Environmental Biology
BI 100-03 Syllabus
Fanuchanan (FALL) 2024

Class Lecture:

Section 03: T/TH 2:00 – 3:20 p.m., **Lecture Hall:** SC101
Instructor: D. Lindstrom. **Office:** SC102B. **Phone:** 735-2611. dlindstrom@triton.uog.edu
Office hours: Tuesday and Thursday 9:30-11:30 a.m., Friday 11 a.m. - 1:00 p.m.
Otherwise by appointment.

Catalog course description

Students will gain an understanding of Pacific Island environments and their ecological principles: the diverse ecosystems; the biological, physical, and chemical processes and interactions that regulate these systems; how scientists learn about and describe nature; and the ways in which humans affect and are affected by the natural environment. To meet GE goals, students will develop science literacy and skills, coming to appreciate the values of science and how science affects their everyday life. BI 100 and BI 100L are co-requisite.

Rationale for offering the course

Through environmental biology content BI 100/100L provides grounding in the ways of science and meets the goals of the General Education curriculum in The Sciences. It also counts for credit toward the Biology BA. The GE curriculum includes two science courses because,

> "Science permeates every facet of the human experience through intellectual and technological products. Educated citizens understand and can discuss the ways science and technology affect themselves. First-hand experience with the practices of science improves understanding of science's strengths and challenges. Individuals who have experience with the scientific practices of observing, identifying, describing, experimenting, and explaining natural phenomena better understand the scientific conceptual framework and its implications for the human experience. They know more about discriminating scientific fact from error, constructing scientific principles, hypotheses testing, and solving problems scientifically."

In addition, knowledge of the natural environment, the processes that shape it, and how scientists study and model it, are important to all citizens in understanding and reacting to environmental issues, which range from local land use decisions to global questions of climate and resource sustainability, from consumer choices to international treaties. This course presents the science relevant to such discussions and shows how science is one key element in policymaking, assisting students to be informed consumers of scientific information and to form their own conclusions on environmental issues.

The lab component is a co-requisite and an integral part of the learning process, even though students register for it as a separate course worth 1 credit (an administrative process so that students may take any lecture section along with any lab section). As noted by the GE committee,

> "A long history of experience shows that didactic courses augmented with hands on laboratories provides an effective structure for learning science. … The laboratory should provide students with the opportunity to conduct experiments [or make observations], analyze data, and write reports."

The lab component provides the experiential side of the course both to improve students' skills in observation and analysis; the lab also supports learning in the lecture part of the course, for example by showing real instances of the concepts students are learning. Essentially, the labs enable students to study nature and not just study books.

Intended Student Learning Outcomes

The objectives of the course are based on those set out for GE science curriculum. The details of how each instructor guides students to meet these objectives vary somewhat, but the common intended outcomes are as follows.

Course SLO matrix (Covers both BI100 and BI100L)

Course student learning outcomes	Program LO's	Institutional LO's	Assessment
1. Observe, describe, and compare-and-contrast structure and function of island ecosystems, and human interactions with them, within the context of current biological, ecological, and evolutionary paradigms;	Disciplinary knowledge (1A)	*An appreciation of the (arts and) sciences*	Test questions
2. Demonstrate a basic grasp of key biological concepts relevant to environmental biology (as listed in the back of the textbook).	Disciplinary knowledge (1A)	*An appreciation of the (arts and) sciences*	Test questions
3. Demonstrate basic knowledge that will provide the basis for your responsible use of natural resources and technology.	Disciplinary knowledge (1B)	*Responsible use of knowledge, natural resources, and technology*	Test questions
4. Describe the ways in which scientists in various disciplines involved in environmental biology think and work—especially how scientists deal with uncertainty, and how these ways differ from and are useful to public policy making.	Disciplinary knowledge (1F)	*Understanding and appreciation of culturally diverse people, ideas and values in a democratic context*	Test questions
5. Demonstrate basic level of skill in answering questions about the data in scientific graphs and tables	Quantitative skills (3A)	*Mastery of quantitative analysis*	Test questions
6. Demonstrate basic skills in problem solving through the process of a scientific study and report write up.	Disciplinary knowledge (1C)	*Mastery of critical thinking and problem solving.*	Lab report
7. Use scientific literature and diagrams as a source of information, properly cite sources and avoid plagiarism, and use computer software to create text and graphics to communicate results effectively through a scientific report.	Communication skills (6A)	*Effective use of oral and written communication*	Lab report

Conceptual structure of the course

The course begins with an introduction to the methods of science, particularly hypothesis development and testing through experiment or observation, and explores the reasons for uncertainty in scientific conclusions. Subsequently, students are introduced to island ecosystems and the conceptual frameworks by which biologists make sense of the vast numbers of species—including humans—and their interactions with each other and with their physicochemical environment. Major ecosystems are explored in the classroom and in the field: terrestrial forests and grasslands, freshwater habitats, and the coral reefs. In the third part of the course students learn how populations grow and decline as a basis for understanding issues of pest control and endangered species protection. Finally, students learn about natural resources and their management and mismanagement, including the global atmosphere, in the context of sustainability. I treat the topics in the order in the textbook except for including basic climate information (Ch. 3) at the end as a lead-in to climate change.

