


# ENGINEERING & SCIENCE (ENGR)

 - General Education Course

|  |                         |
|--|-------------------------|
| <b>ENGR 102 Introduction to CAD</b>  | <b>2 Credit hours</b>   |
| An introduction of scales, plan reading, engineering graphics and computer aided designing. Introduction to the operation of modern 2D and 3D CAD software. 2 lec (PR: MTH 132; pre-engineering or engineering major)  |                         |
| <b>Pre-req:</b> MTH 127 with a minimum grade of D or MTH 130 with a minimum grade of D or MTH 132 (may be taken concurrently) with a minimum grade of D or MTH 229 (may be taken concurrently) with a minimum grade of D or MTH 229H (may be taken concurrently) with a minimum grade of D or ACT Math with a score of 24 or SAT Mathematics Before Mar. 16 with a score of 560 or SAT MATH SECTION SCORE with a score of 570. |                         |
| <b>Concurrent PR:</b> MTH 132 or MTH 229 or MTH 229H   |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |
| <b>ENGR 103 First-Year Engineering Seminar</b>   | <b>1 Credit hour</b>    |
| Weekly seminars presented by practicing engineers to help students gain a better understanding of various engineering fields and the attributes required to be a successful engineer.  |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |
| <b>ENGR 104 The Engineering Profession</b>   | <b>1 Credit hour</b>    |
| Introduction to the engineering profession and engineering disciplines; introduction to the engineering design process and team projects.  |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |
| <b>ENGR 111 Engineering Computations</b>   | <b>3 Credit hours</b>   |
| Introduction to effective problem-solving techniques using various engineering applications with an emphasis on accuracy. Various tools will be covered including calculators, spreadsheets, and a computational environment such as MATLAB.   |                         |
| <b>Pre-req:</b> ACT Math with a score of 24 or SAT Mathematics Before Mar. 16 with a score of 560 or SAT MATH SECTION SCORE with a score of 570 or MTH 127 with a minimum grade of D or MTH 130 with a minimum grade of D or MTH 132 (may be taken concurrently) with a minimum grade of D or MTH 229 (may be taken concurrently) with a minimum grade of D or MTH 229H (may be taken concurrently) with a minimum grade of D. |                         |
| <b>Concurrent PR:</b> MTH 132 or MTH 229 or MTH 229H   |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |
| <b>ENGR 201 Circuits I</b>   | <b>4 Credit hours</b>   |
| Definition of fundamental concepts and components, including operational amplifiers. Steady-state ac and dc analysis using the basic laws of circuits. Principles of electrical measurements. Single-phase ac power. Computer applications.  |                         |
| <b>Pre-req:</b> MTH 229 with a minimum grade of D or MTH 229H with a minimum grade of D.   |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |
| <b>ENGR 213 Statics</b>  | <b>3 Credit hours</b>   |
| Particle and rigid body mechanics for static force systems.  |                         |
| <b>Pre-req:</b> (MTH 229 with a minimum grade of D or MTH 229H with a minimum grade of D).   |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |
| <b>ENGR 214 Dynamics</b>   | <b>3 Credit hours</b>   |
| Laws of motion, work and energy, impulse and momentum, relative motion. 3 lec.   |                         |
| <b>Pre-req:</b> ENGR 213 with a minimum grade of D and MTH 230 (may be taken concurrently) with a minimum grade of D.  |                         |
| <b>Concurrent PR:</b> MTH 230  |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |
| <b>ENGR 215 Engineering Materials</b>  | <b>3 Credit hours</b>   |
| Material types and the relationships between material structure and material properties. Material defects, failure, corrosion and degradation, strengthening mechanisms, testing, and joining operations. (PR: CHM 211).   |                         |
| <b>Pre-req:</b> CHM 211 with a minimum grade of D.   |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |
| <b>ENGR 216 Mech of Deformable Bodies</b>  | <b>3 Credit hours</b>   |
| Strength of materials; shear and moment diagrams; stresses in shafts, beams and columns; combined stresses; deflections. 4 lec.  |                         |
| <b>Pre-req:</b> ENGR 213 with a minimum grade of D.  |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |
| <b>ENGR 217 Engineering Career Preparation</b>   | <b>1 Credit hour</b>    |
| To prepare students for both the job search and a career in the field of engineering. Includes professional communication, networking, interviews, technology, ethics, and licensure.  |                         |
| <b>Pre-req:</b> ENGR 102 with a minimum grade of D or CE 102 with a minimum grade of D or CS 110 with a minimum grade of D or CS 110H with a minimum grade of D.   |                         |
| <b>Attributes:</b> No Textbook Required  |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |
| <b>ENGR 219 Engineering Thermodynamics</b>   | <b>3 Credit hours</b>   |
| Fundamental concepts of energy analysis and thermodynamic principles. Computer applications. 3-lec.  |                         |
| <b>Pre-req:</b> PHY 211 with a minimum grade of D.   |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |
| <b>ENGR 221 Engineering Economy</b>  | <b>3 Credit hours</b>   |
| Economic selection of machines, structures and processes. 3 lec.   |                         |
| <b>Pre-req:</b> MTH 127 or MTH 130 or MTH 132 or MTH 229 or MTH 229H.  |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |
| <b>ENGR 222 Engr Cost Analysis &amp; Economy</b>   | <b>3 Credit hours</b>   |
| Economic analysis of engineering proposals; time value of money; evaluation and selection of projects; replacement and retention decisions; uncertainty and risk; inflation; cost estimation; depreciation; and benefit cost analysis.   |                         |
| <b>Pre-req:</b> MTH 229 with a minimum grade of D or MTH 229H with a minimum grade of D.   |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |
| <b>ENGR 280 Special Topics</b>   | <b>1-4 Credit hours</b> |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |
| <b>ENGR 281 Special Topics</b>   | <b>1-4 Credit hours</b> |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |
| <b>ENGR 282 Special Topics</b>   | <b>1-4 Credit hours</b> |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |
| <b>ENGR 283 Special Topics</b>   | <b>1-4 Credit hours</b> |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |

