EVEN - ENVIRONMENTAL ENGR (EVEN)

EVEN 201 Introduction to the Environmental Engineering Profession
Credit 1. 1 Lecture Hour.
Introduction to the study and practice of environmental engineering; professionalism and professional registration; engineering ethics; exercises in technical communication.
Prerequisites: Grade of C or better in ENGL 103 or ENGL 104; or approval of instructor.

EVEN 301/CVEN 301 Environmental Engineering Lab
Credit 3. 3 Lecture Hours.
Environmental measurements on physical, chemical, biological and biotechnological parameters of water.
Prerequisites: CVEN 301/EVEN 301 or concurrent enrollment; CVEN 311/EVEN 311 or concurrent enrollment; or approval of instructor.

EVEN 304/CVEN 304 Environmental Engineering Lab
Credit 1. 3 Lab Hours.
Water quality; material balances; chemical, physical and biological processes; water quality modeling; water and wastewater treatment; air quality; solid and hazardous waste management.
Prerequisites: Grade of C or better in CHEM 107; Grade of C or better in CVEN 302 and MATH 308, or concurrent enrollment.
Cross Listing: CVEN 301/EVEN 301.

EVEN 311/CVEN 311 Fluid Dynamics
Credit 3. 3 Lecture Hours.
Fluid properties; statics; kinematics; basic conservation principles of continuity, energy and momentum; similitude and hydraulic models; incompressible flow in pipes; fluid dynamic drag.
Prerequisites: Grade of C or better in MATH 251 and CVEN 221; grade of C or better in CVEN 302, or concurrent enrollment; CVEN 311/EVEN 311 or concurrent enrollment; or approval of instructor.

EVEN 339/CVEN 339 Water Resources Engineering
Credit 3. 3 Lecture Hours.
Quantitative hydrology, precipitation, hydrograph analysis, reservoir and stream routing; groundwater; Darcy equation, well equation, well design; probability concepts in design; water law; dams; reservoirs; spillways; open channel and pipe network hydraulics; pumps; urban stormwater drainage; flood damage mitigation.
Prerequisites: CVEN 311/EVEN 311.

EVEN 399 Mid-Curriculum Professional Development
Credit 0. 0 Lecture Hours.
Participation in an approved high-impact learning practice; reflection on professional outcomes from environmental engineering body of knowledge; documentation of experience appropriate to eventual professional licensure; self-assessment of learning at mid-curriculum point.
Prerequisites: CVEN 301/CVEN 301 or CVEN 301/EVEN 301; CVEN 304/CVEN 304; EVEN 311/CVEN 311 or CVEN 301/EVEN 301; CVEN 302; CVEN 221; or approval of instructor.

EVEN 400 Design Problems in Environmental Engineering I
Credit 2. 1 Lecture Hour. 3 Lab Hours.
Capstone design project of an interdisciplinary or specialized nature involving both technical and non-technical aspects of an environmental engineering problem; managing a project through the evaluation, selection and preparation of an appropriate design solution for an open-ended problem; project to be completed in EVEN 401.
Prerequisites: CVEN 402/CVEN 402 or CVEN 402/EVEN 402; EVEN 413/CVEN 413 or CVEN 413/EVEN 413; senior classification; admitted to major degree sequence in environmental engineering; or approval of instructor.

EVEN 401 Design Problems in Environmental Engineering II
Credit 2. 0 Lecture Hours. 6 Lab Hours.
Continuation and completion of capstone environmental engineering project developed in EVEN 400; critical evaluation, revision, preparation and communication of final design solution.
Prerequisite: EVEN 400.

EVEN 402/CVEN 402 Engineered Environmental Systems
Credit 3. 3 Lecture Hours.
Unit operations and processes in environmental engineering; physical, chemical and biological treatment of water and wastewater; treatment system analysis and design.
Prerequisites: Grade of C or better in CVEN 301/EVEN 301 or CVEN 301/CVEN 301.
Cross Listing: CVEN 402/EVEN 402.

EVEN 404 Environmental Unit Operations Laboratory
Credit 1. 3 Lab Hours.
Applications of laboratory methods to measure fundamental aspects of behavior of environmental engineering processes; examination of critical chemical, physical and biological processes that control behavior of materials in multiple media (air, water, land) in natural and engineered systems; evaluation of effects of important process variables.
Prerequisites: CVEN 301/EVEN 301 or CVEN 301/CVEN 301; CVEN 304/CVEN 304; CHEM 222 or concurrent enrollment; CVEN 402/EVEN 402 or EVEN 402/CVEN 402 or concurrent enrollment; admitted to major degree sequence in environmental engineering; or approval of instructor.

EVEN 406 Environmental Protection and Public Health
Credit 3. 3 Lecture Hours.
Communicable and noncommunicable diseases; environmental risk assessment; environmental assessments; comprehensive environmental planning; small water and wastewater systems; solid waste management; hazardous spills and waste management; vector control; environmental administration.
Prerequisites: Grade of C or better in CVEN 301/EVEN 301 or CVEN 301/CVEN 301; or approval of instructor.
Cross Listing: CVEN 402/EVEN 402.

EVEN 413/CVEN 413 Natural Environmental Systems
Credit 3. 3 Lecture Hours.
Water quality assessment of natural environmental systems; development and calibration of models to describe fate and transport of contaminants in aquatic systems; application of models to design of water quality control facilities.
Prerequisite: Grade of C or better in CVEN 301/CVEN 301 or EVEN 301/CVEN 301.
Cross Listing: CVEN 413/EVEN 413.
EVEN 458/CVEN 458 Hydraulic Engineering of Water Distribution Systems
Credits 3. 3 Lecture Hours.
Pressure conduit hydraulics; design, modeling, and analysis of water conveyance and distribution systems including pipelines, pipe networks, and pumps.
Prerequisite: Grade of C or better in CVEN 339/EVEN 339 or EVEN 339/CVEN 339 or approval of instructor.
Cross Listing: CVEN 458/EVEN 458.

EVEN 462/CVEN 462 Engineering Hydrogeology
Credits 3. 3 Lecture Hours.
Groundwater in the hydrologic cycle; aquifer properties; well hydraulics, testing, and design; groundwater quality; and groundwater management and sustainability.
Prerequisites: Grade of C or better in CVEN 311/EVEN 311 or EVEN 311/CVEN 311; Grade of C or better in CVEN 301/EVEN 301, EVEN 301/CVEN 301, CVEN 339/EVEN 339, or EVEN 339/CVEN 339; junior or senior classification; or approval of instructor.
Cross Listing: CVEN 462/EVEN 462.

EVEN 463/CVEN 463 Engineering Hydrology
Credits 3. 3 Lecture Hours.
Occurrence, distribution and properties of natural waters of the earth; measurement and engineering analysis of hydrologic phenomena including precipitation, streamflow and groundwater, hydrologic design of water resources development and management projects.
Prerequisite: Grade of C or better in CVEN 339/EVEN 339 or EVEN 339/CVEN 339.
Cross Listing: CVEN 463/EVEN 463.

EVEN 466 Sustainability and Life Cycle Analysis
Credits 3. 3 Lecture Hours.
Definitions of sustainability and sustainable development from social, economic, political, and technical perspectives; life-cycle analysis and quantitative assessment of sustainability; industrial ecology; valuation of environmental goods and externalities; sustainable infrastructure design and management.
Prerequisites: Junior or senior classification or approval of instructor.