the following options:

- Select how you wish to see the student's version of the problem along with the answers.
    - **no** will show no problem texts
    - **one student** will show only the first student's problem text; this is useful for non-randomized questions.
    - **all students** will show the problem text for all students.
  - Select the level of submission detail you want to view.
2. Select the student(s) to View/Grade/Regrade.
  3. Click the [Next] button.
  4. At the submission record screen, review the answers and select the points you wish to assign the student(s). You also have the option to excuse the student(s) from the problem by using the problem weight pull down menu.

**Note:** The computer has automatically graded all the Problems with a red check mark. You can of course change the scoring for these problems, but there are few faster ways to alienate your students than marking things as incorrect the computer said were correct.
  5. After you have finished viewing or manually grading the problem answers, choose one of the following options:
    - Use the pull down menu select the number of new students you want to view or grade. Click Save & Next.
    - Click [Next] to display the next student from your selection without saving any changes.
    - Click [Previous] to display the previous student from your selection without saving any changes.
  6. When you are done grading, exit the screen by clicking the dot on the Remote Control or the option to Return to Previous Location from the Inline Menu.

If you happen to be grading an essay question, it will make sense for you to want to grade just the students with ungraded submissions and then select the first student on your list. Grade this student's essay and then select [Save & Next] to cycle through all of your students. If you leave, all you need to do is return to the grading screen and again choose only students with ungraded submissions. When grading essay questions, LON-CAPA will give you essay grading keyword tools at the top of each grading page. For example, if you want the keyword "velocity" to be highlighted in every essay submission, just click List and type the word velocity. After grading a few essays in this example, you may realize that you want the keyword "vector" to be highlighted, this time you highlight the word on your screen with your mouse and then click the link Paste Selection to List. The keyword "vector" is now added. The Highlight Attribute choice gives you options to change the default highlighting scheme. For each student, you can also click on the option Compose message to student and leave a message for your student to read next time he or she visits the problem.

### 13.1.2 Current Resource: For all students in a selected section or course

1. On the Grade All screen, you will see a table of student grade data for your class or selected section. You have two options:
  - **Assign a common grade for the class or section:** Select the point value you wish to assign in the box under the Assign Common Grade to Class heading. You may also wish to excuse a problem. Excusing a problem will remove the problem score from the total IF the student has not already received credit on the problem. For example, say your folder is worth 15 points. The students who have credit on the problem will get their total score out of 15 points, however, the students who have not received credit will get their total score out of 14 points.
  - **Assign scores for specific students:** Input the point value you want to assign to each student in the appropriate location.
2. Click **Submit Changes**. The Current Grade Status Screen will display.
3. Click [Save] when you are done.

### 13.1.3 The complete sequence: For one student

- At the Grade by Folder/Page/Sequence screen, using the pull down menu to select the folder with problems you wish to grade. (By default the folder listed is the folder the current problem resides in.)
- Select **Yes** or **No** to view problem text.
- Select Submission detail level you wish to view.
- Select the student.
- Click **Submit**. The screen will display the problems and answers.
- Scroll down and View/grade/regrade the problems.
- Click **Save**.

The screen will display the scores for the problems in the folder.

## 13.2 Upload Scores from File

Click [Browse] to browse your machine to find a CSV file and then click [Upload]. On the next screen, specify which data is in which column. Your csv file needs the username, partial credit factor, domain name of msu, and the problem status for each student. If you set a weight of 10 for your problem and the student gets all 10 points then you assign the student a partial credit of 1. A student who gets 8/10 has 0.8 for her partial credit factor. Below is an example csv snippet:

```
thoma5678,0.6,msu,correct_by_override  
smith1234,0.8,msu,correct_by_override
```

### 13.3 Grade Scantron Forms

Use this option to grade a LON-CAPA Scantron exam. See section ?? about creating and grading exams.

### 13.4 Verify a Submission Receipt Number

When a student receives notification that they submitted a correct answer for a problem, they are given a receipt of their submission. If a student claims that her data has somehow been lost, then you can easily recover this data with the receipt number. This option is mainly reassurance for the student because they can keep track of their receipts. It is also reassurance for the instructor because she can request that students keep track of receipts before contacting her with information about possible data loss.

### 13.5 Viewing Student Submissions

Course Coordinators and Instructors use PGRD to view submissions. However, if you are using a custom role with permission to view grades, but not edit them, you will have to use the SUBM option instead. Go to the problem and then click SUBM on the Remote Control or Inline Menu. The interface for viewing submissions is similar to the interface for grading using the option

Current Resource for all students in selected section or course. (see section ??)

