Environmental Science: Biological Diversity and Ecosystems

EVPP 301

Lecture: Monday / Wednesday 1:30 – 2:45pm, Innovation Hall, Room 215G

Lecture Instructor

Dr. Diego Valderrama
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Laboratory Instructor

Samantha Mohney
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Topics of this Course

Together with EVPP 210 and 302, this course is part of a three-semester sequence for environmental science majors, which provides the basic underpinning for majors courses. Topics include the human dimensions of the environment, biological diversity, vertebrate organ systems, conservation biology, and general ecology.

Textbooks

Life: The Science of Biology. 2017. Sadava, Hillis, Heller, and Berenbaum. 11th Edition. (also used in EVPP 210 and 302)

Elements of Ecology (S&S). T.M. Smith and R.L. Smith. 9th ed. (also used in EVPP 302).

Additional required reading: (1) Leopold, Aldo: http://home.btconnect.com/tipiglen/landethic.html, (2) Silent Spring by Rachel Carson. (Bookstore will order, but can get cheap used copies online. Also available as a nook book for $14.95)

Grading and Assignments

The course consists of coupled lecture and laboratory sessions; both must be taken concurrently and your grade will depend on your performance in both lecture and lab.

The final grade you earn in the lecture part of the course will be based on your performance in examinations. There will be **three exams (100 points each)**, **and a final exam**. The final exam will include material since the third exam (required) (50 points) and a cumulative section (optional) (50 points). If you elect not to take the cumulative section, your total out of 350 points will be scaled up to 400 points. Total points for the lecture is 400 points.

The final grade you earn in the laboratory portion of the course will be based on your performance on worksheets (10 worksheets, 8 points each = 80 points), a full laboratory report on *Daphnia* toxicity (40 points), and an oral presentation on the effects of nutrients on algal growth (30 points). Total points for the laboratory is 150 points.

Final grades will be assigned for undergraduates based on a standard plus/minus scale:

A	(94 - 100 %)	C+	(77 - 79.99 %)
A-	(90 - 93.99 %)	C	(73 - 76.99 %)
B+	(87 - 89.99 %)	C-	(70 - 72.99 %)
B	(83 - 86.99 %)	D	(60 - 69.99 %)
B-	(80 - 82.99 %)	F	(< 60 %)

Practical Matters

It is not possible to master this material without regular class attendance. I will use some different examples than are in the books and incorporate material from other sources. The PowerPoint lectures are ***not*** *a substitute for lecture attendance*. Students should focus on taking detailed notes of lectures and synthesizing

the information with the ideas illustrated in the slides. Occasionally videos will be shown, and students will be responsible for knowing the organisms as well as the concepts they illustrate. Students are responsible for everything discussed in lecture, announced changes in the syllabus, and any handouts distributed in class. All of that is fair game for exams.

Please adhere to the list below during lecture and lab:

Be prepared for class.
Do not be late to class (classes will start on time).
Cell phones are **not** to be used in any way, under *any* circumstances during lecture/lab, and should be turned OFF and stowed out of sight for the duration of every lecture/lab.

Students must use their MasonLive email account to receive important University information, including communications related to this class. I will not respond to messages sent from or send messages to a non-Mason email address.

In certain cases, students will be allowed to take the exam at a unique time - this will usually be held in my office. The only valid reasons for missing an assignment deadline or an examination are those accepted by the University and include death in the immediate family and major illness of the student. Any student missing a graded assignment (including tests) for health reasons or other extenuating circumstances may be required to submit at doctor's statement or other appropriate documentation to avoid a zero for that assignment.

Academic Integrity: It is expected that students adhere to the George Mason University Honor Code as it relates to integrity regarding coursework and grades. The Honor Code reads as follows: "To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University community and with the desire for greater academic and personal achievement, we, the student members of the University Community have set forth this: Student members of the George Mason University community pledge not to cheat, plagiarize, steal and/or lie in matters related to academic work." More information about the Honor Code, including definitions of cheating, lying, and plagiarism, can be found at the Office of Academic Integrity website at http://oai.gmu.edu. Students should read these statements and understand their implications and how they apply to this course. Any violation of the code of academic integrity will result in a severe penalty assessed on the final grade. This penalty will range from a **minimum** of a full letter grade reduction to an F for the course. All academic integrity violations will be reported to the Chair of the Department of Environmental Science and Policy, the Dean of the College of Science, and the Director of the Academic Integrity Board.

