

MASE 406 - Capstone Design I Course Outline Fall 2014

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Class Schedule:	Regular class meetings of a lecture format will be held for one hour each week. In addition, the course requires regularly schedule weekly meetings between students and their instructor. Monday P MEC 144 9:00–9:50 am	
Lab Schedule:	The “Special Projects” room will be available for the use by this class for the duration of the semester.	
Office Hours:	Regular weekly meetings between the advisor and project team will be arranged by mutual agreement	
Prerequisites:	Students must have successfully completed all required Junior-level MASE courses and be in their final academic year prior to graduation.	
Textbooks:	<i>Elements of Style</i> , Strunk and White (and others depending on edition), any edition newer than the Third (Fourth or newer). <i>Project Management for Construction: Fundamental Concepts for Owners, Engineers, Architects and Builders</i> , Version 2.1, Chris Hendrickson, Available without charge from http://www.ce.cmu.edu/pmbook/ . First Edition originally printed by Prentice Hall, ISBN 0-13-731266-0, 1989 with co-author Tung Au. Recommended: <i>Marine Engineering Economics and Cost Analysis</i> , E.C. Hunt and B. Butman, Cornell Maritime Press, 1994, ISBN 0-87033-458-1	
Course Description:	Part one of a two-course sequence: Development and presentation of detailed proposals for offshore or coastal engineering projects, which will form the basis for Capstone II design projects. Topics include: Formulation of project objectives, design constraints, delineation of alternatives, scheduling, and analysis of economic and environmental impact. This is a writing-intensive course including a major report and weekly one-page written reports.	

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Computer Usage: Computer literacy is mandatory for this class. Students are expected to utilize the best tools available, which will involve self-teaching of one or more commercial computer programs.

Professional Behavior: The two-course sequence is intended to help the students transition from the role of a student to the role of a practicing engineer. As such, students are expected to demonstrate a level of professionalism expected of junior engineers.

In group-meetings, students are assigned the role of an engineering contractor, while the professor acts in the role of a client. Students are expected to appear on time and well-organized for group-meetings with their instructor. Written documents are expected to be well-written and oral presentations are to be made in a professional manner.

Grading: Course grades reflect both performance of the group and performance of the individual. Final and intermediate deadlines are of primary importance. Not all members of a group will necessarily get the same course grade, and particularly poor or exceptionally good individual performance can lower or raise the group score. All components of the course must be completed to receive a passing grade.

Weekly Progress Reports and Presentations	10%
Mid-Semester Report	20%
Mid-Semester Presentation	15%
Draft Proposal	15%
Final Proposal	20%
Final Presentation	20%
Total:	100%

Weekly Schedule:	Week	Lecture Topic
	1	Introduction, Orientation and Project Selection Guidelines
	2	Project Justification I
	3	Project Justification II
	4	Project Justification III -by Examples (Economic Analysis)
	5	Project Report and Presentations - Comparison of Options, Part I
	6	Project Report and Presentations - Comparison of Options, Part II
	7	Midterm Student Presentations
	8	Scheduling I: Purpose, overview, Gantt charts
	9	Scheduling II: CPM and PERT
	10	Scheduling III and Project Controls
	11	Life of a Project
	12	Project Reporting, Documentation and Presentations I
	13	Project Reporting, Documentation and Presentations II
	14	Final Student Presentations

This is predominately a project and lab class; instructional and lecture topics on weekly schedule will vary according to student project specifics. Few presentations from the industry (if it is required) are planned to guide/help students through their projects.

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- Absences:** Attendance will be recorded most class sessions. Unexcused absences in two classes will result in a letter reduction of the student's final course grade. Severe attendance problems may result in a failing grade in the class.
- University rules specify that excused absences for all exams must be documented. It is the student's responsibility to contact the instructor within three working days following the absence date for make up requirements of exams. Further information concerning absences can be found in the University Students Rules Section 7. For a University excused absence, the student should contact the Counselling Office to request a letter for the instructor stating that the Associate Vice President for Student Affairs, or his or her designee has verified the student's absence as excused. Please consult the University Student rules for reasons for excused absences, detailed procedures and deadlines.
- If the absence is excused in the process as outlined in the university Student Rules, the student must be given the opportunity to make up the work. The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unauthorized absence. See Part III, Student Grievance Procedures, Section 49, Unexcused Absences, for more information on appealing an instructor's decision.
- Academic Dishonesty:** For many years Aggies have followed a Code of Honor: "Aggies do not lie, cheat, or steal, nor do they tolerate those who do." As such, it is the responsibility of students and faculty members to help maintain scholastic integrity at the University by refusing to participate in or tolerate scholastic dishonesty. The Aggie Code of Honor and the Scholastic Dishonesty sections in the TAMUG University Rules handbook will be the standard upon which scholastic integrity is maintained in this course. Students are responsible for familiarizing themselves with the standards, definitions, and procedures concerning academic dishonesty. The usual penalty for a first violation shall be an "F" in the course and "Honor Violation Probation."
- American Disabilities Act:** The American Disabilities Act (ADA), a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring accommodation, please contact the Director of Counselling and each of your instructors immediately.

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**Family
Educational
and Rights to
Privacy Act
(FERPA):**

FERPA is a federal law designed to protect the privacy of educational records, to establish the right of students to inspect and review their educational records and to provide guidelines for the correction of inaccurate and misleading data through informal and formal hearings. To obtain a listing of directory information or to place a hold on any or all of this information, please consult Admissions & Records Office.

Items that can never be identified as public information are a student's social security number or institutional identification number, citizenship, gender, grades, GPR or class schedule. All efforts will be made in this class to protect your confidentiality.

**Course
Objectives:**

The primary goal of the course is to provide students with the experience of executing a realistic and relatively comprehensive design project which requires use of much of the engineering knowledge they have acquired throughout their engineering education. To meet this objective, students will also be introduced to additional engineering and project management methods and considerations relevant to engineering design. (Letters correspond to EC-2000 Criteria 3, below)

- Provide students with the experience of planning a realistic and relatively comprehensive design project [a d, f, g, h, i, j, k]
- Provide students with the experience of working on an ocean engineering design team [a, c, d, e, f, g]
- Create a framework into which various course materials can be integrated to consolidate students' knowledge [a, c, d, e, h, i, k]
- Have students prepare and present a detailed technical proposal [d, g, k]
- Introduce students to project scheduling [e, g, k]
- Introduce students to engineering economics [a, d, e, h, k]
- Introduce students to the environmental impact statement and project life-cycle analysis [a, b, f, g, h, k]

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**EC-2000
(Criteria 3)**

Engineering programs must demonstrate that their graduates have:

- a. an ability to apply knowledge of mathematics, science, and engineering;
- b. an ability to design and conduct experiments as well as to analyze and interpret data;
- c. an ability to design a system, component, or process to meet desired needs;
- d. an ability to function on multidisciplinary teams;
- e. an ability to identify, formulate, and solve engineering problems;
- f. an understanding of professional and ethical responsibility;
- g. an ability to communicate effectively;
- h. the broad education necessary to understand the impact of engineering solutions in a global/societal context;
- i. a recognition of the need for and an ability to engage in lifelong learning;
- j. a knowledge of contemporary issues; and
- k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.