Format and activities in the course

The schedule includes three hours of lecture each week and three hours of lab. Assessment activities in the lecture section include periodic in-class quizzes. Students will be guided in lab to develop an environmental question, make observations that address the question, and write up the data in a lab report (this will not be part of grade calculations for lecture course).

Labs are usually field trips, but some are indoor practical or "vicarious field trips" via documentary videos or exercises. While the lab sections vary with instructor, tides and weather, each overall achieves the goals stated above and take account of the variation (particularly in timing) when conducting assessment in the lecture section. Labs will be held rain or shine, unless the weather conditions are severe. *Come prepared.* If you are in doubt whether a trip is on, come to the science building as instructors may make last-minute decisions to hold lab indoors instead of going on a field trip. A cancelled field trip does not mean a cancelled lab period! Active participation in labs is required. Physical requirements will be explained in advance, and information on most of the field trips is posted on the course web site (university.uog.edu/bi-100). Students unable to meet the physical requirements of any or some field trips must discuss the situation with the instructor in advance and make arrangement for alternative support of the intended learning outcomes.

Quizzes will be given on a regular basis (see course outline below). Quizzes will be given immediately at the beginning of class, and you will be allowed 10 minutes to complete it. They will cover the reading material that should have been completed previously. If you come late, you reduce the time that you allow yourself to take the quiz. Quizzes cannot be made up! I will drop your lowest (1) quiz score. There will be a total of three (3) exams during the semester. These will be worth a total of 100 pts each. Exams will be mixed format tests, with short answer, compare and contrast, matching, drawing diagrams, essay, etc.

Textbook and readings

The textbook for the course is *Tropical Pacific Island Environments* 2nd Edition by C.S. Lobban, M. Schefter. F. Camacho & J. Jocson. If you can find a used or new hardcopy of this text that will be great. At present the UoG Bookstore does not have many, or any, in stock due to a problem that the publisher is having due to the Covid-19 crisis so we are working on having an electronic version that you can "rent" for the semester available soon. I'll keep you informed on this during on-line lecture sessions and post appropriate links on our Moodle site. This textbook and the web site (university.uog.edu/bi-100) were developed as resources for the course, to provide information in a local context. This book represents the most comprehensive review of the ecology and environmental challenges of island environments to date.

You are expected to use these learning resources as active learners. Read appropriate sections of the book *in advance* and *again after* the topic is covered in class. I do not teach the textbook – I assist you to understand topics. The book is a convenient resource, but it is not the only one! Videos in class or lab, field trips, and information in the news and on the Internet are all legitimate resources, though you must judge the reliability and currency of external sources.

Additional materials or equipment

Appropriate clothing, especially hat, footwear for field trips (see field trip policies on the web, http://university.uog.edu/bi-100/Field_trips.htm)

Evaluation and grades

My philosophy in testing is to see that you have gone beyond memorizing facts and have reached a level of understanding the key concepts. Your understanding will be tested through your skills in:

- *interpreting* - e.g., changing classification diagrams into text or vice versa; reading graphs.
- *exemplifying* - e.g., giving an example of …
- *classifying* - e.g., being able to classify the trophic level of an animal from a food web diagram
- *summarizing* - e.g., Be able to *summarize* the process by which Darwin arrived at his hypothesis of atoll formation.
- *inferring* - e.g., draw a logical conclusion from presented information
- *comparing* - e.g., determine how similar things are as a criterion for applying analogy.
- *explaining* - e.g., explain the cause of drought during El Nino

In addition to understanding, you will be expected to

- *apply knowledge*, e.g., apply argument by analogy to make strong predictions
- *evaluate*, e.g., establish criteria for judging the effectiveness of a proposed solution to an environmental problem

You will begin with *factual knowledge* (i.e., terminology, specific details), but the goal is for you to end with *conceptual knowledge*, including:

- knowledge of principles and generalizations.
- knowledge of theories.
- knowledge of classifications.

