

# GENERAL ENGINEERING (GENENG)

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## **GENENG 1030 Introduction to Engineering Projects 1 Credit**

An introductory course which will provide the opportunity for new engineering students to explore the UW-Platteville engineering programs through hands-on projects. Students will collect and analyze data, work in teams, use appropriate engineering tools and processes, follow an engineering design process, communicate their results, and learn appropriate safety techniques.

**Components:** Laboratory

**Prereqs/Coreqs:** P. Mathematics proficiency level of 15 or above, or P. UWPSTUDY 1010 (with a C- or better), or C: of MATH 1530 or higher, or consent of General Engineering Coordinator

## **GENENG 1320 Engineering Computer Graphics 2 Credits**

Problems relative to points, lines and planes in space; Cartesian coordinates; projection-plane theory; orthographic pictorials; dimensioning; auxiliary views; sections; extensive use of computer-aided design (AutoCAD and solid modeling) including 2D and 3D drawing, editing and enhancing; emphasis on development of the ability to communicate graphically; special emphasis on engineering and computer graphics applications. Two 110 minute classes per week.

**Components:** Laboratory

**Prereqs/Coreqs:** P or C: GENENG 1030 and (MATH 2530 or GENENG 1500)

## **GENENG 1500 Fundamentals of Engineering Analysis Tools 3 Credits**

This course will provide an overview of the salient analytical topics most heavily used in the core sophomore-level engineering courses. These include algebraic manipulation of engineering equations, trigonometry, vectors and complex numbers, sinusoids and harmonic signals, systems of equations and matrices, differentiation, integration and differential equations. All math topics will be presented within the context of an engineering application, and reinforced through extensive examples of their use in the core engineering courses.

**Components:** Laboratory, Class

**Prereqs/Coreqs:** P. Math proficiency of 20 or higher or B- or better in Math 15 or C- or better in Math 1530

## **GENENG 1950 General Engineering Cooperative Education 2 Credits**

Work experience in industry under the direction of the College of Engineering, Mathematics and Science Cooperative Education and Internship Program. During the co-op, the student is expected to work for an industry for a semester and summer. Credits do not fulfill graduation requirements.

**Components:** Field Studies

## **GENENG 1970 General Engineering Internship 1 Credit**

Work experience in industry under the direction of the College of Engineering, Mathematics and Science Cooperative Education and Internship Program. NOTE: This program is designed to cover the summer work experience. Internship is designed to provide experiential learning to the student during the summer period. Credits do not fulfill graduation requirements.

**Components:** Field Studies

## **GENENG 2030 Engineering Modeling and Design 3 Credits**

An introduction to design tools and practices associated with the design and development of engineering systems. Students will gain experience with solid modeling tools, including part modeling, assembly modeling and the reading and creation of layout drawings. Concurrently, the course will discuss the design process as students work through a semester long project. Each team will work on a specific component of a larger industry or community-based project. Work by smaller teams requires coordination, and communication. This course provides experience with collaboration, leadership, and project management. In addition, this course helps the next generation of engineers by supporting an entrepreneurial mindset which is essential to succeed in today's rapidly changing and highly complex world.

**Components:** Laboratory, Class

**Prereqs/Coreqs:** P. MATH 1530 or MATH 2530 or MATH 2450 with a grade of "C-" or better, or mathematics proficiency level of 30 or above

## **GENENG 2130 Engineering Mechanics-Statics 3 Credits**

Composition, resolution and equilibrium of forces and force systems; analysis of structures; friction; centroids; moment of inertia.

**Components:** Class

**Prereqs/Coreqs:** P. MATH 2640 with a C- or better or GENENG 1500 with a C- or better and (C: GENENG 1030 or P. MSNT 1010)

## **GENENG 2230 Engineering Mechanics-Dynamics 3 Credits**

Kinematics and kinetics of particles and rigid bodies in translation; rotation and general plane motion; Newton's law, work-energy and impulse methods; linear and angular momentum; impacts; systems of particles and introduction to 3-D kinetics.

