

ENGI 9601: ENVS: 6004: Environmental Pollution & Mitigation

Instructor	Cynthia Coles	Teaching Assistants	Yujiao Wang (Joy)
E-mail	ccoles@mun.ca	E-mail	yw5485@mun.ca
Phone	864-8704	Phone	864-8856
Office Location	EN-3004	Office Location	EN-4032
Office Hours	Tu, Th, 1:20-1:45 p.m. Fr, 1:10-2:00 p.m.	Office Hours	by appointment

Website <http://www.engr.mun.ca/~ccoles/>

Communication *The best way to reach the professor is at the above MUN email address. The professor may post notices for the students on the above website.*

COURSE DESCRIPTION:

Climate change impacts, implications and management will be focused on in course notes, assignments, term papers and student presentations. A basic study of air pollution will complement the topic of climate change. Noise pollution will be studied with groups undertaking noise measurement projects. Sustainability will be focused on with respect to urban planning, water and sanitation, energy, health, agriculture and biodiversity. Water pollution and water quality management are studied through simple models.

PREREQUISITES: Engineering or Science undergraduate degree

SCHEDULE: LECTURE: Tues. & Thurs. 12:00 noon -1:15 pm Room: EN 4008

CREDIT VALUE: 3 credits

RESOURCES:

TEXT BOOK

- *Introduction to Environmental Engineering, 5th Edition, 2011, M. L. Davis and D. A. Cornwell, McGraw-Hill, TD 145 D26 2013*
- *Climate Wars, (New Material from Copenhagen and Beyond), 2009, Gwynne Dyer, Vintage Canada, ISBN 978-0-307-35584-3*

REFERENCES - BOOKS

- *The Leap: How to Survive and Thrive in the Sustainable Economy, 2011, C. Turner, Random House Canada (some urban planning ideas, S938 O87 2010)*
- *Simon & Schuster Handbook for Writers, Fourth Canadian Edition, 2005, L. Q. Troyka*

- and D. Hesse, Prentice Hall. (for help with your writing, PE 1408 T696 2006)*
- *Environmental Engineering, Fundamentals, Sustainability and Design, 2010, J. R. Mihelcic and J. B. Zimmerman, John Wiley & Sons, Inc. (for air pollution and climate change)*
 - *Introduction to Environmental Engineering and Science, 3rd Edition, 2008, G. M. Masters and W. P. Ela, Prentice Hall (for air pollution and climate change)*

REFERENCES - OTHER

MAJOR TOPICS:

- Historical temperatures, greenhouse effect, Intergovernmental Panel on Climate Change (IPCC), climate change impacts, monitoring, mitigation, adaptation and ocean changes (Chapter 9, starting on p. 613)
- Air pollution, terminology, criteria air contaminants, human health, air pollution disasters, indoor air pollution, acid rain, ozone depletion, global climate, global warming, areas of concern, how cities make their own weather, meteorology and dispersion of pollutants, air pollution control (Chapter 9)
- Noise pollution, detrimental effects, noise properties, terminology and characterization, sound pressure levels, sound frequencies, noise rating systems, noise transmission, traffic noise prediction, noise control at source, along path and at receiver, standards (Chapter 10)
- Sustainable development overview, human population sustainability and growth, green engineering principles, urbanization and urbanization impacts, sustainability indicators, new paradigms for town planning, future of cities and car use, water sustainability including floods and droughts, energy sustainability including renewable energy and conservation, agriculture sustainability, loss of biodiversity (Chapter 13)
- Water quality management, BOD calculations, determination of BOD constants, laboratory BOD measurement, COD, TOC, ThOD, re-aeration of rivers and dissolved oxygen sag curve, lakes management, eutrophication, growth and treatment of cyanobacteria (Chapter 7)

LEARNING OUTCOMES:

Upon successful completion of ENGI 9601, the student will be able to:

