STLF Report to CWSEI and Mathematics Department

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Period: 2011-08-17 – 2011-09-16
Submitted: 2011-09-17

Specific activities performed by STLF

1) Professional development
   - Attended reading group (Aug 23, 30, Sept 14)
   - Attended math reading group (Sept 1)

2) Math SEI general meetings/activities
   - Attended weekly STLF meetings (Aug 17, 22, Sept 15)
   - Met with Sarah and Math-SEI group to review current projects and discuss future plans (Aug 18)

3) Course-specific meetings/activities

   MATH 257/316 – Partial Differential Equations/Differential Equations II
   - All course materials are backed up in course archive.

   MATH 210 – Introduction to Mathematical Computing
   - The syllabus has been redesigned.
     o First half of the course: Maple
       - Symbolic differentiation, integration
       - Manipulation of polynomials and rational functions
       - Analytic and graphical solutions of ODEs
       - Sequences and series
       - Power series and Fourier series approximations of functions
     o 2nd half of the course: MATLAB
       - Vector and matrix operations
       - Numerical solutions of non-linear equations
       - Numerical integration and differentiation
       - Difference methods for ODEs
   - Learning goals:
     o Maple: 1st draft done
     o MATLAB: 1st draft in progress
   - Will start creating course materials after the draft of the learning goals is completed.

   MATH 305 – Applied Complex Analysis
   - Instructor approved the learning goals and put on the course website.
   - Diagnostic assignment on sequences and series is completed. Grading in progress. Will provide results in the next report.

   MATH 110 – Differential Calculus
   - Diagnostic test and remedial assignments
     o The diagnostic test will be given on Fri Sept 23 in class.
     o A new test has been created (11 questions from last year, 5 new questions)
- 9 questions on algebra
- 7 questions on other topics (graphs, word problems)
  - I am responsible for the weekly remedial assignments on WeBWorK
    - 2 parts – Part A: algebra; Part B: graphs and applications
    - Students who get 4/9 or less on algebra need to do Part A.
    - Those who get 3/7 or less on graphs and word problems need to do Part B.
    - Those who get 8/16 or higher on the diagnostic test do not need to do the remedial assignments.

- Workshops
  - Focus on problem solving
  - Groups of 4 or 5
  - Format:
    - Introductory problem – 5 mins
    - TAs introducing problem solving techniques + examples – ~15-20 mins
    - Group work on board
  - Short feedback forms will be given occasionally. I will summarize the comments and compile reports for the instructors.
  - I will report observations to instructor every Friday.

Mathematics Attitudes and Perceptions Survey (MAPS)
- Some factor analyses were done by Warren.
- 4 questions removed, 6 new questions added, 3 more questions about test anxiety added.
- Students in Math 100/180, 104/184, 120, 200 and 226 were invited to take the survey during the 2nd week of classes. Math 110 students will be invited during the 3rd week.
- Validation will be done between late September and early October.
- The next survey will be given next term.

Basic Skills Test (BST)
- Summary of results
  - 168 students wrote the test
  - Average: 12.33/30, median: 11/30
  - Average discrimination index (difference in average between top 1/3 and bottom 1/3 of the distribution): 0.517
  - Average point biserial correlation (correlation between individual question and the overall test scores): 0.493
  - The test in general might be a little too difficult, but the questions are discriminative and consistent.
- Drafts of procedures for the administrator, invigilator and students were produced and are being revised (together with Costanza).
- A few issues needed to be addressed:
  - Registration: It was possible for students to double register or change their registration at the last minutes. The invigilator hence needed to modify the student list in the WeBWorK system after the test started
  - Display problem:
    - Internet Explorer: Errors in displaying mathematical symbols occur randomly. Refreshing the page will fix the problem. Images are not shown correctly if opened in a new window.
    - Firefox: Fonts and Background colours make everything difficult to read.
    - These problems probably only occur with thin client terminals.
Sudden logouts in WeBWorK: A few students were suddenly logged out. After logging back in, some of the answers were lost. This happened a few times.

Unable to submit test: After finishing the test, some students logged out without inputting the exit password. They were unable to submit the test if they logged back in after time was up.

Some errors in WeBWorK: Error messages come up when: duplicating tests, assigning students to tests and changing entrance password.

Error occurs when student numbers are changed in the WeBWorK system.

Current project status (material prepared by either STLF or other members of the MATH SEI)

MATH 110:
Learning Goals: 3rd draft of learning goals is complete.
Assessments: Diagnostic test and attitudinal survey will be given during the third week of classes
New Methods/Materials: New workshops… Problem-solving based.

MATH 210:
Learning Goals: In progress.
Assessments: Not started
New Methods/Materials: The MATLAB module is new.

MATH 305:
Learning Goals: 1st draft is used.
Assessments: Diagnostic assignment done. Analysis in progress
New Methods/Materials: None at this point

Plan for immediate future work

MATH 110:
1. Diagnostic test given on Sept 24. Will analyse the results.
2. Create remedial assignments.
3. Continue with workshop observations and gather feedback from students.

MATH 210:
1. Work on learning goals for the MATLAB module.
2. Work on course materials after the learning goals are created.

MATH 305:
1. Finish the analysis of the diagnostic assignment.

Basic Skills Tests:
1. Email Pam about problems with WeBWork.
2. Finish up the procedures with Costanza.
3. Do questions-by-question analysis when have time.

Math Attitudes and Perceptions Survey:
1. Invite students for validation. Validation starts in late September.
2. Analyze the results after the surveys are closed.