The points breakdown for the lecture section is as follows:

Exams (3, All Non-Cumulative)	300 pts
Quizzes (5 - lowest one dropped from calculation)	100 pts
Total	400 pts

Your final grade will be based upon the following approximate grading scale*:

A 90-100% [360–400 pts]
B 80-89% [320–359 pts]
C 70-79% [280–319 pts]
D 60-69% [240–279 pts]
F <60% [<240 pts]

In general, I will assign "whole" grades, but will reserve the right to give + or – final grades when deserved

Course policies

You are responsible for your learning. Take full advantage of the resources available, including the textbook, lectures, activities, and office hours.

- I recommend you attend every lecture period, but I do not usually take attendance. Chronic absences or other evidence that you have not been doing your best to learn will indicate that you don't deserve discretionary points. – **Note that attendance is required and recorded for labs**.
- For the same reason (that goal is to understand concepts not to attend class), if something prevents you from attending class, or if I cannot give a class because of absence, typhoon, etc., you are still responsible to keep up with the reading/study; contact a classmate for copies of new handouts if necessary. Most everything is on the web or in the library.
- Complete the assignments before the class when they are due for best learning.
- Do not leave an examination until you are ready to hand in the paper.
- Show up to exams on time. I do not distribute exams to students who come in the door after exams have already been completed by other students. NB: In such cases, I will consider the circumstances of your tardiness and choose one of the options immediately below.
- **No make up tests**–If you miss a test or are tardy for a test (see above) for a valid reason, I will average it out of your score, otherwise your score = 0. You **must** tell me if you have such a valid reason. **If you miss two exams, you will receive an F for the course.**
- **Academic dishonesty**: All assignments and tests must be your own work. The term "**plagiarism**" includes, but is not limited, to, the use, by paraphrase or direct quotation, of the published or unpublished work of another person without full and clear acknowledgment. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials. Plagiarizing in your essay or cheating on tests will be punished with a mark of 0. If a plagiarized essay is not replaced with original work I will assign you a grade of F for the course. There will be no make up for tests. If you are not sure what plagiarism is and how to avoid it in using sources for your work, see www.indiana.edu/~wts/pamphlets/plagiarism.shtml — but be careful when paraphrasing not to change the meaning of scientific information. Answers you write on the tests must come only from in your head or the information supplied in the test papers; anything else is cheating. The term "**cheating**" includes, but is not limited to: (1) use of any unauthorized assistance in taking quizzes, tests, or examinations, e.g., looking at other students' answers, using crib notes (including electronic), getting information from another person via any kind of communication; (2) dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; or (3) the acquisition, without permission, of tests or other academic material belonging to a member of the University faculty or staff. If you need to use an electronic translator, you must discuss this with me in advance.
- For labs, you are responsible to ensure that your presence at the lab is recorded at the time with your instructor (which may not be me) . I will not honor later claims of attendance.
- Classroom courtesy: In order to cause the least disruption to your fellow learners, please:
    - Avoid coming late to class or leaving early. If you absolutely must, come in quietly and take the nearest seat! If you need to go to the toilet, please wait until there is a suitable break.
    - Don't talk to each other when I address the class. It is very rude to your fellow students (as well as to me)!

Special needs

Students with special needs must make arrangements through the ADA office. The University makes every attempt to accommodate such requests (see below). Students who cannot meet the requirements of a particular field trip must discuss the problem with me several days in advance.

UOG Disabilities Policy

In accordance with the Americans with Disabilities Act (ADA) of 1990 and the Rehabilitation Act of 1973, the University of Guam does not discriminate against students and applicants on the basis of disability in the administration of its educational and other programs. The University offers reasonable accommodations for a student or applicant who is

otherwise qualified, if the accommodation is reasonable, effective and will not alter a fundamental aspect of the University's program nor will otherwise impose an undue hardship on the University, and/or there are not equivalent alternatives. Students are expected to make timely requests for accommodation, using the procedure below.

ADA Accommodation Services
For individuals covered under the ADA (Americans with Disabilities Act), if you are a ***student*** with a disability requiring academic accommodation(s), please contact the Disability Support Services Office to discuss your confidential request. A Faculty Notification letter from the Disability Support Services counselor will be provided to me. To register for academic accommodations, please contact or visit Sallie S. Sablan, DSS counselor in the School of Education, office 110, disabilitysupport@triton.uog.edu or telephone/TDD 671-735-2460.

UoG Tobacco-Free Policy Pursuant to Board of Regents Resolution No. 13-24, the University of Guam (UOG) has a total ban on the sales, smoking and the distribution and use of tobacco and tobacco-based products on the UOG Campus, and properties.

