EENV - Environmental Engineering

EENV 240. Chemistry for Environmental Engineers. 3 Credits. (3 Lec) PREREQUISITES: CHMY 143 or CHMY 153. Fundamentals of physical, biochemistry and organic chemistry with an emphasis on environmental engineering applications.

EENV 292. Independent Study. 1-3 Credits. (1-3 Ind; 6 cr max) On Demand PREREQUISITE: Consent of instructor and approval of department head. Directed research and study on an individual basis.

EENV 340. Principles of Environmental Engineering. 3 Credits. (3 Lec) F,S Lec 3 PREREQUISITE: CHMY 143 or CHMY 153. COREQUISITE: EGEN 335 or ECVT 337 or ECHM 321. Fundamentals of environmental engineering with emphasis on water and wastewater.

EENV 341. Physical and Chemical Treatment Processes. 4 Credits. (3 Lec, 1 Lab) PREREQUISITE: EENV 240 and ECHM 201. Principles of water chemistry, reactor theory, and unit operations are applied to water treatment processes with a focus on municipal drinking water systems.

EENV 342. Biological Treatment Processes. 1-4 Credits. (3 Lec, 1 Lab) PREREQUISITES: EENV 341 Physical and Chemical Treatment Processes. Principles of microbial kinetics, biological reactors and unit operations are applied to water treatment, with an emphasis on municipal wastewater.

EENV 387. Environmental Laws and Regulations. 3 Credits. (3 Lec) S PREREQUISITES: CHMY 211 or EENV 240 or CHMY 321 or EGEN 335 or ECVT 337. Introduction to major environmental laws and regulations and the impacts of pollution by review of case studies.

EENV 432. Advanced Engineering Hydrology. 3 Credits. (3 Lec) F PREREQUISITE: ECVT 331 and ECVT 332 or ECVT 333. Hydrology emphasizing engineering design. Topics include modern techniques for flow estimation, flood routing and sediment yield, design of conveyance structures; and water project development.

EENV 433. Groundwater Supply/Remediation. 3 Credits. (3 Lec) PREREQUISITE: EGEN 335 or ECVT 337 or ECHM 321. Contemporary groundwater topics including water supply, contaminant transport, and remediation technologies.

EENV 436. Stormwater Management & Engineering. 3 Credits. (3 LEC) S PREREQUISITES: ECVT 333 and EENV 340 or EENV 341. Stormwater engineering is likely to be part of nearly all civil or environmental engineering construction projects our students will encounter in their careers. Moreover, stormwater management systems are a significant component of existing municipal infrastructure. This course will provide a solid foundation in stormwater engineering fundamentals including water quality, regulations that drive management, principles of low impact development, and design of structural controls. The course integrates the introductory hydraulics and hydrology material covered in ECVT 333 with the water quality aspects of EENV 340 and EENV 341 and applies that knowledge to the design of sustainable stormwater infrastructure that is deeply embedded in a social context. EENV 436 will be a 3-credit lecture course, offered once per year in the spring semester.

EENV 440. Water Chemistry for Envr Engr. 3 Credits. (3 Lec) PREREQUISITE: EENV 340 or EENV 341 Fundamentals of aquatic chemistry and principles of water technology for environmental engineers. Based on chemical thermodynamics. Students learn to quantify water quality and control parameters characterizing water quality. Co-convend with EENV 540. Students enrolled in this course will not be able to take EENV 440 and have it count toward degree requirements.

EENV 441. Natural Treatment Systems. 3 Credits. (3 Lec) PREREQUISITE: EENV 340 or EENV 342. Planning, design, and operation of remediation facilities emphasizing natural versus mechanical elements. Specific topics include stabilization ponds, constructed wetlands, land treatment, and on-site domestic systems.

EENV 443. Air Pollution Control. 3 Credits. (3 Lec) PREREQUISITE: CHMY 335 or ECVT 337, and CHMY 141. Fundamentals of air quality management with emphasis on the design of processes and equipment for controlling gaseous and particulate emissions.


EENV 489R. Environmental Engineering Design I. 2 Credits. (1 Lec, 1 Lab) F,S PREREQUISITE: EGEN 310R and student must be within two semesters of graduation. COREQUISITE: EGEN 325 or EGEN 330, and ECVT 308 and concurrent enrollment in ECVT 401. Senior capstone course. Discussion of the design process from conceptual/preliminary design to final design, plans, and specifications. Development proposal for engineering services, including scope of work, data acquisition, and organization of design team.