At the top of the Submissions Screen, choose the amount of detail that you would like to view. Then further down the page select which student(s) you want to see submissions for by checking the box to the left of the names. After making your selection, click the [Next] button.

## 14 Statistics

### 14.1 Overall Problem Statistics

The **Overall Problem Statistics** page lets you view performance statistics on all problems. This page displays the following data about the **Folders/Sequences** selected for evaluation:

- **#Items**

The number of assessment items (problem parts) in the sequence.

- **Score and Count Statistics**

For both the score, the product of the problem weight and the percent awarded, and the count, the number of problem parts correct, the following data are computed:

- **MEAN**

- **Standard Deviation**

- **Maximum**

The highest achieved score or count in the data set.

- **Minimum**

The lowest achieved score or count in the data set.

– **N**

The number of students evaluated.

• **KR-21**

This statistic measures the internal reliability of the data set. **This statistic is relevant for exams only.** Let  $K$  be the number of items in your test,  $M$  the mean score on the test,  $s$  the standard deviation of the scores on your test, then the KR-21 statistic,  $rk$ , is given by the formula

$$rk = \frac{K}{K-1} \cdot \frac{1 - (M * (K - M))}{Ks^2}$$

You have the option to have this statistical data output to an Excel file.

Clicking on the problem name will open a view of the problem in a separate window.

The **Overall Problem Statistics** page displays the following data about the problems currently in the course:

**#Stdnts** Total number of students attempting the problem.

**Tries** Total number of attempts to solve the problem.

**Max Tries** Largest number of attempts to solve the problem by a student.

**Mean Tries** Average number of attempts.

**S.D. tries** Standard Deviation of the tries.

**Skew Tries** Skewness of the students tries.

$$\frac{\sqrt{\sum (Xi - Mean)^3 / \#Stdnts}}{\sigma^3}$$

**#YES** Number of students who solved the problem correctly.

**#yes** Number of students who solved the problem by override.

**%Wrng** Percentage of students who tried to solve the problem but were unable to.

**DoDiff** Degree of Difficulty of the problem.

This statistics gives a measure of how many attempts it took the students to get the problem correct. Those students who did not get the problem correct are not counted. A value close to 0 indicates most students who got the problem correct did so on the first attempt. A value close to 1 indicates many attempts were required for students to get the problem correct. A negative value indicates students were given points without attempting the problem. A value of 'nan' means there were no attempts made on the problem.

$$1 - \frac{\#YES + \#yes}{Tries}$$

**DoDisc** Degree of Discrimination of the problem.

The students are grouped based on their scores on the sequence which contains the homework problem. The percent score of the bottom 25% of the students is subtracted from the percent score the to top 25% of the students. This yields a number from -1 to 1. 1.0 indicates all of the good students answered the problem correctly and none of the poor students answered it correctly. Conversely, a score of -1.0 indicates all of the good students got the problem wrong and the bad students did well.

**weight** The weight of the problem in the course (“points”). The value shown is the weight of the problem for the individual computing the statistics. Individual student or section variations are not shown.

**Sequence Statistics**, that is compiled statistics on problems based on their containing sequence, are also shown. The following data are shown:

**#Items** The number of problem parts in the sequence.

**Score Mean, Score STD, Score Max Score Min** The mean, standard deviation, maximum, and minimum of the scores of the selected students on the given sequence.

**Score N** The number of the selected students who submitted answers to problem parts in the sequence.

**Count Mean, Count STD, Count Max, Count Min** The mean, standard deviation, maximum, and minium count of correct problem parts of the selected students on the given sequence.

**Count N** The number of the selected students who submitted answers to problem parts in the sequence.

**KR-21** The KR-21 reliability statistic measures the internal reliability of a test or exam.

To compute the KR-21 reliability statistic the following formula is used:

$$KR - 21 = \frac{K}{K - 1} \cdot \frac{1 - (M \cdot (K - M))}{K \cdot s^2}$$

Where

$K$  is the number of items in your test

$M$  the mean score on the test

$s$  the standard deviation of the scores on your test

## 14.2 Detailed Problem Analysis

The Detailed Problem Analysis gives you detailed statistics and graphs of student performance on option response problems. For example, you can learn that many of your students set a particular foil to true when it is really false. With this information you can give your students feedback in order to help them better learn the concept the problem assesses. You are given the option to choose to analyze your data over tries or time, analyze your data



as concepts or foils, and select how many plots of the data you wish to view. Help links are provided on the the Detailed Problem Analysis screen which explain these options, in summary:

1. Analysis over **Tries** results in each plot showing the results of a specific attempt by all students, meaning the first plot will show the results of the first attempt by all students, the second will show the results of the second attempt, and so on. Those students who get the problem right on the first attempt won't have a second attempt so the amount of data for each plot will decrease.
2. Analysis over **Time** results in each plot showing the results of all attempts made during specified intervals.

