SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: **RESEARCH PROJECT AND REPORT**

Course No.: **ELR311**

Program: **COMPUTER ENGINEERING TECHNOLOGY**

Semester: **SIXTH (6)**

Date: **MAY 1993**

Author: **FRANK TURCO**

Previous Outline Dated: **MAY 1992**

APPROVED: L P Chrozette Dean — 93-01-06 Date

RESEARCH PROJECT AND REPORT — ELR311

C O U R S E O U T L I N E

PREREQUISITES: CET308
or Permission granted by the Instructor pending completion of CET308

LENGTH OF COURSE: 3 HOURS PER WEEK

TOTAL CREDIT HOURS: 45

I. PHILOSOPHY/GOALS

The Research Project(ELR311) and Research Report(CET308) courses are intended to provide a vehicle for the student to consolidate the skills developed in the first two years of the program, and to apply those skills to a hardware and/or software project of some significance. The student is expected to display a high degree of self-motivation, discipline, organization, technical skill, and communications skills during the course. The entire project is spanned over two semesters (fifth and sixth). Each semester has its individual requirements and will be assessed accordingly. The second part of the course requires satisfactory completion of first portion (fifth semester). This semester (sixth) assumes the student has already completed the analysis and design requirements of the project in the previous course (CET308). By this stage, the student should have significant expertise in what needs to be done and its just a matter of getting it done! At the culmination of this semester, the student will use all his/her knowledge from the previous findings and analysis of CET308 as well as other courses to "bring it all together" and successfully implement and document the research project.

The primary focus of this semester is to code and/or build the project, test it, implement it and document it. The student will be required to provide bi-weekly progress reports that identify his/her plans, tasks completed and issues that need to be resolved. The student will also be required to maintain a detailed project log that identifies all the results of research activities as they progress. The student will also be required to verbally discuss his/her progress and problems in a round table discussion among his/her peers and the instructor. These activities will be assessed and can be excellent sources of documentation to be used in producing the final technical report.

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I. PHILOSOPHY/GOALS (Continued)

The semester culminates in a technical report describing the project. This report is an extension of the previous report, and should contain complete documentation of the project plus a technical description of it. The student must submit the hardware and software for the system, demonstrate the operation of the system, to a group. The documentation must be complete including program listings, pseudocode, test plans, and results.

II. STUDENT PERFORMANCE OBJECTIVES (SIXTH SEMESTER)

At the end of this course the student will:

1. Understand the concept of Independent Research.
2. Demonstrate Technical Proficiency on their specific Project.
3. Demonstrate Organizational Skills.
4. Demonstrate proper time management and discipline.
5. Demonstrate a significant level of effort towards the successful completion of the Project.
6. Demonstrate a proficient command of both oral and written communication skills.
7. Provide detailed and valuable bi-weekly progress reports.
8. Provide a detailed chronological log of the research activities and results.
9. Participate in round table discussions of his/her project with peers and the instructor.
10. Participate and provide constructive criticism comments and assistance to his/her peers.
11. Produce and maintain a project plan.
12. Produce and deliver an in depth research report.
13. Formally present the highlights of the research report to peers, the instructor and possibly other faculty and guests.
14. Implement, test and fully document a completed project.

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III. TOPICS TO BE COVERED

This particular course does not introduce new topics other than those derived through communication and independent research. However, this course is a culmination of previous and current courses the student's are taking. The concepts taken in other courses are reinforced to aid the student approach problem solving related to an individual project. The following information will be emphasized as it relates to the student's individual research project.

1. Project Management.
2. Structured Approach to Problem Solving.
3. Walk Through's and informal presentations.
4. Software/Hardware Development LifeCycle.
5. Proper Documentation Skills.
6. Object oriented Analysis.
7. Problem versus solution orientation.
8. Various research tools and techniques available.

