# Environmental Biology: Molecules and Cells

Department of Environmental Science & Policy
Lecture: EVPP210-001
Spring 2020, MW 1:30 am-2:45 pm
Nguyen Engineering Building, Room 1108

**Lecture Instructor:**
Name: Dr. Scott Glaberman
Email: sglaberm@gmu.edu
Office Hours: W 2:45-3:45pm *please make appointment*
Office: DKH Room 3024 (Note: I am only in Fairfax on Mondays and Wednesdays)

**Learning Assistant:**
Name: Charlotte Joannidis
Email: cjoannid@masonlive.gmu.edu
Office Hours/Review Sessions: TBD

**Lab Instructors/Location:**
Eric Mazur (EVPP210-201)
Zachary Combs (EVPP210-202)
DKH 3021

**Required Materials:**
Textbook: Life: The Science of Biology, by Sadava et al., 11th edition. Sinauer/MacMillan
Laboratory Manual: Introductory Cell Biology Laboratory Manual 2nd Edition (Required)
Access to course material on Blackboard at https://mymasonportal.gmu.edu

**Course Description:**
The goal of this course is to give students core knowledge of molecular and cellular biology that is critical for understanding the relationship between living organisms and their environment. Much of the biology encountered in upper level environmental science courses at GMU will be based on information from this class. The basic principles will be taught by lectures listed below and will be based on material in the textbook. Lecture material will be presented with PowerPoint and may contain some material not found in the textbook. The lecture schedule is subject to change based on progress. Questions or comments to the instructor are encouraged in class but I may communicate with students by email so every student must have an active GMU email account. Please note that lecture and laboratory are linked (grade is based on performance in both), so they must be taken concurrently and require similar levels of understanding about the key concepts of environmental biology. The lecture section will highlight each week's reading and study assignments; the laboratory section will provide further explanation and experimental investigations of key concepts.

**Course Organization:**
Three lecture exams covering specific sections of the material will be administered during the semester and a cumulative final exam will be administered during the scheduled final examination period. All exams are multiple choice worth 100 points each. One lowest exam score will be dropped (does not include final). No make-up exams are allowed except for students involved in university sponsored activities (athletics, student council,

etc.) with appropriate documentation. Students missing an exam because of illness or any other reason will have that particular exam score automatically dropped. *The purpose of the dropped exam is to offset bad days, flat tires, illness, or other unexpected absences*.

Six case studies will be completed in alone or in groups during class time. Each case study will count for 10 pts. The lowest case study grade will be dropped. This is to account for unforeseen absences. There are no makeups. Information from these case studies could show up on the exam.

**Course Policies:**

All students are expected to maintain the GMU honor code by practicing ethical behavior and submitting original work. To assist with another student's unethical behavior is also a violation of the honor code. Remember, the honor code protects your hard work and the value of your degree from GMU. Please turn off cell phones or pagers before class begins. If using electronic devices (such as phones, laptops, tablets), please be respectful of your peers and your instructor and do not engage in activities that are unrelated to class. Such disruptions can affect your grade. Unless otherwise noted by the instructor prior to the exam, these assessments will be taken without the use of study aids, memoranda, textbooks, other books, data, or other information available. The purpose of these assessments is to evaluate the student's progress in understanding the material. There should be nothing on your desk except a pencil and a bottle of water when taking exams.

E-mail policy: I do not respond to emails in the evenings (after 5 pm) or during the weekends, nor do I expect you to. Also, please allow at least 48 hours for a response. Therefore, please be proactive in figuring out what questions you have and do not leave things until the day before an exam or assignment.

If you are a student with a disability and you need academic accommodations, please see Dr. Glaberman and contact the Office of Disability Services (ODS) at 993-2474. All academic accommodations must be arranged through the ODS.

**Disclaimer:** The instructor reserves the right to make modifications to this information throughout the semester.

## Course Grading:

| | |
|---|---|
| Three lecture exams* | +100 points each |
| Cumulative final | +100 points |
| Case Studies* | +50 points |
| **Lecture total** | **350 points** |
| Laboratory total | +150 points |
| **Course total** | **500 points** |

*Lowest score dropped

| Number Grade | Letter Grade |
|---|---|
| 93-100 | A |
| 90-92 | A- |
| 87-89 | B+ |
| 83-86 | B |
| 80-82 | B- |
| 77-79 | C+ |
| 70-76 | C |
| 60-70 | D |
| <60 | F |
| *A CURVE WILL NOT BE APPLIED* | |

## Schedule of Lectures:

| Week | Days | Topic | Chapter |
|---|---|---|---|
| **1** | Jan 22 | Introduction to Course | -- |
| **2** | Jan 27 | Scientific Method | 1 |
| | Jan 29 | *Case Study 1: Disappearing Marine Iguanas* | 1 |
| **3** | Feb 3 | Small Molecules | 2 |
| | Feb 5 | Small Molecules | 2 |
| **4** | Feb 10 | Proteins, Carbohydrates, and Lipids | 3 |
| | Feb 12 | Proteins, Carbohydrates, and Lipids | 3 |
| **5** | Feb 17 | *Case Study 2: Curly and Straight Hair* | 2-3 |
| | Feb 19 | **Exam 1** | 1-3 |
| **6** | Feb 24 | Nucleic Acids | 4 |
| | Feb 26 | Cells | 5 |
| **7** | Mar 2 | Cell Membranes | 6 |
| | Mar 4 | *Case Study 3: Learning Assistant Surprise* | ? |
| **8** | Mar 9 | **Spring Break: No Classes** | -- |
| | Mar 11 | **Spring Break: No Classes** | -- |
| **9** | Mar 16 | Cell Signaling | 7 |
| | Mar 18 | *Case Study 4: Insulin Signaling* | 7 |
| **10** | Mar 23 | Energy, Enzymes, and Metabolism | 8 |
| | Mar 25 | **Exam 2** | 4-8 |
| **11** | Mar 30 | Pathways that Harvest Energy | 9 |
| | Apr 1 | Pathways that Harvest Energy | 9 |
| **12** | Apr 6 | Photosynthesis | 10 |
| | Apr 8 | *Case Study 5: Killing Chloroplasts* | 10 |
| **13** | Apr 13 | Meiosis and Mitosis | 11 |
| | Apr 15 | Meiosis and Mitosis | 11 |
| **14** | Apr 20 | Inheritance | 12,13 |
| | Apr 22 | Inheritance | 12,13 |
| **15** | Apr 27 | **Exam 3** | 8-10 |
| | Apr 29 | From DNA to Protein | 14 |
| **16** | May 4 | *Case Study 6: The Sound of DNA* | 14 |
| | May 6 | **Final Exam** (1:30-4:15) | Cumulative |