BIOL 1625 Spring 2019
Sections 001 and 002

Fundamental Principles of Biology Lab II: Evolution and Diversity of Life

Instructor
Joshua Steffen
Office LS 205

Email
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Office Hours
Monday and Wednesday 10:00-11:30 (iCSC147)

Faculty Specialists
William Brazelton Ph.D.
Bryn Dentinger Ph.D.
Jim Ehleringer Ph.D.
Neil Vickers Ph.D.
Sarah Bush Ph.D.

Teaching Assistants
Luke Hardy
Veronica Montes

Email
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u0674701@utah.edu

Office Hours
Monday 9:00 – 10:00 in lab
Thursday 1:00 – 2:00 in lab

BIO1625 Meeting Times
Day and Time
Wednesday 12:55 - 3:55 PM
Thursday 12:55 – 3:55 PM
Location
Section 1 - Lab Room BIOL 180
Section 2 – Lab Room BIOL 180

Course
Catalog Course Description
Biology 1625 is a 1 credit introductory biology lab course for biology majors and pre-professionals and is part of the year-long “Fundamentals in Biology” sequence. The main focus of this course is to provide foundational knowledge and critical thinking skills to prepare students for more advanced biology courses. This course introduces students to natural selection, origins and diversity of life, the relationship between form and function, and the construction and interpretation of phylogenies. High school biology and chemistry knowledge will be expected from students.

*Although concepts are complementary, it is important to remember that BIOL 1625 is a separate class from BIOL 1620, which is why students must register for this course independently.

Course Fee
Registration for this course requires payment of a $25 lab fee. The fee is used to buy lab supplies and equipment for this course.
Text and Instructional Materials
1. Specific supporting background material will be provided by your instructor.
2. Students will maintain an electronic lab notebook using OneNote software. Instructions for setting up notebooks will be provided on the first day of lab.

Learning Outcomes
Upon successful completion, students should be able to:
- develop skills to work in a biology lab and use common biology laboratory equipment and methods.
- to think like a biologist and be able to recognize broad patterns and develop critical thinking.
- to understand the scientific method i.e. observe, ask questions, design hypotheses, make predictions, design experiments, conduct experiments, collect data, record and organize data, analyze data, draw conclusions and communicate your findings.
- develop skills to present scientific findings in the form of figures, data summaries, formal scientific writing, and oral presentations.
- apply knowledge of molecular, cellular, and organismal structures to explain the diverse set of functions ranging from sub-cellular functions to behavioral and ecological functions that underlie the remarkable diversity of individual organisms as well as communities of organisms.

Course Expectations and Organization
This course will be organized into five modules. Each module will follow basic outline below:

- **Week 1**: Introduction to concept.
  - Introduction to taxonomic group(s) in module.
  - Introduction to appropriate lab techniques.
  - Students pose hypotheses and design an appropriate experimental or comparative approach to address their hypotheses.

- **Week 2**: Students test hypotheses by collecting relevant data.

- **Week 3**: Collection of additional data, if appropriate.
  - Data analysis.
  - Communicate findings (e.g. brief in class oral presentation, poster, paper, blog, etc.).

**During Lab**: Each lab session will be coordinated by a teaching assistant trained extensively by the instructor. Students will lead their own research project using guidelines provided by your instructors. Hands-on experimentation and problem solving will be an integral part of your lab work. It is expected that each student will follow the guidelines explained to you by the TA and follow the course policies listed below. Each student is expected to record lab activities in a lab notebook which will periodically be reviewed by instructors. In addition, as the lab is a shared research space, it is critical that we maintain a clean and organized lab space.

**After Lab**: After each lab students will submit graphs, tables, or summaries of experiments as described by you instructor.
How to Succeed in This Course (Course Requirements)

“How struggling and suffering are the essence of a life worth living. If you’re not pushing yourself beyond the comfort zone, if you’re not demanding more from yourself - expanding and learning as you go - you’re choosing a numb existence. You’re denying yourself an extraordinary trip.”

Dean Karnazes, Ultramarathon Man: Confessions of an All-Night Runner

As the quote above suggests, success this course will involve dedication and commitment but should be rewarding. Course activities, including reading, lectures, labs, quizzes, exams, discussions and other assignments are provided as tools for achieving the goals outlined above. Reading material, primarily from Biology (Campbell), will serve as reference for class discussions and lectures. Class activities will provide opportunities to process, reinforce, and articulate new and challenging concepts. Participating in discussions and completing assigned tasks are not a means to a good grade but a tool for you to achieve the goals outlined above. Your grade in this course will reflect the progress towards achieving the course objectives.

As your instructor, I will do everything I can to help you achieve your goals but I can only provide opportunities to succeed. If you are having problems in class, please come talk to me, the supplemental instructor from the academic development center, or visit the Student Learning Collaborative center in person.

