SUPERVISED PRACTICUM ADVANCED BIOLOGY
BIOL4195

Instructor: Dr. Carmen G. Montaña Schalk
Email: montanascg@sfasu.edu (preferred form of contact)
Phone: 936-468-2322
Office: 123 Miller Science Building

Office Hours: There is not “office hours” per se. Professor- students will schedule regular face-to-face meeting times.
Class Meeting Time/Place: TBA. There is not specific time/place for meeting, students and professor will discuss convenient times for meetings through the semester.

COURSE DESCRIPTION
This course will introduce students to biological/ecological research processes and methodologies. Through readings, discussion, hands-on field and laboratory research, and scientific writing, students will obtain an overview and achieve in depth knowledge on how to become a research scientist. The course is designed for students to conduct a complete scientific research study following the specific steps of the scientific method and write a scientific report and make a final poster presentation. Student is expected to actively participate in each step of this scientific process.

COURSE FORMAT
Individual research studies involving field research, laboratory research, or combination of both. Student conducts research under the supervision of a biology faculty.
Research studies: 1) Life history of imperiled fish species; 2) Isotopic niche analysis of tropical freshwater fishes; 3) Trait-based approaches to study community assembly in Texas streams; 4) Biotic-Abiotic variables influencing fish community organization; 5) Microplastics in stream food webs; 6) other studies as designed by the professor.

COURSE CONTACT HOURS
BIOL 4195 “Supervised Practicum in Advanced Biology” (3 credits) spans 15 weeks. For 3 credits during that period, each student meets multiple times with a faculty research mentor to develop and successfully execute biological research in either a field or lab setting. The student must become familiar with primary literature pertaining to the research project, and is responsible for learning experimental design and laboratory safety. Throughout the semester, the student must provide regular updates to the faculty mentor about any changes to protocols, data analyses, and interpretation of research findings. The student also completes a written summary of accomplishments that is presented to the faculty mentor and other members of the lab group. Successful completion of all elements for the course requires at least 6 hours of out-of-class student work each week.

PROGRAM LEARNING OUTCOMES (PLOs)
This course is designed to address the following Program Learning Outcomes (PLO’s), as given in the Bachelor of Biology Degree program:
PLO#1: The student will demonstrate a good knowledge base in biological concepts and be able to integrate knowledge with critical thinking skills to become problem solvers. Knowledge base
will include: knowledge of biological complexity
(molecular/cellular/population/community/ecosystem), biological/ecological principles and processes.

*PLO#2: The student will clearly communicate scientific information. Provide clear structure and transitions; demonstrate scientific tone, language, and form.

*PLO#3. The student will be able to think scientifically; this includes critical thinking / reasoning and explaining biological principles as well as analyzing and interpreting quantitative data sets.

**STUDENT LEARNING OUTCOMES**

Students who complete this advanced practicum course will be able to:

1. Demonstrate an understanding of ecological concepts and processes, and develop hypotheses to study ecological freshwater communities (PLO's 1 and 3).
2. Identify methods for collecting and studying ecological communities through hands-on field and laboratory experience (PLO’s 1 and 3).
3. Demonstrate competency for understanding the importance scientific research, designing and carrying out scientific research projects using the scientific method (PLOs 1, 2, and 3).
4. Develop skills for gathering, analyzing, and interpreting ecological data (PLO 1, 2 and 3).
5. Demonstrate competency in written and oral communication skills (PLO 2 and 3).

**TEXT AND MATERIALS**

No required materials. Peer-reviewed articles will be assigned for reading and discussion on weekly lab meetings.

**COURSE REQUIREMENTS**

The student will develop and conduct a scientific investigation related to ecological communities in freshwater ecosystems. The project will be designed by the professor and developed by the student with guidance of the biology professor. Findings will be documented with a written scientific report that includes an introduction, methods, results, discussion, and cited literature. Finding from the research project can also be used for presentations in scientific meetings.

