

## Environmental Sciences II: Life Sciences (ENRP 6102, 3 credits)

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Instructor: Prof. Keryn Gedan

Email: kgedan@gwu.edu

Office hours: Tuesday, 5:00 to 6:00pm (just prior to class)

Office: 5685 SEH

### Course hours and location:

1 x 2.5 hour class per week, 6:10 - 8:40pm, Tuesdays, Rome 351

*Distribution of work:* Students will have approximately 150 minutes (2.5 hours) of direct instruction per week and approximately 300 minutes of out of class work. Total time commitment will amount to approximately 112.5 hours over the 15 week semester.

### Course overview

This course will provide a comprehensive overview of the Life Sciences. The first half of the course will focus on the hierarchical organization of living materials, in cells, tissues, organisms, and populations, and of biodiversity in genes, species, and ecosystems. The second half of the course will emphasize applied biology. Biological applications include understanding environmental issues and the advances in biology that have allowed people to prosper in agriculture and medicine.

### Learning objectives

Upon completion of the course students should be able to:

1. Describe the processes that sustain life for cells, organisms, and populations.
2. Explain how species are linked within an ecosystem, and how ecosystems are linked within the biosphere.
3. Apply biological principles to environmental challenges such as habitat destruction, global climate change, biological invasions and extinction.
4. Analyze readings from the primary literature and critically evaluate their findings.

### Readings: (all are available on loan at Gelman library for 2 hours)

Reece, J. B., Urry, L. A., Cain, M. L., Wasserman, S. A., Minorsky, P. V., Jackson, R., & Campbell, N. A. 2014. *Campbell biology*. Pearson, Boston.

Christensen, N. & Leege, L. 2015. *The environment and you*. Pearson, Hoboken, N.J.

Withgott, J., & Laposata, M. 2015. *Essential environment: The science behind the stories*. Pearson, Boston.

Additional required readings will be provided on the course website.

**Attendance:** Planned absences must be approved at the beginning of the semester. A doctor's note or other documentation will be required to excuse a missed class period without preapproval. Students who have pre-approved or excused absences will be given the opportunity to make up exams. In the case of prolonged illness or absence, please contact the instructor to discuss an appropriate course of action.

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**Student responsibilities:** Complete each week's reading assignment, and come prepared for discussion. Please arrive to class on time. If you miss class, please get class notes from a classmate.

**Grading:** You will be scored for participation out of five points each class period; please contribute to each class with questions and discussion. There will be three homework assignments, in addition to weekly readings. You will each do two oral presentations on topics of your choosing (sign up at first class). There will be one midterm exam and one term paper, each worth 100 points.

$$\begin{array}{rcl} 5 \text{ pts for participation} \times 14 \text{ classes} & = & 70 \\ 10 \text{ pts} \times 3 \text{ homework assignments} & = & 30 \\ 50 \text{ pts} \times 2 \text{ oral presentations} & = & 100 \\ 100 \text{ pts} \times 1 \text{ midterm exam} & = & 100 \\ \underline{100 \text{ pts} \times 1 \text{ term paper}} & = & \underline{100} \\ & & \textbf{400 points possible} \end{array}$$

### Grades

A	94-100%	Excellent mastery, outstanding scholarship
A-	90-93	
B+	87-89	Good mastery, good scholarship
B	84-86	
B-	80-83	
C+	77-79	Acceptable mastery, usual achievement
C	74-76	
C-	70-73	
D+	67-69	Marginal performance, unsatisfactory
D	64-66	
D-	60-63	
F	<60	Failure to understand the subject

### University Policy on Religious Holidays

1. Students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance.
2. Faculty should extend to these students the courtesy of absence without penalty on such occasions, including permission to make up examinations.
3. Faculty who intend to observe a religious holiday should arrange at the beginning of the semester to reschedule missed classes or to make other provisions.

### Support for Students Outside the Classroom

Disability Support Services (DSS) - 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 Rome Hall, Suite 102, to establish eligibility and to coordinate reasonable

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accommodations. For additional information please refer to: <https://disabilitysupport.gwu.edu/>

Mental Health Services 202-994-5300 - The University's Mental Health Services offers 24/7 assistance and referral to address students' personal, social, career, and study skill problems. Services for students include: crisis and emergency mental health consultations, confidential assessment, counseling services, and referrals. [counselingcenter.gwu.edu/](https://counselingcenter.gwu.edu/)

### **Academic Integrity Code**

Academic dishonesty is defined as cheating of any kind, including misrepresenting one's own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information. For the remainder of the code, see: [studentconduct.gwu.edu/code-academic-integrity](https://studentconduct.gwu.edu/code-academic-integrity)

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### Schedule of topics

Date	Topic
16-Jan	Scientific and statistical inference
23-Jan	Cellular and molecular biology
30-Jan	Evolution and the tree of life
6-Feb	Ecosystems and ecological interactions
13-Feb	Distribution of biodiversity and ecosystem services
20-Feb	Habitat loss and extinction
27-Feb	Global changes in biodiversity and nutrient cycles
	Global climate change
6-Mar	<b>Mid-term exam</b>
13-Mar	<b>Spring break - no class</b>
20-Mar	Human population biology
27-Mar	Epidemiology
3-Apr	Environmental health and toxicology
10-Apr	Agriculture
17-Apr	Conservation biology
	Stormwater and waste management
24-Apr	<b>Last class, term paper due</b>
1-May	MAKE-UP/READING DAY

### Major assignments

#### Oral presentation guidelines

Each team (2 people) will have 30 minutes to present a topic of their choosing and lead a group discussion about it. The suggested time budget is: 15 min of oral presentation and 15 min of class discussion or activity. Each team will present at least two topics during the semester.

#### Term paper guidelines

Each student will write a review about a relevant environmental topic of their choosing, incorporating at least 15 primary literature references. Students can write about a topic they previously presented during the semester or select a different topic. A title should be submitted for approval by January 30<sup>th</sup>. I am willing to review and provide feedback on outlines and earlier versions of manuscript upon request. Term papers should not exceed 10 pages (double space, 12 point standard font).