1. Have an appreciation for the current state of climate change
2. Understand potential future scenarios and challenges with respect to climate change
3. Understand the impacts and consequences of climate change
4. Identify and use valid sources of information
5. Source, read and understand academic articles related to climate change
6. Appreciate the value of lifelong learning and ever-evolving environmental issues

7. Take simple sound quality measurements
8. Use a simple model to estimate traffic noise with and without shielding
9. Communicate technical information in a clear and effective manner in writing and orally
10. Have a good appreciation for basic aspects of sustainability
11. Have an understanding of simple water quality models

ASSESSMENT:

			Proposed Due Dates
Climate change paper	25%		Thursday, Oct. 10 at 12:00 noon
Climate change presentation	10%		Thursday, Oct. 17, in class
Assignments in Class	20%		Sept. 19, Oct. 3, and Oct. 24
Noise group presentation	10%		
Class Participation	10%		
Final exam	25%		Monday Dec. 9 to Wednesday Dec. 18

No new work will be assigned for submission after Wednesday Nov. 20
Last day of class is Dec. 4

The final exam will have open and closed book portions. For the open book portion the only electronic aid that will be permitted will be scientific calculators. Practice problems, not to be handed in, will be assigned during the term to prepare students for the exam. The open book portion will consist of numerical problems. The paper is to be submitted as an electronic word file. The student needs to make sure that all images are printable and this might be checked by saving the document as a PDF file. A late submission will result in a 5% deduction and every day late beyond that will incur an additional 5% deduction.

ACADEMIC INTEGRITY AND PROFESSIONAL CONDUCT:

Students are expected to conduct themselves in all aspects of the course at the highest level of academic integrity. Students are encouraged to consult Memorial University's Code of Student Conduct at <http://www.mun.ca/student/conduct/>

Students may also consult the PEG-NL code of ethics at <http://www.pegnl.ca/> under "About Us" in the left hand column. This site is also accessible from the Faculty of Engineering and Applied Science home page and it is the second to last item in the left column.

Any student found to commit an academic offence will be dealt with according to the practices as outlined by the School of Graduate Studies. The related calendar information is available at <http://www.mun.ca/regoff/calendar/sectionNo=GRAD-0029>

INCLUSION AND EQUITY:

Students who require physical or academic accommodations are encouraged to speak privately to the instructor so that appropriate arrangements can be made to ensure your full participation in the course. All conversations will remain confidential.

The university experience is enriched by the diversity of viewpoints, values, and backgrounds that each class participant possesses. In order for this course to encourage as much insightful and comprehensive discussion among class participants as possible, there is an expectation that dialogue will be collegial and respectful across disciplinary, cultural, and personal boundaries.

STUDENT ASSISTANCE: Student Affairs and Services offers help and support in a variety of areas, both academic and personal. More information can be found at www.mun.ca/student.

One specific resource provided to students is assistance in writing. Please contact the Writing Centre at <http://www.mun.ca/writingcentre/about/> to find out more. (It is at SN 2053. Call 864-3168 or email vryan@mun.ca for an appointment or drop in to the QEII Library Commons.)

ADDITIONAL INFORMATION:

The professor's office hours and teaching schedule are as show below.

FALL 2013 SCHEDULE, Dr. C. A. Coles

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
9:00					
9:50					
10:00					
10:50					
11:00					
11:50					
12:00		ENGI 9601 12:00 noon – 1:15 pm EN 4008	ENGI 9614 11:45 a.m. – 1:00 p.m. EN 4020	ENGI 9601 12:00 noon – 1:15 pm EN 4008	ENGI 9614 11:45 a.m. – 1:00 pm EN 4020
12:50					
1:00		Office Hour EN 3004 1:20 pm – 1:45 pm		Office Hour EN 3004 1:20 pm – 1:45 pm	Office Hour EN 3004 1:10 p.m. – 2:00 pm
1:50					
2:00					
2:50					
3:00					
3:50					
4:00					
4:50					

Engi 9601: Environmental Pollution and Mitigation

Engi 9614: Special Topics in Environmental Engineering: Renewable Energy and Resource Conservation