

MENG 4215 – Senior Capstone Design I
Course Syllabus

Semester / Year	Fall 2025
Catalog Description	The first of a sequence of two senior courses including a capstone engineering project that entails the theoretical or experimental investigation of design problems. The nature and scope of the project are determined by the student in consultation with the instructor and depend upon the facilities available. A written technical report is required as part of the courses' outcomes. All seniors meet weekly to discuss their projects as teams and with their supervisors. One-hour lecture and 3 hours laboratory.
Prerequisites	Corequisite: MENG 4312. Prerequisites: EENG 3304, MENG 3303, MENG 3309, MENG 3316, MENG 3211, and CMST 1315
Section Number	050, 051, 001L, 002L, 003L, 004L, 030L, 031L, 032L, 034L
Instructor Name	Dr. N. Barakat, Dr. Shih Feng Chou, Dr. Mohammad A Biswas, Dr. Hayder Abdul-Razzak, Dr. Ermias Koricho, Dr. Tahsin Khajah, Dr. Andrew Robbins, Dr. Chung Goh
Contact Information	Contact the following course coordinator if you cannot find the contact info for your specific team advisor: Dr. N. Barakat (Senior Project Board chair) Dr. Shih Feng Chou (TYL coordinator) Dr. Mohammad A Biswas (HEC coordinator)
Class Type / Instruction Mode / Location	Face-to-face and/or zoom lecture and lab/studio – TYL Campus – Location RBN 4034 (Lec) and RBS 2019/4015/1035/TBA (Lab - see Canvas) HEC Campus – Location HEC C204 (Lec) and HEC A216/C203/TBA (Lab - see Canvas)
Class Time	050, 051: We 10:10 AM – 11:05 AM 001L, 002L, 003L, 004L, 030L, 031L, 032L, 034L: We 2:00 PM – 4:45 PM
Office Hours	TBD
No. of Credits	2
Required Textbook	None. A handbook will be provided electronically. The equivalent of the price of a typical engineering textbook will be required as a contribution from each student for material needed to execute the assigned project.
Optional References	TBD
Additional Rules and Requirements	This course involves dealing with multiple non-traditional aspects such as, but not limited to, external entities, financial aspects, and non-disclosure agreements. Therefore, students are required to agree to, sign on, and comply with all related Senior Capstone Design policies.

	AI is permitted for use in reports for providing writing feedback and suggested edits. However, wholesale generation of content is NOT permitted. It is NOT permitted to use AI for solving quiz, or other similar assignments unless explicit written approval is given in the assignment instructions. However, it is permitted to ask AI chatbots general questions about how to solve certain types of problems if the chatbot is not providing the solution. Additional instructions regarding the use of AI tools will be provided in class. All instructions given in class are binding requirements to which every student will be held accountable. Since the mechanical engineering program is intended to train students to be engineering professionals, it is expected that all work products (e.g. reports, presentations, etc.) submitted for class be of professional quality. Failure to submit professional quality work may result in grade reductions, regardless of whether any grading scheme or rubric for an assignment explicitly includes professionalism in the grade calculation.
Evaluation Method	Lecture, discussion, assignments, Teamwork and interaction, and projects grading in this course will be based on input from the advisors and sponsors, as well as other involved faculty and individuals as appropriate. Consistent progress and professional behavior during the course/project are expected. <u>A minimum score of 70% in each element of the following list is MANDATORY to succeed and pass the course.</u> - Assignments and other course requirements 15% - Documentation: Reports (24%), Poster (6%). 30% - Ethics Quiz 10% - Individual evaluation (Faculty advisor (10%), peer (5%), etc.) 15% - Scope Presentation 10% - Design reviews 20% - In addition, successful registration of senior design II MENG 4216 is also required to pass this course
Grading Policy / Scale	Letter grades, scale: A: 90 – 100; B: 80 – 89; C: 70 – 79; D: 60 – 69; F: < 60
Important Events / Dates	09/08/2025 (Mo): Census date 11/03/2025 (Mo): Last day to withdraw from one or more classes Academic Calendar: https://www.utt Tyler.edu/academics/academic-calendar-25-26/
Attendance / Makeup policy / other rules	Regular attendance is imperative if you want to do well in this course. Therefore, any student who incurs three unexcused absences or more during the 15-week semester from any lecture or team event will receive an instant F grade for the course. In case you have an excused absence from a class or event, it is your responsibility to keep up with the class work or assigned tasks and be informed of all announcements made in the class on homework, tests etc. No makeup!

Course Learning Objectives / ABET & PEOs Relation	By the end of this course, students will be able to: 1. Apply knowledge and skills acquired in the undergraduate engineering curriculum in an integrated culminating design project experience to articulate and solve a complex engineering problem. SO1 2. Generate and implement solutions to an engineering problem with realistic constraints and various considerations. SO2 3. Implement and manage a typical life cycle of an engineering design and build project in a structured interdisciplinary team environment, with various real constraints. SO5 4. Recognize and consider the ethical and professional responsibility as well as societal, environmental, and global impact of engineering solutions. SO4 5. Utilize various oral and written communication skills to reach a wide audience throughout an engineering career.
Tentative Topics / Course Plans	1. Creativity and design methodologies 2. Teambuilding 3. Leadership 4. Economic justification 5. Codes and standards 6. Project management 7. Conflict resolution 8. Enhanced communication techniques
University Policies	https://www.utt Tyler.edu/offices/academic-affairs/files/syllabus-information.pdf