**Components:** Class

**Prereqs/Coreqs:** P. GENENG 2130 with a C- or better and PHYSICS 2240 with a C- or better and MATH 2740 with a grade of C- or better

**GENENG 2340 Mechanics of Materials 4 Credits**

Simple stress and strain; design and investigation of joints, beams, torsion members and columns; evaluation of shear, moment, slope and deflection of beams and combined stresses.

**Components:** Laboratory, Class

**Prereqs/Coreqs:** P. GENENG 2130 with a grade of "C-" or better

**GENENG 2630 Basic Thermoscience for Engineers 3 Credits**

Thermodynamic properties; first and second laws of thermodynamics; ideal gas equation of state; steam properties; properties of incompressible substances; refrigerants; Carnot cycle; Rankine cycle; Otto and diesel cycles; refrigeration; conduction and convection heat transfer. Not open to Mechanical Engineering majors.

**Components:** Class

**Prereqs/Coreqs:** P. MATH 2740 and PHYSICS 2240

**GENENG 2820 Engineering Economy 2 Credits**

Application of principles of economic analysis to engineering decision making; time value of money; uniform annual cost; present worth; rate of return; benefit-cost ratio; depreciation; income taxes; inflation.

**Components:** Class

**Prereqs/Coreqs:** P. (GENENG 1030 with a 'C-' or better and sophomore standing) or junior standing

**GENENG 2930 Applications of Electrical Engineering 3 Credits**

Electric circuit analysis techniques; transients; AC analysis; power in AC circuits; transformers; and introduction to three-phase circuits.

**Components:** Class, Laboratory

**Prereqs/Coreqs:** P. PHYSICS 2640 or PHYSICS 2340; not open to Electrical Engineering majors

**GENENG 2990 Independent Study 1-3 Credits**

Study in specialty area selected by student and approved by faculty member.

**Components:** Independent Study

**Prereqs/Coreqs:** P. consent of department chair

**GENENG 3000 Undergraduate Research in Engineering 1-3 Credits**

Introduction to research methods in both interdisciplinary engineering as well as any engineering discipline, literature review, data analysis, and design. A student may register for one to three credits in a given semester.

**Components:** Research

**Prereqs/Coreqs:** C: MATH 2740

**GENENG 4930 Interdisciplinary Senior Design 3 Credits**

Team based projects, primarily from industry. Rigorous application of design processes and methods. Consideration of real-life technical, economic, social, aesthetic, environmental and other constraints. Consideration of several related topics such as creativity, analysis, synthesis, project management, scheduling, time management, engineering ethics, communication, personality types, product safety and liability, copyrights and patents, design for manufacture, economics, and robust engineering. Integration of technical and management knowledge in an open-ended design environment. Oral and written reports. P. Mechanical Engineering Major and 'C-' or better in MECHENG 3230, MECHENG 3330, MECHENG 3830, MECHENG 3720 and C: MECHENG 4330, MECHENG 4720, AND MECHENG 4730, OR P. Engineering Physics Major and 'C-' or better in ENGRPHYS 4010, OR C: Industrial Engineering Major and INDSTENG 4230 and INDSTENG 4430, OR P. Civil Engineering major and CIVILENG 3020, CIVILENG 3030, (CIVILENG 3110 or CIVILENG 3140), CIVILENG 3300, CIVILENG 3530, CIVILENG 3740 and ENVENG 3340, OR P. Environmental Engineering major and CIVILENG 3300, CIVILENG 3740 and ENVENG 3340, OR P. Electrical Engineering Major and ELECTENG 3020, ELECTENG 3210, ELECTENG 3220, ELECTENG 3770, and at least 12 credits of Professional Electives in EE.

**Components:** Class, Laboratory

**Prereqs/Coreqs:** P. See Course Description