### General Ecology – BIO313

**Spring 2020**

**Instructor:** Dr. Carmen G. Montaña-Schalk

| **Location:** | Lecture, E. L. Miller Science 323  
Labs: E. L. Miller Science 134A  
**Credit Hours:** 3 |
|---------------|---------------------------------|

**Office:** BIO #123  
**Email (preferred contact):** montanascg@sfasu.edu  
**Lectures:** MONDAY-WED 12:00 am – 12:50am  
**Lab:** TUESDAY: 12:00 - 2:50PM  
**Office hours:** MW= 1:00 – 4:00PM; Tuesdays: 8-10:00 or by appointment  
**Prerequisites:** “C” or better in BIO 131, BIO 133, MTH 138

*We will not follow the book slavishly, but you will need to keep up with required readings; and will find it a necessary and valuable reference work as well*

**Lab:** *No Text Required* –

### COURSE DESCRIPTION

This course will introduce the basics biological processes at the level of organisms, populations, communities, and ecosystems. Lectures will consist of informal lectures by the instructor, but also student’s participation via in-class paper discussion and PP presentations. The discussion sections will consist of student-led and instructor-facilitated group discussions. Through lectures, readings and discussions, students will obtain an overview and achieve in depth knowledge of the field of ecology.

The laboratory portion of this course will provide applications to the major ecological principles covered in lecture. Upon completion, students will have a basic level of experience for experimental techniques in ecology labs. Additionally, students will enhance their technical writing (or science writing) skills and become familiar with basic data analysis in Microsoft applications. The mandatory laboratory portion of this class will reinforce, using a hands-on approach of the four major areas of ecological study (i.e., organism, population, community, and ecosystem).

### COURSE GOALS

- Understand the major ecological principles, concepts, classical and contemporary hypotheses dominating the field of ecology.  
- Know the basic biological processes at the level of whole organisms and higher (populations, communities, and ecosystems).  
- Recognize the factors that govern interactions between organisms and their environments.  
- Know the importance of science and ecology to contemporary society, and the importance of Scientific field and how ecologists conduct research.  
- Develop critical thinking, oral, and written communication, and use quantitative reasoning.

### COURSE STRUCTURE

The professor will deliver lectures on Mondays and Wednesdays. Every week, we will dedicate 10-15 minutes of our lecture time to have student presentations about an assigned Ecologist.

**NOTE:** Part of your course grade will result from class participation via discussions, I strongly encourage the students to come to class and participate via discussion.
1. Lecture (75%) will cover the basics biological processes at the level of whole organisms and higher (populations, communities, and ecosystems). Lecture attendance is mandatory, and prompt arrival is crucial.

   Lecture participation: Students will participate in prepared group activities, paper discussions, and presentations, etc. Questions/activities for participation points could be given at any time of any class, including right at the beginning of lectures, so it is crucial to arrive on time.

Students discussion-participation will be recorded on a scale of 0 through 10 using the following guideline:

- 0-2 rarely, if ever, contributes;
- 3-4 occasional participation, but generally non-substantive, adding little new information;
- 5-6 occasional participation, but generally well thought out, useful contributions;
- 7-8 regular participation, sometimes useful, sometimes not;
- 9-10 regular participation, always useful.

Reading the assigned papers, chapters, and all handouts provided in class is necessary for the class and will be covered on the exams.

2. Laboratory (25%) The mandatory laboratory portion of this class will reinforce, using a hands-on approach, the 4 major areas of ecological study (i.e., organismal, population, community, and ecosystem). For each area of ecology, we will conduct a complete scientific study following the specific steps of the scientific method. You will be required to actively participate in each step for your grade.

Specifics for labs will be presented in the special lab syllabus.

[Some lab activities will take place outdoor in terrestrial and water ecosystems. When outdoor, in the field, each student should dress appropriately, i.e., no sandals or flip-flops. Rather, each student should purchase an inexpensive pair of rubber boots, waters or hip waders. Boots, light long pants and long-sleeve shirts are ideal for fieldwork. When being outdoor, we are exposed to wild animals including snakes, ticks and chiggers, so proper attire is necessary]

ATTENDANCE is mandatory in lectures AND labs, and you will benefit greatly by attending. I will discuss information that is not in your PowerPoint slides and you will be responsible for knowing on the exams. See below for missed assignments policy. An abbreviate version of the lectures will be posted on D2L

STUDENT RESOURCES: All students can have the ability do well in this course. A number of resources will help you do so.

