

Course Syllabus, Description, & Policies

Units: 1 unit

Time: Lecture: Tu/Th 10:10am-11:30am in Park 159

Lab: M 1:10pm-4:00pm in Park 100

Website: Moodle

Professor: Dr. Brian Donnelly

Office Hours: Wednesdays 12pm-2pm in Park 103 (or by appointment)

Textbook: *Environmental Science: Systems and Solutions* 6th Edition by McKinner, Schoch, Yonavjak and Mincy. Jones & Bartlett Learning. 2019.

Course description: This course focuses on the complex array of topics that collectively form the discipline of environmental and sustainability sciences. Students will be presented with a series of lectures, case studies, and labs focused on the problems facing today's natural, human-managed and coupled human/natural ecosystems. The course will quantitatively integrate across the underlying science and the human dimensions of environmental challenges. These include an understanding of the basic chemistry, physics and ecology of environmental change and how this science is informed and altered by culture, politics, worldviews, ethics, and economics. Students will learn to use quantitative techniques to analyze data as a means of exploring relationships among societal and ecological drivers affecting economic, ecological and socioeconomic stability. Students will learn how the scientific method is used to separate facts and data from opinion, and will apply these methods to explore the causes and solutions to global climate change and other environmental challenges through a semester-long group research project. Throughout the course students will develop an understanding of why environmental challenges are almost always inherently "wicked problems" and why "systems thinking" that includes social, ecological, and economic aspects of environmental and sustainability sciences are critical to finding solutions.

Learning outcomes: At the end of this course students will be able to:

- Identify the breadth of fields that are necessary to tackle the challenges facing the global environment.
- Quantitatively describe the chemical, physical, and ecological underpinnings of important environmental challenges.
- Assess the various perspectives held on environmental challenges and recommend actions to counter misperception and move toward solutions.
- Understand the scientific method from idea generation, data collection, data analysis, and scientific writing

Moodle:

The syllabus, course policies, discussion boards, handouts, additional assigned readings, etc. will be available online at Bryn Mawr's Moodle site.

Grading Criteria:

Assignment	Point Value	# of Assignments	Total Points	% of Total Points
In Class Activities/Participation	9	19	171	21.90
Lab Assignments	15	8	120	15.36
Field Trip Attendance	15	3	45	5.76
Final Paper Checkins	10	3	30	3.84
Peer Review Participation	15	1	15	1.92
Final Paper	100	1	100	12.80
Mid-Term Exam	150	1	150	19.21
Final Exam	150	1	150	19.21
Participation/Attendance	N/A	N/A	N/A	N/A
		Total Points:	781	100

Grading Scale: Minimum letter grades are guaranteed for the following percentage points (but an upward curve is always possible):

		B+	87%	C+	77%	D+	67%
A	94%	B	84%	C	74%	D	64%
A-	90%	B-	80%	C-	70%	D-	60%

Exams are mixed format and draw from the lecture material and assigned readings. The Final Exam will be semi-cumulative, in that 25% of the questions will reflect material covered in the first $\frac{3}{4}$ of the class.

Missed Exams: There will be **no make ups for missed exams**, except in the case of an **emergency**. If you miss an exam due to an emergency, please contact me immediately. If you know that you will miss an exam due to a university-related activity you must let me know at least two weeks prior to the exam.

Students are expected to attend all lectures and attendance will be taken via lecture activity participation. Attendance to lab periods will be critical to student success as the skills learned in these sections will be directly applicable to their semester-long group projects.

Final Paper: Students will work in groups of 3 or 4 to conduct a research study on and around campus. In these groups, they will come up with a project topic and develop the background information, methods, data collection, data analysis, and writing of their findings. This will culminate in a 10-15 page final paper displaying what they found. The project itself will be completed in groups, but the final paper will be an **individual** assignment. Students will be responsible for working on this project throughout the semester as there will be three check-ins where one section of the paper (introduction/literature review, methods, and results) will be due. Finally, there will be a peer review period where a member from another group will read and learn about their peer's project and help edit the paper for clarity. This will culminate in one final paper for each student that will be due on the final class period of the course.

