

Mechanical Engineering Stems & Technical Electives

Catalog #136: 2013-2014

(rev. November 2015)

Stem Courses (6 hours)

Select two (2) of the following 3 courses

- ♦ MEEN 421 - Thermo-Fluids Analysis and Design. Prerequisites: MEEN 461; MEEN 315; junior or senior classification.
- ♦ MEEN 431 - Advanced System Dynamics and Controls. Prerequisites: MEEN 364; junior or senior classification.
- ♦ MEEN 475 - Materials in Design. Prerequisites: CVEN 305; MEEN 360.

Technical Electives (9 hours)

At least 3 hours must be from the MEEN Technical Electives below

MEEN Technical Electives

Materials and Manufacturing

- ♦ MEEN 430 - Nanomaterials. Prerequisites: Junior or senior classification or approval of instructor.
- ♦ MEEN 448 - Fundamentals of Nondestructive Testing. Prerequisite: MEEN 360.
- ♦ MEEN 455 - Engineering with Plastics. Prerequisite: MEEN 222 or approval of instructor.
- ♦ MEEN 458 - Processing and Characterization of Polymers. Prerequisite: MEEN 222.
- ♦ MEEN 460 - Corrosion Engineering. Prerequisite: MEEN 360 or equivalent.
- ♦ MEEN 467 - Mechanical Behavior of Materials. Prerequisite: MEEN360.
- ♦ MEEN 471 - Elements of Composite Materials. Prerequisites: MEEN 368 and 360 or approval of instructor.
- ♦ MEEN 475* - Materials in Design. Prerequisite: MEEN 360; CVEN 305
- ♦ MEEN 476 - Nanoscale Issues in Manufacturing. Prerequisites: MEEN 222 or approval of instructor; junior or senior classification.
- ♦ MEEN 477 - Air Pollution Engineering. Prerequisite: CVEN 305.

Dynamics and Controls

- ♦ MEEN 408 - Introduction to Robotics. Prerequisite: MEEN 364 or equivalent; junior or senior classification.
- ♦ MEEN 411 - Mechanical Controls. Prerequisite: MEEN 364.
- ♦ MEEN 431* - Advanced System Dynamics and Controls. Prerequisite: MEEN 364; junior or senior classification.
- ♦ MEEN 432 - Automotive Engineering. Prerequisite: MEEN 363.
- ♦ MEEN 433 - Mechatronics. Prerequisite: MEEN 364 or equivalent.
- ♦ MEEN 434 - Dynamics and Modeling of Mechatronic Systems. Prerequisite: MEEN 364.

Thermo-fluid and Energy Systems

- ♦ MEEN 410 - Internal Combustion Engines. Prerequisites: MEEN 344 or equivalent or approval of instructor.
- ♦ MEEN 414 - Principles of Turbomachinery. Prerequisite: MEEN 421 or approval of instructor; junior or senior classification.
- ♦ MEEN 421* - Thermal-Fluids Analysis and Design. Prerequisites: MEEN461; MEEN 315; junior or senior classification.
- ♦ MEEN 436 - Principles of Heating, Ventilation and Air Conditioning. Prerequisite: MEEN 461 or equivalent.
- ♦ MEEN 437 - Principles of Building Energy Analysis. Prerequisite: MEEN 315 or equivalent; junior or senior classification.
- ♦ MEEN 472 - Gas Dynamics. Prerequisite: MEEN 344.

Design

- ♦ MEEN 441 - Design of Mechanical Components and Systems. Prerequisite: MEEN 368 or approval of instructor.
- ♦ MEEN 442 - Computer Aided Engineering. Prerequisite: MEEN 363 and MEEN 368.
- ♦ MEEN 444 - Finite Element Analysis in Mechanical Engineering. Prerequisite: MEEN 357 and MEEN 368 or equivalents.
- ♦ MEEN 459 - Mechanical Vibrations. Prerequisites: MEEN 363; MATH 308.

Special Topics - One time course offerings in a new interest area

- ♦ MEEN 489 - Special Topics in Mechanical Engineering
 - Check Howdy for current offerings

* MEEN Stem course will qualify as a MEEN technical elective only after a student has taken at least two MEEN Stem courses prior.

Non-MEEN Technical Electives described on next page (backside)

NON-MEEN Technical Electives (no more than 6 hours)

Students may take non-MEEN courses, either within or outside the College of Engineering, to satisfy technical elective requirements. All non-MEEN technical electives must be approved by the Undergraduate Advising Office.

Based on previous practice, the following courses are pre-approved as non-MEEN technical electives:

- **Energy Engineering Certificate:** 300 or 400-level engineering courses listed at <http://essap.tamu.edu/energy.htm>
- **Engineering Project Management Certificate:** 300 or 400-level engineering courses listed at <http://essap.tamu.edu/project-mgmt.htm>
- **Polymer Specialty Certificate:** 300 or 400-level engineering or science courses listed at <http://essap.tamu.edu/polymer.htm>
- **Systems Safety Engineering Specialty Certificate:** 300 or 400-level engineering courses listed at <http://essap.tamu.edu/safety.htm>
- **Mathematics:** MATH 304, 311, 401, 407, 409, 411, 412
- **Physics:** PHYS 222
- **Chemistry:** CHEM 222
- **Biology:** BIOL 113 and 123 (lab)
- **Statistics:** STAT 211, 414
- **Geology:** GEOL 104
- **COOP:** 3 hours of ENGR 385 may be used.
- **Directed Studies:** 3 hours of MEEN 485 may be used.
- **Research:** 3 hours of MEEN 491 may be used.
- Other 300 and 400-level College of Engineering Courses as approved by the Mechanical Engineering Advising Office.