Learning *Online* Network with CAPA

Course Management Manual

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1 Managing the Class List

1.1 Class List Management

To modify the class list you must be the Course Coordinator for that class.

1. On the remote select the **ENRL** (course enroll) button.
2. In the main browser window you will see a text box directly below the subheading, **Upload a courselist**. Type the path to the file that contains the class list, or click **Browse** and locate the file on your machine.
3. Select the appropriate file type from the drop-down menu (usually **CSV spreadsheet**) and click, **Upload Courselist**. To see how to generate a CSV file, see 1.2.
4. 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 spreadsheets' 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 button labeled, **Reverse Association**. Then you can assign columns of the spreadsheet to more than one field.
5. From this page you can also set the login type and the start/end dates for the students.
6. Once you have the enrollment information set click, **Update Courselist** to complete the transaction.

1.1.1 Add a Student

To modify the class list you must be the Course Coordinator for that class.

1. Logon to the network. If you have multiple roles, click ROLES on the remote and SELECT Course Coordinator for your particular class.
2. On the remote select the **ENRL** (course enroll) button.
3. In the main browser window click the button labeled, "Enroll Student".
4. Enter the relevant student information, login type, and set the start/end dates for the student.
5. Click "Enroll as Student" to complete the process.

1.1.2 Drop a Student

To modify the class list you must be the Course Coordinator for that class.

1. Logon to the network. If you have multiple roles, click **ROLES** on the remote and **SELECT** Course Coordinator for the particular class.
2. On the remote select **ENRL** (course enroll).
3. Near the bottom of the main browser window you will see a subheading called **Drop Students**. Click **Selection List**.
4. 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.
5. Click **Drop Students** at the bottom of the page to complete the drop.

1.2 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 from that menu **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, to create the *.csv file.

You can then upload the CSV file generated, as described in 1.1.

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

1.3 Course Chart to Excel

You can get the information from the chart into Excel or similar spreadsheets by cutting and pasting the chart into a file on your machine. You can then import that file into Excel, though it will take some tweaking of the import parameters to get it to work correctly.

1.4 Modifying Student Data

To modify student data the user must be the Course Coordinator for the course.

1. At the **User Roles** screen, select the role **Course Coordinator** for the desired course.
2. Clink **ENRL** on the remote control.
3. 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.)
4. Select a username to modify the student's information. The screen will display the student name and data.
5. Modify the student data.
6. Click **Submit Modification**.

2 Course Document Screen

Management of a LON-CAPA course is managed through the Course Documents screen, accessed by pressing the **DOCS** button on the remote. 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 are the ones the student will use the navigation controls to move through, and make up the course itself. Main Course documents show up on the Navigation Maps screen. Main Course Documents was 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 hitting the **DOCS** button on their remote. 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 student's computers.

Manipulating the two types of Course Documents are essentially identical, except that the Main Course Documents has some options which are not available in the Supplemental 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 syllabuses 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. It is available online in the **About LON-CAPA Help and More Help** link at the bottom of this page, if you are viewing this online, or at http://*your LON-CAPA server*/adm/help/abouthelp.html, where "*your LON-CAPA server*" is replaced by the hostname you use to access your server, such as "loncapa.msu.edu".

2.1 Main Course Documents

Main Course Documents are the "top-level" documents of your course. They are the documents the user will use the navigation controls to move through, and makeup the course itself. When a user enters the course they will be taken to the first resource listed in the main course documents, and as they proceed forward through the course, they will proceed towards the last resource. Main Course documents also show up on the Navigate Course Content screen. Manipulating main course documents and supplemental course documents is essentially identical, except that main course documents has some options that is not available in the supplemental documents.What are Supplemental Course Documents? Changes made to the main course documents, such as adding new resources, changing the order, renaming or removing resources will be visible the next time you log in, or by clicking the re-initialize button on the course document screen, whichever comes first. Main Course Documents was added to LON-CAPA in 2003, so courses pre-dated 2003, or deliberately created in the old style by the Domain Coordinator will not have Main Course Documents.

Note: 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 ask your LON-CAPA Domain Coordinator about becoming an Author.