Keys to success

1. Come to class.
2. The Canvas site for the class always contains the most up to date course information and should be checked regularly for assignments, due dates, announcements, changes, etc.
3. Assignments must be turned in on time.
4. You are responsible for your education and are responsible for your own work. Not only is it your responsibility to do the work required of you for the class, but you should be constantly assessing yourself and discovering what you know and do not know. It is also your responsibility to seek help from fellow students and the instructor when you need it.

Assessment

<table>
<thead>
<tr>
<th>Grade Component</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Attendance and Etiquette</td>
<td>25%</td>
</tr>
<tr>
<td>Lab Assignments</td>
<td>35%</td>
</tr>
<tr>
<td>Presentations, Discussions, and Papers</td>
<td>20%</td>
</tr>
<tr>
<td>Notebook and Data Submission</td>
<td>20%</td>
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</tbody>
</table>

Attendance and Etiquette.

Attendance in lab is required. Each unexcused absence results in a 10% deduction per missed lab. Three or more labs missed receives a failing grade. Please communicate with your instructor if you are unable to attend class and arrange to make up missed time. Students should follow appropriate safety protocols and general lab rules.

Students are required to maintain a respectful and safe learning atmosphere. All students will be provided with the rules detailing the behavioral, ethical and safety policies in the laboratory in this syllabus. Severe violations of safety policies will result in an automatic deduction or failing grade based upon the instructor’s judgment. Minor violations will result in a warning and a one percent reduction in your lab grade.
Lab Homework Assignments

There will be numerous graded and ungraded assignments completed both in class and at home to help you learn the material, assess your own understanding of the material, and reinforce information gained from lab. All assignments are designed to help your learning process and actively completing them will positively influence your understanding and in turn, your grade. Reading materials either before or after class as assigned is required and necessary to successfully complete course assignments.

Late submission policy: Without prior permission, assignments submitted late will receive a 10% deduction per day late. If you are going to be late submitting an assignment due to unforeseen circumstances please take permission from your TA or instructor.

Lab Notebook

Your lab OneNote notebook is the most important record of your research. Guidelines and rubrics for lab notebooks are posted on CANVAS.

Presentations, Discussions, and Papers

At the end of each module you will present your results in a variety of formats. As this lab is progressive your Please see canvas for rubrics and instructions for these activities.

Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score Range</th>
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<tbody>
<tr>
<td>A</td>
<td>93.0-100</td>
</tr>
<tr>
<td>A-</td>
<td>90.0-92.9</td>
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<tr>
<td>A+</td>
<td>87.0-89.9</td>
</tr>
<tr>
<td>B</td>
<td>83.0-86.9</td>
</tr>
<tr>
<td>B-</td>
<td>80.0-82.9</td>
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<tr>
<td>B+</td>
<td>77.0-79.9</td>
</tr>
<tr>
<td>C</td>
<td>73.0-76.9</td>
</tr>
<tr>
<td>C-</td>
<td>70.0-72.9</td>
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<tr>
<td>D</td>
<td>67.0-69.9</td>
</tr>
<tr>
<td>D+</td>
<td>63.0-66.9</td>
</tr>
<tr>
<td>D</td>
<td>60.0-62.9</td>
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<tr>
<td>F</td>
<td>0.0-59.9</td>
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University Policies and Student Resources

1. **The Americans with Disabilities Act.** The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, (801) 581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services.

2. **Addressing Sexual Misconduct.** Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran’s status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

3. **Drop/Withdrawal.** Last day to add, drop (delete), elect CR/NC, or audit classes 8/31/18. Last day to withdraw from classes 10/19/18.
This syllabus is subject to change.

4. Other important information to consider including:
   a. Student Code: http://regulations.utah.edu/academics/6-400.php
   b. Accommodation Policy (see Section Q): http://regulations.utah.edu/academics/6-100.php

5. **Wellness** Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student’s ability to succeed and thrive at the University of Utah. For helpful resources contact the [Student Wellness Center](http://www.regulations.utah.edu/academics/6-400.html); 801-581-7776. Code of Student’s Rights and Responsibility http://www.regulations.utah.edu/academics/6-400.html

6. [Veterans Center](http://www.regulations.utah.edu/academics/6-400.html)
7. [LGBT Resource Center](http://www.regulations.utah.edu/academics/6-400.html)

<table>
<thead>
<tr>
<th>Date</th>
<th>Class Topic</th>
<th>Reading / Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weeks 1 - 3</td>
<td>Microbial antibiotic resistance and evolution</td>
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<tr>
<td>Weeks 4 - 6</td>
<td>Generation of fungal phylogenies using</td>
<td></td>
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<tr>
<td>Weeks 7 - 9</td>
<td>Physiological, morphological, and behavioral adaptations of animals.</td>
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<tr>
<td>Weeks 10 - 12</td>
<td>Evolution, form, function and diversification of plants. Quantifying stomatal density and distribution on a diversity of species.</td>
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<tr>
<td>Week 13 and 14</td>
<td>Data exploration and analysis</td>
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