



Placement Testing with LON-CAPA

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Problem

- Develop reliable placement tests for students who wish to challenge prerequisites for calculus (Calculus Readiness Test) and other quantitative courses (Q Placement Test).

Stages

- Selecting an assessment system
- Developing and testing resources
- Enrollment and registration
- Logistics
- Practice Test
- Tracking
- Diagnostic Testing

Selecting an Assessment System

- Obvious choice: LON-CAPA
 - Very wide range of features for assessment
 - Not limited to pre-packaged test
 - Tests can be easily modified – personalized approach
 - Community of users of the system
 - Free

Creating Resources



Main Menu Launch Remote Control Roles Help Exit

Construction Space: /priv/tgray/template.problem Justin Gray
Author
/sfu/

--- Recent ---

Creating a new problem resource.

The requested file /priv/tgray/template.problem currently does not exist.

To create a new problem, select a template from the list below. Then click on the "Create problem" button.

- Blank Problem
- Chemical Reaction Response
- Click-On-Image Problem
- Curve Plot with Numerical Response
- Custom Response
- Data Plot with Numerical Response
- Drop Box
- Essay Response
- Exam Upload Resource
- Formula Response using Computer Algebra System
- Formula Response using Computer Algebra System and Hints
- Formula Response with Samples
- Matching Response
- Math Response using Computer Algebra System and Hints
- Numerical Response
- One of Multiple Answers Numerical Problem
- Option Response - Concept Groups
- Option Response - Matching
- Option Response - True/False
- Organic Material Response
- Radio Button Response
- Randomly Labelled Image with Option Response
- Rank Response
- Simple Formula Problem
- String Response
- Unordered Multi-Answer Formula Response Problem

Developing and Testing Resources

- Ran pilot tests on students in calculus and other quantitative courses
- Observed:
 - Degree of difficulty of questions
 - Degree of discrimination of questions
 - Student feedback (comments, responses)
 - Student success

Compiling Statistics

Compiling statistics for 30 problems

Sequence Statistics ?

Sequence	#Items	Score Mean	Score STD	Score Max	Score Min	Score N	Count Mean	Count STD	Count Max	Count Min	Count N	KR-21
Calculus Readiness Test	30	17.44	6.60	30.00	1.00	105	17.44	6.60	30.00	1.00	105	0.86

Calc Readiness Test

Compiled on Fri May 23 05:50:18 am 2008 (PDT)

Calculus Readiness Test

P#	Title	Part	#Stdnts (plot)	Tries (plot)	Max Tries (plot)	Min Tries (plot)	Mean Tries (plot)	S.D. tries (plot)	#YES (plot)	#yes (plot)	tries/correct (plot)	#Wrng (plot)	%Wrng (plot)	DoDiff (plot)	DoDisc (plot)	weight
1	L01.problem	0	79	79	1	1	1.00	0.00	33.0	0.0	2.4	46.0	58.2	0.58	0.65	1
2	L02.problem	0	97	97	1	1	1.00	0.00	71.0	0.0	1.4	26.0	26.8	0.27	0.32	1
3	L03.problem	0	100	100	1	1	1.00	0.00	72.0	0.0	1.4	28.0	28.0	0.28	0.31	1
4	L04.problem	0	99	99	1	1	1.00	0.00	77.0	2.0	1.3	22.0	22.2	0.22	0.40	1
5	L05.problem	0	90	86	1	0	0.96	0.21	53.0	7.0	1.6	37.0	41.1	0.38	0.35	1
6	L06.problem	0	105	105	1	1	1.00	0.00	58.0	1.0	1.8	47.0	44.7	0.45	0.48	1

Enrollment and Registration

- Students register for the test via a webform
- Automatic enrollment runs on “dummy course”
- Students are contacted by placement test proctor to schedule an appointment
- Groups are set up in advance with varying open dates
- Proctor assigns students to groups

Registration



Math Test Registration

Time remaining to submit this page: 12 minutes.

Fields marked with "*" are required. [Click here for contact information.](#)

Once you have registered for one of the tests below, you will need to schedule a time to write the test by contacting qtest@sfu.ca

First Name: *

Last Name: *

Computing ID: tgray

Which test are you registering for?
 Quantative Placement Test
 Calculus Readiness Test

Between which dates would you like to take the test?
 *

Scheduling

[Main Menu](#)
[Return to Last Location](#)
[Navigate Contents](#)
[Edit Course](#)
[Groups](#)
[Launch Remote Control](#)
[Roles](#)
[Help](#)
[Exit](#)

Groups
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Q Placement Test

[Q Placement Test](#) -> **Groups**
Groups [?](#)

[Create a new group](#)
[Re-enable a deleted group](#)

