

# BE - BASIC ENGINEERING

## **BE 1001 Engineering Bridge Mentorship Program Participant I Cr. 1**

Required peer mentorship program for Engineering Bridge students. Offered Every Term.

**Corequisite:** BE 1060

**Restriction(s):** Enrollment is limited to students with a major in Engineering.

## **BE 1002 Engineering Bridge Mentorship Program Participant II Cr. 0**

Required peer mentorship program for Engineering Bridge students. Offered Winter.

**Corequisite:** BE 1060

## **BE 1050 Career Readiness for Engineering Students Cr. 1**

The design of the Career Readiness for Engineering Students series is set to help you identify and apply the steps necessary to reaching your goals related to your career and professional development. The materials & activities provided throughout the course will help you define your career goals, build your personal career materials, identify and apply the skills that are most sought after by employers to prepare you for success at your co-op and throughout your career. Offered Fall.

## **BE 1060 Building a Foundation for College Success Cr. 1**

**Satisfies General Education Requirement:** Wayne Experience

This course is designed to expose students to the Wayne State University undergraduate experience. Students will gain an understanding of campus resources, institutional values, and the merits of a liberal arts education from an urban research one university. This course will aid in the development of critical and analytical thinking skills necessary for college success while determining one's academic and professional goals. Offered Fall, Winter.

**Restriction(s):** Enrollment limited to students with a class of Freshman.

**Equivalent:** FPC 1020, RSE 1010

## **BE 1101 Introduction to Officership Cr. 1**

Classroom introduction to leadership, and the experiential examination of leadership, followership, decision-making, and group accomplishment of tasks. Offered Every Other Year.

## **BE 1102 Introduction to Leadership Cr. 1**

Continuation of B E 1101; focus on communications, leadership, and problem-solving. The light infantry platoon and the troop leading process. Offered Every Other Year.

**Prerequisite:** BE 1101 with a minimum grade of C-

## **BE 1200 Basic Engineering I: Design in Engineering Cr. 3**

Core principles of engineering practice: design, teamwork, professional ethics. Offered Fall, Winter.

**Prerequisites:** MAT 1050 with a minimum grade of C (may be taken concurrently), MAT 1070 with a minimum grade of C (may be taken concurrently), MAT 1800 with a minimum grade of C (may be taken concurrently), MAT 2010 with a minimum grade of C- (may be taken concurrently), MAT 2020 with a minimum grade of C- (may be taken concurrently), or MAT 2030 with a minimum grade of C- (may be taken concurrently)

**Fees:** \$50

## **BE 1300 Basic Engineering II: Materials Science for Engineering Applications Cr. 3**

Fundamentals of materials science; emphasis on how material properties and behavior affect engineering applications. Offered Every Term.

**Prerequisites:** (CHM 1125 with a minimum grade of C- or CHM 1100 with a minimum grade of C-), CHM 1130 with a minimum grade of C-, BE 1200 with a minimum grade of C- (may be taken concurrently), (PHY 2170 with a minimum grade of C- (may be taken concurrently) or PHY 2175 with a minimum grade of C- (may be taken concurrently)), and MAT 2020 with a minimum grade of C- (may be taken concurrently)

**Corequisite:** BE 1310

## **BE 1310 Materials Science for Engineering: Laboratory Cr. 1**

Laboratory component of B E 1300. Offered Every Term.

**Corequisite:** BE 1300

**Fees:** \$35

## **BE 1500 Introduction to Programming and Computation for Engineers Cr. 3**

Use of computational tools, such as Excel and MATLAB, to solve engineering problems. Topics include general engineering problem solving, algorithm development, programming, and computational analysis. Offered Fall, Winter.

**Prerequisites:** MAT 2010 with a minimum grade of C-

**Restriction(s):** Enrollment is limited to Undergraduate level students.

## **BE 1600 Introduction to Programming and Computation: Python Cr. 3**

An introduction to programming using Python for students with no programming experience. Basic control structures (sequence, selection, repetition) and all core data types using objects. Practice on core data structures (string, list, tuple, dictionary, and set). Design, implementation and testing of programs to solve problems with an emphasis on data manipulation using real world, practical examples. Offered Fall, Winter.

## **BE 2100 Basic Engineering III: Probability and Statistics in Engineering Cr. 3**

An introduction to application of probability theory and statistical methods in engineering, including design and manufacturing. Offered Every Term.