**COURSE STRUCTURE**

*Research project*

Students are expected to participate in research projects designed by the professors, which follow specific steps of the scientific method. Projects range from field-based, laboratory-based, or a combination of both field/laboratory settings. No matter the nature of the research project, each student should participate in one or more of the following: 1) familiarize with protocols (e.g., EPA, TCEQ) for measuring in-stream habitats and water quality in freshwater ecosystems such as rivers and streams; 2) identify freshwater fishes of Texas; 3) learn how to use and record environmental data from portable meters used in the field; 4) develop and test hypotheses regarding the study of interest; 5) become familiar with the morphology of fishes and be able take morphological measurements of the fish to make inferences in their ecology; 6) learn how to enter data in excel software, and perform basic statistical analysis to understand the trend of data collected; 7) Disseminate the project results in the form of a scientific report and poster presentation.
**Poster-Research paper**

The end goal of this course will be for the student to complete a research project to be presented in the form of “poster” at scientific meetings such as the SFA Undergraduate Research Conference, The Texas Chapter American Fisheries Society, Ecological Integration Symposium at TAMU. Throughout the semester, the student is expected to write each section of the project including background for the study, objectives/hypotheses of the study, methods used for data collection and analysis performed with the data collected, provide illustrations of the results (e.g., figures or tables), and interpretation of the findings. Timeline for each of these sections will be discussed with the faculty mentor. A final document summarizing the research study is due no later than April 30, 2024.

**COURSE EVALUATION**

All students are required to complete a course evaluation at the end of the semester.

**Grading policy**

Upon satisfaction of all student learning outcomes above, a grade will be assigned as follows:

P = acceptable
F= unacceptable

**COURSE CALENDAR**

**Tentative Lecture Schedule**

<table>
<thead>
<tr>
<th>SPRING 2024</th>
<th>TOPIC/ACTIVITY</th>
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<tbody>
<tr>
<td>Week-1</td>
<td>Research projects overview, preliminary research questions</td>
</tr>
<tr>
<td>Week-2</td>
<td>Overview of research protocols, field/lab techniques, safety protocols.</td>
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<tr>
<td>Week-3</td>
<td>Research project setup, literature search, data collection</td>
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<tr>
<td>Week-4</td>
<td>Literature search, data collection</td>
</tr>
<tr>
<td>Week-5</td>
<td>Literature search, data collection, data entry, writing</td>
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<tr>
<td>Week-6</td>
<td>Literature search, data collection, data entry, writing</td>
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<tr>
<td>Week-7</td>
<td>Data collection, data entry, writing – first in-progress report due*</td>
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<tr>
<td>Week-8</td>
<td>Data collection, data entry, writing</td>
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<tr>
<td>Week-9</td>
<td>Data collection, data entry, writing</td>
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<tr>
<td>Week-10</td>
<td>Data collection, data entry, writing</td>
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<tr>
<td>Week-11</td>
<td>Data collection, data entry, data analysis</td>
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<tr>
<td>Week-12</td>
<td>Data collection, data entry, data analysis – second in-progress report due*</td>
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<td>Week-13</td>
<td>Data entry, data analysis, writing</td>
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<tr>
<td>Week-14</td>
<td>Data analysis, writing, illustration of results using PP presentation</td>
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<tr>
<td>Week-15</td>
<td>Writing/ Research paper due</td>
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<td>Week-16</td>
<td>Class evaluation and research paper feedback</td>
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**CLASS RULES**

1. **Communicating to your professor:** Email will be the primary means of communication for the course. So please, check your email often.
   
   Any correspondence to your professor should follow the following format:
   
   - **Subject line:** BIOL-4195
   - **to whom** (Dr. or professor Montana),
   - **Statement** (xxxxxxxxxxxxxxxxxx)
   - Thank you
   - 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 the professor via D2L. The professor does not utilize that method for class communication.

   For any correspondence with Dr. Montana, please use her official university email: montanascg@sfasu.edu

2. **Attendance policy:** students are expected to meet with the professor regularly upon scheduled times.