The purpose of this policy is to protect the public health and welfare by prohibiting smoking and the use of tobacco products or simulated smoking devices, including but not limited to E-cigarettes, on the UOG campus and properties; to guarantee the right of nonsmokers to breathe smoke-free air, while recognizing that the need to breathe smoke-free air shall have priority over the desire to smoke; and to encourage a healthier, more productive living/learning environment for all members of our University community.

FERPA
UOG is bound by the policies of the Family Educational Rights & Privacy Act. This means your educational records and personal information are protected by law. Please consult the FERPA web site for more information: http://www2.ed.gov/policy/gen/guid/fpco/ferpa/index.html

Student workload

Time outside the classroom--You should plan to spend an average of 2 h studying for every hour of **lecture** class time (as with every class), and 1 h/week for the lab. I suggest you structure those 7 h per week as follows. (These times will vary from student to student, and from week to week depending on assignments and tests; the 6 h/wk and the allocation of that time are suggestions that your need to adjust on the basis of your experience in this course.)

2 h pre-reading the textbook (*before* class).

Read the sections that are assigned (not always the whole chapter!)

Make note of new terms/key words and write out definitions. (Key words are listed on the first page of each chapter and are printed in boldface when first introduced. The definitions can be found in the Glossary at the back of the book.) *Note that I do not want you to memorize the definitions and will not ask for them on the tests.* You will be expected to know what the terms mean and be able to work with them.

2 h re-reading the textbook and revising your notes after class.

Focus on the specific objectives in the syllabus. These are your study guide and test questions.

2 h doing assignments and testing yourself on the specific objectives.

The specific objectives can easily be converted to test questions. You should write out practice answers to all these questions. This way you will (a) be ready for whatever selection of them appears on the test; (b) become aware of any points which may need clarification in class or during office hours.

When I give you answer keys to assignments, correct your paper in detail and analyze your answers when they are different. This is an important part of your learning process with the news stories, where several possible answers and wordings may be acceptable.

+ Additional time working with other print/Internet sources. 1 h for the lab.

Read the description and read/review pertinent parts of the textbook in advance of a field trip, review concepts afterwards. Allow several hours over 2-3 weeks to write the lab report.

If the textbook does not give clear, complete, or up-to-date information that will allow you to answer the specific objectives, or if you feel that you need different resources to understand the material better, you should spend time online with the BI 100 web and/or find other environmental science textbooks in the library.

Additional resources

The web site (university.uog.edu/bi-100) has special features such as interactive diagrams showing the changes in the vertebrate fauna of Guam before and after the snake arrived, practice sessions for reading graphs, and 3D maps of several of the field trip sites.

Contact information for classmates

Write the names and contact info for two or three classmates you can contact if you miss a lecture session or want to study together. I encourage you to form study groups! I will also have a class WhatsApp group set up.

COURSE OUTLINE/CALENDAR (subject to change as needed,
Exam and Quiz Dates will not change unless UoG is closed)

Lecture Schedule:			Chapter Covered	Quiz Dates
Aug.	15	Course Introduction, Islands, People and Knowledge	Ch.1	
	20	The Nature of Science	Ch.1	
	22	The Physical Environment	Ch.2	
	27	Levels of Organization, Classification, and Intro to Ecology	Ch.2	**Quiz1**
	29	Habitats and the Environment	Ch.3	
Sept.	3	Habitats and the Environment	Ch.3	
	5	Diversity of life, Classification and Organization	Ch.4	
	10	Diversity of life, Biodiversity	Ch.4	**Quiz 2**
	12	Catch up and review		
	17	**UNIT EXAMINATION #1**		
	19	El Nino Video		
	24	Populations and Communities	Ch.5	
	26	Populations and Communities	Ch.5	
Oct.	1	Populations and Communities	Ch.5	
	3	Ecosystems and Biomes	Ch.6	**Quiz 3**
	7-12	**Fall Break - No Classes**		
	15	Ecosystems and Biomes	Ch.6	
	17	Terrestrial Ecosystems	Ch.7	
	22	Terrestrial Ecosystems	Ch.7	
	24	Freshwater Ecosystems	Ch.8	
	29	Freshwater Ecosystems	Ch.8	
	31	Diadromous Life Histories	Ch.8	**Quiz 4**
Nov.	5	Catch up and review		
	7	**UNIT EXAMINATION #2**		
	12	Marine Ecosystems	Ch.9	
	14	Marine Ecosystems	Ch.9	
	19	Ecosystem Changes	Ch.10	
	21	Climate Change	Ch.11	
	26	Ecosystem Management and Sustainability	Ch.12	**Quiz 5**
	28-30	**Thanksgiving Holiday No Classes**		
Dec.	3	Catch up		
	5	and review for Final Exam		

FINAL EXAM: Tuesday December 10, 2023 @ 2:00 – 3:50 p.m.