“Scientists dream about doing great things. Engineers do them.” – James A. Michener

Mechanical engineering is the broad and a diverse discipline which scales its breadth from the designing and manufacturing of the smallest objects like printer inkjets to the gigantic machinery and systems like the space crafts. Mechanical engineers are employed in virtually every kind of industry. They are involved with seeking new knowledge through research, creative design and development, and with the construction, control, management, and sales of the devices and systems needed by society. A major strength of an education in mechanical is the flexibility it provides in future employment opportunities for its graduates.
Mechanical Engineering Courses

Entrance to Major Courses
• All these courses require a grade of ‘C’ or greater for entrance to major.
• Minimum GPA required – 3.0
• ME major is enrollment controlled.

Mathematics
• Math 140 or Math 140E (Calculus with Analytical Geometry 1)
• Math 141 or Math 141E (Calculus with Analytical Geometry 2)
• Math 251 (Ordinary and Partial Differential equations)

Chemistry
• Chem 110 (Chemical Principles-Inorganic chemistry)

Physics
• Phy 211 (Mechanics)
• Phy 212 (Electricity and Magnetism)
All these courses require a grade of ‘C’ for graduation in this major.

ENGINEERING MECHANICS

E MCH 211 – Statics
* Equilibrium of coplanar force systems; analysis of frames and trusses; non coplanar force systems; friction; centroids and moments of inertia etc.

E MCH 212 – Dynamics
* Motion of a particle; relative motion; kinetics of translation, rotation, plane motion; work-energy; impulse-momentum etc.

E MCH 213 – Strength of Materials
* Axial stress and strain; torsion; stresses in beams; elastic curves and deflection of beams; combined stress; columns etc.

Students may also take E MCH 210 which is the accelerated course and a combination of E MCH 211 and E MCH 213.
MAJOR COURSES

DESIGNING

M E 340 – Mechanical Engineering Design Methodology
• The design process; problem definition, conceptual design, system design, detail design, evaluation and test, implementation, documentation and communication etc.

M E 360 – Mechanical Design
• Specification of components such as shafts, bearings, and power transformers; optimal designs for operational, environmental, and manufacturing requirements etc.

THERMODYNAMICS

M E 300 – Engineering Thermodynamics 1
• Basic thermodynamics concepts, properties of pure substances, first and second law analysis of systems and control volumes etc.

M E 410 – Heat Transfer
• Thermal energy transfer mechanisms: conduction (steady, transient), convection (internal, external), radiation; lumped parameter method; heat exchangers; introduction to numerical methods etc.
VIBRATIONS and ACOUSTICS

M E 370 – Vibrations of Mechanical Systems
• Fundamentals of statistics, sensors, instrumentation, and measurement of mechanical phenomena such as temperature, flow, pressure, force, stress, displacement, and acceleration.

INSTRUMENTATION, MEASUREMENT AND STATISTICS

M E 345 – Instrumentation, Measurement and Statistics
• Fundamentals of statistics, sensors, instrumentation, and measurement of mechanical phenomena such as temperature, flow, pressure, force, stress, displacement, and acceleration.

MODELLING and ANALYSIS

M E 450 – Modeling of Dynamic Systems
• Modeling and analysis of dynamic interactions in engineering systems. Classical and state variable methods; digital simulation; stability and dynamic response.
MAJOR FACULTY

M E 320 – Talmage Gita, Wonk Tak Sing
M E 300 - O'Connor Jacqueline Antonia, Kulkarni Anil Kamalakant
M E 410 – Lynch Stephen P, Yetter Richard A
M E 340 - Moore, Jason Zachary, Vonlockette, Paris R, Mockensturm, Eric M
M E 360 - Kraft, Reuben Heymann, Sommer, Henry Joseph
M E 370 – Sinha Alok, Michaleris, Panagiotis
M E 450 - Wang, Qian, Chang, Liming
Capstone Projects – Neal, Gary L

My Suggestions for some First Year courses

Math 140 and Math 141 – Amine Benkiran
Chem 110 – Benjamin Lear
ESL 015 – Ai Haiyang
E Mch 210 – Samia, Suliman A
M E 300 – Anil Kulkarni

Checkout the professors on RatemyProfessors.com
The following are the minors offered by College of Engineering (They require about classes worth 16-18 credits):

- Biological Engineering
- Biomedical Engineering
- Engineering Entrepreneurship
- Engineering Leadership Development
- Nanotechnology
- Engineering Mechanics
- Environmental Engineering
- Product Realization
- Six Sigma
- Information Sciences and Technology
Mechanical Engineering v/s Electrical Engineering

Mechanical Engineering
• Involves design machines and mechanical devices with detailed layouts and precise calculations to make sure their machines and devices are strong and fit together.
• It also involves thermal sciences, which is the flow of fluid and energy between systems.
• The main 2 fields are thermal sciences and design and control.

Electrical Engineering
• the study and application of electricity, electronics, and electromagnetism.
• Sub-disciplines include: power microelectronics, telecommunication, computers, instrumentation etc.
• design, develop, test, and supervise the manufacturing of electrical equipment, such as electric motors, radar and navigation systems, communications systems, and power generation equipment.
After Graduation

• Go to a Graduate school for Industrial, Aerospace, Automobile Engineering or other fields.

• Take an internship or a job at an industry, manufacturing or mining company (automobile company, robotics etc.)

• Do research in various fields like robotics, automation, mechatronics, nano-engineering etc.
IMPORTANT WEBSITES

- University Bulletin - http://bulletins.psu.edu/undergrad/
- Engineering Advising Center - http://www.engr.psu.edu/advisingcenter/
- Recommended Academic Plan - http://www.engr.psu.edu/AcademicPlans/UniversityPark/ME.aspx

STUDENT ORGANISATIONS

- American Society of Mechanical Engineers (ASME)
- Tau Beta Pi Engineering Honors Society
- Triangle Fraternity

Tips

- Save easy General Education classes for the last semesters (Eg. GH or GHA).
- Meet with an advisor at least once a semester.
- Keep up with the Homework and go to guided study groups.
- Attend the career fairs.