PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

MAJOR PROJECTS
EET 2601

Class Hours: 0.0 **Credit Hours: 2.0**

Laboratory Hours: 6.0 **Date Revised: Fall 2001**

NOTE: This course is not intended for transfer credit.

Catalog Course Description:

A project course in which the student and instructor identify a project to be pursued by the student. The student is required to submit the project for acceptance, acquire the parts and build and test the completed product.

Entry Level Standards:

Students must be proficient in the basics of analog and digital circuit analysis, and have sufficient mastery of mathematics and communications skills to enable the student to demonstrate problem-solving ability with a selected project and articulate the results. The student must be able to synthesize and apply subject matter studied previously in the Electrical Engineering Technology curriculum.

Prerequisite:

EET 2310

Corequisite:

EET 2220

Textbook(s) and Other Reference Materials Basic to the Course:

No textbook is required. The student must procure all necessary parts to fabricate the circuit(s) required for this project. Cost varies a great deal usually $100.00 to $200.00.

I. Week/Unit/Topic Basis:

This course is not structured with a given unit in a text and a given topic for a given week as would be a lecture course. Each student has a different electronic project, and the degree of completion of the project at any given time will depend upon the student. The student must work independently and utilize the assistance of the instructor on an "as needed" basis. A number of films related to the course will be shown to the entire class at a time deemed best for the group. Soldering techniques, printed circuit board fabrication techniques, etc., will be demonstrated prior to the need of those techniques in the project implementation. The following shows a general guideline for progress in the implementation of the project.

Week	**Topic**
1	Selection of a project finalized; log book started.

2	Parts ordered; design of printed circuit board begins.
3	Design of printed circuit board completed; artwork for printed circuit board produced on plotter.
4	Printed circuit board photographed, etched, drilled, etc.; parts received.
5	Assembly of printed circuit board begins.
6	Assembly of printed circuit board completed; board mated to enclosure (box, cabinet, etc.).
7	All interface connectors, power supply cable, etc., completed; circuit thoroughly inspected prior to application to power.
8	Testing of the circuit begins; data taken during recorded in log book; troubleshooting is accomplished as required; modifications are made as required.
9	Testing of the circuit continues; additional modifications (if any) are made.
10	Testing completed; test data reviewed for consistency and content; additional testing may be required if anomalies exist in the original test data which cannot be explained and warrant clarification.
11	Preparation of the technical report on the project begins.
12	Preparation of the technical report continues.
13	Technical report completed; plans are made as to how the student will present his or her project to the panel of judges (selected from area industries).
14	Projects are evaluated.
15	Technical reports may be modified to include comments by the evaluator(s); technical reports submitted to the instructor.
16	Final project presentation

II. Course Objectives*:

A. Effectively communicate with the technical and scientific community in the "common language" of Electrical Engineering Technology definitions, units, and relationships; experience in project planning and development. I, II, VI, VII

B. Understand and analyze a wide range of analog and digital circuits using basic analytical techniques learned in previous courses. II, III, V, VI

C. Use word processing and software for printed-circuit board layout and schematic capture in the preparation of a comprehensive technical report. II, IV, VI

D. Be familiar with and fundamentally skilled in soldering and printed-circuit board fabrication, and in packaging an electronic project. II, III, IV, V

*Roman numerals after course objectives reference goals of the EET program.

III. Instructional Processes*:

Students will:

1. Participate in classroom discussions which challenge their abilities to think creatively and visualize complex spatial and mathematical relationships to solve problems. *Problem Solving and Decision Making Outcome*

2. Work in teams to conduct laboratory experiments and also to solve special problem assignments. These activities are designed to foster interpersonal skills in teamwork and develop and enhance leadership skills, students' abilities to express ideas, and students' abilities to reach consensus solutions for the team through negotiation. *Active Learning Strategy, Problem Solving and Decision Making Outcome, Personal Development Outcome*

3. Use electronic test equipment to test electrical circuits constructed from schematics in the laboratory and acquire data. Use computers with applications software to simulate, analyze, and predict the behavior of electrical circuits. Compare expected responses to experimental responses of electrical circuits. Use the Internet for special assignments such as locating data sheets on electronic components. Use computers with word processing software to prepare reports. *Technological Literacy Outcome, Information Literacy Outcome, Numerical Literacy Outcome*

4. Prepare reports on laboratory experiments which include methodology, mathematical analyses of electrical circuit models, a comprehensive comparison of calculated results with experimental results, and conclusions. *Communication Outcome, Numerical Literacy Outcome*

5. Discuss the importance of personal qualities such as personal responsibility, time management principles, self?esteem, sociability, self?management, integrity and honesty in school and in the workplace, and dynamics of change in the workplace. *Personal Development Outcome, Cultural Diversity and Social Adaptation Outcome, Transitional Strategy*

*Strategies and outcomes listed after instructional processes reference Pellissippi State’ s goals for strengthening general education knowledge and skills, connecting coursework to experiences beyond the classroom, and encouraging students to take active and responsible roles in the educational process.