### 14.3 Submission Time Analysis

This option gives a display and analysis of submission times on assessments. You can see how the number of submissions varies while the problem is open. You can also see how the number of students with the problem correct increases over time.

### 14.4 About Clear and Update Cache

The **Statistics Cache** manages the data used in computing student performance statistics.

Much of the time spent computing statistics is actually used to compile student data into a more useful format, the temporary course cache. Normally student data is maintained in an archived format which does not provide for rapid access. Since each student's data is stored on their home server in their account, and not with the course, it takes time to compile the data and store it in the temporary course cache. All of the statistics modes use the same cache so the process of compiling the student data does not need to be repeated when successive statistics are requested.

Only those students who are involved in the current calculation will have their data compiled. When you modify the selected set of students, by changing the section you are computing statistics with, the caches will be updated.

The temporary course cache is maintained for 2 days on the server used for the statistics computation.

The cache management buttons, marked **Clear Caches** and **Update Caches**, appear when the temporary course caches are in use.

**Clear Caches** causes the entire cache for the course to be flushed, discarding all the current contents. The cache is then rebuilt to display the desired statistics. The normal use of statistics should not require you to press this button, but it is here for completeness.

**Update Caches** checks the students record for updates since their data was compiled. Any changes to the student's record for your course will be reflected after this button has been pressed. The **Update Caches** button is useful if your students are currently completing a homework set and you wish to evaluate their progress in the time your statistics were generated.

## 15 Spreadsheet

### 15.1 Introduction to the Spreadsheet

The **Spreadsheet** is used to implement complex grading policies in your course. It has the flexibility to implement most grading schemes and it provides access to all the parameters associated with the homework and exams in your course.

For basic information about the structure and function of the spreadsheet, see **Spreadsheet Hierarchy** (15.3.1) and **Spreadsheet Layout** (15.3.2).

For help creating and editing spreadsheets, see **Spreadsheet Files** (15.4) and **Spreadsheet Editing** (15.4).

### 15.2 Student View

The student view of the spreadsheet is restricted to the student level spreadsheet in courses where the environment has been set to allow the student view of the spreadsheet 16.1. Students are not able to view assessment level spreadsheets. Students cannot modify the spreadsheet in any way and cannot load or save spreadsheets.

If the course contains assessments which indicate the student should not be able to view the results, as is the default for an exam, the row will appear blacked out and the data will not be present. Once the answer date has passed for the resource, the row will be shown.

### 15.3 Spreadsheet Organization

#### 15.3.1 Spreadsheet Hierarchy

There are three different types of spreadsheets inside LON-CAPA: Assessment Spreadsheets, Student Spreadsheet, and Course Spreadsheet.

1. **The Assessment Spreadsheets**

An assessment level spreadsheet provides access to all of the parameters associated with a student's performance on a particular homework, quiz, or exam. Each student has an assessment spreadsheet for every assessment in the course. The assessment spreadsheets provide data to their parent, the student level spreadsheet, via the **export row** (15.3.4).

2. **The Student Spreadsheet**

The student level spreadsheet presents data to the students on their performance in the course. There is only one possible student level spreadsheet definition, but the data varies for each student. The data present in the student spreadsheet is imported from the **export row** (15.3.4) of each assessment spreadsheet for all of the assessments currently in the course. The student spreadsheets pass summary data to the course level spreadsheet via the **export row** (15.3.4).

3. **The Course Spreadsheet**

The course spreadsheet contains all of the summary data for the students in the course. There is only one course spreadsheet.

### 15.3.2 Layout

This section describes the layout of each level of spreadsheet. See the section on the **Spreadsheet Hierarchy** (15.3.1) for a description of the types of spreadsheets and their data-flow relationships.

#### General Characteristics

Each spreadsheet has 52 columns and a variable number of rows. The columns of the spreadsheets are labeled 'A-z'. The rows of the spreadsheets contain data appropriate to the spreadsheet as described below. The section **Spreadsheet Row Numbers** (??) describes how row numbers are assigned.

#### Assessment Spreadsheet Layout

There are two special rows on the top of the assessment spreadsheet. The first is the **template row** (15.3.5). The second row is the **export row** (15.3.4).

The main body of the assessment spreadsheet contains the parameters associated with the assessment. The parameter values appear in the "A" column of the spreadsheet and cannot be edited. The remainder of the spreadsheet columns, labeled "B-z", can be edited and used for computations.

See **Referencing Spreadsheet Parameters** (15.4.3) for information on how to reference a parameter value in the spreadsheet.

