

The George Washington University
Department of Engineering Management and Systems Engineering
Environmental and Energy Management Program
EMSE 6220: Environmental Management

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Web Sites

Course Web Page: <http://blackboard.gwu.edu>
E&EM Web Page: <https://eem.seas.gwu.edu>
E&EM Newsletter: <https://eem.seas.gwu.edu/newsletter>
E&EM Institute: <https://eemi.seas.gwu.edu>
Deason Web Page: <https://www.seas.gwu.edu/~jdeason>

Course Description

This course is designed to provide an overview of the environmental challenges currently facing humankind, as well as the technical, political, administrative and social forces influencing the quality of the environment and the use of resources. It includes coverage of government and industrial programs to combat pollution of the air, soil and water, and the legislative and regulatory regimes affecting environmental and related energy matters.

Course Access

As a registered student for EMSE 6220 you have automatic access to our course website. To enter, just go to <http://blackboard.gwu.edu>, scroll down to the “Collaborate Ultra” button on the left-hand side of the first page, then click “Course Room” and then click “Join Course Room.” If you have any trouble, you can access our Course Room directly at <https://us.bbcollab.com/guest/5e3cf9505aa641ebbb07006262993a64>. You also can call the alternate call-in number +1-571-392-7650, PIN: 838 294 5599 by phone for audio only.

If for any reason you become disconnected during the semester, please try to reconnect using the Collaborate Ultra link or the direct access Course Room link. If neither of those work, just call the alternate call-in number and rejoin that way.

Learning Outcomes

Upon completing this course, students should have solid knowledge about the drivers of macroscale and environmental problems throughout the world, the nature of such problems, and the responses that have evolved to address such problems. In addition, students will have specific knowledge about the nature and solutions to problems in the areas of air quality, water quality, biodiversity and hazardous and solid wastes.

Time Estimates

The amount of time expected for optimal performance in this course is 150 minutes (2.5 hours) direct interaction (class time) plus 300 minutes (5 hours) of independent learning (homework) per week during the course.

Grading

Case studies	10%
Mid-term exam	30%
Course project	25%
Final exam	30%
Class participation	5%

Textbooks

1. United Nations Environmental Programme. Global Environmental Outlook 6 (GEO-6), Healthy People, Healthy Environment. New York: UNEP, 2019. (ISBN 978-1108707664), 745 pages. Available free in pdf format online at: <https://www.unenvironment.org/resources/global-environment-outlook-6>
2. Organisation for Economic Co-operation and Development. OECD Environmental Outlook to 2050. Paris: OECD, 2012. (ISBN 978-92-64-12216-1), 353 pages. Available free in pdf format online at: <http://www.naturvardsverket.se/upload/miljoarbete-i-samhallet/internationellt-miljoarbete/multilateralt/oecd/outlook-2050-oecd.pdf>
3. UNEP, UNDP, World Bank, World Resources Institute. Decision Making in a Changing Climate. Washington, DC: World Resources Institute, 2011. (ISBN 978-1-56973-774-3), 170 pages. Available free in pdf format online at: <http://www.wri.org/publication/world-resources-report-2010-2011>
4. UNEP, UNDP, World Bank, World Resources Institute. World Resources 2000-2001. Washington, DC: World Resources Institute, 2001. (ISBN 1-56973-443-7), 389 pages. Available free in pdf format online at: <http://www.wri.org/publication/world-resources-2000-2001>

Notifications. I will alert each class member through the Blackboard message system if the class is cancelled due to inclement weather or other reasons. If you are uncertain about class cancellation at any time, please call me.

Emergency Preparedness. Please familiarize yourself with the emergency evacuation routes from our classroom and sign up for GW Alert text-message or e-mail notifications at <http://campusadvisories.gwu.edu/gw-alert-faqs>. For up-to-date information on the GWU emergency preparedness and response resources, please check: <http://campusadvisories.gwu.edu/About-Office-Emergency-Management>

Students with Disabilities. Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Marvin Center, Suite 242, to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to: <https://disabilitysupport.gwu.edu/>

Academic Integrity. Students are encouraged to share their opinions during the course formal meetings and outside of the class, as well as discuss the principles and applications of the course materials, to the extent these intellectual exchanges and academic collaborations comply with the GWU Code of Academic Integrity: <https://studentconduct.gwu.edu/code-academic-integrity>. Violations of the University's Code of Academic Integrity will not be tolerated and will be dealt with according to the George Washington University policies and procedures. By registering for this course you agree to comply with the GWU Code of Academic Integrity. Academic

dishonesty includes, but is not limited to: obtaining or giving aid on an examination, having unauthorized prior knowledge of examination content, doing assignments on behalf of another student, and plagiarism of all types. Please familiarize yourself with the GWU Code of Academic Integrity and feel free to ask and clarify beforehand if you are unsure whether a specific rule applies to your situation. There will be no repercussions for prior clarifications.

