ELECTIVES
Students are required to complete nine credit hours of technical electives, three of which must be approved Design Electives.

**Fluids/Thermal Sciences and Energy Systems**
- EAS 4712 Aerodynamic Shape Design
- EGM 4350 Finite Element Analysis in Mechanical Design
- EGM 4370 Intro. to Meshfree and Alternative Methods in ME
- EML 3450 Energy Systems
- EML 4419 Propulsion Systems
- EML 4421 Internal Combustion Engines
- EML 4601 Principles of Refrigerating and Air Conditioning
- EML 4601L Refrigeration and A/C Lab
- EML 4603 Air Conditioning Design
- EML 4608C Mechanical Systems in Environmental Control
- EML 4702 Fluid Dynamics
- EML 4711 Gas Dynamics
- EML 4721 Intro to Computational Thermo Fluids

**Mechanics, Materials and Design**
- EAS 4200 Intro to Design and Analysis of Aerospace Structures
- EGM 4610 Introduction to Continuum Mechanics
- EGM 4350 Finite Element Analysis in Mechanical Design
- EGM 4370 Intro. to Meshfree and Alternative Methods in ME
- EGM 5315 Intermediate Analysis of Mechanical Systems
- EGM 5615 Synthesis of Engineering Mechanics
- EGN 5367 Industrial Materials and Engineering Design
- EMA 3066 Polymer Science and Engineering
- EMA 4121L Materials Laboratory
- EMA 4121L Materials Laboratory
- EMA 4223 Mechanical Metallurgy
- EMA 5295 Principles of Composite Materials
- EMA 5507C Analytical Techniques of Material Sciences
- EMA 5935 Advanced Topics in Materials Engineering
- EML 3301C Instrumentation
- EML 4220 Mechanical Vibrations
- EML 4260 Dynamics of Machinery
- EML 4535 Mechanical Computer-Aided Design
- EML 4561 Introduction to Electronic Packaging

**Design, Robotics and Manufacturing**
- EAS 4200 Intro to Design and Analysis of Aerospace Structures
- EML 4220 Mechanical Vibrations
- EML 4535 Mechanical Computer-Aided Design
- EML 4561 Introduction to Electronic Packaging
- EML 4840 Robot Design
- EML 4823 Introduction to Sensors and Signal Processing

**Professional Certificate Programs**
The Professional Certificate Programs provide traditional degree-seeking students, non-degree seeking students and practicing professionals with learning experiences that enhance their design capabilities in four concentration areas. Some of these courses may require additional prerequisites or permission of the program coordinator.

**Professional Certificate in Heating, Ventilating and A/C Design (HVAC)**
- EGN 3343 Thermodynamics I
- EGN 3613 Engineering Economy
- EML 4601 Princ. of Refrigerating and A/C
- EML 4603 Air Conditioning Design
- EML 4608C Mechanical Systems in Environmental Control

**Professional Certificate in Materials Engineering**
- EGN 3365 Materials Engineering
- EGM 4521C Materials Science I
- EGM 4522C Materials Science II
- EML 5015 Intro.to Nanomaterials Eng.
- EML 4911 Undergraduate Research Experience

**Professional Certificate in Robotics Engineering**
- EML 4804 Intro. to Mechatronics
- EML 4806 Modeling and Control of Robots
- EML 4840 Robot Design
- EML 4823 Intro. to Sensors and Signal Processing
- EML 4911 Undergraduate Research Experience

**Professional Certificate in Aerospace Engineering**
- EAS 4105 Introduction to Flight Mechanics
- EAS 4200 Intro. to Design and Analysis of Aerospace Structures
- EAS 4105 Introduction to Flight Mechanics
- EAS 4200 Intro. to Design and Analysis of Aerospace Structures
- EAS 3702L Mechanics and Materials Science Lab
- EML 4419 Propulsion Systems
- EML 4711 Gas Dynamics
- EML 4535 Finite Elements in Mechanical Engineering
- EML 4721 Intro. to Computational Thermo Fluids
- EAS 4712 Aerodynamic Shape Design

**Important Information for MECHANICAL ENGINEERING Curriculum**
- EML 1533 Intro to 3D CAD for ME’s (SolidWorks), or equivalent is required unless previously taken in High School.
- Grade “C” or better required for all ME courses, see advisor for clarification.
- EGS 1006 Intro to Engineering is required if transferring with less than 30 credit hours; otherwise, SLS 1501 and EGS 1006 must be substituted by 3 credit hours of an approved Technical/Engineering Elective.
- Humanities, Social Science, Art courses mentioned are recommended. For other University Core Curriculum (UCC) Courses, go to: http://undergrad.fiu.edu/advising/pdfs/ucc-new.pdf
- **Gordon Rule with Writing (GRW) requirement:** To fulfill this requirement, students can select any two GRW designated courses (six credit hours) chosen from the University Core Curriculum (UCC) courses list.
- **Global Learning (GL) Requirement:**
  - Transfer students who do not meet UCC requirements or have less than 60 credit hours prior to entering FIU must take one Global Learning (GL) Foundation course and one Global Learning Discipline-Specific course.
  - Transfer students who have more than 60 credit hours with or without an “AA” prior to entering FIU will satisfy the Global Learning (GL) requirement by completing two Global Learning Discipline-Specific courses. ME students will have the GL satisfied by completing the Senior Design Project courses (EML 4551 and EML 4905).