#### Student Spreadsheet Layout

The student spreadsheet has both a **template row** (15.3.5) and an **export row** (15.3.4).

The main body of the student spreadsheet contains the export rows of the assessments in the course. Each assessment appears beneath the title of the folder or sequence which it belongs to. The first 26 columns of the main body of the spreadsheet, "A-Z", are the export data from the assessments and cannot be edited. The remaining columns, "a-z", can be edited.

#### Course Spreadsheet Layout

The course spreadsheet contains the data exported from each student level spreadsheet.

The two topmost rows are the **template row** (15.3.5) and a summary row. The remainder of the spreadsheet is taken up with student data. Each student spreadsheet exports one row to the course spreadsheet. The first 26 columns, "A-Z", contain the student data and cannot be edited. The remaining 26 columns "a-z", can be edited.

### 15.3.3 The Three Spreadsheet Levels

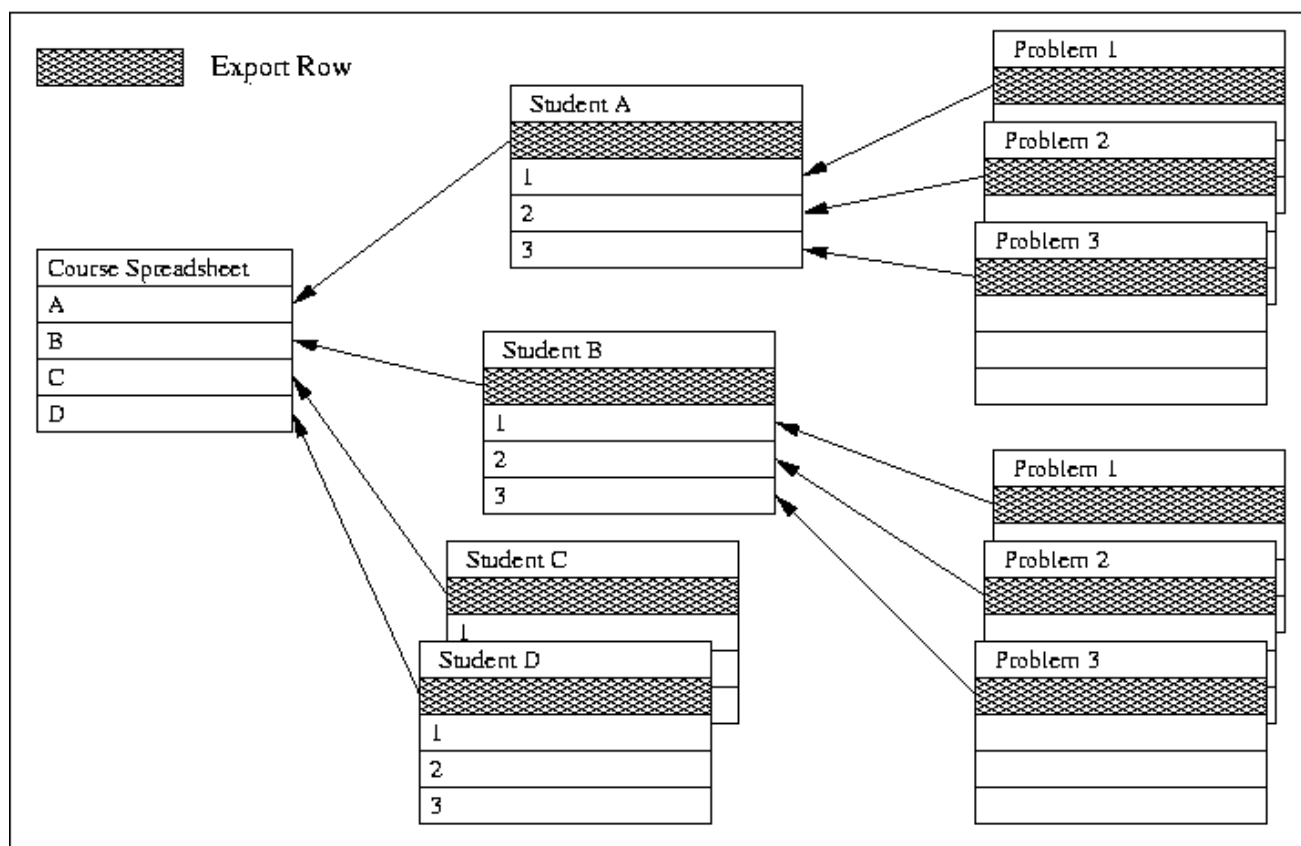
The course spreadsheet has three levels.

The top-level is the "course level" sheet, which is not accessible to students. It lists the export rows of all "student level" sheets (the sheet that students get to see when they press "GRDS"). These in turn import the export rows of all assessment level sheets.