1) An abbreviate version of the lectures will be posted on D2L. I highly recommend coming to lecture and taking notes.
2) Your book! It provides a chapter summary and review questions.
3) Exam reviews/practice problems will be provided before each exam.

Additional tips for success in this course...

1) Do your reading and in-class quizzes. They are basically free points if you spend the time doing them.
2) Study smart!! Memorization will not get you very far in this course. Exams will be derived from the main concepts in the textbook and learning objectives in class. The activities we do in class are designed to address the learning objectives. If we do something in class, you may be expected to do again on an exam. This means that for the exams, you need to practice your critical thinking, not just memorize the info!
Final grades for BIOL 313 will be determined by the following formula:

\[ 75\% \text{ (Final Lecture Grade)} + 25\% \text{ (Final Lab Grade)} \]

**LECTURE GRADES:** The following weights will be used to calculate an overall grade:

**Lecture activities:**
- Lecture exams (2 @ 100 pts each) 200 pts
- Final exam (1 @ 100 pts) 100 pts
- Lecture quizzes/problems (unannounced during the semester) 50 pts
- In-class paper discussions/participation 50 pts
- Ecologist presentation 50 pts

**Laboratory:**
Laboratory Activities (field and laboratory settings) and Reports 200 pts
Lab paper project 50 pts

\[ 700 \text{ pts*} \]

*NOTE:* The total points value is somewhat tentative. Because labs rely on outdoor activity, some adjustments may have to be made if there is difficulty completing them due to weather, animal activity, etc. **Adjustments are at the discretion of Dr. Montaña.** However, adjustments should not be greater than 10% of total points stated above.

**Grading scale:** Grades will be calculated to the nearest tenth of a point (00.0%).

79 % earns a C, not a B. To clarify, I will not round grades upward. You can track your score throughout the semester by checking your scores on D2L. **There will be no curve and no individual extra credit.**

100.0% - 90.0% = \text{A(E)}xceptional), 89.9% - 80.0% = \text{B(above average), 79.9% - 70.0% = C(average), 69.9% - 60.0% = D(below average), < 59.9% F (Fail)}

**LECTURE ASSIGNMENT DESCRIPTION**

**Exams (200 pts)**

There will be (2) lecture tests (100 pts each) given throughout the semester. All tests will be held in class. The test questions will vary in format, but will likely range from short answers, short/long essay questions, true/false, graphical interpretation, and multiple choices. Rather than testing your ability to memorize definitions, the tests are designed to evaluate your conceptual understanding of the topic and your ability to apply that knowledge to a practical situation. The exam will consist of true/false question, graphical interpretation, multiple choices questions, short answers, and short/long essay questions.

The lecture exams will cover lectures, text chapters, and any other assigned material (papers, presentation, etc.) discussed in class. I will not provide exam reviews or review sessions. I hold onto all exams, tests can be viewed during office hours.

The best way to do well on the lecture exams is to begin studying early and asking questions about subjects that were not clear in class. Usually, my evaluation (i.e., grading) of any given test answer comes down to my determination of how well you understand the topic. Based on my evaluation, I assign a percentage to score your demonstrated level of understanding for each question.

*On the exam days, please arrive 10 minutes early, put away books and notes before the exams are distributed, and do not wear hats.*
**Final exam (100 pts)**

The final exam is cumulative. It will cover lectures, text chapters, and any other assigned material discussed in class.

**Ichthyologist presentation (50pts)**

Each student will give one 10-15 minute powerpoint presentations focused on the research of an influential Ecologist. The presentation should focus and discuss their major research accomplishments and any important studies produced (i.e., peer reviewed publications) during their career. The presentation should focus on their original research studies and **not** review papers. I **strongly** encourage students to come see me before they begin their research/presentation for guidance. Dr. Montana will assign an ecologist to each student in the course.

