Course Description
Current topics in organic evolution from molecular to macroevolutionary scales.

Prerequisite/Restriction: BIOL 3060 or WILD 4880 or permission of instructor; BIOL 2220/WATS 2220 recommended.

Semester(s) Traditionally Offered: Fall, Spring

Fees
No additional fees

Course Objectives
By the end of this course, you will be able to:

1. Students will develop critical thinking skills in order to make informed decisions within the realm of evolutionary biology.

Specific strategies: Review and interpret primary literature in the field (research papers), engage in discussions about current topics in the field, be able to predict or recommend actions to solve previously unfamiliar problems.

2. Students should acquire an understanding of the basic mechanisms (facts and concepts) of evolutionary biology.

Specific strategies: Learn the terminology and facts/knowledge of the field, general evolutionary theory, apply these facts and concepts to new problems (exams)

3. Students should learn to communicate in written, oral, and quantitative formats.

Specific strategies: Review and interpret primary literature in the field (graded discussions, research paper and oral presentation), engage in discussion about current topics in the field, and illustrate evolutionary processes graphically (exams)

Instructor
Course Resources


We will also be using modules from Simbio to illustrate some topics

Syllabus pdf: Evolutionary_Biology(BIOL-5250)_Syllabus.pdf
(https://usu.instructure.com/courses/636427/files/79664771/download?verifier=kqFLpnaWoqHylFTxZHSu9vl2jg1dXfoKR49dFbl&wrap=1)

Course Requirements

Each student will:

1. Need to complete writing assignments on time. The research paper is organized with due date that will allow you to complete the assignment and for me to provide adequate feedback on your progress
2. Attend all classes and be present at the start of class.
3. Complete all reading assignments including primary literature prior to the start of class

Evaluation Methods and Criteria

Lecture and Reading

Completing assigned readings in the text prior to coming to class is expected and will improve your grade in the class. I will supplement the textbook with material from the primary literature and other sources. These reading are not optional and will be part of the course itself. Please keep in mind that reading a scientific paper requires more time and effort to work through than a textbook so give yourself plenty of time.

Course Management System: CANVAS

You will need to use the course website on CANVAS to access weekly guided study questions (see below), current grade status, course information, link to my email, study guides, links to useful learning resources and more. I will be updating the schedule as well as the weekly reading on CANVAS so please keep up to date with the website. Go to online.usu.edu and login to CANVAS using your A number and password, click on Courses in the top menu, and then click on the Biology 5250 link.
Exams

There will be two midterm exams and a comprehensive final exam. Exams include all material covered since the previous exam. The format includes multiple choice, fill-in-the-blank, short answer, and essay. Exams are taken in the testing center and will be offered for multiple days to allow students with challenging schedules time to complete exams. Exams are worth 150 points each. The final exam will include comprehensive material and is worth 300 points. Some questions on the comprehensive material will be taken from the first two exams.

Quizzes: You will have weekly in class quizzes. These quizzes will be administered at the beginning of each class (on CANVAS). Each quiz will be worth 10 points and you will have a total of 14 of these. I will drop your lowest two quizzes. In class quizzes will cover the material for the session so do the readings before class. The will also be comprehensive in that they will build on previous material as well. The format of these will be variable but will included essay and short answer as well as multiple choice and fill in the blank.

Research Paper: This is a communication intensive course and a major goal of the class is to help you become better at writing and communicating. You will have to write a research paper that will be worth 20% of your total grade in the class. This paper will be due in a series of smaller assignments for which you will receive credit (see schedule). We will also be doing a peer evaluations of each other’s papers to help improve the papers as well helping you improve your own writing. The peer evaluation will also be graded. Further information on the details on the assignment will be forth coming. The paper is not optional. You cannot get a passing grade in the course without turning in the paper.