Any assignment turned in for a grade in this course must reflect your work and your work only.

Student Disabilities: If you are a student with a disability and you need academic accommodations, please see me and contact Disability Services at 703.993.2474 or ods.gmu.edu. All academic accommodations must be arranged through that office at the beginning of the semester.

Students are responsible for verifying their enrollment in this class. Schedule adjustments must be made by the deadlines posted in the Schedule of Classes.

CLASS SCHEDULE:

Week	Lecture Topic and Reading Assignment	Laboratory Topic and Assignment
Aug 26 – 30	(1) Humans and Nature-History (2) Population Dynamics See Lecture notes; S&S, Ch. 9 AND Sadava et al.: Ch. 54	Human Population Growth; Population Pyramids Lab manual, Lab 1
Sept 4 – 6 **NO CLASSES ON SEPT 2 – LABOR DAY**	(3) Environmental Ethics Leopold: http://home.btconnect.com/tipiglen/landethic.html	Human Survivorship Curves Derived from Gravestones Lab manual, Lab 2
Sept 9 – 13	(4) Biological Diversity: Bacteria and Archaea (5) Biological Diversity: Eukaryotes; Sadava et al.: Ch. 25, 26	Aquatic Ecology: The Tidal Potomac River Lab manual, Lab 3
Sept 16 – 20	(6) Biological Diversity: Fungi, Protists, Plants I (7) Biological Diversity: Plants II: Plant Structure and Function Sadava et al.: Ch. 27-29; 33-38	Environmental Ethics Discussion Using Dichotomous Keys to Identify Organisms Lab manual, Labs 4a and 4b AND "The Land Ethic" by Aldo Leopold
Sept 23 – 27	**Exam 1 – Monday, Sept 23** (8) Biological Diversity: Animal Diversity I Sadava et al.: Ch. 30-32	Biological Diversity: The Protists Lab manual, Lab 5
Sept 30 – Oct 4	(9) Biological Diversity: Animal Diversity II (10) Biological Diversity: Animal Diversity III Sadava et al.: Ch. 32, 39-43	Biological Diversity: The Plants Lab manual, Lab 6
Oct 7 – 11	(11) Vertebrate Organ Systems (12) Toxicology Sadava et al.: Ch.44-51 AND S&S: Ch 19	Biological Diversity: The Animals I Lab manual, Lab 7
Oct 15 – 18 **MONDAY CLASSES MEET ON TUESDAY**	**Exam 2 Tuesday, Oct 15** (13) Conservation Biology Sadava et al.: Ch. 58 AND S&S: Ch. 26	Biological Diversity: The Animals II Lab manual, Lab 8
Oct 21 – 25	(14) Population Ecology (15) Population Regulation Sadava et al.: Ch. 54 AND S&S: Ch.8-9	Set up Nutrient Experiment / Overview of Data Analysis and Scientific Report Writing Lab manual, Lab 9

Week	Lecture Topic and Reading Assignment	Laboratory Topic and Assignment
Oct 28 – Nov 1	(16) Adaptation and Evolution (17) Life Histories S&S: Ch. 5, 10, 11 AND Sadava et al: Ch. 56	Impact of Pesticides Discussion – "Silent Spring" by Rachel Carson Lab manual, Lab 10
Nov 4 – 8	(18) Species Interactions (19) Communities S&S: Ch. 12-18 AND Sadava et al.: Ch. 55-56	Toxicity Test on a Small Aquatic Organism Lab manual, Lab 11
Nov 11 – 15	(20) Ecosystems; Decomposers and Local Nutrients (21) Biogeochemical Cycling S&S: Ch. 20-22 AND Sadava et al.: Ch. 57	Effect of Nutrients on Primary Production: Completion Lab manual, Lab 12
Nov 18 – 22	**Exam 3 – Monday, Nov 18** (22) Climate Basics S&S: Ch. 2	Oral Presentations: Effects of Nutrients on Primary Production Lab manual, Lab 13 AND Appendix on Oral Presentation
Nov 25 **NO CLASSES ON NOV 27 – THANKSGIVING RECESS**	(23) Terrestrial Ecosystems S&S: Ch. 4	No Lab
Dec 2 – 4	(24) Biomes S&S: Ch. 23 -27	No Lab

FINAL EXAM – WEDNESDAY, DECEMBER 11, 2019

1:30 – 4:15 PM