## 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 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: MEEN 360.
- 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.

#### 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: MEEN 461; 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 357and 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 (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](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](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](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](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.