Provost’s Learning Innovations Grant for Faculty
Request for Full Proposal
2000-2001

Please send your completed grant proposal (4 pages, plus attachments), one original and eleven copies, to Linda Bauford, 4000 Eastman
by 4:30 p.m.
Monday, March 6, 2000.
No hand written proposals will be accepted.
Notification of awards will be made by Monday, April 17, 2000.

Project Title: Instructional Techniques: Content and Delivery Development

Applicant(s):

Name: [Redacted] Telephone: X7787

Department: ECT-ET College: CAST
1. Project Summary:
This project involves the re-development of an existing course into a completely new format. The reason for performing this work is to make the Computer Engineering Technology discipline more interesting and appealing to first year students. The format change proposed will enable faculty members to work more closely with a large number of students and develop a relationship with those students in an effort to make them more successful.

The course proposed for enhancement is titled Electronic Fabrication Techniques (0618-220). Presently this course is taught to approximately 110-120 first year students during the fall quarter. The purpose of this course is to provide students with the lab skills necessary to succeed in the Electrical, Computer, and Telecommunications Engineering Technology department. The course has a focus on the Computer Engineering Technology Discipline. The present method of teaching involves a faculty member lecturing to either one group of about 120 students, or two groups of 50-60 students each. Lecture materials consist of overhead transparencies and/or 35mm slides. The students also have a two-hour laboratory period each week. Usually, because of the large number of students involved, the laboratory instructor is not the same person performing the lecture. The result is that most students do not develop a good relationship with the lecturer because they do not see him in and environment conducive to open communications. The lecture material is dry and not very interesting.

This project proposal involves modifying the current content and format of the course to make it more interesting to students. Rather than lecturing to a large group of students, I propose lecturing to groups of approximately 16 in a “studio-like” environment. A lecture would consist, not of a series of transparencies or 35mm slides as is currently done, but of videos which clearly demonstrate the laboratory techniques that the students are learning for the current week. In some instances, the lecture may consist of a direct faculty demonstration with the instructor using an ELMO. The students are in a smaller group more conducive to questions and the laboratory phase immediately follows the lecture portion of the course in a single two or three hour session. This enables the students to immediately perform the techniques to which they have just been exposed. With the large numbers of students involved, it is expected that there will be six to eight sections of this course depending upon enrollment and final class size. The use of videos in many cases makes it feasible for one faculty member to be able to teach several sections of the course while maintaining a high level of interest for the students.

The specific work involved in this proposal involves investigating, acquiring, and evaluating currently available videos which demonstrate/teach the laboratory techniques required for this course: prototyping, bread-boarding, wire-wrapping, soldering, debugging, and testing of electronic equipment. For those areas in which suitable media are not available, lectures that are more conventional will be developed. Additionally a series of eight laboratories will be developed which will enable the students to develop their skills in each of the desired areas.
2. Targeted Learners:
This course enhancement will directly impact all Freshmen in the Electrical, Computer, and Telecommunications Engineering Technology programs in addition to Undeclared Engineering Technology. This course is also optional for University Program students. Enrollment is approximately 120-140 students per year.

3. Anticipated Impact on Teaching and/or Learning:
This project will accomplish several goals in these areas. By making the course more interesting and stimulating to both faculty and students retention should be increased. The development proposed here will provide a better mechanism for both teaching and learning by enhancing the environment in which interaction occurs. Reducing the class size provides a better environment for student/faculty relationship, which is very important, especially at the freshman level. Incorporating demonstration videos will provide a much more solid description and definition of what is expected of the students. Rather than simply seeing pictures or graphics of soldering, for example, they will be able to watch someone actually soldering. This should greatly expedite the learning process. In addition, this work provides the potential to develop this course for delivery in a distance learning environment.

4. Impact Measurement:
The most tangible measurements available are student evaluations and retention rate. Several years of evaluations are available for several instructors. It is anticipated that by comparing the evaluations of the newly offered delivery and techniques to previous years evaluations an improvement will be seen. It is expected that this type of comparison would be performed for at least two years of the course offering. It is also anticipated that improved laboratory techniques will be demonstrated by the students once the students get into the upper division courses. The project, along with the specific findings of the evaluation, will be presented to the ECT-ET faculty, the Computer Engineering Technology Curriculum Committee, and the Computer Engineering Technology Industrial Advisory Board. In addition, this development work will be directly shared with our adjunct faculty who teach this course to a relatively small group during the winter quarter each year. It is also planned that this development and the associated retention information and student evaluations will be shared with other Engineering Technology programs so that they may perform similar modifications in their own programs if desired.

5. Rationale for Project:
This project is needed to improve retention and the students laboratory abilities in the Electrical, Computer, and Telecommunications Engineering Technology programs. Our faculty is currently unable to take release time due to the current workload within the ECT-ET department during our normal teaching quarters. The Provost's Learning Innovations Grant affords us the opportunity to complete this type of work, which is very important, but probably not the highest priority task. Retention improvement is one of the goals of the ECT-ET department and the enhancement of this introductory course should provide a significant boost in this area. By redesigning both the content and the format for Electronic Fabrication Techniques the course will become more educational and more interesting to the students. By getting the students excited about this technology, retention rates and student evaluations should be greatly improved.
Though this proposal directly impacts a single course offering, the techniques used could easily be transferred to other courses and/or faculty members. This effort will be shared with others in the Engineering Technology area to enable them to use this approach where it is relevant. The goal here is to really demonstrate techniques to students, rather than simply explaining techniques. I believe this type of structure can work in any environment where manual skills are required.

I am the sole faculty member involved in this proposal. I have been teaching Electronic Fabrication Techniques for the last three years to groups of more than 110 students per year, and am in a tenure-track position as Assistant Professor in the ECT-ET department. My background is in both hardware and software Computer Design and I spent the last 7 years prior to coming to RIT as a Senior Systems Design Engineer for Intel Corporation.

6. Development Timetable:
This work will be performed and completed during the summer quarter 19994.