

Engineering

Western Illinois University – Quad Cities Campus

Preliminary Program Information October 2008

Western Illinois University has received authorization from the Illinois Board of Higher Education to offer a bachelor of science degree in Engineering at the Quad Cities campus. The program will be offered beginning in fall semester 2009. The WIU Engineering program is designed as a 2+2 program that articulates with pre-engineering programs at the WIU-Macomb campus and community colleges.

The following information is a draft of the information that will be included in the WIU Undergraduate Catalog. As such, it is provided to give prospective students an overview of the program and its requirements in order to determine their level of interest in and readiness for the Engineering program. Prospective students interested in learning more about the Engineering program and the transferability of their associate degree or prior coursework should contact the WIU-Quad Cities admissions via the web page (<http://www.wiu.edu/qc/index.php>) or by phone at 309.762.3999 or toll free at 877.PICKWIU.

Thomas Erekson
Dean
College of Business & Technology
Western Illinois University
Macomb, IL 61455
309-298-2442
tl-erekson@wiu.edu

Curtis Williams
Associate Director of Student Services/Admissions
Western Illinois University – Quad Cities
3561 60th Street
Moline, IL 61265
309-762-3999, ext. 236
cm-willimas11@wiu.edu

Engineering

The Engineering program is designed to prepare graduates to lead and thrive in the technology-driven global workplace. The program focuses on the practice of engineering by providing a broad curriculum which emphasizes basic engineering fundamentals, while allowing students to select an area of emphasis in mechanical/manufacturing engineering or electrical/computer engineering.

The Engineering program incorporates design and teamwork throughout the curriculum, with ample opportunities for practical, hands-on engineering educational experiences. The program is linked to business, industry, and the IP Institute through required internships and senior capstone design projects. In addition, all students must pass the Fundamentals of Engineering Examination prior to graduation, thus completing another important step in the process of becoming a professional engineer.

WIU provides the junior and senior engineering courses at the WIU QC campus, and the program is articulated with the pre-engineering transfer programs at the WIU-Macomb campus and community colleges in Illinois, Iowa, and Missouri. WIU-QC offers an effective dual enrollment program wherein students may be simultaneously enrolled at a partner community college and the Engineering program (dual enrollment will be in WIU's pre-engineering prior to full admission to the Engineering program).

Program Objectives

The objectives of the Engineering program describe the career and professional accomplishments that the program prepares graduates to achieve following graduation. These are:

- Graduates will successfully transition from the university into the engineering profession and/or to graduate engineering and professional education programs.
- Graduates will apply fundamental concepts of mathematics, science, computing, and engineering design to solve technical problems in industry and society.
- Graduates will work effectively in multi-disciplinary and cross-functional teams in a professional, ethical, and responsible manner.
- Graduates will establish a foundation for life-long learning and development in engineering and related professional areas.
- Graduates will demonstrate competence when communicating with team members, clients, management, and the public using written, oral, and visual formats.

Program Outcomes

The outcomes of the Engineering program describe what a student should know and be able to do upon graduation from the program. The program outcomes listed below are from the ABET accreditation standards, and have been established to measure achievement of program objectives. Each graduate of the Engineering program will have demonstrated the following competencies:

- an ability to apply knowledge of mathematics, science, and engineering;
- an ability to design and conduct experiments, as well as to analyze and interpret data;
- an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
- an ability to function on multidisciplinary teams;
- an ability to identify, formulate, and solve engineering problems;
- an understanding of professional and ethical responsibility;
- an ability to communicate effectively;
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;

- a recognition of the need for, and an ability to engage in life-long learning;
- a knowledge of contemporary issues;
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Admission

Students seeking admission to the Engineering program must have earned 45 semester hours of credit with an overall grade point average of 2.5, and a grade of "C" or better in MATH 133 and 134, Calculus and Analytic Geometry I and II, and Physics 197 and 198, University Physics I and II, or the equivalent transfer courses.

Bachelor of Science – Engineering

- 1) University General Education.....43 s.h.
 (to include Math 133, Phys 197, Chem 201, and Econ 231)
 Communication Skills (9 s.h.)
 Natural Science and Mathematics (10 s.h.)
 Social Sciences (9 s.h.)
 Humanities (9 s.h.)
 Multicultural Studies (3 s.h.)
 Human Well-Being (3 s.h.)
- 2) Core Courses.....22 s.h.
 ENGR 105 – Engineering Graphics/CAD (3 s.h.)
 ENGR 241 – Manufacturing Processes (3 s.h.)
 ENGR 271 – Introduction to Electronics (3 s.h.)
 ENGR 330 – Engineering Economics (3 s.h.)
 ENGR 331 – Engineering Project Management (3 s.h.)
 ENGR 493 – Internship (3s.h.)
 ENGR 499 – Senior Design (4 s.h.)
- 3) Options of Study (Select A or B).....27 s.h.
Option A – Mechanical/Manufacturing Engineering
 ENGR 207 – Introduction to Computer Aided Drafting (3 s.h.)
 ENGR 251 – Strength of Materials (3 s.h.)
 PHYS 354 – Thermodynamics (3 s.h.)
 ENGR 311 – Fluid Dynamics (3 s.h.)
 ENGR 345 – Quality Engineering (3 s.h.)
 ENGR 482 – Computer Aided Design (3 s.h.)
 OM 352 – Operations Management (3 s.h.)
 ENGR/CS/PHYS/MATH Electives (6 s.h.)

Option B – Electrical/Computer Engineering
 ENGR 385 – Digital Logic Industrial Application (3 s.h.)
 ENGR 477 – Process Controllers (3 s.h.)
 CS 211 – Principles of Computer Science I (2 s.h.)

CS 212 – Basics of Java (1 s.h.)
 CS 214 – Principles of Computer Science II (3 s.h.)
 CS 350 – Data Structures I (3 s.h.)
 ENGR 478 – Industrial Controls (3 s.h.)
 PHYS 320 – Electricity and Magnetism I (3 s.h.)
 ENGR 471 – Microelectronic Circuits (3 s.h.)
 ENGR/CS/PHYS/MATH Electives (3 s.h.)

4) Supporting Courses.....54 s.h.

MATH 133 – Calculus with Analytic Geometry I (4 s.h.)
 MATH 134 – Calculus with Analytic Geometry II (4 s.h.)
 MATH 231 – Calculus with Analytic Geometry III (4 s.h.)
 MATH 311 – Linear Algebra (3 s.h.)
 MATH 333 – Ordinary Differential Equations (3 s.h.)
 PHYS 197 – University Physics I (4 s.h.)
 PHYS 198 – University Physics II (4 s.h.)
 PHYS 200 – University Physics III (4 s.h.)
 PHYS 201 – University Physics IV (3 s.h.)
 PHYS 312 – Engineering Mechanics (Statics and Dynamics) (4 s.h.)
 CHEM 201 – Inorganic Chemistry I (4 s.h.)
 CHEM 202 – Inorganic Chemistry II (4 s.h.)
 MGT 349 – Principles of Management (3 s.h.)
 ECON 231 – Principles of Macroeconomics I (3 s.h.)
 CS 225 – Programming for Engineering and Science (3 s.h.)