**CIVL 355: Environmental Engineering (3 credits)**

This course provides students with a background in the fundamental science and engineering principles of environmental engineering. A broad range of topics will be covered: water quality and treatment, atmospheric pollution, solid and hazardous waste management, noise pollution, soil contamination, climate change and clean energy, and green building design. (Prerequisite: CHEM101)

**Course Learning Outcomes:**

By the end of this course, students will be able to:

A1. Demonstrate detailed knowledge of the scientific and engineering principles related to environmental engineering.

A2. Adapt techniques and practices within the environmental engineering field to address various issues.

B1. Identify, analyze, and solve environmental engineering problems.

C1. Work effectively as a member of a team to complete a project in environmental engineering.

**Course Learning Materials:**

* Davis and Cornwell (2022). Introduction to Environmental Engineering, McGraw-Hill.
* Davis and Masten (2019). Principles of Environmental Engineering and Science, McGraw-Hill

**Course Content:**

1. Properties of water quantity and quality: global water distribution, the water cycle, quality standards, indicator parameters and analysis, sources of water pollution, water and wastewater treatment, desalination
2. Atmospheric pollution: air quality standards and indicators, sources of air pollution, remediation
3. Climate change: causes and impacts of climate change, clean energy.
4. Solid waste: municipal and hazardous waste, waste management strategies (landfilling, incineration, recycling)
5. Noise pollution: sources, monitoring, reduction measures
6. Sustainable construction: green building assessment and LEED certification, ecological design, energy and water efficiency, sustainable sites, life cycle analysis, indoor environmental quality