To add Course content, log in to the course you want to add content to. On the remote control, click **DOCS** to display the **Course Document** screen.

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

- Upload a document from your harddrive such as Powerpoint presentations or PDF files (2.2),
- Import a document from the LON-CAPA network (2.3),
- Add an external resource (2.5), or
- Create a document from a prepared template (2.6).

You can also organize documents into folders for structure, (2.7) or add a **Navigate Content** page, which creates a resource in the course that displays the Navigation Course Content screen.What is Navigate Course Content 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 resource you wish to move. Repeat this until you have all the resources in the order you want. You can also **Remove** or

Rename a resource by clicking on the blue word next to the resource. Changes made to the course documents, such as changing the order, adding new resources, renaming or removing resources will be visible the next time you log in, or by clicking the **re-initializing course** button on the course document screen, whichever comes first.

2.2 Uploading a Document From Your Harddrive

Any file you can create on your harddrive 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:

- Create the document, and save it to your hard drive.
- Log in to the course you want to add content to.
- Click **DOCS** on the remote control.
- 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 it on your hard drive.
- Type the title in the Title text box.
- Click Upload Document.

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

2.3 Importing a LON-CAPA Resource

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:

- At the **User Roles** screen, select the role **Course Coordinator**.
- Click **DOCS** on the remote control.
- At the **Course Documents** screen, click the **Import** button in the **Import a Published Document** area.
- 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 **Search** to pull up the LON-CAPA search interface.

- Click the boxes next to the resources you want to import.
- Click **GROUP IMPORT** at the top of the screen. At this point you can re-arrange the order prior to insertion into the course document sequence, go back and collect more resources, or cancel the process.
- Click **FINISH IMPORT**, and the resources will be added into your course documents.

Note: Your new resources will be visible the next time you log in, or by clicking the re-initialize button on the course document screen, whichever comes first.

2.4 Loading Resource Into A Folder

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 load up a folder with existing resources, and subsequently manipulate the folder, such as by deleting or reordering the resources.

Note that if you have no intention of changing the order, it's easier just 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**.

2.5 Adding External Resources

Resources not included in the LON-CAPA content network can be added to the course by clicking the **External Resource** button on the Course Documents screen.

1. Type in the title of the web resource you wish to add in the **Title** text box.
2. Type in the URL of the web resource in the **URL** text box.
3. Click **View** to see if the web resource is in the frame below the entry fields.
4. Click **Choose** to add the web resource to the course.

The new resource will appear in the course next time you **Re-Initialize** the course on your **ROLES** screen, or login, whichever comes first.

2.6 Creating A Document From A Template

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**. **Simple Page** and **Bulletin Board** will pop up a window asking you to give them a title. Once you've titled the page, if necessary, the page will be added to the end of the current Course Documents folder.

The new document will appear in the course next time you **Re-Initialize** the course on your **ROLES** screen, or login, whichever comes first.

- **Syllabus** adds a traditional syllabus page, which can be filled out with various standard Syllabus information.
- **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 **Browse...** button to select the file to upload, and then click the **Upload** button.
- **Bulletin Board** allows you to add a dedicated Bulletin Board page to the course. By default in LON-CAPA, *all* pages can host discussion, but you may wish to centralize the discussion, or provide a place for general course-related discussion.
- **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 to yourself for 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. Click **DOCS** on the remote control.
  2. At the **Course Document** screen, click **My Personal Info** listed in the **Special documents** column.
  3. Click **re-initialize course** 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 link listed in main course documents.
  5. At the Personal Information screen, fill out the various information.

6. Click **Store**.

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 propogate 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.

To edit templated pages, click on the page's link in the Course Documents area, next to the blue arrows, **Remove** and **Rename** link. 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. When you are done, click one of the **Store** buttons to save your work.

When you click **Store**, *all* changes made to any textbox on the screen are saved. Thus, you need not click **Store** for every single textbox; the **Store** buttons are shown next to each box for your convenience only.

To see how the page looks without the text boxes, click the **Public View** or **Show Student View** link near the top of the page. This will show you how the page looks to everyone else.

