

AIR POLLUTION CONTROL
ENGG*4330
FALL 2010

Instructor:

Warren Stiver
Professor & NSERC Chair in Environmental Design Engineering
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D2L too
Office Hours: Whenever I am in my office - you have access to my schedule via Zimbra

Meeting Times:

Lectures (MCKN224)	MWF 9:30 - 10:20
Tutorial (THRN1006)	W 12:30 - 2:20 or 3:30 - 5:20 (Attend your tutorial section!)

Teaching Assistant:

No GTA.

Text:

Optional: C.D. Cooper and F.C. Alley, **2002**, *Air Pollution Control: A Design Approach*, 3rd Ed., Waveland Press, Inc. Prospect Heights, IL.

Notes:

Copies of all lecture overheads will be posted on the course's D2L site. Supplemental information will also be provided for download via D2L.

Prerequisites:

ENGG*3260 Thermodynamics
ENGG*3180 Air Quality

Course Objectives:

Following completion of this course the students will understand techniques used to minimize the emission of air pollutants. These techniques include end-of-pipe solutions (e.g. electrostatic precipitators) and in process solutions (e.g. combustion chamber modifications). The understanding will include the underlying principles and the basics of design for each unit.

Evaluations:

Lab Project:	35%	Report due: October 22 nd (10:00 pm)
Design Project:	35%	Report due: December 17 th (Noon)
Tests:	30%	October 1 st , October 29 th , November 26 th
Peer Evaluations:	*	Multiplying factor for team reports

Note: There is NO final exam. The design project is due during the exam period.

Laboratory Project:

Combustion system emissions and energy efficiency. A preliminary experiment will be conducted on Wednesday, September 15th. Full experiments will be scheduled between September 22nd and October 1st in non-scheduled class times.

Design Project:

The design of a particulate pollutant control system. An innovative design idea developed and supported using CFD.

Tests:

Tests will be held during the Friday lecture time period. The tests will cover all material up until the Monday prior to the test. Tests will be closed notes and books. Data and equation sheets will be made available to you with the test (posted for your information approximately 1 week prior to the test). You will be permitted to bring in your own single aid sheet (8½ x 11").

Team Work is a Requirement in this Course!

The laboratory and design projects will be conducted in teams of three and each team will submit a single report. You are free to choose your team members. However, there must be no overlap between your two teams. I may need to assign some team members and there may be one or two teams of four.

You will be required to submit a peer evaluation form with the final reports (lab and design). Should this provide evidence or should there be other evidence that one or more members of the team may not have contributed their share of the effort then the instructor will arrange meetings with individuals involved. The result may be a multiplication factor of less than 1.0 assigned to one or more individuals. In some cases the lack of contribution may be considered academic misconduct. The University's academic misconduct policies and procedures will then apply.

Assignments:

Assignments will be provided. The value in completing the assignment yourself will be for your learning. You are responsible for the material that is reflected by these assignments. Tutorials will be used for providing assistance in the completion of these assignments. Questions from old exams and tests will make up some of the assignments.

Policies:

- Missed labs, design projects and/or tests will require documented medical or compassionate evidence. The sniffles the day before a project is due is not grounds for consideration of late submissions.
- Late reports will only be accepted on compassionate or medical grounds – if these grounds exist see Warren as soon as possible. In the absence of approved consideration, late reports will be assigned a grade of zero (0) for all members of the team.
- A failing grade will be assessed when a solution is fundamentally flawed.
- **Literacy and Numeracy Expectations:**
It is required that the students perform with a reasonable competency in both numeracy and literacy. Failing grades **WILL** be assigned on entire questions or projects (or substantial portions thereof) if the competency is inadequate at the 4th year level.
- **Academic Integrity:**
Team projects must include a cover page of the required format. Students who have not signed the cover page will NOT receive the grade assessed for the report. The University’s academic misconduct policies will be applied, as described in the Calendar, when it becomes known that a student(s) has committed academic misconduct including claiming credit for work that they have not substantively contributed to.

Topic Outline (nominal # of hours):	Suggested Reading*
Introduction (1)	
▪ air challenges	
Combustion & Energy (15)	Supplemental Notes
▪ fundamentals	
▪ role in pollution formation and control	Ch 15 C&A
▪ automobiles	Ch 17 C&A
Particulate matter control (12)	
▪ particulate characteristics	Ch 3 C&A
▪ cyclones	Ch 4 C&A
▪ electrostatic precipitators	Ch 5 C&A
▪ fabric filters	Ch 6 C&A
Fugitive Emissions (6)	
▪ Characterizing	
▪ Control	
Closure (1)	

* it would be greatly to your advantage to read chapters prior to the corresponding lecture coverage

Comments:

All students are encouraged to submit signed written comments (positive or negative) to the Director of the School of Engineering on any aspect of this course.

Required Format for Lab & Design Report Cover Page

Design / Lab
Report

Date

a report completed in partial fulfilment of
Air Pollution Control
ENGG*4330

Team # or letter (as assigned)

Team Members

John Doe ____ (signature)
Jane Doe _____
etc.

(NOTE: Do NOT include student numbers)

By signing this cover page, we take responsibility and credit for the content of this report. Each individual signature signifies that the individual has been a substantive contributor to this report and the work that it represents.