Learning *Online* Network with CAPA

Course Management Manual (Unfinished)

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Contents

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 that 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 | 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", at 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 the same procedure as Excel does. 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.

2   Course Messaging 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.

2.1   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.

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.

2.2   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.

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.

2.3   Disabling Discussion

By default, all users of a course can use the discussion features LON-CAPA provides. If you wish to block course discussion for, you can disable course discussion from the Course Environment.

As Course Coordinator, go to **PARM** from the Remote, press **Set Course Environment**, and where it says **Disallow Resource Discussion**, enter a comma-separated list of role shorthands. For example, enter **st,ta** if student and TAs are not allowed to discuss.

Don't forget to check the **Set?** field, and then press **Set Course Environment**. Changes take effect when next entering the course.

3   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.

3.1   Feedback Adresses

In the Course Environment. Access the Course Environment through **PARM**, and then **Set Course Environment**.

For each Feedback type you can specify a comma separated list of "username:domain", for example, "fred:msu,susie:ohiou". Check **Set** next to the new entries, and store. The new settings will take effect when entering the course the next time.

3.2   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.

3.3   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.

4   Misc.

4.1   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 override the grading for.

4.2   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.

4.3   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 rolesfor 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.

4.4 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 student menu. 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.

5 Introduction to the Spreadsheet

The **Spreadsheet** is used to tell LON-CAPA how to determine how many points a student gets for the LON-CAPA portion of the course.

Spreadsheets are extremely flexible and powerful and can draw upon nearly all aspects of the data LON-CAPA stores about a student. Spreadsheets can be simple things that simply give one point per completed problem to a student, or powerful things that give bonus points for completing problems early or penalties for late completion,, completing problems on the first try, differing values to different problems or problem parts, or just about anything else you could desire.

5.1 Spreadsheet Organization

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.

In order to get data from the lower level spreadsheets to the higher level spreadsheets (see 5.1), the data must be exported from the lower-level spreadsheet.