All of these document types are provided for your convenience; you are not required to use them. If for instance you prefered to create your own Syllabus, you can create an HTML page and either upload it into the course like any other document (see 2.2), or host it on another web server and add it as an External Resource (see 2.5).

2.7 Structuring Your Course With Folders

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

- Log in to the course you wish to add folders to.
- Click **DOCS** on the remote control.
- At the **Course Documents** screen, click the **New Folder** button in the **Special documents** column.
- At the pop up window, type the name of the new folder and click OK.

  The folder will appear at the bottom of the course document area you added it to.
- To add resourses to the folder, click on the folder you created.

A new course document 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 resourses to the folder, exactly as they are added in the "top-level" Course Documents area (2.1).

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

2.8 Navigate Content Page

A **Navigate Content** page will display the exact same page as the **NAV** button on the remote control. This page displays the resources in the Main Course Sequence. They are the documents the user will use the navigation controls to move through, and makeup the course itself. Putting a Navigate Content 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.

2.9 Supplemental Course 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, ect. This is also useful for files that may not be directly viewable or usable in a browser, such as PowerPoint pesentations and Word documents. Supplemental documents differ in how the material is presented to the student. The student will not see the supplemental documents unless they click DOCS on the remote control. Manipulating supplemental course documents is essentially identical to main course documents, except that main course documents has some options that is not available in the supplemental documents. Specifically, you cannot add a **Navigate Content** page, a **Simple Page**, or **Bulletin Board** since those should be in the course sequence. Like the Main Course Documents, you can still add a **New Folder** (2.7), add an **External Resource** (2.5), add a **Syllabus** (2.6), or add your **My Personal Info** page (2.6).

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

Note: 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 ask you LON-CAPA Domain Coordinator about becoming an Author.

3 Course Communication System

You can access all messages using the **COM** button. Unread messages will be displayed to you immediately. In addition, on the **NAV** page, you see a letter symbol next to any resource for which you received unread feedback messages.

This chapter will focus both on how you will use the communication system, and the various ways the students can use the communication to communicate with you and the rest of the course personnel.

3.1 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 Course Personnel can send Critical Messages.

To send a Critical Message, push the **COM** button on the remote to get to the Communication screen. 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**.

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.

3.2 Making a Discussion Board

To create a place explicitly intended as a discussion area, the easiest thing to do is make a short HTML page, with contents set to something like *General Discussion Board: Please post general discussion here.* Then add that page as the first page of your course sequence, or wherever else you would like the general discussion page. LON-CAPA's built-in discussion features will do the rest.

This can be done by a course instructor through the **DOCs** screen; see section 2.6 for more information on how to do that.

You might also want to include information on that page about how to post to the discussion.

You can make as many of these discussion board areas as you like; for example, you might want to make one for each chapter or section.

3.3 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.

1. At the **User Role** screen, select the role of Course Coordinator for the course.
2. Click **PARM** on the remote control.
3. At the **Set Course Parameters** screen, click **Set Course Environment**.
4. Scroll down to **Disallow Resource Discussion for Roles** or **Disallow Discussion for User**.

5. 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`.

6. Check the **Set** field if not checked.

7. Click **Set Course Environment**.

These changes take effect the next time affected users enter the course.

3.4 Course Calendar

A user can add an announcement to the calendar by clicking **CLDR** on the remote control. The **Announcements and Calendar** screen will open. Using the pull down menus click on the Starting time and the Ending time. Type the announcement in text box and click Post Announcement. 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 Course Syllabus page.

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**.

3.5 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. Click **COM** on the remote control.

2. At the Communication and Message screen, click the **User notes, record of face-to-face discussions, and critical messages** 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 **Retreive discussion and message records**. The screen will show any records previously entered for the user.

5. Enter text in the text box.

6. Click **Post this record**.

3.6 Course Chat

To use the course chat feature do the following:

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

2. Type the message in the new window's text box.

3. Click **Post Anonymous** or **Post**.

Note: If the user chooses to post anonymously only the course faculty will see their name. Certain smilies and frownies are supported along with LATEX.

3.7 Course Evaluation

To submit an evaluation for a course, do the following:

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

2. At the **Evaluate Resource** screen, answer the questions using the pull down menus.

3. Add comments if necessary in the comment field.

4. Click **Submit Evaluation**.

4 Course Parameters

As course coordinator, select **PARM** on the remote to set course parameters. From that screen, you can edit 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, due dates for example, 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.

