

Department .: Engineering Undergraduate Programs

Course number :MSE 4002W

Course title: Capstone Design Project II

Credits : 2

Contact Person : Marty Wood

Catalog Copy : -

MSE 4902W. Capstone Design Project II

Seniors working in teams with faculty and industry mentors solve open ended projects in design of materials, materials processes, and materials systems. Oral and written reports are required in each semester. For students with high academic standing the BSE and MS projects may overlap.

Course Information : -

This course is the final course of a two course sequence which consists of system analysis, integrated design, synthesis of knowledge, fabrication, testing, redesign if necessary, four oral and two written reports that all Materials Science Engineering students must complete to graduate. Students working in teams undertake a major project, usually in an industry setting. Students identify need, define objectives, develop an experimental and analytical approach, evaluate alternative solutions and communicate their findings and recommendations periodically during this two course sequence (see attached syllabus) .

Describe the course requirements :

Computer Usage :

Project preliminary and final reports are required to be prepared with word processing and spreadsheet computer applications. Most projects will require numerical analysis and simulation.

Laboratory reports :

Since these two courses combine to equal a “W” course, there will be extensive writing assignments. These assignments will consist of four written reports during the two semester sequence. Each report is a team effort but sections of the report are written by one of the two-team members; therefore, individuals will receive feedback on their written work. The reports will be graded based on both technical content and the quality of the writing. Each report must consist of at least eight typed finished pages (for a total of at least 4,000 words in length exclusive of footnotes, bibliography, diagrams, etc.). Each report will be graded and returned to the student before the next report is required. **Failure to complete the written portion of the course satisfactorily will result in failure of the entire course.**

The major goals of this course are:

1. Students working in teams undertake a major project, usually in an industry setting.
2. Students identify need, define objectives, develop an experimental and analytical approach, evaluate alternative solutions, and communicate recommendations to their faculty project advisor and teacher of record.

W Criteria:

MMAT 288W, Senior Design II, coupled with the prerequisite course MMAT 287, requires students to develop and submit in writing:

1. The need to improve or change the design/process.
2. The design objectives and goal that will be achieved as a result of their analysis, redesign and experimentation.
3. The design, objectives and goals of the experimental design.
4. The results of the experimental testing and analysis and how the results will affect the final design.
5. Did the experiment model the expected systemic behavior? Did it provide insight for alternative solutions?
6. A preliminary Project Report – one while taking MMAT 287 and one while taking MMAT 288W
7. A final Project Report – one while taking MMAT 287 and one while taking MMAT 288W.

Failure to complete the written portion of the course satisfactorily will result in failure of the entire course.

Role of Grad Students : - The TA functions as an engineering mentor during office hours, assists in the organization and logistics of the classroom presentations, assists in the organization and logistics of the demonstration day and supports the teacher of record. Graduate Assistants will not provide feedback on written reports unless they attend the W course training provided by the University. They are supervised by the faculty instructors.

Impact of Course on Teaching Loads : - Since the student to faculty ratio can be no greater than 19/1, the teaching loads will increase by a factor of (1/19)* total number of students per a semester. Presently not an issue but as program grows, this would become an issue

Supplementary Information : -

MMAT 287P, MMAT 288P Capstone Design Project I & II Syllabus

MMAT 287, MMAT 288 Capstone Design Project I & II

First and second semesters. Two credits each semester. By appointment. Prerequisites: MMAT 266 and MMAT 276.

Seniors working in teams with faculty and industry mentors solve open ended projects in design of materials, products, and processes. Oral and written reports are required in each semester. For students with high academic standing the BSE and MS projects may overlap.

References: Dependent on project.

Goals:

Students working in teams undertake a major project, usually in an industry setting. Students identify need, define objectives, develop an experimental and analytical approach, evaluate alternative solutions, and communicate recommendations.

Prerequisites by topics:

Senior status in Metallurgy and Materials Engineering.

Topics:

Students work with faculty and industry mentors to define, solve, and communicate the solution to a major design project.

Computer Usage:

Project preliminary and final reports are required to be prepared with word processing and spreadsheet computer applications. Most projects will require numerical analysis and simulation.

Laboratory Projects:

Use of laboratories for measurements and process trials will depend on project.

Laboratory reports:

Since these two P skill courses combine to equal a “W” course, there will be extensive writing assignments. These assignments will consist of four written reports during the two semester sequence. Each report is a team effort but sections of the report are written by one of the two-team members; therefore, individuals will receive feedback on their written work. Each report must consist of at least eight typed finished pages (for a total of at least 4,000 words in length exclusive of footnotes, bibliography, diagrams, etc.). The reports will be graded based on both technical content and the quality of the writing. Each report will be graded and returned to you before the next report is required. **Failure to complete the written portion of the course satisfactorily will result in failure of the entire course.**

The enrollment in each section will be less than 19 students thus maintaining a teacher to student ratio of 1/19 (maximum). However each student team has a faculty mentor in addition to the teacher-of-record. Therefore the faculty-to-student ratio is 1:2 and two faculty members read each report and provide comments prior to the students having to submit the next report.