Export Row

Student A

| 1 |
| 2 |
| 3 |

Course Spreadsheet

| A |
| B |
| C |
| D |

Student B

| 1 |
| 2 |
| 3 |

Student C

Student D

| 1 |
| 2 |
| 3 |
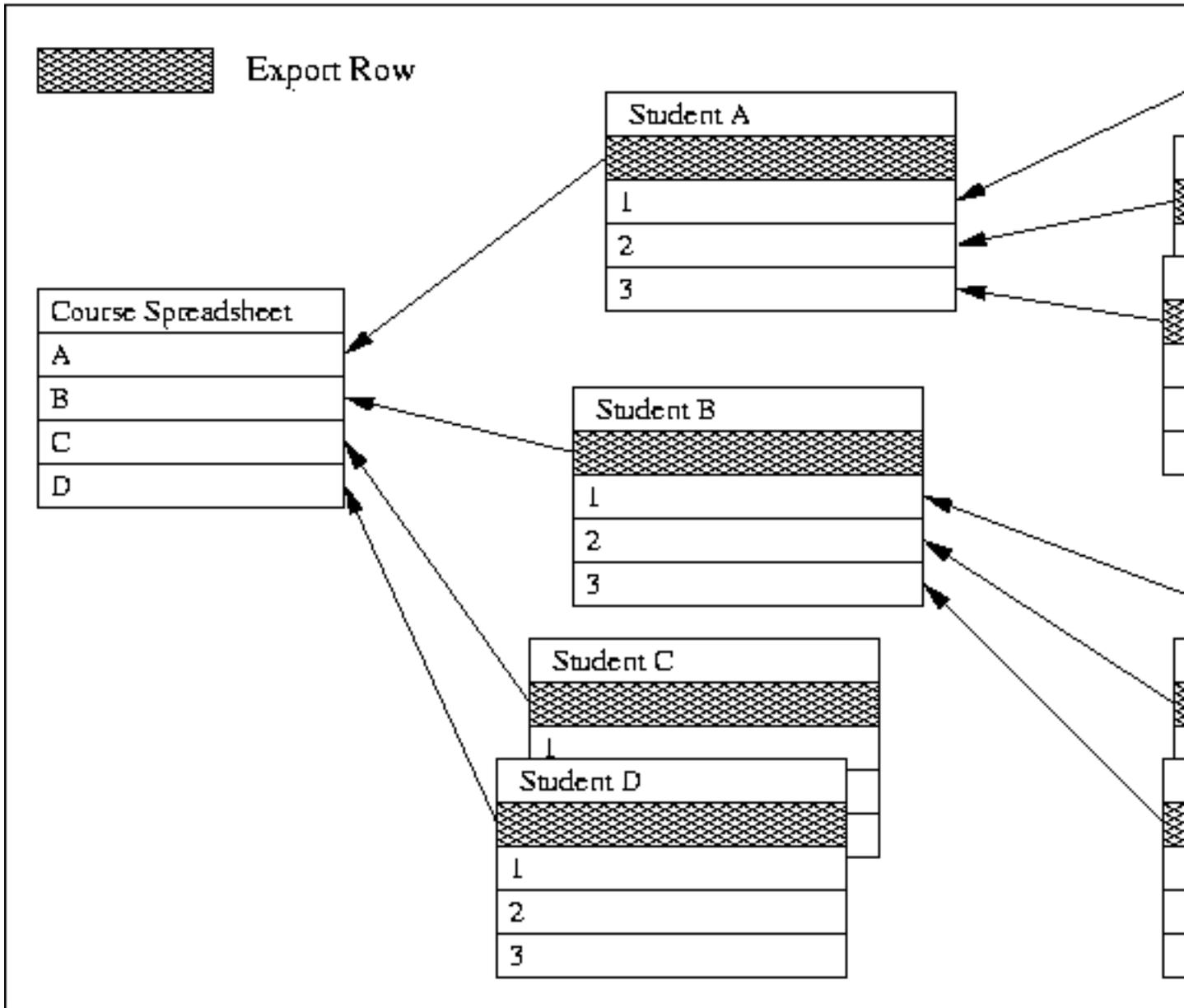
The export row of assessment-level spreadsheets is what is exported to the student-level sheet.

The export row of student-level spreadsheets is what is exported to the course level sheet.

Only the columns labeled with uppercase letters will be exported. The lowercase letters are available for additional calculations used only on the current level of the spreadsheet.

The template row is a way to use the same formula in every row of a sheet. The actual row number is replaced by a "#". For example, "A#*b#" would be "A5*b5" in row 5.

6   Using the Spreadsheet

6.1   How the Spreadsheet Works

(This section is particularly haphazard and could use a well-written overview.

The spreadsheet determines which data it imports from the metadata of the resource. Additional imported values can be used in formulas through the same &EXT (external) function that is also available in assessments. For example, &EXT("system.time") imports the system time. (Note that in this particular example, the explicit time dependence is not recognized by the caching mechanism (see also 6.2).

In the assessment level spreadsheet, most imported values also have symbolic name attached to them, for example parameter_0_weight. You can refer to the imported value by adding square brackets around its name, for example [parameter_0_weight]*A5.

Problem weight is set on the **Parm** screen. The **weight** of the problem is a parameter that is attached to the problem that *can* be used by the spreadsheet to calculate the points a student will receive for a problem.

The default spreadsheet uses the "weight" parameter as the number of points a student will receive for completing a problem correctly. Custom spreadsheets can use many parameters to compute the points a student will receive, such as *status* (completed, not solved, excused, etc.), *partial credit, number of tries*, etc., or **weight** as just another parameter.

Thus, for a given course, the true effect of the **weight** parameter can only be understood in the context of the spreadsheet the course is using to determine the number of points a student will receive for a given problem. (Using **weight** as part of the spreadsheet calculation can provide an easy way to manipulate how the problem distributes points without needing to edit the spreadsheet directly.)