IV. LEARNING ACTIVITIES / REQUIRED RESOURCES

In this course a student will be developing an understanding of all aspects related to a specific project of their own choosing. Each student will learn and build some expertise in their individual project, however, their will be some general learning activities that will be addressed and tailored to the individual student's needs. (Some minor modifications to these objectives may be required if time constraints apply)

LEARNING ACTIVITIES

IMPLEMENTING, TESTING AND DOCUMENTING

This block will be the duration of the entire sixth semester. The primary focus is to build and/or code the project.

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IV. LEARNING ACTIVITIES / REQUIRED RESOURCES (Continued)

REQUIRED RESOURCES

Instructor's Handouts, Guidance, and Material as it relates to the individual's project.

Preparation and discussion of the Bi-Weekly Progress Reports.

Participation in the Weekly Project "RAP" sessions where we share our project successes and problems with each other.

The weekly meetings are **mandatory** since they assist us in following a plan and limits duplication of efforts. We can also learn from each other as to how we handle certain situations.

Depending on the topic, students may be required to use a variety of resources such as: library searches, periodicals, technical people, manufacturers, support people etc.

VI. SPECIAL NOTES

1. Students with special needs are encouraged to discuss required accommodations confidentially with the instructor.

2. Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.

VII. ASSESSMENT

The student shall be assessed a letter grade per deliverable on some or all of the following criteria:

1. Technical Demonstration and Ability.
2. Organizational Skills.
3. Preparedness and attendance of the weekly meetings.
4. Level of effort, detail and participation.
5. Communication Skills.
6. Project Management Skills.
7. Project Completeness and depth.
8. Documentation and Reports.

The following is a tentative breakdown of marking scheme based on the periodic deliverables throughout the semester.

a) BiWeekly Progress Reports will constitute 10% of the final grade. These reports must demonstrate a natural progression towards successful completion of the project. They must also illustrate the weaknesses and issues that must be resolved throughout the project.

b) The Log book will constitute 10% of the final grade. The log book should have enough detail in it that will allow the student to effectively be preparing his final documentation on a continual basis. The log book should also illustrate the level of effort taken to achieve success. It should also identify a detailed list of things to do and issues to resolve.

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VII. ASSESSMENT (CONTINUED)

c) Class participation and attendance will constitute 5% of the final grade. The interest in your peers efforts as well as the enthusiasm you bring towards your project will be rewarded in this area.

d) The final technical report for this semester will constitute 25% of the final grade. The specific contents and approach may vary per project and will be discussed with each student. However, some general guidelines will apply such as: attention to detail, projection of significant understanding of the problem by the student, proper identification of the problem, summary of findings through your research, identification of issues to be resolved at the development stage, a detailed summary of what was done and given more time what improvements you would make.

e) A fully implemented project complete with identification of future enhancement options. This will constitute 50% of the final grade.

Each of the above activities must be acceptable to the instructor for the successful completion of the course.

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VII. ASSESSMENT (CONTINUED)

1. GRADING SCHEME

A+	90	-	100%	Outstanding achievement
A	80	-	89%	Excellent achievement
B	70	-	79%	Average Achievement
C	55	-	69%	Satisfactory Achievement

I Incomplete: Course work not complete at Mid-term. Only used at mid-term.

R Repeat

X A temporary grade that is limited to instances where special circumstances have prevented the student from completing objectives by the end of the semester. An X grade must be authorized by the Chairman. It reverts to an R if not upgraded in an agreed-upon time, less than 120 days.

Where a student's overall performance has been consistently unsatisfactory in the fifth semester, an R grade may be assigned without the option to continue on into the sixth semester of the course.

VIII. RECOMMENDED TIMETABLE

The following timetable should be kept in mind during the project. Since each project is different, some flexibility is allowed. However, no major timetable changes may be made without consultation with the instructor.

Winter Semester:

Elapsed Time	Stage of Completion
2 weeks	Solid Plan of attack on the project
6 weeks	Prototyping complete..
12 weeks	System built.
14 weeks	Summer Technical Report presented and system ready to hand in.