Fundamentals of Engineering Program

Nature of the Program

The Benjamin M. Statler College of Engineering and Mineral Resources' Fundamentals of Engineering Program (FEP) is designed to support students as they build foundational engineering skills and discern their career interests within engineering and computing fields. The mission of this student-oriented program is to mentor, prepare, and retain qualified students for degree programs in the Statler College. The FEP provides the academic and co-curricular support students need for their success in their: transition to college life; development of academic discipline and skills necessary for entering and succeeding in an academically challenging major; foundational courses (mathematics, chemistry, physics, and basic engineering); and selection of an engineering or computing discipline major. The FEP focuses on:

- communication between students, faculty, mentors, and others;
- academic support services to support students in the fundamental mathematics, science, and engineering courses;
- provision of a co-curricular environment that facilitates successful transition to the college environment, provides career exploration opportunities, and supports students' academic endeavors;
- quality and engaging fundamental engineering instruction.

The FEP provides a vibrant and supportive community for students centered in the Eugene V. Cilento Learning Center (ELC). Students have a "one-stop" place to get the answers they need as they navigate through the transition from high school to college. In the ELC, students receive free tutoring, find information about upcoming guest speakers and other College events, and spend a significant amount of time studying, doing homework, and working on team projects for their engineering courses. Academic support is provided to all FEP students in the following subjects: mathematics, chemistry, physics, and engineering.

To facilitate engagement with the engineering community and development as engineering and computing professionals, FEP students participate in and reflect upon "Out of Class Experiences" (OCEs). Typical OCE opportunities include: *EngineerFEST*, an engineering student organization fair held each year to encourage students to learn about and become involved in one or more of the College's many student chapters of professional engineering societies; Department Visits, in which each department hosts FEP students in an informational seminar describing their majors, relevant research opportunities, and the career paths of graduates; Panels of Practicing Engineers; and other seminars, presentations, panels, workshops and experiences in which students learn academic success skills and strategies, are introduced to important professional expectations and life skills, and explore a variety of engineering and computing-related careers.

All policies, procedures, events and activities, and academic resources are listed on the FEP website. These curricular and co-curricular activities create a coherent program designed to facilitate student success in engineering and computing fields.

Additionally, students successfully completing the WVU Statler College Fundamentals of Engineering Program will select and enter an engineering or computing discipline major within the Statler College.

Program Objectives

The educational objective of the Fundamentals of Engineering Program (FEP) in the Statler College is to prepare students to be academically successful in the engineering or computing major of their choice. Students who complete the FEP successfully:

- Transition to college life;
- Develop the academic discipline and skills necessary for entering and succeeding in an academically challenging major;
- Complete foundational courses (mathematics, chemistry, physics, and basic engineering); and
- Select an engineering or computing discipline major.

Student Outcomes

Recognizing that the Fundamentals of Engineering Program (FEP) is the first step toward completing an engineering or computing discipline degree, students completing the FEP are *introduced* to the engineering and computing program educational outcomes listed below. Each of these outcomes are developed in the program in which the student completes a degree. Students who successfully complete the requirements of the WVU Fundamentals of Engineering Program begin to:

1. identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. communicate effectively with a range of audiences
4. recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

5. function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. acquire and apply new knowledge as needed, using appropriate learning strategies

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FACULTY

DIRECTOR

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  Bioengineering, Stem Cell Research, Engineering education, STEM education, Student Success and Retention

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  STEM education, Robotics, Industrial applications, Curriculum development
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  STEM education K-16, Student success and retention, Diversity and inclusion in STEM fields, Curriculum Development

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  Environmental Engineering Sciences, Engineering Education, Student Success and Retention
- Xinyu (Catherine) Zhang - Ph.D. (University of Illinois at Urbana-Champaign)
  STEM education, Chemical, Biological, and Environmental Engineering

TEACHING INSTRUCTORS

- Michael K. Brewster - M.A. (West Virginia University)
  Mathematics, Statistics, STEM education K-16

PROGRAM COORDINATOR

- Kelly Stewart - M.S. (West Virginia University)

Matriculation into Engineering Majors

ENGINEERING DEGREES

Students can matriculate into the engineering discipline of their choice once they have successfully completed the following classes with a C- or better, and have a cumulative 2.00 GPA.

- MATH 154 or MATH 155
- ENGR 101
- ENGR 191

Curriculum

Students in the Fundamentals of Engineering Program will complete a minimum of 7 credit hours while completing the requirements to matriculate into their choice of engineering discipline. The amount of credit hours and the time in the Fundamentals of Engineering Program is based on math readiness.

- Students who start in Calculus I (MATH 155) or higher can matriculate into their specific major in 1 semester
- Students who start in Pre-Calculus (MATH129) can matriculate into their specific major in 1 year
- Students who start in College Algebra (MATH 126) can matriculate into the specific major within 1.5 years

SUGGESTED PLAN OF STUDY FOR ENGINEERING MAJORS

This curriculum is based on starting in Calculus I (MATH 155). Students who place into a different math class when they start at WVU should work with their academic advisor to determine their specific curriculum.

First Year	
Fall	**Hours**
MATH 155*	4
ENGR 101	2
ENGR 191	1
	7

Total credit hours: 7

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Students who place into math courses other than MATH 155, Calculus 1, must work with their academic advisor to create an appropriate plan to graduation.