

## Mechanical Engineering Stems & Technical Electives

(Catalog 134)

[rev. Jan. 2012]

### Stem Courses

6 hours required - 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 required - Select from the following groups of which at least one (1) course must be a MEEN Technical Elective

a) MEEN Technical Electives

- MEEN 408 – Introduction to Robotics. Prerequisite: MEEN 364 or equivalent; junior or senior classification.
- MEEN 410 – Internal Combustion Engines. Prerequisites: MEEN 344 or equivalent or approval of instructor.
- MEEN 411 – Mechanical Controls. Prerequisite: MEEN 364.
- 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 430 - Nanomaterials. Prerequisites: Junior or senior classification or approval of instructor.
- 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.
- 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 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 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 459 – Mechanical Vibrations. Prerequisites: MEEN 363; MATH 308.
- 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 472 – Gas Dynamics. Prerequisite: MEEN 344.
- 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.
- MEEN 489 – Special Topics in Mechanical Engineering

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

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