The figure shows the spreadsheet hierarchy.

### 15.3.4 Export Row

The export row determines what information is passed to the next higher spreadsheet in the **spreadsheet hierarchy** (15.3.1). The first 26 columns of the row, labeled "A-Z", are exported. The remaining 26 columns, labeled "a-z", are not and may be used for supporting computations. The export row is row number 0.



### 15.3.5 Template Row

The template row allows you to quickly fill in columns of your spreadsheet. If a cell in the template row has a value or formula, every cell in that column of the main body of the spreadsheet will be given the same value or formula. If a cell in the spreadsheet already has a value, that value will be preserved.

Using the “#” notation to specify rows is highly suggested. See **Referencing Spreadsheet Cells** (15.4.2) for more information.

## 15.4 Modifying the Spreadsheet

If you have permission to edit a spreadsheet you will also have permission to save and load spreadsheet definition files.

### Default Spreadsheets

There are three default spreadsheets, one for each level. These are called `default_classcalc`, `default_studentcalc`, and `default_assesscalc`. These are the starting spreadsheets for every class.

### Modified Spreadsheets

When you modify a spreadsheet you begin working with an temporary copy. You may save the spreadsheet using the “Save as” button on the spreadsheet. Fill in a name and click on the “Save as” button. You may also use the “Save as & Make This Sheet the Default” button to set the current spreadsheet definition as the default for this level.

### Loading a Spreadsheet Definition from a Published File

Using the “Select Spreadsheet File” link opens the LON-CAPA resource browser. Only files with the extension `spreadsheet` can be selected. The spreadsheet definition file must be valid XML. Please contact the LON-CAPA development team for instructions and examples on creating these files.

### Setting the Assessment Level Spreadsheets used to Calculate Grades

In the student level spreadsheet every assessment in the course has a spreadsheet definition file associated with it. The spreadsheet definition used for each assessment is selected using a drop-down dialog in the assessments row. Initially this spreadsheet is “Default”, meaning the current default assessment spreadsheet will be used to compute the students grade.

Changing the spreadsheet used for an assessment modifies the student level spreadsheet, so you must use the “Save as” button to save the current student spreadsheet.

The strength of the spreadsheet is its ability to be modified to reflect just about any grading method used in a course. The following topics should prove helpful in getting you started editing spreadsheets.

- **Cell Editing** (15.4.1)
- **Referencing Cells** (15.4.2)
- **Referencing Parameters** (15.4.3)
- **Special Functions** (15.4.4)
- **Examples and Comments** (15.4.5)
- **Examples and Comments on Assessment spreadsheets** (15.4.6)

#### 15.4.1 Cell Editing

To edit a cell in the spreadsheet, move you mouse pointer over it until you are able to follow a link. Click on the link to open up an editing window. The current contents of the cell will be shown and can be modified. Pressing the “Accept” button will cause the spreadsheet to be updated with the new formula. You will then be working with an unsaved modified copy of a spreadsheet. See **Spreadsheet Files** 15.4 for information on loading and saving spreadsheets. Pressing the “Discard Changes” button will discard any changes you have made to the contents of the cell.

##### What goes in a cell

The cells of the spreadsheet contain a mixture of Perl commands and LON-CAPA specific functions (15.4.4). Most non-IO Perl functions work in cells.

#### 15.4.2 Referencing Cells

##### Cells

Cells may be specified by simply writing their name. `A17` will be replaced with the value in row A column 17 before the perl is evaluated.

##### Ranges

Ranges specify rectangles of various shapes in the spreadsheet, just as ranges do in traditional spreadsheets. Ranges must be enclosed in quotes. Examples of legitimate ranges:

- “\*” - all rows, all columns
- “B\*” - all rows in column B
- “\*5” - all columns in row 5
- “C5”..“F25” - all cells in the rectangle between C5 and F25

Many functions accept ranges. For example, `&SUM(“d*”)` will add up all cells in column d.

### Special References

There is an additional means of referencing cells most used in the **template row** (15.3.5). By using a “#” in the place of a row number the spreadsheet will replace the # with the current row number. For example `B#` will be replaced with the contents of cell B7 in the row 7 and the contents of B8 in row 8.

### 15.4.3 Referencing Parameters

In the assessment level spreadsheet the parameters are available for calculation in two ways.

1. Reference the cell containing the parameter: `A7`
2. Reference the parameter by name: `[parameter_0_weight]`

In each case the value of the parameter will replace the reference before the perl code in the cell is executed.

If you set a course parameter (via the **PARM** button on the remote), you can access this parameter in the spreadsheet . To access the parameter 'testparm' use

```
&EXT('course.testparm')
```

in a cell of your spreadsheet.

