

# Course-Level Student Learning Outcomes (SLO) Assessment Plan

SLOAT member's name(s): Carlos Castillo and Soraida Romero

Division/Department: Math and Physics Division

Course to be assessed for SLOs in Spring 2011: MTH 100

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1. What student learning outcomes (SLOs) will you assess in Spring 2011? Please identify at least 2 (total) chosen from the following: course goals (CG), general education goals (GEG) for which the course has been 'affirmed' by GECC, and/or applicable program goals (PG) from your ECC Course Outline SLO Assessment Summary Sheet.
    - CG #1: Demonstrate knowledge of the fundamental concepts and theories from algebra and geometry.
    - CG #2: Utilize various problem-solving and critical-thinking techniques to set up and solve real-world applications.
    - CG #3: Communicate accurate mathematical terminology and notation in written and/or oral form in order to explain strategies so solve problems as well as interpret found solutions.
    - CG #4: Use calculators effectively as a tool to solve such problems as those described above.
  2. For each SLO given above, what assessment methods (rubrics, assignments, tests, classroom assessment techniques, portfolios, surveys, etc.) will you implement in Spring 2011 to gather evidence of student learning related to the outcome? Please make sure to vary the types of assessment methods you choose to include the following: direct (D) & indirect (I); process (P), input (In) & context (C); summative (S) & formative (F); qualitative (QL) & quantitative (QN); objective (Obj) & subjective (Subj).

Assessment methods to be used to assess CG #1, #2, #3, and #4:

- *Acquisition of MPOs:* The Midterm Exam for MTH 100 will be blue-printed for the acquisition of 8 MPOs for MTH 100. All sections to be assessed will be using this midterm exam, and attempts will be made to have all sections in this study to use at most 4 different versions of this exam. The 8 multiple choice problems on this midterm exam for MTH 100 will assess 8 MPOs for MTH 100 that fall under CGs #1, #2, #3, and #4 listed above. Analysis of these multiple-choice questions will determine if these particular MPOs have been achieved by the

students in the sample. This assessment method is Direct (D), Student Learning Outcome (SLO), Summative (S), Quantitative (Q) and Objective (O).

- *The relation of absences, online homework usage, and recitations on success rates:* By midterm time, each faculty member who teaches the sections in this study will be asked to submit a sheet with all students in their section, student IDs, the grade each student got on the midterm exam, the grade each student is running after the midterm exam, the number of absences incurred by each student up to midterm time and if the students used an Online Homework package, the homework grade obtained by each student on this software. Using this information, the course coordinators will assess the following:
  - (a) if there is a correlation between number of absences and midterm grade. This assessment method is Indirect (I); Process (P); Formative (F); Quantitative (Q) and Objective (O).
  - (b) if there is a correlation between Online Homework package usage and midterm grade. This assessment method is: Indirect (I); Process (P); Formative (F); Quantitative (Q) and Objective (O).
  - (c) if there is a difference in success rates in MTH 100 by midterm time for those students who are taking MTH 100 with a special recitation hour versus those students who are not. Indirect (I); Process (P); Formative (F); Quantitative (Q) and Objective (O).
- *The effect of communication practice on the attainment of CG #3:* It was discovered in the Fall 2010 MTH 100 SLOAT study that many students do not know how to express the solution to particular problems in written form due to the fact that the text does not give them that type of practice. During the month of February, a special handout will be given out to students attending 4 sections of MTH 100 in Spring 2011 asking them to express their answers to particular problems in written form. Since two of the multiple-choice questions on the Midterm Exam require students to explain their answers, the coordinators will determine if there is a difference in acquisition of this MPO by those students who received this handout versus those that did not. This assessment method is indirect (I); process (P); formative (F) and subjective (S).
- *The alleviation of test anxiety:* It was also discovered in the Fall 2010 MTH 100 SLOAT study that many students experienced test anxiety. It was therefore recommended that a seminar on test-taking be offered to students to address this problem. During the month of March 2011, a test-taking seminar will be given by Prof. Ming McCall of the Math Department and the students from the sections in this study will be urged to attend the seminar. An evaluation

sheet will be circulated at the end of this seminar to see if students found the seminar helpful. This assessment method is indirect (I); process (P); formative (F) and subjective (S).

