**Basic Engineering Courses**

**Courses**

**BE 1101. Introduction to Engineer Lab.**
Introduction to Engineering Lab (0-3) Students will learn and practice team skills, data analysis techniques, written and oral communication skills, engineering math applications, and problem solving using Excel. Students will work in teams on several hands-on projects that each culminate in a written report and oral presentation. Restricted to majors: LDCE, LDIE, LDME, LDMT. Prerequisites: MATH 1411 and ENGL 1311 each with a grade of "C" or better and department approval. MATH 1411 and ENGL 1311 may be taken concurrently with BE 1101.

**Department:** Basic Engineering

1 Credit Hour
3 Total Contact Hours
3 Lab Hours
0 Lecture Hours
0 Other Hours

**Corequisite(s):** BE 1301

**BE 1205. Graphics in Engineering Design.**
Graphic Fundamentals in Engineering Design: [TCCN ENGR 1204] Fundamentals of multiview projections, auxiliaries, sections, pictorial drawings, dimensioning; introduction to CAD, decision process, and geographical information systems.

**Department:** Basic Engineering

2 Credit Hours
4 Total Contact Hours
3 Lab Hours
1 Lecture Hour
0 Other Hours

**BE 1301. Introduction to Engineering.**
Introduction to Engineering (3-0) This course will introduce the student to effective methods for solving engineering problems using mathematics, fundamental engineering concepts, data analysis techniques, and computational tools. The course will also introduce the student to the engineering profession, including the role and responsibilities of the engineer in today's society and engineering ethics. Restricted to major: LDCE, LDIE, LDME, LDMT. Prerequisites: MATH 1411 and ENGL 1311 each with a grade of "C" or better and department approval. MATH 1411 and ENGL 1311 may be taken concurrently with BE 1301.

**Department:** Basic Engineering

3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

**BE 2303. Intro. to Mats. Sci. and Engr..**
Introduction to Materials Science and Engineering: [TCCN ENGR 2332] Introduction to properties of engineering materials and relationships to their structure, behavior, and processing; materials testing and measurement of properties. Selection of materials for engineering applications considering interrelationships between structure, properties, processing, and performance.

**Department:** Basic Engineering

3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

**Prerequisite(s):** (CHEM 1305 w/C or better)

**BE 2326. Engineering Economy.**
Engineering Economy (3-0) Application of economics to engineering and industrial problems which require a knowledge of engineering for their solution. Prerequisite: MATH 1411 with a grade of "C" or better.

**Department:** Basic Engineering

3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours
BE 2338. Mechanics II.
Mechanics II: [TCCN ENGR 2302] A second course in Newtonian mechanics; dynamics (kinematics and kinetics) of particles and rigid bodies; work and energy; impulse and momentum.
Department: Basic Engineering
3 Credit Hours
5 Total Contact Hours
3 Lab Hours
2 Lecture Hours
0 Other Hours
Prerequisite(s): (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better)

BE 2375. Intro. to Thermal-Fluid Sci..
Introduction to Thermal-Fluid Science: [TCCN ENGR 2334] An introduction to the basic concepts of thermodynamics and fluid mechanics to include properties, property relationships, states and fields. Presentation of the basic equations of thermal-fluid science, continuity, first and second laws of thermodynamics and momentum. BE 2338 may be taken concurrently with BE 2375.
Department: Basic Engineering
3 Credit Hours
5 Total Contact Hours
3 Lab Hours
2 Lecture Hours
0 Other Hours
Prerequisite(s): (BE 2338 w/C or better) OR (MECH 2338 w/C or better)

BE 2377. Electrical Circuits and Motors.
Electrical Circuits and Motors: [TCCN ENGR 2305] Principles of electrical circuits, generators, and motors. Introduction to electronics and introduction to microprocessors for data acquisition.
Department: Basic Engineering
3 Credit Hours
5 Total Contact Hours
3 Lab Hours
2 Lecture Hours
0 Other Hours
Prerequisite(s): (PHYS 2421 w/C or better) OR (PHYS 2121 w/C or better AND PHYS 2321 w/C or better AND PHYS 2411 w/C or better)

BE 2434. Mechanics I.
Mechanics I: [TCCN ENGR 2301] A first course in Newtonian mechanics using vectors. Equilibrium of particles and rigid bodies, forces in space, centroids, moments of inertia, study of stress and strain; use of stress-load equations to determine the state of stress in specific structural elements; study of combined stresses.
Department: Basic Engineering
4 Credit Hours
6 Total Contact Hours
3 Lab Hours
3 Lecture Hours
0 Other Hours
Prerequisite(s): (MATH 1411 w/C or better) OR (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better) OR (MATH 1411A w/C or better AND MATH 1411B w/C or better AND MATH 1411C w/C or better)

BE 3341. Engineering Analysis.
Engineering Analysis (3-0) Applications of mathematical principles to the analysis of engineering problems: derivation and solution of mathematical models of physical systems, closed-form solutions, computer solutions by programming in a higher language and by using mathematical computer packages. Prerequisites: MATH 2313, and MATH 2326 or MATH 3326, each with a grade of "C" of better.
Department: Basic Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours
Engineering Probability and Statistical Models (2-3) Fundamental concepts of discrete and continuous random variables, distribution functions, moments, moment generating functions, statistical dependence, stochastic modeling and random events, graphical and numerical methods, descriptive and inferential statistics, point and interval estimation, hypothesis testing and regression analysis. The creation and proper utilization of statistical decision models for engineering analysis and design are stressed. Emphasis is on measurement, formulation analysis and design of physical problems.

**Prerequisite:** MATH 2313 with a grade of "C" or better.

**Department:** Basic Engineering

**3 Credit Hours**

**5 Total Contact Hours**

- 3 Lab Hours
- 2 Lecture Hours
- 0 Other Hours