### 15.4.4 Special Functions

The following special functions are available in the spreadsheet. Please see **Referencing Cells** (15.4.2) for information on specifying cells and ranges.

- `&NUM(range)` - number of non-empty cells in range
- `&BIN(low, high, range)` - number of non-empty cells in range with values between low and high
- `&SUM(range)` - sum of the non-empty cells in range
- `&MEAN(range)` - mean value of non-empty cells in range
- `&STDDEV(range)` - standard deviation of non-empty cells in range
- `&PROD(range)` - product of non-empty cells in range
- `&MAX(range)` - maximum value of non-empty cell in range
- `&MIN(range)` - minimum value of non-empty cells in range
- `&SUMMAX(n ,range)` - sum of the maximum n non-empty cells in range

- `&SUMMIN(n, range)` - sum of the minimum *n* non-empty cells in range
- `&EXT(expression)` - access to EXT function in lonnet. Use `&EXT("system.time")` to retrieve the current time.
- `&SUMSEQ(column,sequence1,sequence2,sequence3,...)` - sum the given column across the folders or sequences listed.

When specifying a sequence use the full title. Instead of a sequence title the word "all" can be used to sum over all sequences. Regular expressions can be entered as well, if prefixed by "regexp:". See below for examples.

- `&SUMSEQ('Z', 'Chapter 1');`
- `&SUMSEQ('Z', 'Chapter 1', 'Chapter 2', 'Chapter 3');`
- `&SUMSEQ('Z', 'all');` - sum over all sequences.
- `&SUMSEQ('Z', 'regexp:Large Biomolecules');` - sum over all sequences which match the regular expression `/Large Biomolecules/`.

In addition, most non-IO Perl functions work in cells.

### 15.4.5 Examples and Comments

#### Summing up columns

To take the sum of column "M", for example, use `&SUM('M*')`

**Spreadsheet Lists** When you have a list of numbers in a cell, how it is displayed depends on how you separate the numbers and how Perl interprets the results.

`35 45 12` will not generate any result because this is an invalid perl statement.

`35,45,12` will have a result of 12 because Perl has a comma operator similar to the comma operator in C.

The comma operator is binary and returns the value on its right. Thus `$variable = 15, 26;` assigns `$variable` the value 26. If you need the values to all be displayed, enclose the entire cell contents in quotes.

### 15.4.6 Examples and Comments on Assessment Spreadsheets

#### How to deal with multi-part problems

Often, there are several parts in a specific problem. For example, a problem with three parts would have parts 0, 11, 12, and 13. For a general spreadsheet, it is not often desirable to sum up all of these parts, while not knowing how many parts there are as the spreadsheet is written.

The spreadsheet has a preprocessor which can expand a symbolic expression over all symbolic names that fit. The general syntax is `[&EXPANDSUM(VARNAME;expression)]`.

For example, for the above assessment with three parts,

```
&EXPANDSUM(PART;parameter_PART_weight*stores_PART_awarded)
```

would become

```
parameter_0_weight*stores_0_awarded +
parameter_11_weight*stores_11_awarded +
parameter_12_weight*stores_12_awarded +
```

`parameter_13_weight*stores_13_awarded +`

where **bolded text** is used to highlight what the `&EXPANDSUM` function is doing.

### What 'tries' means

In multi-part questions, the exported value for "tries" is now the average number of tries to get the parts right. The full data for each part is still stored by the system.

## 16 Student Grade Access

Students have a button labeled GRDS instead of the SPRS button on the Remote Control or Main Menu. Students can click on this button and see a summary of all of their scores. By default, the problem weight you assign to each resource is the problem score. However, if you changed your Course Environment's grading specification to "spreadsheet" your students will have access to their student spreadsheet with their scores based upon your spreadsheet via a [detailed scores](#) link. The use of the term "score" is also changed to the phrase "parts done" on the student Grade Screen. There are three different ways the Student Grades Screen can appear based upon the course environment.

### 16.1 Changing Course Environment for Student Access of Spreadsheet

Click PARM on the Remote Control or Main Menu. Then click the [Course Environment](#) link. Edit the course parameter variable **grading options**. This course environment variable can take three values:

**standard:** the points for every problem part are partial credit factor times weight

- no [detailed scores](#) link provided to students on the GRDS page
- the GRDS page uses the word "points"

**external:** grade information screens are hidden, usually because grades are calculated external to LON-CAPA

- no [detailed scores](#) link is provided to students on the GRDS page
- the GRDS page does not use the word "points," but rather shows the number of completed parts

**spreadsheet:** the full spreadsheet is used for grade calculations

- the [detailed scores](#) link is provided on the GRDS page
- the GRDS page does not use the word "points," but rather shows the number of completed parts



## 17 LON-CAPA Exams

## 18 Misc.

### 18.1 Prepare a Printable PDF Document

To print a resource, do the following:

1. Select a resource.
2. Click **PRT** on the Remote Control or Inline Menu to access the Print Helper.

The Print helper will guide you through the process of preparing a PDF document of the resource. If you see error message when trying to prepare a PDF file, then you will need to contact the author of the problem which has the printing error.