- *Special Instruction on solving word problems algebraically*: One of the MPOs that was not met by at least 70% of the students in the Fall 2010 MTH 100 SLOAT study involved solving written problems using algebra. It was recommended that a special seminar on solving word problems should be conducted to help students learn this important algebraic skill. Prof. Carlos Castillo of the Math Department will be conducting such a seminar during the month of March 2011. An evaluation sheet will be circulated at the end of the seminar to see if the students found this seminar helpful. This assessment method is indirect (I); process (P); formative (F) and subjective (S).
  - *Success Rate of students who started their ECC math instruction with AFM 083*: One of the conclusions of the Fall 2010 MTH 100 SLOAT study was that students who started at ECC with AFM 083 were less successful in MTH 100 than those who took MTH 086. It was recommended that a follow-up study be conducted on all students who had taken AFM 083 since its inception to see how successful they were in all their subsequent math courses at the College. One of the coordinators will therefore request from the Office of Institutional Research a list of all ECC students who had taken AFM 083 since its inception together with a list of all other math courses these students had taken at ECC with their grades for these courses. From this spreadsheet an analysis of success rate for these students in subsequent math courses will be determined. This assessment method is Direct (D); Summative (S), Quantitative (Q) and Objective (O).
3. For each SLO given above, identify *when* each assessment method will be used in the course in Spring 2011; e.g., draw up a timeline for the course which indicates when every SLO assessment method named above will be used throughout the semester (Week 1 – Week 15).

Timeline for all assessment methods:

- Week of February 15: Identify the 8 sections of MTH 100 and inform the faculty members who teach these sections of our assessment plans for these sections.
- Week of February 10: The first draft of the Midterm Exam will be prepared by the two course coordinators. It will then be edited and reviewed by the course coordinators and finalized.
- Week of February 21: Contact the Office of Information Technology (IT), asking them to provide us with an Excel spreadsheet containing the names and IDs of all students who took AFM 083 at the College together with all math courses these students had taken at the College with the semester and grade for each. An analysis of this data will be conducted

throughout the month of March by one of the coordinators to determine the success rate of these students in math courses subsequent to AFM 083.

- Week of February 28: Students in these 8 sections will take their Midterm exam. The instructors will have the multiple-choice questions which have been blue-printed to particular MPOs for MTH 100 answered on a Scan-Tron sheet and these will be returned to one of the MTH 100 coordinators.
  - First Week of March: A statistical analysis of the Scan Tron sheets for the Midterm exam will be conducted by Prof Alvin Williams to determine the percent of MPOs that were met by this sample of students.
  - Second Week of March: The test-anxiety workshop will take place and an assessment instrument of the workshop will be filled out by all students that attend.
  - Third Week of March: The word-problem workshop will take place and an assessment instrument of the workshop will be filled out by all students that attend.
  - The last week of April: The two coordinators will write a report of the findings of the study.
4. How many sections of the course or how many students will be involved in using these assessment instruments and collecting SLO assessment data in Spring 2011? Please identify your sample size by number of classes (sections of the course) or number of students. (REMEMBER: A 5% error margin in your analysis is ensured if you sample 278 out of 1000 students, 217 out of 500 students, 184 out of 350 students, 132 out of 200 students, 80 out of 100 students, or 44 out of 50 students. – taken from p. 48 of *Assessing Student Learning: a common sense guide*, 2<sup>nd</sup> edition by Linda Suskie).

# of sections to be used: 8 sections of MTH 100 in Spring 2011 with about 35 students in each section (total of about 280 students)

5. Using ~~representative-random~~ sampling, which sections or which students will be involved in using these assessment instruments and collecting SLO assessment data in Spring 2011?

Distribution of Sections: These 8 sections will all be taught during the day at the Main Campus by full-time faculty members. This sampling strategy was purposefully decided in order to reduce the number of variables affecting the student sample – such as day vs. evening; full-time vs. adjunct; etc.