

Mechanical Engineering Systems (MES)

MES 200 Introduction to Mechanical Engineering Systems (2 credit hours)

This course introduces students to mechanical engineering systems and its application in real-world problem solving. Using Excel and MATLAB, students will structure and solve problems. Through hands-on activities, students will become familiar with basic mechanical components, tools and machines. Students will be introduced to professionalism in engineering and develop a personal professional development plan. This course requires a field trip to a local business and students will be required to provide or arrange for their own transportation. Course contains a required laboratory component.

Corequisite: MAE 206
Typically offered in Fall only

MES 201 Mechanical Engineering Systems Lab I (2 credit hours)
Course provides an introduction to the theory and practice of manual and computer assisted laboratory measurement techniques, data analysis, design of experiments and technical report writing. Students learn to successfully conduct and document an engineering experiment. This course requires a field trip to a local business and students will be required to provide or arrange for their own transportation.

Prerequisite: MAE 206
Typically offered in Spring only

MES 300 Systems Engineering (3 credit hours)
This course introduces the theory and practice of formal systems engineering. Students are exposed to systems thinking, systems modeling and performing engineering design within a formal systems engineering framework. They will perform requirements definition and analysis, system architecting, test and integration plan development, and formal technical reviews.

Prerequisite: MES 200 and C or better in MAE 206
Typically offered in Spring only

MES 301 Mechanical Engineering Systems Lab II (2 credit hours)
This is the first course in a series of three upper level laboratory courses MES 301, 302, and 400. In each course, students apply the measurement and experimental techniques learned in MES 201 to explore, experience and verify key theoretical mechanical engineering concepts. MES 301 focuses on the fields of fluid mechanics, dynamics of machines, digital design, and electrical engineering. Course requires a field trip to a local business and students will be required to provide or arrange for their own transportation.

Prerequisite: MES 201; Corequisite: MAE 308 and MAE 315
Typically offered in Fall only

MES 302 Mechanical Engineering Systems Lab III (2 credit hours)
This is the second course in a series of three upper level laboratory courses. MES 302 focuses on the fields of fluid mechanics, dynamic systems controls, and instrumentation. Students also experience engineering design by designing, building and testing an instrumentation device for engineering measurements. Course requires a field trip to a local business and students will be required to provide or arrange for their own transportation.

Prerequisite: MES 301; Corequisite: MAE 435
Typically offered in Spring only

MES 305 Mechanical Engineering Systems Lab I (1 credit hours)
Course provides an introduction to the theory and practice of manual and computer assisted laboratory measurement techniques, data analysis, design of experiments and technical report writing. Students learn to successfully conduct and document an engineering experiment. For MES Majors only.

Prerequisite: MSE 201 and MAE 206
Typically offered in Spring only

MES 400 Mechanical Engineering Systems Lab IV (2 credit hours)
This is the final course in a series of three upper level laboratory courses. MES 400 focuses on the fields of fluid mechanics, heat transfer, digital design, and solid mechanics. Students also finish the design experience started in MES 302. Course requires a field trip to a local business and students will be required to provide or arrange for their own transportation.

Prerequisite: MES 302; Corequisite: MAE 310
Typically offered in Fall only

MES 401 MES Capstone Design I (3 credit hours)
This course sequence is the first in the senior capstone engineering design experience. This capstone experience is the culmination of the MES student's undergraduate education experience. Working in teams, students perform engineering design to solve a real-world engineering problem supplied by an industry partner. In MES 401 & MES 403, students follow a formal systems engineering approach to manage their design project through the completion of a System Requirements Review, a Conceptual Design Review, a Preliminary Design Review, a Detailed Design Review, and a Critical Design Review. Students develop written and verbal communication skills through reports and presentations. Students also gain insight into engineering design practices through guest lectures from local engineers. Course requires travel to sponsor and students are required to provide or arrange for their own transportation.

Prerequisite: MES 300 and MAE 316; Corequisite: MAE 310 and MAE 415
Typically offered in Fall only

MES 402 MES Capstone Design II (4 credit hours)

This course is second in a two semester engineering design and manufacturing experience which is the culmination of the MES student's undergraduate education experience. In teams, students solve a real-world engineering problem supplied by an industry partner. In the two courses, students follow a formal systems engineering approach to manage their project through the following reviews: System Requirements, Conceptual Design, Preliminary Design, and Critical Design. Students develop written and verbal communication skills and gain insight into engineering design practices through guest lectures from local engineers. Students must provide any transportation needed for this class. MES students only.

Prerequisite: MES 401

Typically offered in Spring only

MES 403 MES Capstone Design II (3 credit hours)

This course sequence is the second in the senior capstone engineering design experience. This capstone experience is the culmination of the MES student's undergraduate education experience. Working in teams, students perform engineering design to solve a real-world engineering problem supplied by an industry partner. In MES 401 & MES 403, students follow a formal systems engineering approach to manage their design project through the completion of a System Requirements Review, a Conceptual Design Review, a Preliminary Design Review, a Detailed Design Review, and a Critical Design Review. Students develop written and verbal communication skills through reports and presentations. Students also gain insight into engineering design practices through guest lectures from local engineers. Course requires travel to sponsor and students are required to provide or arrange for their own transportation.

Prerequisite: MES 401

Typically offered in Spring only

MES 405 Mechanical Engineering Systems Lab II (2 credit hours)

In this course, students apply the measurement and experimental techniques learned in MES 305 to explore, experience and verify key theoretical concepts from the fields of thermal science, fluid mechanics, solid mechanics, and dynamics and controls. Students learn to successfully design, conduct, analyze, document and present a statistically sound engineering experiment. For MES students only.

Prerequisite: MES 305 and MAE 314 and MAE 308; Corequisite: MAE 435 and MAE 310

Typically offered in Fall only