### 18.2 Adding Instructors and Teaching Assitants to Your Course

A course coordinator can add TAs, instructors, guests, etc, to the course. There is also the option to create a new role with customized privileges; see how to create a custom role in 18.2.2.

To add a user to your course:

1. Click **CUSR** on the remote control.
2. At the **Create User, Change User Privileges** screen, type the username in the username text box or click the **Select User** link. The screen will then display the current class list. Select a username to modify the user privileges.
3. Click **User Roles**.
4. The system will automatically recognize the user if the user already has a LON-CAPA account. Otherwise, you will have to fill out the necessary data such as name and password.
5. Scroll down to **Add Roles**.
6. Click the box next to the roles you wish to activate for the selected user.
7. Set the starting dates and ending dates for each role you selected.
8. Click **Modify User**.

#### 18.2.1 Change Privileges of a User

To modify a user's privileges, do the following:

1. Click **CUSR** on the remote control.

2. At the **Create User, Change User Privileges** screen under the heading **Set Individual User Roles**, type the username in the textbox.

**Note:** If you don't know the username, click the **Select User** link and a window will open with a list of all the users in the course. Select a User.

3. Click the **User Role** button.

**Note:** At the **Change User Privileges** screen the user's existing roles and available roles are listed.

4. Click the box next to the roles you wish to revoke or add to the user. If your adding roles input the group/section if applicable and the starting/ending dates for the roll.
5. Click **Modify user**.

### 18.2.2 Creating a Custom Role

To edit a custom role privileges, do the following:

1. Click **CUSR** on the remote control, or if you are using the text menu, select **Main Menu**, then **user roles**.
2. At the **Create Users, Change User Privileges** screen under the heading **Edit Custom Role Privileges**, select the role you wish to edit from the drop down menu. To create a new role, select **Generate new role ...** from the drop-down menu, and give the new role a name.
3. Click **Custom Role Editor**. The screen will display the privileges set and available to select for this role.
4. Update the privileges you wish this custom role to have.
5. Click **Define Role**.

## 18.3 Course Calendar

To add an announcement to the calendar, do the following:

1. Select **CLDR** on the Remote Control or Main Menu.
2. Using the pull-down menus, choose a starting time and an ending time.
3. Type the announcement in the text box and click the [Post Announcement] button. The announcement will now appear on the specific date(s) on the calendar. Today's announcements will also show up on the **Roles** screen, next to the respective courses, and on the **Syllabus** screen.

A user can remove an announcement from the calendar by clicking **CLDR** on the remote control. The Announcements and Calendar screen will open. Scroll down the screen to view the calendar shown on the screen. If the announcement is in the current month then check the box next to the announcement. If the announcement is not in the current month then use the **Previous Month** and **Next Month** links to move to the correct month. After the user has selected the announcement click **Remove Checked Entries**.

## 18.4 Course Chat

To use the course chat feature, do the following:

1. Select **CHAT** on the Remote Control or Main Menu.
2. A small chat room window will open up for chatting with other students, TAs, Instructors, and Course Coordinators affiliated with the course who happen to have their chat window open while inside their LON-CAPA course.
3. Type the message in the new window's text box.
4. Click the [Post Anonymous] or [Post] button.

NOTE: If the user chooses to post anonymously, only the course faculty will see their name. Certain emoticons are supported, along with LATEX.

## 18.5 Evaluating a Resource

Evaluations can be submitted on any resource in a course by any user. To submit an evaluation, do the following:

1. Navigate to the resource you wish to evaluate.
2. Click  **EVAL**  on the Remote Control or Inline Menu.
3. At the **Evaluate Resource** screen, answer the questions using the pull down menus.
4. Add comments if necessary in the comment field.
5. Click **Submit Evaluation**.

The data that is provided through these LON-CAPA internal evaluations becomes part of the problem's catalog information.

## 18.6 Searching the LON-CAPA Resource Pool

LON-CAPA has a built-in search of LON-CAPA resources. Metadata exists for each resource published in the LON-CAPA repository. Much of the metadata which exists is reported by the author upon resource publication. Some dynamic metadata is tracked by the system as well.