EENV 490R. Undergraduate Research. 1-6 Credits. (1-6 Ind) F,S,Su Directed undergraduate research which may culminate in a research paper, journal article, or undergraduate thesis. Course will address responsible conduct of research. May be repeated.

EENV 491. Special Topics. 1-3 Credits. (1-3 Lec; 12 cr max) On Demand PREREQUISITE: Course prerequisites as determined for each offering. Courses not required in any curriculum for which there is a particular one-time need, or given on a trial basis to determine acceptability and demand before requesting a regular course number.

EENV 492. Independent Study. 1-3 Credits. (1-3 Ind; 4 cr max) On Demand PREREQUISITE: Junior standing, consent of instructor, and approval of Department Head. Directed research and study on an individual basis.


EENV 534. Environmental Engineering Investigation. 3 Credits. (3 Lec) PREREQUISITE: EENV 454 or ECVT 529. Laboratory and field investigations for design and analysis of environmental engineering systems with focus on site investigations, remediation and incorporation of modeling studies.

EENV 540. Water Chemistry for Envr Engr. 3 Credits. (3 Lec) PREREQUISITE: EENV 340 or EENV 341. Fundamentals of aquatic chemistry and principles of water technology for environmental engineers. Based on chemical thermodynamics. Students learn to quantify water quality and control parameters characterizing water quality. Co-convend with EENV 440. Students enrolled in this course will not be able to take EENV 440 and have it count toward degree requirements.

EENV 561. Environ Eng Reactor Theory. 3 Credits. (3 Lec) PREREQUISITE: EENV 340 or EENV 341. Theory and mathematics of reactors commonly used in water and wastewater operations.

EENV 562. Water Treatment Process/Design. 3 Credits. (3 Lec) S Principles, theory, and practice of water treatment plant design.


EENV 565. Chem Sens/Instr Envr Biotech. 2 Credits. (2 Lec) PREREQUISITE: EENV 340. The course provides the knowledge necessary to design, manufacture, and use chemical sensors in the area of environmental biotechnology. Principles of manufacture and examples of application of chemical sensors along with the principles of measurement, signal conditioning, and data acquisition are presented to an extent that is necessary for the operation of sensors. The measurement techniques are preceded with an adequate theoretical introduction. Demonstrations of the sensors are organized in the Microsystems Laboratory located at the Center for Biofilm Engineering.

EENV 575. Research or Prof Paper/Project. 1-4 Credits. (1-4 Ind; 6 cr max) F,S,Su Max 6 cr. PREREQUISITE: Graduate standing. A research or professional paper or project dealing with a topic in the field. The topic must have been mutually agreed upon by the student and his or her major adviser and graduate committee.

EENV 589. Graduate Consultation. 1-3 Credits. (3 Lec) F,S,Su PREREQUISITE: Master's standing and approval of the Dean of Graduate Studies. This course may be used only by students who have completed all of their coursework (and thesis, if on a thesis plan) but who need additional faculty or staff time or help.

EENV 590. Master's Thesis. 1-10 Credits. (1 Ind; max unlimited) On Demand PREREQUISITE: Master's standing. May be repeated.
EENV 591. Special Topics. 1-3 Credits. (1-3 Lec; 12 cr max) On Demand
PREREQUISITE: Upper division courses and others as determined for each
offering. Courses not required in any curriculum for which there is a particular one
time need, or given on a trial basis to determine acceptability and demand before
requesting a regular course number.

EENV 592. Independent Study. 1-3 Credits. (1-3 Ind; 6 cr max) F,S,Su
PREREQUISITE: Graduate standing, consent of instructor, approval of Department
Head and Dean of Graduate Studies. Directed research and study on an individual
basis.

EENV 598. Internship. 2 Credits. (2 Ind) On Demand
PREREQUISITE: Graduate standing, consent of instructor and approval of
Department Head. An individual assignment arranged with an agency, business or
other organizations to provide guided experience in the field.

EENV 690. Doctoral Thesis. 1-10 Credits. (1-10 Ind; max unlimited) F,S,Su
Prerequisite: Doctoral Standing.
**Font Notice**

This document should contain certain fonts with restrictive licenses. For this draft, substitutions were made using less legally restrictive fonts. Specifically:

Times was used instead of Adobe Garamond Pro.

The editor may contact Leepfrog for a draft with the correct fonts in place.