

**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 (LBS 118 or concurrently) R: Open to freshmen or sophomores in the College of Engineering and open to students in the Lyman Briggs School.

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.

**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.

**110 ROSES Engineering Seminar**

Fall. 1(2-0) R: Open to freshmen in Residential Option for Science and Engineering. Seminar for ROSES students. Transition issues, success issues, and the exploration of engineering as a major and profession.

**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.

**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.

**300 Technology, Society and Public Policy**

Fall. 2(2-0) P: Completion of Tier I writing requirement. RB: Two courses in mathematics or engineering or science. SA: EGR 200, MSM 300

Defining, describing and analyzing technology. Impact of technology on society. Public policy and technology. Short history of technology. Development and use of assessment tools to measure impact and consequences of technology.

**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. 2(1-3) P: (EGR 300 and STT 351) and ((ECE 201 or concurrently) or (ECE 230 or concurrently) or (ECE 345 or concurrently)) and ((ME 222 or concurrently) and completion of Tier I writing requirement) R: Open to students in the Applied Engineering Sciences major. SA: MSM 400, SYS 410

System analysis and design. Needs analysis, system identification, and graphical models. Team project required.

**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.

**888 Capstone Project in Manufacturing**

Fall, Spring, Summer. 3(1-6) Interdepartmental with Marketing and Supply Chain Management. Administered by Marketing and Supply Chain Management. R: Open only to seniors in the Manufacturing Engineering major or to students in the Manufacturing and Engineering Management major.

Problem solving in manufacturing. Design of products and processes for manufacturing using a systems approach. Teaming and communication skills are emphasized.