



UES 302 Aug 2:0

Design Principles in Environmental Engineering

Instructor

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Teaching Assistant

Email:

Department: Undergraduate

Course Time:

Lecture venue: CST Lecture Hall

Detailed Course Page:

Announcements

Brief description of the course

This course is a core course for undergraduate students majoring in Earth and Environmental Science Program. The student will be exposed to the design principles of design and assessing performance of process equipment's which deal with pollution control.

Prerequisites

None

Syllabus

Mass and energy transfer and balances; environmental chemistry; fundamentals of chemical reaction engineering: thermodynamics, stoichiometric and kinetics of chemical reactions, chemical reactors – stirred tank and plug flow reactors. Air pollution sources, control technologies, and atmospheric stability; ambient air quality standards and indoor air quality standards; Design for air pollution control: gas-liquid interactions, absorption and adsorption processes, particulate emission control. Wastewater treatment systems and effluent standards; Design for waste water treatment processes: physical unit operations such as sedimentation and filtration, chemical and biological treatment processes

Course outcomes

â€¢ Acquire general knowledge and understanding of the principles upon which environmental engineering is based, including general engineering, mathematical and scientific computations as well the physical, chemical, and biological science.

â€¢ Appreciate the need for multidisciplinary approaches to engineering solutions to environmental problems, and the cross-media (air, water, earth) nature of environmental problems.

â€¢ Gain basic knowledge and skills to identify solutions to environmental engineering and understand current issues and the context in which environmental engineering is practiced.

â€¢ Appreciate and value the environmental engineering and professional ethics.

Grading policy

Assignments 30%

Midterm Exam 20%

Final Exam 50%

Assignments

Resources

1. Mackenzie Davis and Susan Masten, Principles of Environmental Engineering, McGraw Hill, 2004. ISBN-13: 978-0072350531.
2. Mackenzie Davis and David Cornwell, Introduction to Environmental Engineering, McGraw Hill, 2012. ISBN-13: 978-0073401140
3. James Mihelcic and Julie Beth Zimmerman, Environmental Engineering: Fundamentals, sustainability and Design, John Wiley, 2014. ISBN-13: 978-1118741498
4. Mihelcic, J. and Zimmerman, J. B. 2010 Environmental Engineering: Fundamentals, Sustainability and Design, John Wiley.