Academic Integrity: All students are expected to adhere to the Bryn Mawr Academic Integrity Policies:

<https://www.brynmawr.edu/inside/offices-services/student-success/academic-policies>

Any instances of academic dishonesty will be referred to the Bryn Mawr College Honor Board.

Assignments & Late Policy

All assignments are accessed and submitted online. Assignments must be submitted precisely on or before the due date. As assignments, quizzes, and other deliverables will be all submitted directly through moodle, no wiggle room will be given and moodle will restrict late submissions. Any submission after the deadline will be considered a late assignment.

Each student is permitted to submit one late assignment without penalty for lecture assignments and one late assignment without penalty for lab assignments as long as it is submitted within 7 days of the original due date.

After the first forgiven late assignment, any other late assignments are worth 50% of their original point value as long as it is submitted within 7 days of the original due date. The reason for this is that the skills in assignments build on each other and failure to complete one will detract from subsequent work.

No assignments are accepted beyond 7 days of their due date. Any assignment or other deliverable missing or submitted after 7 days will be given an automatic zero.

Reasonable Accommodation for Students with Disabilities

Bryn Mawr College is committed to providing access, equal opportunity and reasonable accommodation in its services, programs, activities, education and employment for individuals with disabilities. Students who have disabilities may wish to consult Access Services (<https://www.brynmawr.edu/inside/offices-services/access-services>) for aid with resources and accommodation. Those who wish to receive academic services and accommodations must present their accommodation needs at the beginning of the semester so that accommodations can be arranged in a timely manner.

Please come to me with any questions or concerns - I want to ensure that your disability is not an obstacle in excelling in this class.

Title IX

Bryn Mawr College is committed to providing an inclusive environment, free from sexual and gender-based discrimination. Title IX prohibits discrimination based on sex in any federally funded educational program or activity, and forms the basis for Bryn Mawr's policies and resources regarding sex discrimination. The Bryn Mawr College Sexual Misconduct Policy (https://www.brynmawr.edu/sites/default/files/media/documents/2025-07/2024-2025%20Bryn%20Mawr%20College%20Sexual%20Misconduct%20Policy_Jan.%202025.pdf) prohibits Title IX sexual harassment, which includes sexual assault, dating violence, domestic violence, and stalking. Bryn Mawr's Policy is more extensive than Title IX, and also covers other gender-based misconduct.

Where to get help

If at any point of the semester an issue arises that affects your ability to fully participate and learn in this class, I encourage you to talk with me as you feel comfortable. Please note that I am a university-mandated reporter, meaning that if I am made aware of an incident related to sexual assault, sexual harassment, gender-based harassment, dating or domestic violence, sexual exploitation, or stalking, I am required to report it to the Title IX coordinator on campus.

Many campus resources exist to support you, including the following:

- Bryn Mawr College Counseling Services: Provides confidential medical and mental health services.
- ProtoCall HelpNow Line – 24/7, 365 Support: Call 610-526-7778 any time to talk to a crisis counselor.
- 7 Cups of Tea: a 24/7 emotional support chat, online therapy options, and more
- Many more! (<https://www.brynmawr.edu/inside/offices-services/health-wellness-center/counseling-services/counseling-resources>)

Class Schedule

Lect	Week	Day	Date + Day Plan	Topic	Lectures Reading (before class)	Lecture Activities & Tests	Home-Work Due	Lab Activity
1	1	Tu	9/1/26	Course/Syllabus Overview	N/A	Meet with Groups and Discuss Project Ideas		8/31/26: FIRST DAY OF CLASSES: NO LAB
				Intro to Environmental Science				
2	1	Th	9/3/26	Human Population Growth	Ch. 2	Population Pyramids	Submit Top Three Final Research Project Ideas	
3	2	Tu	9/8/26	The Ever-Changing Earth: The Biosphere and Biogeochemical Cycles	Ch. 3: p.58-73 Skim sect 3.3	Carbon Pools		9/7/26: LABOR DAY: NO LAB
4	2	Th	9/10/26	Ecological Fundamentals: Species Interactions	Ch 3 (p73 to end)	Ecological Relationships		
5	3	Tu	9/15/26	Community, Landscape	Finish Ch 3.	What Happens Next?		9/14/26: Lab 1: Scientific Reading Lab