3. **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).

3. **Completing assignments:** Each student is expected to complete the research assignments in a timely manner.

**CLASS POLICIES**

**Conduct Policy:** Use of tobacco products is not permitted in this class.

**Academic Integrity (4.1):** (see [https://www.sfasu.edu/docs/policies/10.4.pdf](https://www.sfasu.edu/docs/policies/10.4.pdf))

The Code of Student Conduct and Academic Integrity outlines the prohibited conduct by any student enrolled in a course at SFA. It is the responsibility of all members of all faculty, staff, and students to adhere to and uphold this policy.

Articles IV, VI, and VII of the new Code of Student Conduct and Academic Integrity outline the violations and procedures concerning academic conduct, including cheating, plagiarism, collusion, and misrepresentation. Cheating includes, but is not limited to: (1) Copying from the test paper (or other assignment) of another student, (2) Possession and/or use during a test of
materials that are not authorized by the person giving the test, (3) Using, obtaining, or attempting to obtain by any means the whole or any part of a non-administered test, test key, homework solution, or computer program, or using a test that has been administered in prior classes or semesters without permission of the Faculty member, (4) Substituting for another person, or permitting another person to substitute for one’s self, to take a test, (5) Falsifying research data, laboratory reports, and/or other records or academic work offered for credit, (6) Using any sort of unauthorized resources or technology in completion of educational activities.

Plagiarism is the appropriation of material that is attributable in whole or in part to another source or the use of one’s own previous work in another context without citing that it was used previously, without any indication of the original source, including words, ideas, illustrations, structure, computer code, and other expression or media, and presenting that material as one’s own academic work being offered for credit or in conjunction with a program course or degree requirements.

Collusion is the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on academic dishonesty, including disclosing and/or distributing the contents of an exam.

Misrepresentation is providing false grades or résumés; providing false or misleading information in an effort to receive a postponement or an extension on a test, quiz, or other assignment for the purpose of obtaining an academic or financial benefit for oneself or another individual or to injure another student academically or financially.

Withheld Grades Semester Grades Policy (5.5): 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. For additional information, go to https://www.sfasu.edu/policies/course-grades-5-5.pdf.

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/.

Acceptable Student Behavior: Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional
forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.

**Student Wellness and Well-Being** SFA values students’ overall well-being, mental health and the role it plays in academic and overall student success. Students may experience stressors that can impact both their academic experience and their personal well-being. These may include academic pressure and challenges associated with relationships, emotional well-being, alcohol and other drugs, identities, finances, etc.

If you are experiencing concerns, seeking help, SFA provides a variety of resources to support students’ mental health and wellness. Many of these resources are free, and all of them are confidential.

**On-campus Resources:**

- **The Dean of Students Office** (Rusk Building, 3rd floor lobby)
  - [www.sfasu.edu/deanofstudents](http://www.sfasu.edu/deanofstudents)
  - 936.468.7249
dos@sfasu.edu

- **SFA Human Services Counseling Clinic** Human Services, Room 202
  - [www.sfasu.edu/humanservices/139.asp](http://www.sfasu.edu/humanservices/139.asp)
  - 936.468.1041

- **The Health and Wellness Hub** “The Hub”
  - Location: corner of E. College and Raguet St.
  - To support the health and well-being of every Lumberjack, the Health and Wellness Hub offers comprehensive services that treat the whole person – mind, body and spirit. Services include:
    - Health Services
    - Counseling Services
    - Student Outreach and Support
    - Food Pantry
    - Wellness Coaching
    - Alcohol and Other Drug Education
  - [www.sfasu.edu/thehub](http://www.sfasu.edu/thehub)
  - 936.468.4008
  - thehub@sfasu.edu

- **Crisis Resources:**
  - Burke 24-hour crisis line: 1.800.392.8343
  - National Suicide Crisis Prevention: 9-8-8
  - Suicide Prevention Lifeline: 1.800.273.TALK (8255)
  - johCrisis Text Line: Text HELLO to 741-741