



## **UNDERSTANDING POLLUTION**

Humans are massively changing the Earth  
Why does pollution happen?  
Global pollution and global environmental health  
Root causes  
Our actions have consequences

- Jan 20**      **GLOBAL CLIMATE CHANGE (PART I)**  
Lecture Schedule  
A warming Earth  
Greenhouse gases and their sources
- Jan 27**      **GLOBAL CLIMATE CHANGE (PART II)**  
Assessing global climate change  
Industry and government action to reduce emissions
- Feb 3**        **AIR POLLUTION (PART I)**  
Criteria air pollutants  
Hazardous air pollutants
- Feb 10**      **MIDTERM EXAM**
- Feb 17**      **AIR POLLUTION (PART II)**  
Pollution from space  
Air pollution in less-developed countries
- Feb 24**      **READING WEEK: NO CLASSES**
- Mar 3**        **STRATOSPHERIC-OZONE DEPLETION**  
The stratosphere and ozone  
Antarctica  
Consequences of ozone depletion  
Ozone-depleting pollutants  
Reducing atmospheric levels of ozone-depleting substances-The future
- Mar 10**      **WATER POLLUTION-EUTROPHICATION**  
Basic Concepts of Eutrophication  
Food Web Structure  
Natural and Cultural Processes of Eutrophication  
Relationships among Nutrients, Water Clarity, and Phytoplankton  
Response Models for Trophic State – Simple Eutrophication Models  
Other Pollutants and Mitigation of Water Pollution
- Mar 17**      **WATER POLLUTION-EUTROPHICATION**  
Internationally-known examples of eutrophication  
Gulf of Mexico  
Chesapeake Bay and Neuse River Estuary

Baltic Sea  
Black Sea  
Lake Washington  
Lake Nyos

- Mar 24**      **GREAT LAKES ECOLOGY-FOOD WEB DYNAMICS**  
Great Lakes Water Quality Agreement  
Eutrophication problems in:  
(i) Lake Erie; (ii) Lake Superior; (iii) Lake Michigan, (iv) Lake Huron;  
(v) Lake Ontario  
Invasive Species  
Biotic Resistance Model-Invasional Meltdown Model  
Examples
- Mar 31**      **AN INCONVENIENT TRUTH & GLOBAL WARMING (THE SIGNS AND THE SCIENCE)**
- Apr 7**      **MATHEMATICAL MODELS & ENVIRONMENTAL MANAGEMENT**  
Models as a Management Tool  
Models as a Scientific Tool  
Modelling Elements  
The Modelling Procedure  
Selection of Model Type  
Selection of Model Complexity and Structure  
Evaluation of the Current State of Mechanistic Aquatic Biogeochemical Modeling

### ***READINGS***

The required textbook for this course is:

Hill, Marquita K. (2004 or 2010). *Understanding Environmental Pollution (2<sup>nd</sup> Ed. resp. 3<sup>rd</sup> Edition)*. New York: Cambridge University Press.

Mann, E.M. & L.R. Kump (2008). *Dire predictions: Understanding Global Warming*. Pearson Education Canada

Specific readings will also be given out for some lectures.

### **UTSC Intranet**

Many announcements (such as the weekly readings or any changes to the lecture schedule) will be made on the course “blackboard page”. To access this, you need to sign up for a UTSC account. The page is located at <https://portal.utoronto.ca>. Please check this site at least once per week, as it will be updated frequently.