				Ecology, and Succession				
6	3	Th	9/17/26	Distribution of Life on Earth	Ch 4	Name that Biome!		
7	4	Tu	9/22/26	Dynamic Earth and Natural Hazards	Ch 5	Hazard or Disaster?	Literature Review for Final Paper Due	9/21/26: Lab 2: Biosphere Interactions
8	4	Th	9/24/26	Natural Resources	Ch 6	Tragedy of the Commons		
9	5	Tu	9/29/26	Fundamentals of Energy, Fossil Fuels, and Nuclear Energy	Ch 7	Choose your Power (Plant)		9/28/26: Lab 3: Forest Lab
10	5	Th	10/1/26	Renewable and Alternative Energy Sources	Ch.8	Build an Energy Grid		
11	6	Tu	10/6/26	Method Section Discussion	N/A	Develop Sampling Methods	Sampling Methods Due	10/5/26: Lab 4: Chanticleer/ Longwood Gardens
12	6	Th	10/8/26	Mid-Term Exam	N/A	N/A	N/A	
x	7	Tu	10/13/26	No Class: October Break!	N/A	N/A		10/12/26: OCTOBER BREAK: NO LAB!
x	7	Th	10/15/26	No Class: October Break!	N/A	N/A	N/A	
13	8	Tu	10/20/26	Water Resources	Ch.9	Who gets the Water?		10/19/26: Lab 5: Stream Discharge Lab
14	8	Th	10/22/26	Group Project Time	N/A	Group Project Time		
15	9	Tu	10/27/26	Mineral Resources	Ch.10	Where's my phone (from)?		10/26/26: NO LAB: Dr. Donnelly Out of Town
16	9	Th	10/29/26	Conserving Biological Resources	Ch.11	Conservation on a Budget		
17	10	Tu	11/3/26	Land Resources and Management	Ch.12	Sustainable City Planning		11/2/26: Lab 6: Water Quality Lab
18	10	Th	11/5/26	Soil Resources	Ch.13	Soil CSI		

19	11	Tu	11/10/26	Food Resources	Ch.13	Feed the Future		11/9/26: Lab 7: Project Sample Processing Lab/Data Analysis
20	11	Th	11/12/26	Principles of Pollution Control	Ch.14	Control it at the Source		
21	12	Tu	11/17/26	Water Pollution	Ch.15	Who Polluted the Stream?		11/16/26: Lab 8: Soil Resources Lab
22	12	Th	11/19/26	Local and Regional Air Pollution	Ch.16	Smog Forecast	Figures and Results of Final Paper Due	
23	13	Tu	11/24/26	The Ozone + Solid/Haz Waste	Ch.17, p463-72 + Ch. 18	The Waste Audit		11/23/26: Lab 9:
24	13	Th	11/26/26	No Class: Thanksgiving Break!	N/A	N/A		
25	14	Tu	12/1/26	Peer Review Papers	N/A	Peer Review Papers	Draft of Final Paper Prepared	11/30/26: Lab 10: Group Project Working Time
26	14	Th	12/3/26	Climate Change	Ch. 17, p 472-93	N/A		
27	15	Tu	12/8/26	Final Paper Working Time	N/A	N/A		12/7/26: Lab 11: World Climate Simulation
28	15	Th	12/10/26	Informal Presentation of Group Project Findings	N/A	N/A	Final Paper Due	

Group Assignments:

Group A: Nadav Gilad-Muth, Jason Zhou, Ariana Gaebe

Group B: Willa Hollinger, True Garcia, Isabelle Cervasio-Dyer

Group C: Mila Munoz-Mazurkiewicz, Olivia Celestin, Uma Garcia

Group D: Tarini Patel, Sam Clare, Jack McCurry, Abigail Reichart