4.1 Feedback Adresses

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

1. At the **User Role** screen, select the role of Course Coordinator for the course.
2. Click **PARM** on the remote control.
3. At the **Set Course Parameters** screen, click **Set Course Environment**.
4. Scroll down to each Feedback type and enter a comma seperated list of "username:domain", for example, "fred:msu,susie:ohiou". This will specify who gets which feedback messages.
5. Check the **set** field if not checked.
6. Click **Set Course Environment**.

These changes take effect the next time the user enters the course.

4.2 Top-level Sequence

Every course points to one "top-level" sequence file. This sequence is specified by its URL when the course is first opened.

The sequence used as the "top-level" sequence can also be changed later using the **Course Environment** in the **PARM** screen. The danger in pointing to another sequence file in the middle of a running course is that homework performance data might be lost.

4.3 Problem Weight

The "problem weight" parameter is used to calculate the points of a problem. The default spreadsheet uses the weight as the points. 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.

5 Misc.

5.1 Student Grade Override

To override the grading of a problem of a problem for a particular student, **NAV**igate to the problem as the course coordinator (or instructor) and use the **PGRD** (Problem Grade) button on the remote. If the problem in question appears in a page, the **PGRD** button will be above the problem. Then, select the student that you want to override the grading for.

5.2 Homework Performance Overview

To get an overview of how well the students are performing their homework in a course, select the **Course Coordinator** or **Instructor** role for the course, and press the **CHRT** button in the remote.

The numbers indicate how many attempts it took that student to get the homework correct. The green numbers indicate the number of problems a student solved per sequence. The blue numbers indicate the total number of problems solved out of the total number of problems for the complete course.

5.3 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, instructors, 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.

5.4 Viewing Student Problems

To see how a specific student did on a specific problem, or to view the correct answer for a given student and problem, **NAV**igate to the problem in question and hit **SUBM** (Submission). This will display a menu allowing you to choose a student. After you select the student of interest, LON-CAPA will show all previous submissions that the student made. For problems that are on pages, the **SUBM** button will not be on the remote control but above the actual problem. The **SUBM** function will also show the correct solution for that student, as well as a dump of all variable values if the problem has a script area.

6 Introduction to the Spreadsheet

The **Spreadsheet** is used to implement complex grading policies in your course. It has the flexability 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** (6.1) and **Spreadsheet Layout** (6.1).

For information about what a student will see when they view the spreadsheet, see **Spreadsheet Student View** (6).

For help creating and editing spreadsheets, see **Spreadsheet Files** (7) and **Spreadsheet Editing** (7).

The student view of the spreadsheet is restricted to the student level spreadsheet. 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.

6.1 Spreadsheet Organization

There are three different types of spreadsheets inside LON-CAPA.

The Assessment Spreadsheets

An assessment level spreadsheet provides access to all of the parameters associated with a students 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** (6.1).

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** (6.1) of each assessment spreadsheet for all of the the assessments currently in the course. The student spreadsheets pass summary data to the course level spreadsheet via the **export row** (6.1).

The Course Spreadsheet

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

This section describes the layout of each level of spreadsheet. See the section on the **Spreadsheet Hierarchy** (6.1) 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** (6.1). The second row is the **export row** (6.1).

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** (7) for information on how to reference a parameter value in the spreadsheet.

Student Spreadsheet Layout

The student spreadsheet has both a **template row** (6.1) and an **export row** (6.1).

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** (6.1) and a summary row. The remainder of the spreadsheet it 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.

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.

The export row determines what information is passed to the next higher spreadsheet in the **spreadsheet hierarchy** (6.1). 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.

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** (7) for more information.