IV. Expectations for Student Performance*:

Upon successful completion of this course, the student should be able to:

1. Analyze analog electronic circuits using basic analytical techniques developed from fundamental laws, theorems, and procedures learned in previous courses. A,B

2. Analyze digital electronic circuits using basic analytical techniques developed from fundamental laws, theorems, and procedures learned in previous courses. A,B

3. Use library research in developing a project to meet a set of specifications. A,B

4. Perform experimental research to determine if a selected circuit will meet a set of specifications. A,B

5. Synthesize and apply subject matter studied in previous courses. A,B

6. Understand the dynamics of project planning and development from the conceptual stage through the process of the finished product. A

7. Interface sub-circuits with one another and the outside world. B

8. Use word processing (such as WordPerfect) and software for schematic capture on a personal computer to write a technical report. C

9. Use software on a personal computer for design layout of a printed-circuit board. C

10. Use a personal computer in conjunction with a plotter to produce the artwork for a printed-circuit board. C

11. Prepare a comprehensive technical report based on experimental data. A,C

12. Troubleshoot analog or digital circuitry or a combination of the two types of circuits. B

13. Use the printed-circuit board facility to photograph the printed-circuit board artwork, etch the printed-circuit board, drill holes in the board for leads of the circuit components, etc. D

14. Perform soldering satisfactorily. D

15. Package electronic circuitry. D

*Letters after performance expectations reference the course objectives listed above.

V. Evaluation:

Evaluation Procedures:

The evaluation in the major projects course will be determined by a combination of: (1) difficulty of the project selected; (2) the level of effort put forth by the student to meet the specifications of the project; (3) the quality of work, including design analysis as well as workmanship in the printed-circuit board fabrication, packaging the circuit, etc.; (4) the presentation and content of the technical report. The project report required in this course will be evaluated according to presentation and content. From the presentation standpoint, organization, spelling, word usage, and grammar are important. In your presentation, you will be concerned with sub-skills such as synthesizing, organizing, documenting, arguing and summarizing. Up to 20% of the value of the report will be vested in the area of presentation. The remaining 80% of the value of the report will be vested in the content area. In the content area, you will be concerned with problem definition, concepts and requirements associated with your project, experimental results, analysis, conclusions and recommendations. Every aspect of the project must be documented, including a parts list and cost of the project. Graphics documentation will include design drawings (including system diagram, circuit design sketch, and packaging plan), schematic of the final circuit configuration, breadboard drawing (if project is breadboarded), printed-circuit board design layout drawing, printed-circuit board artwork, sheet metal drawings (if sheet metal fabrication is involved), and wiring diagrams. The instructor will provide you with a format guide for your report. The percentage of the total grade for the course vested in the project report may vary with instructors, but 25% is offered as a guide.
NOTE: The student will prepare for the instructor a weekly progress report which will be presented to the instructor in the last lab session in a given week. The report must be word processed and not be more one-half page or so. The student must notify the instructor immediately if the student encounters any problems with the student's project which might potentially hinder completion of the project by the specified deadline.

VI. Policies:

Attendance Policy:

Pellissippi State Technical Community College expects students to attend all scheduled

instructional activities. As a minimum, students in all courses must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course (Pellissippi State Catalog). Individual departments/programs/disciplines, with the approval of the vice president of Academic and Student Affairs, may have requirements that are more stringent.

EET Department Policy for This Course:

Students are expected to spend two 3-hour sessions in a lab environment in the department each week of the semester. There will be occasions when the instructor will allow students to visit the ERC (after reporting to the instructor at the beginning of the lab session) and work there researching for design ideas, etc. The student should strive to attend every scheduled lab session in the course, and only those absences due to bonafide emergencies will be excused. Because of the stringent demands of the course and the accelerated nature of the work done in the course, at least a 90% attendance is required to receive credit.