

## **Name of the PROPOSAL:**

**An Applied Math Tutorial for the Electrical/Electronics Technology Student**

## **Purpose of the PROJECT:**

This tutorial project will provide an online and/or computer based learning tool for students in the Electrical/Electronics technical programs area. While the emphasis will be on applied mathematics for Electrical/Electronics area, the tutorial could be used by anyone who has an interest in applied mathematics. In my opinion after observing Compass and/or ACT scores of students over a span of approximately eight years; there are two important basic skill areas, mathematics and reading, that are essential to the success of students in the Electrical/Electronics technology programs, this proposal addresses the mathematics area. Many older adult students in the programs have been out of school for significant periods of time; thus, they may score well enough to get into our programs, but need assistance in rebuilding their mathematics knowledge base. Many students, who are just exiting the secondary experience, may have failed to take adequate preparatory mathematic courses or just did not see the need for taking the classes seriously.

## **GOALS:**

- **Student Benefits:** This tutorial will focus on the application of mathematics to solve problems in Alternating Current [AC] and Direct Current [DC] circuit analysis. Problem solutions will be explained and facilitated through the use of a basic scientific calculator, costing about ten dollars. The participant will be guided through the experience by redirection to a varying degree of problem difficulty based upon the response to questions. Thus, the participant will be allowed to progress at a pace based upon their present skill level. The more knowledgeable or experienced participant with a sound knowledge base in some areas of AC and DC circuits analysis would be able to move more quickly through the program, while being able to experience a higher degree of difficulty in problems to be solved; The less knowledgeable student would be able to progress through

differing degree of difficulty to a minimal acceptable level, prior to being able to go to a new topic area.

- **Redesign addresses different learning styles:** Inclusion in the program of pictures of actual circuits, schematics, and animation should assist those with differing learning styles to grasp the content.
- **Integration of technology into proposed redesigned course:** Macromedia “Authorware 7”, “Dreamweaver MX 2004”, and “Flash MX 2004” software will be used to allow the tutorial to be web and/or computer based. Other software used will include Microsoft “PowerPoint”, “Word”, “Excel”. “Visio”, and “Access”.
- **Ideas to ensure the end product can be updated:** The use of popular and readily available software should help ensure that changes can be made in the future with relative ease.
- **Web-based software, proposal for future funding:** There are no recurring expenses for the software employed, although the purchase of enhancements or upgrades in the software technology used may be desirable. I would think a recurring budget of approximately \$1,000 per year would be more than sufficient as funding if desired.
- **CD,DVD, online tutorial, pre-test and post-test\* will enhance teaching and learning for other faculty and students:** The tutorial could assist faculty by use as a resource tool either in the classroom or as out-of-class assignments. Students interested in applied mathematics of all disciplines would find the content of use.

### **Evaluation:**

- **Measurement of Success:** By monitoring the use of the tutorial and the increase in retention and grades achieved for those who use the tutorial. It may be interesting and beneficial to design an experimental study to compare the success of the participants using the tutorial versus those who do not, by an analysis of compass and ACT scores as a basis for comparison. A Pre-test and Post-test assessment will be available to determine student progress.

### **Technical Support Needed:**

- **Training:** Macromedia – “Authorware 7”, Macromedia Dreamweaver MX 2004”, and “Macromedia Flash MX Professional 2004” – online web training would be used to accomplish this training goal; Microsoft “Access” and Visio” – books would suffice to accomplish this training goal.
- **Software:** Macromedia – “Authorware 7” “Macromedia Dreamweaver MX 2004”, and “Macromedia Flash MX Professional 2004”; Microsoft “Word”, “Excel”, “PowerPoint”, and “ACCESS”; “VISIO”
- **Hardware:** An external CD/DVD Read/Write Drive or a Laptop with that capability would be desirable.

**BUDGET for Technical Support:**

- **BOOKS for Learning the Microsoft Software Systems:**
  - o Programming Microsoft Office Access 2003 (Core Reference)  
by [Rick Dobson](#)  
\$49.95
  - o Microsoft Visio Version 2002 Inside Out  
By [Resources Online, Nanette Eaton, Resources Online](#)  
\$30.59
- **Web Based Macromedia Training:**
  - o Macromedia Web Professional Online Library  
\$299
- **Software:**
  - o Visio Professional 2003  
\$499
  - o Macromedia Dreamweaver MX 2004-*Educational Version*  
\$ 99
  - o Macromedia Authorware 7 – *Educational Version*  
\$499
  - o Macromedia Flash MX Professional 2004 – *Educational Version*  
\$149

**Total =  
\$1625.54#**

{#This assumes that the hardware needs are provided in addition to these costs.}