CEE 490/ENV H 461 Air Pollution Control

M-W 10:30-12:20

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Canvas Website: https://canvas.uw.edu/courses/1448411

Zoom Live Class on M-W 10:30-12:20: https://washington.zoom.us/j/96859955980

There is not a required textbook for this class.

Notes and assignments will be posted on the Canvas website.

Description: This course focuses on air pollution emission control with a general introduction to the regulatory framework and a specific focus on the first level design of devices for controlling particulate and gaseous emissions from both stationary and mobile sources.

Learning Objectives: The goal of this course is to provide students with realistic and practical experience in the design of air pollution control equipment using EPA design guidelines. Students are expected to:

- Apply EPA engineering guidelines to the design of control systems
- Be able to assess the initial feasibility of air pollution control equipment for a given application

Week 1: Introduction & Criteria Air Pollutants

Criteria Air Pollutant Health Effects & Standards

Air Permits

Week 2: Hazardous Air Pollutants ('Air Toxics')

Air Toxics 2020.pdf

National Air Toxics Assessment.pdf

Air Toxics Screening Models 2020.pdf

Week 3: Stationary Source Emission Testing

Overview of Emission Estimation Methods

Basic stack sampling procedures

In-situ Continuous Emission Monitoring Systems

Week 4: Particulate Emission Controls: Part 1

Gravity and Inertial Collection Mechanisms

Week 5: Particulate Emission Controls: Part 2

Filtration & Baghouses

Electrostatic Precipitators

Week 6: Stationary Source NOx, SO2 and Hg emission controls

NOX controls

SO2 controls

Hg controls

Week 7: Stationary Source Hydrocarbon and Odor Controls
Incineration
Adsorption
Biofiltration & Non-thermal Plasma

Week 8: Stationary Source GHG Emission Reductions
Climate and GHG emission goals
GHG emission reduction options
Carbon Trading

Week 9: Mobile Source Emission Regulations and Controls
Traditional Pollutant regulations & control
Transportation GHG controls

Week 10: Respirable Silica and Diesel Exhaust in the Workplace
Respirable Silica and the Construction Industry
Diesel Exhaust

Grading:

Homework:	20%
Discussions	20%
Midterm:	30%
Final:	30%

Some Textbooks on this subject:

"Air Pollution Control: A Design Approach" 4th Edition by Cooper and Alley

"An Introduction to Air Pollution Control" by J. Paul Guyer

"Air Quality" 5th Edition by Davis, Godish, and Fu

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