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.

6.2 Recalculating the Spreadsheet

The total number of sheets in course can be tremendous, since it is the number of students times the number of assessments. LON-CAPA caches these sheets and only selectively invalidates those cache copies if potentially relevant data changes. **Completely Recalc** forces LON-CAPA to invalidate all cache copies.

For instance, this is necessary to get the most up-to-date calculations if the sheet itself contains direct access to the system clock (making it "out-of-date" the moment it is calculated), or if an assessment is edited in a way that would retroactively change grading. The automatic spreadsheet devalidation catches student submissions, **PARaMeter** changes, and spreadsheet changes, but not re-publication of a problem resource.

6.3 Specifying Cells

Cells are specified by the letter-number combination of their position in the table, for example "A5". Note that the columns are labeled "A-Z" and then to the right of that "a-z" (lowercase).

There are also the wildcards '*' and '#' which are used in ranges (see 6.3), templates (see 5.1), and symbolic names (see 6.1).

Ranges specify rectangles of various shapes in the spreadsheet, just as ranges do in traditional spreadsheets. 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.

6.4 Using Cells

6.4.1 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.

6.5   Available Functions

The following functions are available in the spreadsheet:

- `&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

In addition, non-IO Perl functions work in cells, which is internally evaluated within a safe space. Field names and Column-Row combinations can be used as variables.

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

6.5.1   ? :

The ?'s and :'s seen in the spreadsheet cells are part of compact notation for an if-then-else clause. Something like:
```
( B2 > 16 ?  'passing grade' :  'failing grade')
```
can be translated into:
```
if (B2 > 16 ) {
 $temp = 'passing grade';
```

```
} else {
    $temp = 'failing grade';
}
$temp;
```

The nicest part of the (? :) operator (aside from its compactness) is the way it automatically returns the value you want without having to use any temporary variables.

6.6 Handling 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. In multi-part questions, "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. To expand the data and work with all parts, please see 6.6.

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7 Troubleshooting and Tips

7.1 Common Error Messages

7.1.1 Max Depth Exceeded

The "Maximum Calculation Depth Exceeded" error can occur when you reference other cells in calculations. For example, if you have:

```
   G0 = Some_complicated_expression
X0 = G0>2?1:0
```

Try replacing X0's contents with [(Some_complicated_expression) > 2]?1:0. In other words, replace the reference to G0 with the actual contents of G0. That might fix your error by removing one level of indirection that LON-CAPA must process in order to compute the result.

7.2 Common Problems

7.2.1 Empty Rows Showing

To avoid showing "empty rows" in the spreadsheet, you can check the **Hide** box on the spreadsheet itself, or you can change the default functionality in the **Course Environment**, available through pushing the **PARM** button.

7.2.2 Out-of-Order Rows

Once a sheet is saved, there is a one-to-one relationship between a certain row and a specific student in the course-level sheet, and a specific assessment in the student level sheet. Thus, specific cell names like "A5" can be used in calculations. Changing class enrollment or course content, respectively, after saving a sheet will bring the row numbers "out of order".

7.2.3 Changes to Grading Scheme

If you change the grading scheme in the spreadsheet, the student's view of the problem will be unaffected (still show "correct" or "incorrect"), as the problem view never shows how many points a problem is worth. Their view of their own spreadsheet (which they obtain through the **GRDS** button) will show the updated points calculation.

7.3 Tips

7.3.1 Alternate View

If you want an alternative spreadsheet view of the same data, save the sheet without making it default. Then use "load" if you want to use the sheet again.

7.3.2 Changing Student Spreadsheets

To change the spreadsheet sheet that students see, use **Save As...** on the level of spreadsheet that you want to change, and check the box **Make Default**.

If you only want to change the sheet for specific assessments, save the assessment level sheet and do not make it default. Instead, on the student level sheet, use the pulldown menu next to the particular assessment.