The presentation will be evaluated on the following factors: the quality of information presented by the student, 2) the quality of the format of PP presentation, 3) the quality of the student’s individual presentation of their oral presentation, 4) the quality of the student to answer questions.

**Lecture quizzes/problems (unannounced during the semester) (50pts)**

There will be problems and short in-class quizzes. Pop quizzes will cover 1) the material discussed that week, material from assigned papers, or material from the unit assignments. Pop quizzes **cannot** be made up no matter what the reason for the absence.

**In-class discussions/participation (50 pts)**

Students are expected to participate in class via discussions on the assigned chapters, class material, presentations. To facilitate discussion, each student is required to bring in two typed questions that they will submit each class. The grade will be determined based on the frequency of their participation as well as thoughtfulness/utility of their contributions to class discussion (**Students discussion-participation, above**).

Students are expected to come to class having read any assigned readings/materials suggested by Dr. Montana and prepare to discuss content and related concepts in a more superficial manner.

**THERE ARE NO MAKE-UP ASSIGNMENTS PROVIDED FOR ANY REASON**

**Exams due dates**

- **Exam 1**: 4 March 2020 _in-class_
- **Exam 2**: 22 April 2020 _in-class_
- **Final Exam**: May 4th, 2020 @ 1:30 - 4 p.m.

**COURSE EVALUATIONS**: It is now departmental policy to require students to fill out online class evaluations at the semester’s end. If you do not participate in the evaluation, one percentage point will be deducted from your lecture grade.
CLASS POLICIES

1. **D2L and Email**: I will communicate with the class using email via D2L. Thus, I expect you to check your email regularly for information regarding the class. Missing an email announcement is not an excuse for missing an assignment. Moreover, I will post general information about assignments, tests, and labs on D2L. It is your responsibility to obtain these documents.

2. **Communicating with your professor**: Email ([montanascg@sfasu.edu](mailto:montanascg@sfasu.edu)) will be the primary means of communication for the course. Any correspondence to your professor should follow the following format: subject line: BIO313, to whom (Dr./Professor Montana), statement, thank you, and student’s name. The professor has the right of not answering emails to those students that fail to follow this format.

   **Note:** Do not contact me via D2L. The main method to communicate to me is via email: ([montanascg@sfasu.edu](mailto:montanascg@sfasu.edu)).

3. **Completing assignments**: It is your responsibility to complete assignments independently and in a timely manner. **I will not accept any late assignments (i.e., you will receive a grade of zero for any assignment not submitted on time).**

4. **Attendance**: Attendance in this class and laboratory is mandatory, expected, and often is directly correlated with grade. Most examination questions come from lectures and experiences show that those students who attend class consistently obtain the highest grade. Attendance will be recorded at the beginning of each class period. If you want to understand and learn ecology, don’t miss class or lab.

5. **Grades cannot be discussed via e-mail at any time** due to federal law. I will speak to you in person instead during my office hours. DO NOT involve a third-party who is not affiliated in an official capacity with SFASU (e.g., friend, roommate) in any matters pertaining to your enrollment in this course. Your instructor is legally prohibited from discussing most course/grade-related issues with third parties according to the Family Educational Rights and Privacy Act (FERPA) (20 U.S.C. § 1232g; 34 CFR Part 99).

6. **Plagiarism policy**: A first offence will be penalized with a zero that cannot be dropped. A second offence will be penalized with an F and/or the option to drop the course. **Please pay particular attention to this policy as you will be working on class projects for the semester.** Be sure to review the university’s academic integrity policy which can be found at [http://www.sfasu.edu/policies/4.1-student-academic-dishonesty.pdf](http://www.sfasu.edu/policies/4.1-student-academic-dishonesty.pdf)

   Examples of plagiarism are (1) submitting an assignment as if it were one’s own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an internet source or another source; and (3) incorporating the words or ideas of an author into one’s paper without giving the author due credit.

7. **Students with Disabilities**: To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004/468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to [http://www.sfasu.edu/disabilityservices/](http://www.sfasu.edu/disabilityservices/).

