MEC E 409 - Experimental Design Project I

★ 4 (fi 8) (either term or Spring/Summer, 2-0-4) Selected group projects in experimental measurement and mechanical design. Two to four person groups develop planning, design, testing and report writing skills on projects in applied mechanics, thermosciences and engineering management. Prerequisites: MEC E 301 and ENG M 310 or 401.
MecE 409 Experimental Design Project I
MecE 469 Experimental Design Project II

Department Policy and Course Description
(as approved by Department Council, 11 June 2004)

Calendar Entry (MecE 409 shown for reference)
“Selected group projects in experimental measurement and mechanical design. Two to four person groups develop planning, design, testing, and report writing skills on projects in applied mechanics, thermosciences and engineering management.”

General Information

1. Prerequisites
(MecE 303, ENGM 310 or 401) will be enforced.

2. General operation of the course
A 409/469 course coordinator is assigned for each session (Fall/Winter) by the Chair. The coordinator’s function is to oversee the conduct of the course, provide guidance to all project groups and supervisors as required via scheduled meetings, read reports and attend the final oral presentations, and, in conjunction with the project supervisor, assign grades. The position of 409/469 coordinator is not meant to be an onerous task, and will not count towards the normal teaching assignment for academic staff.

3. Project Initiation
Projects may be advertised by staff or initiated by students. In either case, a Project Application form (see attached) containing the following information must be submitted to the course coordinator by the student group requesting the project:
a) Project Title
b) Supervisor (with signature)
c) Group members’ names and IDs (with signatures)
d) Project abstract (one page max) containing objectives and procedure
e) Estimate of department resources, especially machine shop time

The deadline to submit applications is one month before the start of each term (August 1 for Fall, December 1 for Winter). Selection of projects that may proceed will be done by the coordinator, in consultation with the designated supervisor(s), the Chair, and the affected department personnel (eg machine shop, computer, electronics, office). Some proposed projects may be allowed to proceed with changed or altered terms of reference. The coordinator will generate a “Project Approval” sheet for distribution to relevant department staff (machine shop, computer, electronics, office) as required.
4. Project Deliverables

Students should not attempt this course unless they are willing to put in sufficient time and effort. (This has not normally been a problem in this course.) It is intended that students will do most of the design, construction, data collection and analysis with a minimum of supervision. Deliverables to be submitted to the supervisor and the course coordinator include the following:

a) Detailed project proposal - this is not the same as the short (one page) application submitted prior to project acceptance. The detailed proposal should indicate the group’s understanding of the project goals and objectives, and outline the work to be carried out in order to complete the project within the one-term course.

b) Progress report - at approximately half-way through the term, date TBA.

c) Oral report - short 20 minute presentation to the course coordinator and other interested parties, scheduled during the last two weeks of the term.

d) Final report - a complete engineering report describing the project; this should include a thorough description of the problem, description of experimental design, test procedures, results and calculations, discussion, and conclusions. This is due before the last day of classes in the term. It is anticipated that these project reports will be of sufficient quality and interest to be maintained in a department archive.

It is expected that the project group will meet with the supervisor regularly through the term. There will be some meetings of the entire 409/469 course enrollment as required (for example: initial course organization and setup, final oral presentations).

5. Determination of Grades

As with all courses, expectations for performance and an explanation of course grading must be presented to students at the beginning of the project. Grades will be based on the deliverables listed above and each individual’s performance during the project. In general, the quality expectations and grading will be consistent with the senior capstone design course (currently MecE 465). Both the degree of difficulty of the project as well as the performance of the project group may be considered. Members of the same project group do not necessarily receive the same grade.

At the conclusion of the project, the supervisor will provide an initial proposed grade for (and ranking of) the students in each project group they supervise. To ensure both actual and perceived consistency of grading across all project groups, course grades will be reviewed by the course coordinator. Where the course coordinator wishes to modify an individual student’s grade, this must be discussed with the project supervisor. The coordinator will handle all administrative tasks involved in processing of grades.

6. Department Resources

It is expected that most projects will be carried out in the supervisor’s lab space, using existing equipment and resources at the supervisor’s disposal. If the project will make demands on department resources (machine shop time, rapid prototype machine, exceptional computer lab access, general lab equipment, additional space, etc), these must be detailed and estimated in the project application. The course coordinator, in consultation with the Chair and other department
personnel, may reject (or request revision of) projects that represent an excessive drain on resources.

Resource utilization will be monitored through the term. Projects requesting additional resources (beyond the initial estimate) may be put on hold pending a project review by the coordinator, the Chair, and affected personnel. If the project is to proceed, a revised “Project Approval” sheet will be generated and distributed to relevant personnel.

The department will not pay for incidental costs of 409/469 projects (supplies, materials, equipment, machine shop, or other costs) unless by special arrangement with the Chair. The Chair will determine, on an annual basis, the total resource allocation for 409/469, and a maximum “per group” allocation.

7. Extension to MecE 469

MecE 469 is available as an elective course for students who have completed MecE 409 (a stated prerequisite in the Calendar). Projects carried out in MecE 469 might arise from those completed in 409, or could be completely separate (different group members, different supervisor). An extension from 409 requires a request (in writing) from the project supervisor and a positive evaluation of the 409 project and group performance by the course coordinator. Extension of a 409 project into MecE 469 implies the setting of new goals and objectives, and is not meant to delay or postpone deadlines or completion of 409. Regardless of the project origin, a new application for MecE 469 must be submitted following the same format as the 409 application. Project reviews, approvals, deliverables, and grade assignment will follow the same guidelines as MecE 409.

8. Important Deadlines

Specific dates each term will be announced in the first class meeting. The following is based on a 12 week term.

Prior to academic term:
August 1/December 1 Project Application due

During academic term:
Week 2 Detailed Project Proposal due
Week 6 Progress Report due
Week 11 Oral Report due
Week 12 Final Report due
Application is due in the department office one month before the start of the desired term.

Check as appropriate: □ MecE 409 □ MecE 469 □ Fall □ Winter Year ______

Title ______________________________________________________________

______________________________________________________________

Supervisor: _____________________________ Date: ________________

Group Members:
__________________________ ID ____________ email: ________________________
__________________________ ID ____________ email: ________________________
__________________________ ID ____________ email: ________________________
__________________________ ID ____________ email: ________________________

Abstract

Attach a one-page typed (12 pt font), double-spaced description of the project. This must include the objectives, a description of the proposed procedures, and an approximate time line. The purpose of this is to allow an assessment of the feasibility of the project rather than to evaluate its results.

Supervisor Resources Available for Project

Check all that apply: □ lab space □ equipment □ computer(s) □ other

Provide details of checked items
_________________________________________________________________________________
_________________________________________________________________________________

Department Resources Requested

Check all that apply: □ machine shop □ RP machine □ computing facility □ extra space □ other

Provide details of checked items
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________

Supervisor Signature: _____________________________ Date: ________________