7 Modifying the Spreadsheet

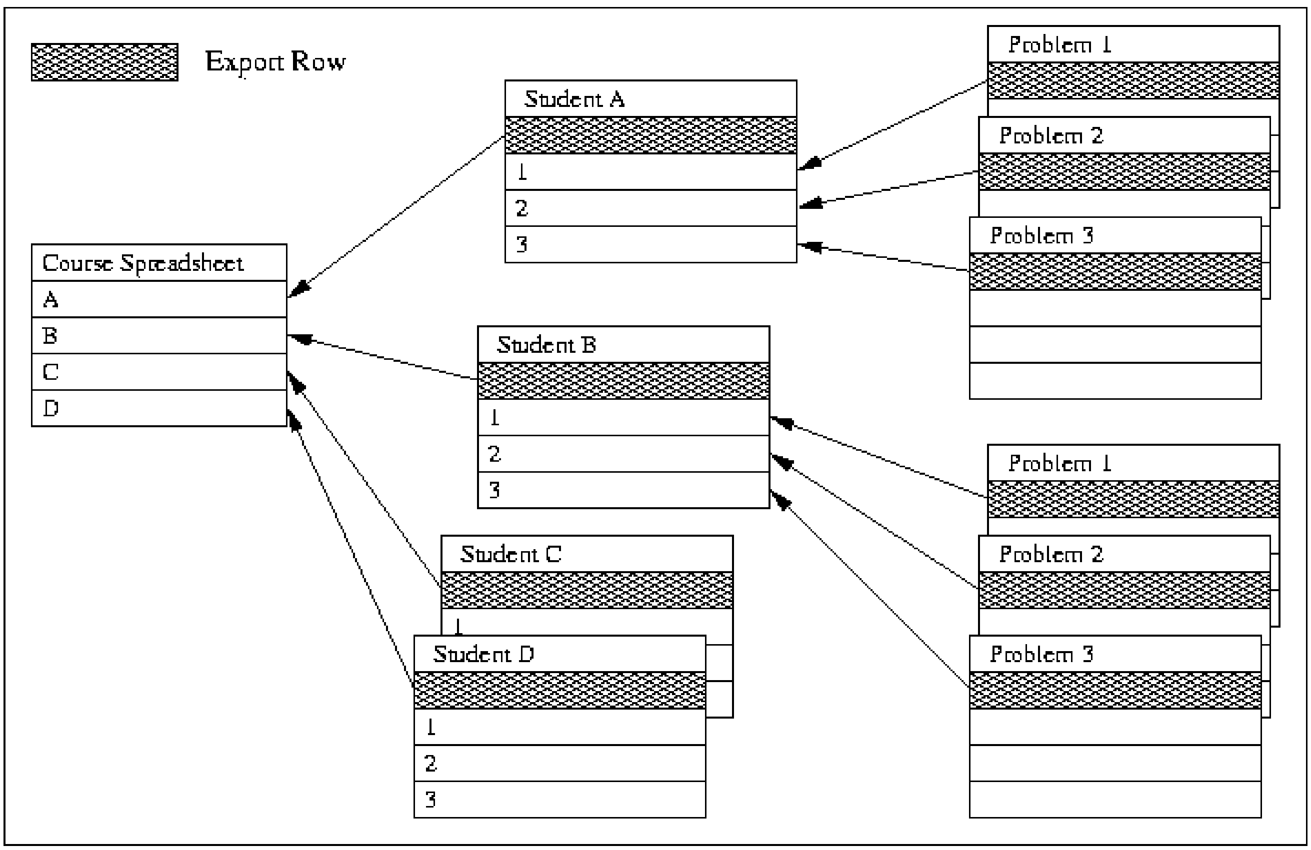
If you have permission to edit a spreadsheet you will also have permission to save and load spreadsheet definition files.

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


Export Row
Student A
1
2
3
Problem 1
Problem 2
Problem 3
Course Spreadsheet
A
B
C
D
Student B
1
2
3
Problem 1
Problem 2
Problem 3
Student C
Student D
1
2
3

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** (7)
- **Referencing Cells** (7)
- **Referencing Parameters** (7)
- **Special Functions** (7)
- **Examples and Comments** (7)
- **Examples and Comments on Assessment spreadsheets** (7)

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** 7 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 (7). Most non-IO Perl functions work in cells.

The following special functions are available in the spreadsheet. Please see **Referencing Cells** (7) 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.

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** (6.1). 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.

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.

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.

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 an 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.