8. **Absence and Make-up Policy**: Any points for assignments, participation, or exams missed as a result of an absence cannot be made-up. The only exception for an in-class exam is if the absence is planned and approved by the instructor at least 15 days prior to the date of absence or upon receipt of a documented medical excuse or an excuse provided by the office of the Vice President for Academic Affairs. In this case an alternative exam will be given. A student who wishes to make up an exam will have 7 calendar days after they return. After 7 calendar days the student will receive a “0” for that exam.
**CLASSROOM CONDUCT**– All students in the class must treat others with civility and respect and conduct themselves during class sessions in a way that does not unreasonably interfere with the opportunity of other students to learn.

9. **Disruptive behavior policy**: A student may be asked to leave the classroom for any behavior I find disruptive. A first offence will not be penalized; however, further offences may be penalized with reduction in a student’s final grade as follows: 10% for a second offence, 20% for a third offence, etc.

**Dr. Montaña does NOT necessarily give you a warning or make an announcement that you are disrupting class.** Instead, points will simply be deducted in the grade book. Students are free to inquire at any time whether they have had points deducted during office hours.

- **Tardiness**: Tardiness to lecture will not be tolerated; it disrupts the lesson and the concentration of fellow students. Reasonable accommodations will be made in cases of emergency situations if documentation is provided. It is the student’s responsibility to provide the instructor with documentation of emergencies.

- **Sleeping**: Sleeping during class can be distracting to other students and the instructor. If a student is so tired that they cannot stay awake for a lecture, as boring as it may be, the student should not be in class.

- **Cell Phones**: Cell phones must be turned off during lecture. If a cell phone goes off, the student may be asked to leave lecture for that day. In cases of family health (pregnant spouse, hospitalized family member, etc.), the student must inform the instructor of the situation BEFORE class begins. In these cases, the cell phone ringer must remain off (i.e., phone set to vibrate).

- **Leaving Class**: Leaving class is disruptive to other students who are trying to pay attention. Leaving the class for any reason will count against you. **This includes leaving during exams to use the restroom.** Hence, be sure to use the restroom before coming to class. If a student knows they will need to leave class early, notify the instructor well ahead of time. Points will not be deducted if the student has a legitimate excuse for leaving early.

- **Talking/Disruptive Behaviors**: Dr. Montana highly encourages students to ask questions or make relevant comments during a lecture. However, talking to a neighbor or other disruptive behavior will not be tolerated because, again, it disrupts the learning environment of other students.

- **Laptop computers**: Laptop computers are not allowed in lecture. In my past experience, too many students have used them for surfing the internet or working on other projects during lecture, which distracts other students.

10. **Withheld Grades Semester Grades Policy (A-54)**: Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

*If you have difficulties or complaints related to this course, your first action usually should be to discuss them with Dr. Montaña.*
## Tentative Lecture and Lab Topics - Spring 2020**

