

Engineering BAS

Engineering BAS Degrees and Certificates

- 1
- Bachelor of Applied Science - Engineering Technology

Engineering BAS Classes

ECON 305: Professional Ethics

A course in engineering professional ethics. This course will focus on ethical situations engineering technology students will face throughout their careers. Research and projects included will be taught from the administrator lens.

Credits 5

Weekly Contact Hours 5

Meets Degree Requirements For
Restricted Elective

ELEC 226: Applied Circuit Analysis

Design and analysis of DC and AC circuits using basic laws such as Ohm's and Kirchhoff's laws. Introduction to circuit analysis methods such as the node method, mesh current method, superposition, and the Thevenin methods. Applications of phasor representations to circuits with R, L, and C components. Analysis of AC steady-state circuits and determination of average power. Measurement of circuit variables using tools such as oscilloscopes, multimeters, and signal generators.

Credits 5

Weekly Contact Hours 6

Meets Degree Requirements For
Not Intended for Transfer, Typically Numbered Below 100.

Prerequisites

ELEC 115 and PHYS& 114, 115, and 116 or Instructor permission

ELEC 325: Instrumentation

This course covers sensors, transducers, signal conditioning devices and computer-based instrumentation. Input/output (I/O) characteristics of sensors for pressure, distance, light, airflow, temperature, Hall effect and humidity are evaluated using data acquisition equipment and virtual instrumentation. Emphasis is placed on industrial applications, troubleshooting and determining I/O requirements to interface actuators such as AC, DC, stepper and servo motors to programmable logic controllers (PLCs).

Credits 5

Weekly Contact Hours 6

Meets Degree Requirements For
Restricted Elective

Prerequisites

[ELEC 225](#) and ENGR 315 and [CHEM& 161](#) and PHYS& 116

ENGR 201: Introduction to Engineering Safety

Fundamental concepts, techniques and applications of risk analysis and risk-informed decision making for engineering students. An introduction to lock-out tag procedures, electrical arc flash protection, personal protection equipment (PPE) safety gear, and hands-on safety training.

Credits 1

Weekly Contact Hours 1

Meets Degree Requirements For

Restricted Elective

ENGR 310: Project Management

Utilizing Lean principles and concepts, this course develops a foundation of solutions that support planning, scheduling, monitoring and performance measurement activities required for successful project completion.

Credits 2

Weekly Contact Hours 2

Meets Degree Requirements For

Restricted Elective

ENGR 315: Introduction to Materials Science

Crystal structure, microstructure, and physical properties of metals, ceramics, polymers, composites, and amorphous materials. Also includes elementary mechanical behavior and phase equilibria.

Credits 5

Weekly Contact Hours 6

Meets Degree Requirements For

Restricted Elective

Prerequisites

CHEM&163; PHYS&115 or PHYS&222; PHYS&116 or PHYS&223; and MATH&142

ENGR 325: Mechanical: Strength of Materials

The mechanics of materials emphasizing the analysis and design of statically determinate beams, columns, and structural members in torsion and application of the three moment equations to statically indeterminate beams.

Credits 5

Weekly Contact Hours 6

Meets Degree Requirements For

Restricted Elective

ENGR 326: Mechanical: Fluid Mechanics

A course in fluid mechanics. Topics include: fluid properties, hydrostatics, conservation laws, infinitesimal and finite control volume analysis, Navier-Stokes equations, dimensional analysis, internal and external flows. Students will build upon knowledge gained in [ENGR 325](#) and analyze, troubleshoot, predict and problem-solve complex systems.

Credits 5

Weekly Contact Hours 5

Meets Degree Requirements For

Restricted Elective

ENGR 327: Mechanical: Dynamic Systems and Control

Modeling and analysis of dynamic systems and introduction to feedback control. Topics include dynamic modeling and response of mechanical, electrical, fluid, and thermal systems; and feedback control systems analysis. Students will build upon skills learned in prior courses that enables them to draw conclusions about complex problems and provide solutions.

Credits 5

Weekly Contact Hours 5

Meets Degree Requirements For

Restricted Elective

Prerequisites

ENGR& 214, [ELTRO 240](#), [ELEC 225](#) or [ELTRO 121](#)

ENGR 328: Hydraulic Control System

Analysis of hydraulic control components and systems. Topics include pumps, valves, actuators, and industrial and mobile control systems.

Credits 5

Weekly Contact Hours 5

Meets Degree Requirements For

Restricted Elective

ENGR 329: Mechatronics

Design, create and test systems which require the integration of mechanical and electronic components. Topics include microcontrollers, sensors, actuators, mechanical systems, real-time control system programming and modeling of electronic and mechanical systems. Prerequisites: highly recommend [ELTRO 240](#) and [ELEC 135](#) classes or experience working with electric and mechanical systems.

Credits 5

Weekly Contact Hours 6

Meets Degree Requirements For

Restricted Elective

ENGR 401: Advanced Engineering Safety

Safety and health in the manufacturing, construction, and utilities industries, including pertinent laws, codes, regulations, standards, and product liability considerations. Organizational and administrative principles and practices for safety management and safety engineering, accident investigation, safety education, and safety enforcement.

Credits 2

Weekly Contact Hours 2

Meets Degree Requirements For

Restricted Elective

Prerequisites

[ENGR 201](#)

ENGR 405: Engineering Technology Capstone Preparation

Prepare and plan for capstone project.

Credits 1
Weekly Contact Hours 1
Meets Degree Requirements For
Restricted Elective

ENGR 410: Advanced Engineering Project Management

Fundamentals of planning, scheduling, allocating resources and controlling projects using project management software and tools. The role of leadership and organizational structure in project management is also covered.

Credits 5
Weekly Contact Hours 5
Meets Degree Requirements For
Restricted Elective
Prerequisites
[ENGR 310](#)

ENGR 412: Engineering Technology Internship

Supervised on-the-job training with a manufacturer, processor, or related industrial firm. Students will need a letter of recommendation and faculty director permission.

Credits 3-5
Weekly Contact Hours 5
Meets Degree Requirements For
Restricted Elective

ENGR 415: Engineering Technology Capstone Project

Students can choose projects in electronics, renewable energy systems, wireless/data communications and automation/robotics. Typical project activities include the research and design phase, the execution phase, and the project report phase. A written report and oral presentation are required.

Credits 10
Weekly Contact Hours 10
Meets Degree Requirements For
Restricted Elective