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

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Division/Department: Mathematics and Physics

Course to be assessed for SLOs in Fall 2011: MTH 121 — Calculus with Analytic Geometry I

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1. What student learning outcomes (SLOs) will you assess in Fall 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.

SLO #1: CG 1: Demonstrate knowledge of the fundamental concepts and theories from calculus.

SLO #2: CG 2: Utilize various problem-solving and critical-thinking techniques to set up and solve applied problems in engineering, sciences, business and technology fields.

SLO #3: CG 3: Communicate accurate mathematical terminology and notation in written and/or oral form in order to explain strategies to solve problems as well as to interpret found solutions.

SLO #4: CG 4: Use appropriate technology, such as graphing calculators and computer software, effectively as a tool to solve such problems as those described above.

1. For each SLO given above, what assessment method**s** (rubrics, assignments, tests, classroom assessment techniques, portfolios, surveys, etc.) will you implement in Fall 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 SLO #1, #2, #3 & #4:

1. More than 500 questions (WebAssign) have been MPO tagged and will be electronically analyzed at the end of the semester. In addition, participating faculty will be given 39 questions (to be hand graded in a group setting) that map to these electronic questions. At the end of the semester, we will look at how the electronic assessment compares to the teachers’ graded impression for each student. A full report of MPOs will indicate both a final grade (teacher assigned) and the students’ ability to meet each MPO. A final exam (also electronic) will give a summary of all MPOs as well.
2. We are also giving a pre-assessment of each student’s pre-calculus skills at the beginning of the course and may try to correlated overall course performance to this assessment.
3. For each SLO given above, identify *when* each assessment method will be used in the course in Fall 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).

The electronic assessment takes place over the entire semester (09/06/2011—12/17/2011) and students/teachers are provided feedback about completion. Extensive notes (course guides) are provided to each teacher/student and clearly indicate what electronic assignments need to be done. These notes are publically viewable at [http://mth121.mathography.org/—](http://mth121.mathography.org/%E2%80%94) they provide a flexible timeline to each participating instructor. The hand-graded questions and key are made available to each instructor, including full instructions on when and how to give these assessments are to be given. To even out grading differences, a group grading procedure will be implemented.

1. How many sections of the course or how many students will be involved in using these assessment instruments and collecting SLO assessment data in Fall 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*, 2nd edition by Linda Suskie)

There are four MTH 121 sections being offered in Fall 2011, and all were invited to participate. However, the instructors of only two sections have agreed to the conditions of the study and will, therefore, participate in SLO data collection. This agreement is available and will be attached to the final report.

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

All students in the participating 2 sections of MTH 121 are told that the WebAssign and hand-graded questions are being used to measure their level of mastery of the various course MPOs and that their performance on these instruments will contribute toward their final course grade. A uniform MTH 121 syllabus and website, that provides structure in both content and expectations, is also provided to all students.