**Mechanical Engineering Stems & Technical Electives**

*(Catalog 130)*

[rev. March 2008]

### STEMS
- 6 hours required.
- Select 2 of the following 3 courses.
  
  - MEEN 421 – Thermo-Fluids Analysis and Design. Prerequisites: MEEN 461; MEEN 227; 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.
- At least 1 MEEN Electives Required.
  
  - 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: MEEN 461; MEEN 227; junior or senior classification.
  - 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 436 – Principles of Heating, Ventilation and Air Conditioning. Prerequisite: MEEN 461 or equivalent.
  - MEEN 437 – Principles of Building Energy Analysis. Prerequisite: MEEN 227 or equivalent; junior or senior classification.
  - MEEN 441 – Design of Mechanical Components and Systems. Prerequisite: Junior classification in MEEN.
  - MEEN 442 – Computer Aided Engineering. Prerequisite: MEEN 364.
  - MEEN 444 – Finite Element Analysis in Mechanical Engineering. Prerequisite: MEEN 357 and 368 or equivalents.
  - 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: MEEN 360.
  - 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.

a) Energy Engineering Certificate: 300 or 400-level engineering courses listed at [http://essap.tamu.edu/energy.htm](http://essap.tamu.edu/energy.htm)

b) Engineering Project Management Certificate: 300 or 400-level engineering courses listed at [http://essap.tamu.edu/project-mgmt.htm](http://essap.tamu.edu/project-mgmt.htm)

c) Polymer Specialty Certificate: 300 or 400-level engineering or science courses listed at [http://essap.tamu.edu/polymer.htm](http://essap.tamu.edu/polymer.htm)

d) Systems Safety Engineering Specialty Certificate: 300 or 400-level engineering courses listed at [http://essap.tamu.edu/safety.htm](http://essap.tamu.edu/safety.htm)

e) Mathematics: MATH 304, 311, 401, 407, 409, 411, 412

f) Physics: PHYS 222

g) Chemistry: CHEM 222

h) Biology: BIOL 113 and 123 (lab)

i) Statistics: STAT 211, 414

j) Geology: GEOL 104

k) COOP: 3 hours of ENGR 385 may be used.

l) Directed Studies: 3 hours of MEEN 485 may be used.

m) Research: 3 hours of MEEN 491 may be used.

n) Other 300 and 400-level College of Engineering Courses as approved by the Mechanical Engineering Advising Office.