

Assessment Plan for LITRE Proposal
"Creating Interactive Tutorials for Calculus 141,241 and 242 "
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In my LITRE proposal for 2005-2007 I describe how I plan to create "interactive tutorials/learning sessions" for MA 141, 241 and 242 students to help them with their calculus/Maple homework. It is anticipated that students will turn to these materials after they have failed to successfully complete one or more of their Maple homework problems. The "interactive tutorials/learning sessions" will offer the student constructive advice on how to complete the problem(s). The advice will be directed toward both conceptual problems related to the calculus aspects of the problems, and toward Maple syntax problems.

There are two stages to the project.

2005-2006: Data extraction from archived homework. In the first stage of the project I plan to hire an undergraduate or graduate student to extract the data that is needed to build an "expert system", namely a system that knows all (or almost all) the mistakes that students tend to make in the Calculus/Maple homework problems. What will be extracted from the archived worksheets is the set of *all mistakes not accounted for by existing partial credit assignments*. These "new mistakes" then will be feed back into the grading code as new partial credit assignment together with the "student advice" referred to above.

Assessment of success with this part of the project will be measured by the number of "new mistakes" we find once the above work on data extraction and assimilation is completed. The point is that once this first part of the project is completed, it is possible that more "new mistakes" arise in the future. These new mistakes, if any, will be "logged" in the fall 2006 semester and assimilated into the grading code at a future date.

2006-2007: Interactive tutorials/learning sessions created and tested. In the second stage of the project I will use eGrader software (already developed) to create the "interactive tutorials/learning sessions" and prepare them for use in the fall, 2006 semester. For the assessment of this part of the project I will concentrate on two Maple Lessons in MA 242 (Lessons #2 and #3) that are particularly relevant to third semester calculus.

1. Split the approximately 12 sections of MA 242 into two groups, Group #1 and Group #2. Group #1 will have access to the "interactive tutorials/learning sessions" while Group #2 will not have such access.
2. To test whether or not the new materials help the students to better understand the calculus concepts introduced in the lessons, all students in both groups will then have the exact same problem (or problems) on the in class tests that follow each of the two assignments. Grades of those problems will then be compared to see if access to the Interactive tutorials/learning sessions helped the students to better understand the calculus ideas being studied.
3. The students in Group #1 that have access to the new materials will be asked to answer a few questions in a questionnaire at the end of the course. The types of questions that will be asked are:
 - (a) Did you use the Interactive tutorials/learning sessions?
 - (b) Do you feel the Interactive tutorials/learning sessions helped you to better understand Calculus and Maple syntax?
 - (c) What changes would you make to the Interactive tutorials/learning sessions to improve their effectiveness?