

Syllabus for EK 335: Introduction to Environmental Engineering Science

4 hours/week

1. Mass and Energy Transfer	1 week
2. Environmental Chemistry Inorganic Chemistry Organic Chemistry Nuclear Chemistry	1.5 weeks
3. Growth Models Resource Consumption Population Growth Economic Growth	1 week
4. Risk Assessment Hazard Identification Dose-Response Assessment Exposure Assessment Risk Characterization Comparative Risk Analysis	1.5 weeks
5. Water Pollution Water resources and pollutants Oxygen demand Pollutant transport Water and waste water treatment Legislations	2.5 weeks
6. Air Pollution Emissions overview (industry, transportation, commercial and residential) Legislations Criteria and Toxic Air Pollutants Pollution modelling Pollution Control Air pollution and Meteorology	2.5 weeks
7. Global Change Greenhouse effect and global temperature Carbon, nitrogen, and oxygen cycle IPCC Emissions Scenarios Oceanic changes and changes in the stratosphere	1 week
8. Solid Waste Management and Resource Recovery Life-Cycle Assessment Source Reduction including a discussion of the RoHS Directive Collection and Transfer Operations Recycling Waste to Energy Conversion Landfills	2 weeks

Text: Gilbert M. Masters and Wendell P. Ela, Introduction to Environmental Engineering and Science, 3rd edition (2008), Prentice Hall, Upper Saddle River, NJ.