To access the search functionality, click **SRC** on the Remote Control or Main Menu. If you wish to search for resources related to a certain word or phrase, the 18.6.1 Basic Search provides the capability to search a number of metadata fields at once.

If you have more specific needs, such as a desire to search on metadata not included in the basic search, the 18.6.2 Advanced Search will allow you to specify values for as many metadata fields you are interested in.

### 18.6.1 Basic Search

The Basic search page allows you to specify a phrase or expression to search for in the LON-CAPA resource repository. Search strings can contain quoted phrases, multiple words, '-' (meaning “not”), and multiple words or phrases joined with 'or'. For example:

- **cat** Matches resources about cats.
- **cat or dog** Matches resources about cats or dogs.
- **cat dog** Matches resources about both “cat” and “dog”.
- **“fluffy cat” -dog** Matches resources on the phrase “fluffy cat” that do not contain “dog”.

There are two checkboxes on the basic search page. The first allows you to limit your search to the domain of the machine you are currently logged into. The second causes a thesaurus lookup to be done on your search phrase. Search results will include resources which match any of the related phrases as well as the original phrase.

The resource metadata fields searched in a basic search are listed below. It is worth noting that the data searched is self-reported by the resource author. In many cases authors are unable to provide relevant values for the fields searched. If you need to search based on properties other than the following, use the 18.6.2 Advanced Search link on the basic search page.

- title
- author
- subject
- notes
- abstract
- keywords

### 18.6.2 Advance Search

The Advanced Search in LON-CAPA allows you to search specific metadata fields for matching resources. Resources which match all of the constraints specified will be returned.

For many of the search fields, a “related words” checkbox is available. This causes each search term or quoted phrase in the search for that field to be matched in our thesaurus. Resources which matches in the given field any of the search phrases (depending on the logic in the original search phrase) will be returned.

The following fields can be searched:

- Title
- Author
- Publisher/Owner

- Author Space
- Last Modifying User
- Keywords
- Notes
- Abstract
- Standards
- Mime type
- Lowest grade level
- Highest grade level
- Domain
- Copyright
- Language
- Creation and Modification Dates

Dynamic metadata, computed based on resource usage statistics, can be searched as well. The following fields can be searched, with a minimum or maximum value being specified:

- Network-wide number of accesses (hits)
- Total number of students who have worked on this problem
- Average number of tries till solved
- Degree of difficulty
- Degree of discrimination

Evaluation data may be searched, with a minimum or maximum value being specified:

- Material presented in clear way
- Material covered with sufficient depth
- Material is helpful
- Material appears to be correct
- Resource is technically correct

## 18.7 Browsing Resources

Click RES on the Remote Control or the Main Menu to browse the LON-CAPA resource pool. This is the same interface used when importing a document into your course documents except that you only have permissions to view the resources, not select them for importing. Note that at the top of the Resource Space Screen there are some options you can select. For example, selecting "Title" will show you the titles from the metadata from each problem. Selecting "All versions" will show you all the versions of the resource which are saved whenever the resource was republished.

## 18.8 Viewing Resource Catalog Information

Go to any resource in your course, then click CAT on the Remote Control or on the Inline Menu to view the resource's catalog information. The catalog information is made up of metadata, such as title and keywords. Other catalog information include statistics of the resource's use and user evaluation.

## 18.9 Bookmarks

LON-CAPA can store bookmarks in the system for you. To save a bookmark, click **SBKM** on the resource you would like to bookmark, and fill in the resulting window as you'd like. Note only users using the pop-up remote can set bookmarks, since it requires a pop-up window.

To see stored bookmarks, push **VBKM** on the remote, and select the bookmark you'd like to go to.

## 18.10 Annotations

Annotations are only available if you are using the pop-up remote, since it requires pop-up windows. To create annotations on a resource:

1. Select the resource.
2. Click **ANOT** on the remote control.
3. Type your notes, and save them by clicking **Save and Update**

When you return to the resource at a later time and click ANOT on the remote control, you will see your previous notes.

## 18.11 On Deleting Courses

A course can not be "deleted" from a LON-CAPA server. Courses occupy very little storage space, and an inactive course is not a burden on the system. On the other hand, allowing data to be permanently deleted could lead to serious accidental data loss.

You *can* expire the roles for all users in the course. For example, when you use **ENRL** or **CUSR** to put students or Course Coordinators into a course, you can set an ending date for those roles. When the ending date is reached, the role associated with the course will not be accessible to the user any more.

If you view the **ROLES** screen, you will see a checkbox at the top that allows you to display all roles. If you check that box and click the Display button, you can see your current and expired roles, if any.

It is a good idea to get into the habit of setting end dates for all courses.