

**ENGINEERING****EGR****College of Engineering****100 Introduction to Engineering Design**

Fall, Spring. 2(1-2) P: ((MTH 116 or concurrently) or (MTH 132 or concurrently) or (MTH 152H or concurrently) or (LB 118 or concurrently)) and (WRA 1004 or designated score on English Placement test ) R: Open to students in the College of Engineering and open to students in the Lyman Briggs College.

Engineering design process as modeled by team-based, interdisciplinary design projects. Roles of engineers and the contributions of engineering in society. Project management, and design of products and processes to specified outcomes under specified constraints. Introduction to computing tools and physical equipment in support of engineering design. Engineering ethics. Oral and written technical communications.

**102 Introduction to Engineering Modeling**

Fall, Spring. 2(1-3) P: (EGR 100 or concurrently) and ((MTH 132 or concurrently) or (MTH 152H or concurrently) or (LB 118 or concurrently)) R: Open to students in the College of Engineering or in the Lyman Briggs School. Not open to students with credit in CSE 131.

Application of systematic approaches to engineering problems. Problem decomposition and identification of a solution approach. Solution using tools such as advanced spreadsheet features and MATLAB. Data representation, curve fitting and analysis. Mathematical modeling of engineering systems. Application of principles through team-based engineering projects.

**150 Engineers and the Engineering Profession**

Spring. 2(2-0) P: (MTH 116 or concurrently) or (MTH 132 or concurrently) or (LBS 118 or concurrently) R: Open only to freshmen or sophomores.

Overview of the engineering profession. Historical background. Engineering specialties. Engineers at work. Professionalism and ethics. Communication skills. Future trends and challenges.

**160 Diversity and Engineering**

Fall, Spring. 2(2-0) P: (MTH 116 or concurrently) or (MTH 132 or concurrently) R: Open only to freshmen or sophomores in the College of Engineering.

Diversity and engineering. Transitional problems. Career options. Communication skills.

**192 Environmental Issues Seminar**

Fall, Spring. 1 credit. A student may earn a maximum of 4 credits in all enrollments for this course. Interdepartmental with Agriculture and Natural Resources and Communication Arts and Sciences and Natural Science and Social Science. Administered by Natural Science. R: Open only to students in the College of Agriculture and Natural Resources or College of Engineering or College of Natural Science or College of Communication Arts and Sciences or College of Social Science. Approval of college.

Environmental issues and problems explored from a variety of perspectives, including legal, scientific, historical, political, socio-economic, and technical points of view.

**210 Global Systems: Economics, Engineering, Environment**

Fall. 3(3-0) P: EGR 102 or CSE 231 R: Not open to freshmen.

Globalization as a process driven by economics, enabled by engineering, and constrained by the environment. Development of systems analysis tools for understanding how these themes interact globally. Enhancement of communication skills through teaming, presentations, and active listening.

**290 Independent Study**

Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course. R: Open only to students in the College of Engineering, approval of college.

Independent undergraduate research in engineering.

**291 Selected Topics**

Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course. R: Open only to freshmen or sophomores.

Experimental course development or special topics appropriate for freshmen and sophomores.

**292 Applications in Environmental Studies**

Fall. 2(1-2) Interdepartmental with Agriculture and Natural Resources and Communication Arts and Sciences and Natural Science and Social Science. Administered by Natural Science. P: NSC 192 R: Open only to students in the Specialization in Environmental Studies.

Community engagement project. Projects vary depending on student's major and area of environmental interest.

**310 Sustainable Systems Analysis**

Spring. 3(2-3) P: (EGR 210 and (STT 315 or concurrently)) and completion of Tier I writing requirement R: Open to juniors or seniors in the College of Engineering or approval of department. SA: EGR 300

Concepts of sustainable systems; computational analysis tools for project management, life-cycle analysis, system-level representation, and six-sigma approaches. Case studies. Modeling and computational analysis.

**393 Engineering Cooperative Education**

Fall, Spring, Summer. 1(1-0) A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to students in the College of Engineering.

Pre-professional educational employment experiences in industry and government related to student's major. Educational employment assignment approved by College of Engineering.

**400 Special Problems in International Engineering**

Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to juniors or seniors or graduate students in the College of Engineering.

Supervised study of selected topics in engineering using laboratories, equipment, and engineering design techniques. Given at various international universities and institutes.

**410 System Methodology**

Spring. 3(1-4) P: (EGR 310) and completion of Tier I writing requirement R: Open to seniors in the Applied Engineering Sciences major. Approval of department; application required. SA: MSM 400, SYS 410

System analysis experience involving analysis tools and practices appropriate to the project, oral and written communication, professional ethics.

**475 Special Topics in International Engineering**

Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to juniors or seniors or graduate students in the College of Engineering.

Topics selected to supplement regular courses. Given at various international universities and institutes.

**490 Independent Study (W)**

Fall, Spring, Summer. 1 to 4 credits. R: Open only to juniors and seniors in the College of Engineering. Approval of college.

Individualized reading, research, and/or project.

**691 Selected Topics**

Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 9 credits in all enrollments for this course. R: Open to graduate students in the College of Engineering.

Selected topics in engineering.