

# ENVIRONMENTAL ENGINEERING (ENVE)

<b>ENVE 600 Special Topics in Envr Engr</b>	<b>1-3 Credit hours</b>	<b>ENVE 650 Special Topics</b>	<b>1-4 Credit hours</b>
<b>Grade Mode:</b> Normal Grading Mode		Occasional special offerings in Environmental Engineering. (PR: Consent)	
<b>ENVE 611 Air Pollution Design I</b>	<b>3 Credit hours</b>	<b>Grade Mode:</b> Normal Grading Mode	
An introduction to absorption, condensation, incineration, absorption, and process modification relevant to the design of abatement systems for gaseous air pollutant emissions. (PR: unit operations, thermodynamics and calculus)		<b>ENVE 651 Special Topics</b>	<b>1-4 Credit hours</b>
<b>Grade Mode:</b> Normal Grading Mode		Occasional special offerings in Environmental Engineering. (PR: Consent)	
<b>ENVE 612 Air Pollution Design II</b>	<b>3 Credit hours</b>	<b>Grade Mode:</b> Normal Grading Mode	
An introduction to equipment, processes, and basic principles relevant to the design of particulate collection systems including electrostatic precipitators, fabric filtration units, cyclones, and high energy scrubbers. (PR: ES 604 or courses in physics, fluid mechanics, and process design)		<b>ENVE 652 Special Topics</b>	<b>1-4 Credit hours</b>
<b>Grade Mode:</b> Normal Grading Mode		Occasional special offerings in Environmental Engineering. (PR: Consent)	
<b>ENVE 615 Environmental Chemistry</b>	<b>3 Credit hours</b>	<b>Grade Mode:</b> Normal Grading Mode	
Fundamental principles governing the various aspects of chemistry relevant to the environment will be addressed. The chemistry of waste treatment, cycle processes and other applications will be evaluated. (PR: Consent)		<b>ENVE 653 Special Topics</b>	<b>1-4 Credit hours</b>
<b>Grade Mode:</b> Normal Grading Mode		Occasional special offerings in Environmental Engineering. (PR: Consent)	
<b>ENVE 616 Wastewater Treatment Fac Dsgn</b>	<b>3 Credit hours</b>	<b>Grade Mode:</b> Normal Grading Mode	
Fundamental principles and applied practices of wastewater treatment facilities. Includes performance analysis, component selection, and system design for physical, chemical, and biological processes. (PR: ENVE 615)		<b>ENVE 663 Environmental Permitting</b>	<b>3 Credit hours</b>
<b>Pre-req:</b> ENVE 615.		The permit process for the construction and operation of facilities, including stream crossing, wetlands, etc.; permits under Clean Air Act, Clean Water Act, NPDES, RCRA and TSCA.	
<b>Grade Mode:</b> Normal Grading Mode		<b>Grade Mode:</b> Normal Grading Mode	
<b>ENVE 617 Water Treatment Fac Design</b>	<b>3 Credit hours</b>	<b>ENVE 670 Hydrology and Drainage Control</b>	<b>1-6 Credit hours</b>
Fundamental principles and applied practices of water quality and water treatment facilities. Includes analysis of source waters, and design of physical and chemical system components. (PR: ENVE 615)		The goal of this course is to develop an understanding of watershed processes, including precipitation, generation of runoff, infiltration, stream flow, soil erosion, sediment transport and deposition, and fluvial geomorphology. The course provides students with an overview of hydrologic concepts, such as precipitation and runoff flow, with an emphasis on practical applications such as modeling and control of runoff and sedimentation. Additional practical applications covered in the course are highway drainage concepts, including calculation of runoff and design of channels, culverts and other control structures.	
<b>Grade Mode:</b> Normal Grading Mode		<b>Grade Mode:</b> Normal Grading Mode	
<b>ENVE 618 Pollution Prevention</b>	<b>3 Credit hours</b>	<b>ENVE 671 Hydraulic Structures</b>	<b>3 Credit hours</b>
Introduces the student to the basic understanding and criteria required for establishing a pollution prevention program, including a review of successful industry practices Emphasis on management strategies. (PR: Undergraduate degree in science or engineering)		Analysis and design of water conveyance channels and hydraulic structures, such as siphons, chutes, weirs, flumes, dams, spillways, gates, locks, storm surge barriers, and outlet works.	
<b>Grade Mode:</b> Normal Grading Mode		<b>Grade Mode:</b> Normal Grading Mode	
<b>ENVE 620 Solid Waste Management</b>	<b>3 Credit hours</b>	<b>ENVE 672 Watershed Modeling</b>	<b>3 Credit hours</b>
Solid waste management and minimization: options, methods, laws and regulations. Landfill design, testing, operation, monitoring, and closure. Use of composting in landfills. Incinerator design and operation. Separation and recycling approaches.		Setup, execution, and calibration of numerical watershed models. Includes the rational method, TR-55, HEC-1, and HEC-HMS. Emphasis on watershed analysis for decision making and drainage design.	
<b>Grade Mode:</b> Normal Grading Mode		<b>Grade Mode:</b> Normal Grading Mode	
<b>ENVE 625 Hazardous Waste Manangement</b>	<b>3 Credit hours</b>	<b>ENVE 673 Industrial Ventilation</b>	<b>3 Credit hours</b>
Options and methods of managing hazardous waste. Landfill design, testing, operation, monitoring, and closure. Incinerator design, testing, operation, and monitoring. Design and operation of treatment facilities. Waste reduction practices.		The design and analysis of industrial ventilation systems, including properties of air contaminants; hood, duct, and fan design; system performance; mine ventilation; air cleaning devices; testing; diagnosis; troubleshooting, cost analysis. (PR: Consent)	
<b>Grade Mode:</b> Normal Grading Mode		<b>Grade Mode:</b> Normal Grading Mode	
		<b>ENVE 675 Industrial Noise Control</b>	<b>3 Credit hours</b>
		Physics of sound, absorption and reflection, sound level measurements and instruments, and noise control criteria; audiometry and the physiology of hearing; community noise abatement; laws and regulations. (PR: undergraduate degree in science or engineering)	
		<b>Grade Mode:</b> Normal Grading Mode	

**ENVE 680 Air Poll Disper Meteoro Model 3 Credit hours**

Meteorological concepts with emphasis on air pollution; atmospheric dynamics, adiabatic processes; temperature profiles, behavior of stack effluent, atmospheric chemistry, attenuation of solar radiation, and climatology application to dispersion models. (PR: undergraduate course in physics, and spreadsheet capability)

**Grade Mode:** Normal Grading Mode

**ENVE 681 Environmental Engr Design 3 Credit hours**

Principles of engineering design of water and waste- water treatment systems and processes, including physical, chemical and biological treatment and handling of treatment residuals. Includes coverage of relevant water quality concepts.

**Grade Mode:** Normal Grading Mode

**ENVE 682 Environmental Remediation Tech 3 Credit hours**

Decontamination or removal of pollutants from soil. Aeration of excavated soil on site. Use of solvents and surfactants as removal aids. Removal of soil for treatment at an off-site facility. (PR: ES 651)

**Grade Mode:** Normal Grading Mode

**ENVE 683 Environmental Geotechnology 3 Credit hours**

Surface and subsurface geology; geotechnical properties of soil and rock. Geotechnical engineering design aspects of landfills, groundwater barriers, tunneling. Mechanics of ground movement; sediment and erosion control. (PR: engineering or geology degree)

**Grade Mode:** Normal Grading Mode