Use of Electronic Course Materials and Class Recordings. Students are encouraged to use electronic course materials, including recorded class sessions, for private personal use in connection with their academic program of study. Electronic course materials and recorded class sessions should not be shared or used for non-course related purposes unless express permission has been granted by the instructor. Students who impermissibly share any electronic course materials are subject to discipline under the Student Code of Conduct. Please contact me if you have questions regarding what constitutes permissible or impermissible use of electronic course materials and/or recorded class sessions. Please contact Disability Support Services if you have questions or need assistance in accessing electronic course materials.

Course Syllabus
EMSE 6220: Environmental Management

SCHEDULE AND ASSIGNMENTS

<u>Session</u>	<u>Topics</u>	<u>Assignments</u>
1 Sep 1	<u>The Environment We Are Trying to Protect: Ecology and Ecosystems.</u> Class Introductions; Course Requirements; Terrestrial Ecosystems; Aquatic Ecosystems; Textbook Overviews	Ref 4, pages 3-51
2 Sep 8	<u>Drivers of Environmental Problems I.</u> Population and Economic Growth; Industrialization; Urbanization	Ref 1, pages 3-16 Turn in: Project Proposals
3 Sep 15	<u>Drivers of Environmental Problems II.</u> Evolution of Energy Use; Exponential Growth; Future Predictions <u>Case Study:</u> Africa	Ref 1, pages 21-51
4 Sep 22	<u>Nature of Environmental Problems.</u> Natural and Anthropogenic Environmental Problems <u>Case Study:</u> Asia and the Pacific	Ref 2, pages 19-33
5 Sep 29	<u>Global Responses.</u> New and Emerging Environmental Management Disciplines; Multinational Agreements <u>Case Study:</u> Europe	Ref 1, pages 471-481 & 581-617
6 Oct 6	<u>Presentations.</u> Project Progress Report Presentations; Review for Mid-Term Examination	
7 Oct 13	<u>Mid-Term Examination</u>	
8 Oct 20	<u>Air Quality Management I.</u> Review of Mid-term Exam Results; Atmospheric Pollutants and Effects; Overview of Laws and Regulations	Ref 1, pages 107-133
9 Oct 27	<u>Air Quality Management II.</u> Air Pollution Measurement and Control <u>Case Study:</u> Latin America and the Caribbean	Ref 2, pages 71-138 Ref 3, pages 24-35 and 122-131

10 Nov 3	<u>Water Quality Management I.</u> History of Water Pollution; Classification of Waterborne Pollutants; Sources of Water Pollution <u>Case Study:</u> North America	Ref 1, pages 235-264 Ref 2, pages 207-272
11 Nov 10	<u>Water Quality Management II and Biodiversity.</u> Water and Wastewater Treatment Technologies; Regulatory Approaches to Water Quality Management; Status and Trends of Species Diversity <u>Case Study:</u> West Asia	Ref 1, pages 141-167 Ref 2, pages 155-205
12 Nov 17	<u>Solid and Hazardous Waste Management.</u> History of Solid Waste; Statutory and Regulatory Overview; Approaches to Solid Waste Disposal; History of Hazardous Waste; Major Legislation; Approaches to Hazardous Waste Treatment, Storage and Disposal; Integrated Discussion of Environmental Impacts on Human Health	Ref 1, pages 201-228 Ref 2, 275-332
13 Nov 24	<u>Project Presentations.</u> Project Final Report Presentations	Turn in: Project Final Reports
14 Dec 1	<u>Presentations and Review.</u> Project Final Report Presentations; Review for Final Examination	
Dec 8	<u>Reading Day</u> (Designated Friday - no class)	
15 Dec 15	<u>Final Examination</u>	