**Prerequisites:** MAT 2020 with a minimum grade of C- (may be taken concurrently)

## **BE 2201 Innovative Tactical Leadership Cr. 1**

Military organizational leadership with focus on leadership development and interpersonal group dynamics. Offered Every Other Year.

**Prerequisite:** BE 1102 with a minimum grade of C-

## **BE 2202 Leadership in Changing Environments Cr. 2**

Challenges of leading in complex contemporary operational environments. Cross-cultural challenges of leadership applied to practical Army leadership tasks and situations. Offered Every Other Year.

**Prerequisite:** BE 1102 with a minimum grade of C-

## **BE 2600 Global Tech Internship Cr. 3**

The Global Tech Experience is a virtual, equity-driven experiential learning program that enables undergraduate students from all backgrounds to build career-focused intercultural and technical skills. Offered Every Term.

## **BE 3000 Engineering Bridge Mentorship Program Leader Cr. 0**

Documentation of mentor participation in Engineering Bridge Program. Offered Every Term.

**Restriction(s):** Enrollment limited to students in the following programs: BS in Chemical Engineering, BS in Civil Engineering, BS in Electrical Engineering, BS in Electrical and Comp Engg, BS in Industrial Engineering, BS in Mechanical Engineering; enrollment limited to students in the College of Engineering.

**BE 3301 Leading Small Organizations I Cr. 2**

Leadership development and interpersonal and group dynamics. Methods of visualizing, planning and leading organizations to achieve set goals.

Offered Every Other Year.

**BE 3302 Leading Small Organizations II Cr. 2**

Offered Every Other Year.

**Prerequisite:** BE 3301 with a minimum grade of C-

**BE 3500 Co-Op Record Cr. 0**

Engineering practice under supervision in cooperative education program. Offered Every Term.

**Restriction(s):** Enrollment limited to students in the following programs:

BS in Chemical Engineering, BS in Civil Engineering, BS in Computer Science, BS in Electrical Engineering, BS in Electrical and Comp Engg, BS in Industrial Engineering, BS in Mechanical Engineering; enrollment limited to students in the College of Engineering.

**BE 3510 Internship Experience Cr. 1-3**

Engineering practice under supervision in cooperative/internship education program. Written report required. Offered Every Term.

**Restriction(s):** Enrollment limited to students in the following programs:

BS in Chemical Engineering, BS in Civil Engineering, BS in Electrical Engineering, BS in Industrial Engineering, BS in Mechanical Engineering; enrollment limited to students in the College of Engineering.

**Repeatable for 6 Credits**

**BE 3900 National Design Competition Participant Cr. 0**

For engineering undergraduates who are active team members in national engineering design competition projects. Satisfactory completion of this course will document active participation throughout the semester. Offered Every Term.

**BE 4401 Leadership and Management Cr. 3**

Multiple styles and theories of leadership; ethical decision making, especially as relating to changing organizational and individual behavior; accomplishing goals in resource-constrained environments. Offered Every Other Year.

**Prerequisite:** BE 3302 with a minimum grade of D-

**BE 4402 Military Professionalism and Professional Ethics Cr. 3**

Evaluation and assessment of needs of subordinate units and individuals; near-term and short-term plans to address these needs. Analysis of a historical battle as well as analysis of moral and leadership dilemmas in history. Offered Every Other Year.

**Prerequisite:** BE 4401 with a minimum grade of C-

**BE 5900 National Design Competition Projects Cr. 1-4**

Primarily for engineering undergraduates who are dedicating a substantial amount of effort towards college-sponsored national design competition projects. Offered Every Term.

**Repeatable for 99 Credits**

**BE 5995 Special Topics in Engineering Cr. 4**

Special topics not covered in other courses; topics announced in Schedule of Classes. Offered Every Term.

**Repeatable for 99 Credits**

**BE 5998 Engineering Honors Thesis Cr. 1-4**

Completion of required Honors Thesis. Offered for undergraduate credit only. Offered Every Term.

**Restriction(s):** Enrollment limited to students in the following programs:

BS in Biomedical Engineering, BS in Chemical Engineering, BS in Civil Engineering, BS in Electrical Engineering, BS in Electrical and Comp Engg, BS in Industrial Engineering, BS in Mechanical Engineering; enrollment is limited to Undergraduate level students; enrollment limited to students in the College of Engineering.

**Repeatable for 4 Credits**