Action	Group Name	Group Title	Creator	Created	Last Modified	Collaborative Tools	Quota (Mb)	Members	Files	Discussion Boards	Disk Use (%)
View Modify Delete	2007Nov2	11:30 - 1:20pm, AQ3145	ameichsn:sfu	on Friday, Nov 2 2007 at 02:22 am (PDT)	on Friday, Nov 2 2007 at 02:22 am (PDT)	None available	0	active - 0 previous - 2 future - 0	Files: 0 Folders: 0	0	N/A
View Modify Delete	2007Nov13	11:30 - 1:20pm, AQ3145.2	ameichsn:sfu	on Monday, Nov 5 2007 at 06:59 pm (PST)	on Monday, Nov 5 2007 at 06:59 pm (PST)	None available	0	active - 0 previous - 9 future - 0	Files: 0 Folders: 0	0	N/A
View Modify Delete	2007Nov30	11:30 - 1:20pm, AQ3145.2	ameichsn:sfu	on Monday, Nov 5 2007 at 07:01 pm (PST)	on Monday, Nov 5 2007 at 07:01 pm (PST)	None available	0	active - 0 previous - 9 future - 0	Files: 0 Folders: 0	0	N/A
		1:30 - 3:20pm		on Monday, Nov 5 2007	on Monday, Nov 5 2007			active - 0	Files: 0		

Logistics

- Each student writes a different version of test
- Scrap paper and four-function calculator is provided
- Students are logged out when their time-limit expires
- Scores are available immediately

Practice Test

- Version of each placement test is published public
- Prospective students can try it without the need to login to LON-CAPA
- Problems are accessed from links in a webpage

Tracking

- Only one LON-CAPA course is used for each placement test
- Sections correspond to semesters
 - Option to combine data from several semesters easily
 - Easy to check whether a student has already written the placement test

Sections Correspond to Semesters

[Main Menu](#) [Return to Last Location](#) [Navigate Contents](#) [Edit Course](#) [Groups](#) [Launch Remote Control](#) [Roles](#) [Help](#) [Exit](#)

Classlist Manager

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Course Coordinator
Calc Readiness Test

[Calc Readiness Test](#) -> [User Management](#) -> [Automated Student Enrollment](#) -> [Section settings](#) Automated Student Enrollment Manager

Task information

Automated adds/drops

Change enrollment dates

Change access dates

Notification of changes

Change crosslistings

Section settings

Student photo settings

Update roster now

Update student photos

View students and change type

Changes to section settings

Currently, this LON-CAPA course incorporates enrollment from 11 sections. Students enrolling in any of these course sections will be automatically added to the class roster for the course, if you have chosen to enable a nightly automated enrollment update. For each section, uncheck the checkbox if you want registered students in that section to cease being included in the student roster for LON-CAPA course: **Calc Readiness Test (mcr001)**; otherwise leave it checked. If you want to change the section ID designation used for this section in LON-CAPA, delete the current value in the LON-CAPA section ID textbox and enter the new value. If you wish to add new course section, enter the number of new sections to add in the textbox at the bottom of the page. You will provide information about each of the new sections on a subsequent page. Click 'Go' to save your changes.

Enrollment?	Section	LON-CAPA section ID
<input checked="" type="checkbox"/>	_d100_1071	1071
<input checked="" type="checkbox"/>	_d100_1074	1074
<input checked="" type="checkbox"/>	_d100_1077	1077
<input checked="" type="checkbox"/>	_d100_1064	1064
<input checked="" type="checkbox"/>	_d100_1067	1067
<input checked="" type="checkbox"/>	_d100_1081	1081
<input checked="" type="checkbox"/>	_d100_1084	1084
<input checked="" type="checkbox"/>	_d100_1087	1087

Diagnostic Testing

- Students enrolled in Calculus I enter with varying degrees of preparation
- Can write a version of the Calculus Readiness Test on an advisory basis
 - Identify gaps in understanding of prerequisite material early
 - Direct students to resources for help
 - Generate more data

Data for 2500 Calculus I Students over Two Semesters

		Letter Grade				
		A	B	C	D or F	Total
Diagnostic Test Score	80%+	22.8%	26.7%	34.7%	15.8%	100.0%
	60-79%	11.4%	23.9%	46.7%	18.1%	100.0%
	40-59%	3.1%	15.9%	43.9%	37.0%	100.0%
	20-39%	1.9%	9.0%	51.3%	37.8%	100.0%
	0-19%	1.7%	6.0%	28.4%	63.8%	100.0%
	Total	10.2%	19.2%	41.9%	28.7%	100.0%

Extra Help for Students with Weak Pre-calculus Background

Number of Classes Attended and Final Letter Grade Cross Tabulation, 20-59% Diagnostic Test

		Grade				
		A	B	C	D or F	Total
Number of Classes Attended	4-10 Classes	7 5.0%	29 20.9%	74 53.2%	29 20.9%	139 100.0%
	0-3 Classes	5 1.6%	31 10.1%	133 43.5%	137 44.8%	306 100.0%
Total		12 2.7%	60 13.5%	207 46.5%	166 37.3%	445 100.0%