

BIOL221L – Seafood Forensics –FALL 2019
Wednesday and Thursdays
Wilson 134

COURSE DESCRIPTION: Primarily this is a course about how to do science. How to develop scientific hypothesis, perform experiments, analyze data, write manuscripts, and publish results in a peer-reviewed journal. Along the way students will develop laboratory and general science skills and learn about fisheries and seafood sciences. This is meant to be an introduction to research: students are not expected to have any prior research experience. The science will be focused on using forensics sciences (primarily DNA barcoding) to quantify seafood mislabeling (e.g., farm raised tilapia sold as wild caught salmon). Additional topics covered include seafood supply chains and markets, fisheries management, over-fishing and its impact on marine ecosystems, and the importance of food labeling in human health.

COURSE MEETINGS:

Section 001: Wednesday 11am-3pm

Section 002: Thursday 11am-3pm

The laboratory and non-laboratory portions of the course will occur back to back and will intermingle (there will not be a distinct break between the two; students might start a lab experiment, move on to another activity, such as a short lecture or paper discussion or group project, then go back to the laboratory work to complete the task).

INSTRUCTOR: Dr. Blaire Steinwand, Coker 212, blairejs@live.unc.edu

INSTRUCTOR: Dr. John Bruno, Wilson 340, jbruno@unc.edu

We are all available by appointment. Please contact us if you would like to meet outside of our time in the classroom together. We would love to meet with you!

SAKAI SITE: You need an [onyen](#) to log on. Everything except the discussion board will be on the Sakai site. The syllabus, schedule, readings, links to training videos, updates and announcements, etc. It is your responsibility to check it regularly. At least daily.

TEXT: There is no textbook required for this course. Instead, reading assignments will come from the primary literature, news articles, and the instructor.

ADDITIONAL REQUIREMENTS: Basic knowledge of biology as demonstrated by a B or above in BIOL 101.

LAB EXERCISES: We will collect in-class assignments from time to time. These will often be based on the discussions we have about scientific literature in the field but could also relate directly to your research project. In addition, you will receive 5 points for actively participating each week in discussions and lab work as well as points for maintaining a lab notebook and attending open lab each week.

FINAL PAPER AND PRESENTATION: You will write up your results in a manuscript/paper at the end of the semester. This final paper will take the place of a final exam in the course. In addition, you will give a scientific talk on your findings to the group.

WHAT YOU SHOULD BRING TO CLASS EVERY DAY:

1. Your lab notebook
2. Computer
3. Writing utensil
4. Enthusiasm and creativity!

COURSE GOALS

To introduce you to the process of science.

The lecture and the reading material will provide the basic content. You will gain hands on experience with techniques in molecular biology, learn how to formulate testable hypotheses, and design experiments to test them. You will read scientific literature and learn to write like a scientist. After this class, you will be prepared to do research in a lab on campus and to build upon this content with Biol202, Biol201, Biol205 and upper level courses in the Department of Biology.

When you **Do the Science** you will acquire basic laboratory techniques and skills needed to use DNA barcoding to determine the frequency of seafood mislabeling. You will develop a novel, hypothesis driven question, design an experiment that allows you to answer it, collect data, and interpret your findings.

When you **Share the science** you will write a paper / manuscript and give a talk with your lab partners to the class and members of the local community about your science.

You will **Understand and communicate the relevance of the science**. For example, you will read and discuss journal articles on seafood mislabeling and marine conservation to understand the application of the science you are doing.

EXAM: There will be one mid-term given during the session. For this exam, you will need your PID number as identification on your exam sheet. Additionally, you may be asked to verify your identity, so it is required that you bring your one-card to each exam. Failure to produce a one-card or other picture ID if asked may result in a zero on that exam. Test material to study: lab note book, lab exercises, reading, homework, power point slides, learning objectives, and problem sets. To succeed in this class, it behooves you to take each reading/homework seriously and actively engage in all class discussions.

GRADING

Lab: Your final average is calculated:

Total for the semester = $(0.35 \times \text{lab exercises}^*) + (0.20 \times \text{mid-term}) + (0.20 \times \text{final paper}) + (0.15 \times \text{final presentation}) + (.10 \times \text{quizzes})$

*participation, in-class assignments, written proposals, lab notebook checks, open lab attendance, etc.

In general, the scale for each letter grade comes very close to a 10-point scale. However, we reserve the right to change that scale since it is impossible to predict the difficulty level of any particular test. We will keep you updated about the estimated scale as the course moves along.

DIGITAL ETIQUETTE

This course will require you to use your laptop during class time. While we recognize that you are an excellent multi-tasker, research suggest that your peers are not. Please be respectful of your classmates and restrict your use of digital devices to course content. If we see that you or your peers are distracted, we will ask you to put your devices away and you may forfeit your ability to earn participation points that day. We understand that your devices connect you to your friends and family (a wonderful thing!) but the classroom should be a place apart, however briefly (even if it seems like an eternity to you), from the outside world and distractions. You will learn more if you concentrate on the course while you are here and your classmates will thank you for not impeding their ability to learn.

DIVERSITY STATEMENT

The Department of Biology values the perspectives of individuals from all backgrounds reflecting the diversity of our students. We broadly define diversity to include race, gender identity, national origin, ethnicity, religion, social class, age, sexual orientation, political background, and physical and learning ability. We strive to make this classroom and this department an inclusive space for all students.

This course will enable students to meet the following goals as part of the General Education curriculum:

Empirical Investigation Lab

One Focus Capacity course must include or be associated with a one-credit Empirical Investigation Lab. In such labs, students participate in measurement, data collection and analysis, and hypothesis testing connected to the course content. An Empirical Investigation Lab is not usually a separate class; ordinarily it is a fourth credit attached to another Focus Capacity class.

Learning Outcomes

1. Take empirical measurements using appropriate apparatus.
2. Generate and test hypotheses.
3. Gather, store, and organize data.
4. Analyze and report on data and hypothesis testing.

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