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Lecture Topics</th>
<th>Lab topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 15</td>
<td>Syllabus Review; What is Science?; Intro to Ecology</td>
<td></td>
</tr>
<tr>
<td>Jan 21-22</td>
<td>Intro to Ecology; Climate, Biomes</td>
<td>Orientation/Syllabus; lab safety, Expectations Lab project introduction</td>
</tr>
<tr>
<td>Jan 27-29</td>
<td>Organisms and their environment:</td>
<td>Ecosystems: ecosystem functions and services (outdoor lab)**</td>
</tr>
<tr>
<td></td>
<td>- Temperature, water, energy</td>
<td>- Identify types of ecosystems: terrestrial/aquatic</td>
</tr>
<tr>
<td></td>
<td>- Acclimation and physiological ecology</td>
<td>- Identify function and services of ecosystems</td>
</tr>
<tr>
<td></td>
<td>- Adaptations that maximize biological activity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Tolerance curve</td>
<td></td>
</tr>
<tr>
<td>Feb 3-5</td>
<td>Evolutionary ecology:</td>
<td>Sampling &amp; Statistics (Reading assigned*)</td>
</tr>
<tr>
<td></td>
<td>- Natural selection</td>
<td>Sampling methods for Aquatic and terrestrial ecosystems</td>
</tr>
<tr>
<td></td>
<td>- Adaptations</td>
<td>- Quadrat and Transect sampling</td>
</tr>
<tr>
<td></td>
<td>- Speciation</td>
<td>- Capture techniques: nets, traps, etc.</td>
</tr>
<tr>
<td></td>
<td>- Sexual selection</td>
<td>- Biotic sampling techniques: density, frequency, biomass</td>
</tr>
<tr>
<td></td>
<td>Reading assigned*</td>
<td></td>
</tr>
<tr>
<td>Feb 10-12</td>
<td>Evolutionary ecology:</td>
<td>Sampling &amp; Statistics Field data collection (outdoor lab)**</td>
</tr>
<tr>
<td></td>
<td>- Social/behavioral interactions</td>
<td>(¥)</td>
</tr>
<tr>
<td></td>
<td>- Life history adaptations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Population dynamics</td>
<td>- Animal &amp; Plant adaptations</td>
</tr>
<tr>
<td></td>
<td>- Population growth models</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Age and life history tables</td>
<td></td>
</tr>
<tr>
<td>Feb 24-26</td>
<td>Metapopulations and ecological corridors</td>
<td>Life Table Data Collection (outdoor lab)**</td>
</tr>
<tr>
<td></td>
<td>Genetic of small populations</td>
<td>Construction of life tables and survivorship curves</td>
</tr>
<tr>
<td></td>
<td>Reading assigned*</td>
<td></td>
</tr>
<tr>
<td>Mar 2-4</td>
<td><strong>Exam 1</strong></td>
<td>Population Distributions (outdoor lab)**</td>
</tr>
<tr>
<td></td>
<td>Community Ecology</td>
<td>- Data collection at Pinewood plant center</td>
</tr>
<tr>
<td></td>
<td>- Community properties</td>
<td>- Plants Distribution patterns</td>
</tr>
<tr>
<td></td>
<td>- Disturbance, Succession, Resilience theories</td>
<td></td>
</tr>
<tr>
<td>Mar 9-11</td>
<td>Spring break – No classes</td>
<td></td>
</tr>
<tr>
<td>Mar 16-18</td>
<td>Gradients of community structure Island Biogeography</td>
<td>Predator-Prey Interactions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Predator abundance, Prey abundance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Changes in predation rates</td>
</tr>
<tr>
<td>Mar 23-25</td>
<td>Ecological interactions:</td>
<td>Species-Area curves, species diversity indices (¥)</td>
</tr>
<tr>
<td></td>
<td>- Competition, The Niche, Predation, Symbiosis,</td>
<td>Data collection and calculations (outdoor lab)**</td>
</tr>
<tr>
<td></td>
<td>- keystone species</td>
<td></td>
</tr>
<tr>
<td>Mar 30 - Apr 1</td>
<td>The Food Web, Top-Down Bottom-Up Regulation</td>
<td>Functional groups and food webs</td>
</tr>
<tr>
<td></td>
<td>Reading assigned*</td>
<td>Reading assigned*</td>
</tr>
<tr>
<td>Apr 6-8</td>
<td>Ecosystem Ecology:</td>
<td>Ecosystem Ecology: Part 1</td>
</tr>
<tr>
<td></td>
<td>- Ecosystem Function</td>
<td>- Energy Transfer in a Model Ecosystem</td>
</tr>
<tr>
<td></td>
<td>- Ecosystem production</td>
<td></td>
</tr>
<tr>
<td>Apr 13-15</td>
<td>Nutrients and Nutrient Cycles</td>
<td>Ecosystem Ecology: Part 2</td>
</tr>
<tr>
<td></td>
<td>- Ecological Stoichiometry</td>
<td>- Ecosystem Metabolism (outdoor lab)**</td>
</tr>
<tr>
<td>Apr 20-22</td>
<td><strong>Exam 2</strong></td>
<td>Lab project meeting</td>
</tr>
<tr>
<td>Apr 27-29</td>
<td>Biodiversity and Conservation</td>
<td>Final Lab project due</td>
</tr>
<tr>
<td>May 4-6</td>
<td><strong>Final exam</strong></td>
<td>Lab Review/Grading</td>
</tr>
</tbody>
</table>

**NOTES:**
A double asterisk (**) indicates that outdoor activities may be subject to change with short notice due to weather conditions.
A yen sign (¥) indicates days that may have possible extra credit opportunities. This will involve helping with field research.