ENGR AND COMPUTING (ENCP)

ENCP 101 - Introduction to Engineering (3 Credits)
Engineering problem solving using computers and other engineering tools.

ENCP 102 - Introduction to Computer-Aided Design (3 Credits)
Principles and practice of visualization and graphical representation using modern computer-aided design tools.

ENCP 103 - Exploratory Topics in Engineering and Computing (0-6 Credits)
Introduction to new, contemporary, and emerging issues in engineering and computing that are not regularly included in lower division courses. Course content varies and will be announced in the schedule of classes.

ENCP 105 - Professional Development and Ethics in Engineering and Computing (1 Credit)
Introduction to the field of engineering and computing in a seminar format. Open to first-year students only.

ENCP 200 - Statics (3 Credits)
Introduction to the principles of mechanics. Equilibrium of particles and rigid bodies. Distributed forces, centroids, and centers of gravity. Moments of inertia of areas. Analysis of simple structures and machines. A study of various types of friction.
Prerequisites: MATH 141.

ENCP 201 - Introduction to Applied Numerical Methods (3 Credits)
Introduction and application of linear algebra and numerical methods to the solution of physical and engineering problems. Techniques include iterative solution techniques, methods of solving systems of equations, and numerical integration and differentiation.
Prerequisite or Corequisite: D or better in MATH 142.

ENCP 210 - Dynamics (3 Credits)
Kinematics of particles and rigid bodies. Kinetics of particles with emphasis on Newton's second law; energy and momentum methods for the solution of problems. Applications of plane motion of rigid bodies.
Prerequisites: ENCP 200 or ECIV 200 or EMCH 200.

ENCP 260 - Introduction to the Mechanics of Solids (3 Credits)
Concepts of stress and strain; stress analysis of basic structural members; consideration of combined stress, including Mohr's circle; introductory analysis of deflection; buckling of columns.
Prerequisites: ENCP 200 or ECIV 200 or EMCH 200, MATH 241.

ENCP 290 - Thermodynamic Fundamentals (3 Credits)
Definitions, work, heat, and energy. First law analyses of systems and control volumes. Second law analysis.
Prerequisites: D or better in MATH 241.

ENCP 330 - Introduction to Vibrations (3 Credits)
Theoretical and experimental analysis of systems involving one degree of freedom, including measurement methods. Introduction to free vibrations in systems with two degrees of freedom.
Prerequisites: ENCP 210 or ECIV 210 or EMCH 310, MATH 242.

ENCP 360 - Fluid Mechanics (3 Credits)
Basic principles of fluid statics and dynamics; conservation laws of mass, momentum, and energy developed in the context of the control volume formulation; application of dimensional analysis, dynamic similitude, steady-state laminar viscous flow, and turbulent flow.
Prerequisites: D or better in ENCP 200, ECIV 200, EMCH 200, BMEN 212, BMEN 260, BMEN 263, or ECHE 300; D or better in PHYS 211.

ENCP 399 - Independent Study (1-3 Credits)

ENCP 440 - Sustainable Development in Engineering (3 Credits)
An examination of political, social, technical, and economic issues associated with sustainable development.

ENCP 460 - Special Topics in Engineering and Computing (1-6 Credits)
Emerging topics in engineering and computing. Course content varies and will be announced in the schedule of classes by title. May be repeated up to 8 hours as topic varies.

ENCP 481 - Project Management (1 Credit)
Estimating project time and resources, scheduling, Gantt and pert charts, budgeting, monitoring and tracking results. Upper-division standing,
Graduation with Leadership Distinction: GLD: Research

ENCP 491 - Capstone Design Project I (3 Credits)
Major team-based design project to be undertaken in a student's final year of study; project planning. Consent of advisor and instructor.
Prerequisite or Corequisite: ENCP 481 or ECIV 405.

Graduation with Leadership Distinction: GLD: Research

ENCP 492 - Capstone Design Project II (3 Credits)
System implementation, testing, verification and validation of results. Written reports and oral presentations in a technical setting. Consent of instructor.
Prerequisites: ENCP 491.

Graduation with Leadership Distinction: GLD: Research

ENCP 499 - Interdisciplinary Technical Elective (1-3 Credits)
Investigation or studies or special topics, typically in an interdisciplinary team-based environment. A maximum of three credits may be applied toward a degree. Advance approval of proposed project by instructor and academic advisor.
Graduation with Leadership Distinction: GLD: Research

ENCP 530 - Cases in Technology Feasibility Analysis (3 Credits)
Technology innovation, exploitation of intellectual property, and technology feasibility analysis.

ENCP 533 - Legal Aspects of Engineering & Innovation (3 Credits)
Contracts, products liability, intellectual property including patent, trade secrets, copyrights and trademarks, and business torts relating to product design.

ENCP 535 - Developing and Launching New Ventures in Science and Technology (3 Credits)
Processes, strategies and tools to analyze and facilitate the emergence of science and technology oriented ventures.

ENCP 536 - Innovation and New Venture Analysis (3 Credits)
Entrepreneurial perspective and planning, market preparation, business model analysis, business planning and fundraising.

ENCP 540 - Environmentally Conscious Manufacturing (3 Credits)
Design for the environment; life cycle analysis; environmental economics and global competitiveness; legal and regulatory affairs; and management of technological change. Interdisciplinary collaboration of engineering, science, math, and business majors. Graduate student standing or consent of instructor.

ENCP 602 - Introduction to Engineering Design for Teachers (3 Credits)
An introduction to computer-aided design with solid modeling for pre-service and in-service teachers. Design process, professional communication and collaboration methods, design ethics, and technical documentation. Non-engineering and computing majors only. Prerequsite: college algebra with trigonometry.

ENCP 603 - Gateway to Technology for Teachers (3 Credits)
Addresses the development of knowledge, skills, and understanding of modern technology. For preservice and in-service teachers. College of Engineering and Computing majors are excluded.
Prerequisites: MATH 112 or MATH 115.

ENCP 605 - Principles of Engineering for Teachers (3 Credits)
Introduces technological processes employed in engineering and engineering technology for K-12 teachers. For pre-service and in-service teachers. College of Engineering and Computing majors are excluded.
Prerequisites: MATH 112 or MATH 115.