MASTER OF SCIENCE | ENVIRONMENTAL ENGINEERING

SMU | LYLE
SCHOOL OF ENGINEERING

*To support continued exploration, an oil producer employs nanoscale filtration membranes to process the water used in drilling and safely return it to the municipal supply.*

*To remediate the soil around a former military base, an environmental engineering firm injects microbes that are genetically engineered to process certain hydrocarbons.*

*Before launching a much needed urban freeway project, the local transportation authority authorizes an in-depth study of its effect on local air quality.*

The developed world must find ways to sustain economic and technological progress without sacrificing ecological preservation. It must leverage available resources to provide food, clean water, energy, and transportation for its growing populations. And all must anticipate and adapt to the increasing exigencies of climate change. Our responses to these challenges depend on specialists who combine a knowledge of chemistry, biology, and other natural sciences with an engineering approach to solutions—exactly those who achieve a master's in environmental engineering from SMU-Lyle.

## FIND US **HERE**

P.O. Box 750335 Dallas, Texas 75275
EngineeringLeaders@SMU.edu | lyle.smu.edu
214-768-2002

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# ENGINEER SOLUTIONS

Environmental engineers are intimately involved in finding solutions to the ecological problems of energy and food production, manufacturing and transportation, water quality and availability, and waste treatment—virtually every facet of 21st century life. They must deal with constantly changing environmental policies, mandates, and regulations. And they must be able to engineer innovative solutions, often by combining knowledge from different fields. Our master's in environmental engineering program was created to provide a solid grounding in multiple disciplines, starting with such core topics as Risk Assessment, Environmental Chemistry and Biology, and Air Pollution Management. Students then expand their horizon through a wide range of electives, including Ground Water Hydrology, Environmental Regulations and Compliance, Environmental Epidemiology, and Engineering Economics. They benefit from the broad-based education needed to launch a career or later pursue a Ph.D. in this essential field.

# RESEARCH IMPACT

The master's in environmental engineering curriculum at SMU-Lyle is presented by an exceptionally qualified faculty whose own cross-disciplinary research investigations into the role of nanoscale minerals in environmental processes, new filtration materials targeted at specific pollutants, hydrologic and hydraulic modeling of water resource systems, and fate and transport of contaminants, for example, touch upon many key issues in this critical field. Courses are offered in small classes to produce the optimal environment for individual mentoring, hands-on engagement, and long-range success.

# ACADEMIC **PROGRAM**

Requirements include the completion of ten graduate level courses (30 CH), or the completion of eight courses (24 CH) and a thesis.

**Core Courses (15 CH).**

Air Pollution Management and Engineering
Biological Waste Treatment
Environmental Chemistry and Biology
Environmental Engineering Principles and Processes
Risk Assessment and Health Effects

**Group I Specialization Electives (9 CH).**

Aerosol Mechanics
Biodegradation of Hazardous Organic Pollutants
Bioremediation of Inorganic Contaminants
Environmental Organic Chemistry
Fate and Transport of Contaminants
Geographical Information Systems and Mapping
Groundwater Hydrology and Contamination
Intermediate Fluid Dynamics
Probability and Statistics for Scientists and Engineers
Soil Chemistry and Mineralogy

**Group II Breadth Electives (6 CH).**

Engineering Accounting
Engineering Economics and Decision Analysis
Engineering Finance
Engineering Management
Engineering Microbiology
Environmental Epidemiology
Environmental Regulations and Compliance
Introduction to Environmental Management Systems
Introduction to Environmental Toxicology
Leadership Innovation Hub
Operations Research Models
Optimization Models for Decision Support
Project Management
Thesis