

MASE 407 - Capstone Design II $\Delta$ Course Outline Spring 2015
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<b>Class Schedule:</b>	<p>The primary instructional format of the course is regularly schedule weekly meetings between students and their instructor.</p> <p>Additionally, weekly class meeting will be held throughout as necessary for orientation, technical writing, special topics, and multiple student project presentations.</p> <p>Monday    PMEC 242    2:00–3:50 pm  Friday     PMEC 242    1:00–4:50 pm</p>	
<b>Lab Schedule:</b>	<p>The “Special Projects” room will be available for the exclusive use of this class for the duration of the semester. additionally, the class has priority access to the computer aided design (CAD) lab on Friday afternoon as noted above.</p>	
<b>Office Hours:</b>	<p>Regular weekly meetings between the advisor and project team will be arranged by mutual agreement</p>	
<b>Prerequisites:</b>	<p>MASE 406 (Capstone I), and enrollment in OSCE major degree sequence</p>	
<b>Textbooks:</b>	<p><i>Elements of Style</i>, Strunk and White (and others depending on edition), any edition newer than the Third (Fourth or newer).</p> <p><i>Project Management for Construction: Fundamental Concepts for Owners, Engineers, Architects and Builders</i>, Version 2.1, Chris Hendrickson, Available without charge from <a href="http://www.ce.cmu.edu/pmbook/">http://www.ce.cmu.edu/pmbook/</a>. First Edition originally printed by Prentice Hall, ISBN 0-13-731266-0, 1989 with co-author Tung Au.</p> <p><b>Recommended:</b> <i>Marine Engineering Economics and Cost Analysis</i>, E.C. Hunt and B. Butman, Cornell Maritime Press, 1994, ISBN 0-87033-458-1</p>	

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**Course Description:** Part two of a two-course sequence: Complete design process of a major engineered system completed as a group project. Realistic application of engineering design skills and tools, project managing for the engineering-design effort. This is a writing-intensive course including a major report and weekly one-page written reports.

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

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

Group meetings are an important part of this course. The objective of the meeting include providing guidance to the team and monitoring progress in reaching the established goals. The meetings also provide practice in professional presentation and progressive management of the project by having the students act as an engineering contractor, while the professor or advisor acts as a client. Under normal circumstances, students are neither required nor expected to meet with professors on project-related matters outside of the scheduled weekly meetings.

Throughout the semester, final and intermediate deadline are of primary importance. Students are expected to appear at scheduled meetings and give the presentations on time. The oral presentations are expected to be well-organized and professional. Documents are expected to be well-writing too

**Grading:** Course grades reflect both performance of the group and performance of the individual. 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. Each of the major course tasks (weekly progress, mid-term presentation, final presentation draft and final reports) is scored as a percentage using the following weighting factors:

Weekly Progress Reports, Meetings and minutes:	30%
Mid-Semester Presentation	15%
Draft Report	15%
Final Presentation	20%
Final Report	20%
Total:	100%

The grading scale is defined as:

90 – 100% =	A,
80 – 89% =	B,
70 – 79% =	C,
60 – 69% =	D,
< 60% =	F

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Weekly Schedule:	Week	Lecture Topic
	1	Introduction and course overview
	2	Technical Writing: Planning a major engineering report
	3	Technical Writing: Engineering style and professional standards
	4	Engineering planning and project organization
	5	Site data and detailed project constraints
	6	Analysis planning and numerical model definition
	7	Student mid-term presentations guideline
	8	Student mid-term presentations
	9	Structural Analysis
	10	Hydrodynamic Analysis
	11	Environmental impact analysis
	12	Economic Analysis including cost and profitability
	13	Final Student Presentations guideline
	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. Several presentation from the industry are planned to guide/help students through their projects.

**Absences:** Weekly meetings (approximately 12) are mandatory. Failure to attend a weekly meeting without prior approval of the instructor will result in a zero grade for that weekly meeting and the associated weekly report. Unexcused absence in three classes (here, this includes weekly meetings) will result in a mandatory conference with the instructor and probable reduction of one letter grade from the student's final course grade. Students should make arrangements with the project advisor to make up any missed weekly meetings or presentations prior to an excused absence.

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. Information concerning absences is contained in the University Student Rules Section 7 <http://www.tamug.edu/stulife/Academic%20Rules/Rule%207.pdf>. The University views class attendance as an individual student responsibility. All students are expected to attend class and to complete all assignments. Please consult the University Student Rules for reasons for excused absences, detailed procedures and deadlines as well as student grievance procedures (Part III, Section 45).

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**Academic  
Integrity  
Statement:**

AGGIE HONOR CODE: "An Aggie does not lie, cheat, or steal or tolerate those who do". Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. Procedures on the web: <http://www.tamug.edu/HonorSystem>

**Americans  
with  
Disabilities  
Act:**

The Americans with Disabilities Act (ADA) is a federal non-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this law 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 an accommodation, please contact the Counseling Office, Seibel Student Center, or call (409)740-4587. For additional information visit <http://www.tamug.edu/counsel/services/dssprocedures.htm>

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

FERPA is a federal law designed to protect the privacy of educational records by limiting access to these 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 the 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 privacy and to ensure confidential treatment of information associated with or generated by your participation in the class.

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**Learning  
Outcomes:**

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)

- Prepare students to develop a realistic and relatively comprehensive ocean engineering design project [a, c, d, e, f, g, h, i, j, k]
- Prepare students to work in a multidisciplinary ocean engineering design team [a, c, d, e, f, g, h, k]
- Rearrange students' engineering knowledges through more practical application [a, c, k]
- Have students prepare a detailed technical project report and presentation [d, g, k]
- Prepare students to develop and update engineering project schedule [e, g, k]
- Prepare students to develop engineering project economics [a, d, e, h, k]
- Prepare students to formulate project environmental impact [a, b, f, g, h, k]

**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.

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