|  |                         |  |                         |
|--|-------------------------|--|-------------------------|
| <b>ENGR 318 Fluid Mechanics</b>  | <b>3 Credit hours</b>   | <b>ENGR 487 Independent Study</b>      | <b>1-4 Credit hours</b> |
| Fluid properties, hydrostatic forces, stability of floating bodies, equations of fluid acceleration and motion (continuity, momentum, energy, Euler's Bernoulli's), dynamic similitude, internal flow, and computer solutions in ideal fluids. 3-lec. (PR: ENGR 214; CR: ENGR 319) |                         | <b>Grade Mode:</b> Normal Grading Mode |                         |
| <b>Pre-req:</b> ENGR 214 with a minimum grade of D.  |                         | <b>ENGR 488 Independent Study</b>      | <b>1-4 Credit hours</b> |
| <b>Grade Mode:</b> Normal Grading Mode   |                         | <b>Grade Mode:</b> Normal Grading Mode |                         |
| <b>ENGR 319 Fluid Mechanics Laboratory</b>   | <b>1 Credit hour</b>    |  |                         |
| Laboratory techniques in fluid mechanics to include various experiments in fluid statics and fluid dynamics such as hydrostatic pressure, open channel flow, pipe flow, momentum theorem, etc.   |                         |  |                         |
| <b>Pre-req:</b> ENGR 214 with a minimum grade of D.  |                         |  |                         |
| <b>Co-req:</b> ENGR 318  |                         |  |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |  |                         |
| <b>ENGR 330 Engineering Research</b>   | <b>3 Credit hours</b>   |  |                         |
| This course is designed to provide the undergraduate engineering student with an opportunity to participate in engineering projects, research  |                         |  |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |  |                         |
| <b>ENGR 335 Adv Engineering Analysis</b>   | <b>3 Credit hours</b>   |  |                         |
| Mathematical methods for analyzing and solving a range of engineering problems, including linear algebra, vector and multivariate calculus, complex variables calculus, and Fourier analysis.  |                         |  |                         |
| <b>Pre-req:</b> MTH 335 with a minimum grade of D.   |                         |  |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |  |                         |
| <b>ENGR 350 Engineering Co-Op</b>  | <b>0 Credit hours</b>   |  |                         |
| A supervised experience in which the student works for a company to gain practical experience in a students major.   |                         |  |                         |
| <b>Pre-req:</b> ENGR 217 with a minimum grade of D.  |                         |  |                         |
| <b>Grade Mode:</b> Credit/No Credit Grade Only   |                         |  |                         |
| <b>ENGR 451 Intro to Proj Management</b>   | <b>3 Credit hours</b>   |  |                         |
| This course covers project management fundamentals including project definition, project selection, project planning, estimating, scheduling, resource allocation and project control. An emphasis will be placed on building effective project teams.                             |                         |  |                         |
| <b>Pre-req:</b> ENGR 222 with a minimum grade of D.  |                         |  |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |  |                         |
| <b>ENGR 473  Capstone Senior Design</b>   | <b>3 Credit hours</b>   |  |                         |
| Students utilize the engineering design process to complete a comprehensive engineering project that addresses a real-world problem with realistic constraints in a collaborative environment.   |                         |  |                         |
| <b>Pre-req:</b> ENGR 451 with a minimum grade of D.  |                         |  |                         |
| <b>Attributes:</b> Capstone Course   |                         |  |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |  |                         |
| <b>ENGR 480 Special Topics</b>   | <b>1-4 Credit hours</b> |  |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |  |                         |
| <b>ENGR 481 Special Topics</b>   | <b>1-4 Credit hours</b> |  |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |  |                         |
| <b>ENGR 482 Special Topics</b>   | <b>1-4 Credit hours</b> |  |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |  |                         |
| <b>ENGR 483 Special Topics</b>   | <b>1-4 Credit hours</b> |  |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |  |                         |
| <b>ENGR 485 Independent Study</b>  | <b>1-4 Credit hours</b> |  |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |  |                         |
| <b>ENGR 486 Independent Study</b>  | <b>1-4 Credit hours</b> |  |                         |
| <b>Grade Mode:</b> Normal Grading Mode   |                         |  |                         |