Topic

The topic must be within the field of evolutionary biology either covered in class, in your textbook and readings, or perhaps not covered in this course. Above all, choose a topic about which you have developed some interest. The topic may be contemporary or historical, empirical or theoretical, organismal or molecular; but it must involve evolutionary biology. You may use the attached list of suggested topics for ideas, but do not feel that you should be limited to these topics. (For example, you might be interested in "the origin of life on planet Earth").

Focus your topic quite narrowly to address a specific thesis or set of alternative theses (as discussed below). (For example, a recent article in the journal Science presented evidence supporting the hypothesis that Earth was "seeded" by meteorites of Martian origin. But there are alternative explanations that suggest the Martian meteorites did not actually contain life forms.) Focused topics are usually much better than broad, general topics (and easier to write about!)

The thesis should be a single-sentence statement or proposition about how you view a particularly important aspect of your topic. For example, "the morphospecies concept is a generally practical-but not infallible-means of differentiating species", or "Darwin's interstrain crosses of pigeons demonstrate that several extreme variations may arise at single genetic loci". The thesis statement will be the first sentence of your paper and thus the topic sentence of your first paragraph.
Size and Scope

Write a thoughtful, engaging essay that conveys why the topic is interesting or important. The essay should consist of about 10-12 pages of text, with a minimum of ten full pages. Assume that the reader is unfamiliar with the topic but scientifically literate. One way to do this is to imagine the reader is another member of the class. State your question clearly in the opening paragraph. Your ideas should follow a logical sequence, with good transitions between paragraphs. The paper should typically have 15 to 20 references.

Graded Portions/Assignments Proposal/Literature Review (10 points)
You will turn in a one (or two) sentence proposal for your paper couple with a complete (mostly) list of references that you are planning on using for your paper. The proposal can be in the form of a topic sentence (see above). I will look at your proposal and give you verbal feedback on both the topic as well as references.

Outline (15 points)

This must include: - A tentative concise title (often phrased as a question) - A list of 3-5 main points that you plan to address. What is the main topic and what are the important subtopics? - An annotated bibliography with at least ten initial references. List each source and state in a couple of sentences how it will be useful for your final essay.

The outline will be scored as follows: 15 pts – complete and scientifically accurate, 6-14 pts –

complete but not sufficiently detailed or accurate, 1-5 pts – only partially complete.

Drafts and Peer Reviews

You will turn in a first draft of the paper (50 points, see schedule). This draft should be written as if you are receiving a final grade for the paper. However the grading for the first draft will emphasize completeness. I will give you feedback that will allow you to improve the paper in preparation for final submission. You will also submit your paper for peer review as well as review your peers’ papers as well. This will be worth 25 points and your grade will be based on your reviews of other papers not peer reviews of your paper.

Final Submission
The final submission of the paper will be worth 100 points. Late submissions will not be accepted. I have timed the submission of the final paper such that I can grade and return them to you well before the end of the semester. This will allow you to rewrite or revise your paper if you are unhappy with your final grade on the paper.

**SimBio Tutorials:** You will have two lab/tutorial exercises on the SimBio portal. Much of these will be done in class but some out of class work will be required. Each of these will be worth 40 points. Late tutorials will be graded but I will take off 8 (20%) points for being late.

### Grading Summary

<table>
<thead>
<tr>
<th>Points</th>
<th></th>
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<tbody>
<tr>
<td>In Class Quizzes (11 @ 10 pts)</td>
<td>120</td>
</tr>
<tr>
<td>Midterm Exam I</td>
<td>150</td>
</tr>
<tr>
<td>Midterm Exam II</td>
<td>150</td>
</tr>
<tr>
<td>Final exam- new material</td>
<td>300</td>
</tr>
<tr>
<td>Research Paper Proposal/Literature Review</td>
<td>10</td>
</tr>
<tr>
<td>Outline</td>
<td>15</td>
</tr>
<tr>
<td>First Draft</td>
<td>50</td>
</tr>
<tr>
<td>Peer Review</td>
<td>25</td>
</tr>
<tr>
<td>Final Draft</td>
<td>100</td>
</tr>
<tr>
<td>SimBio Tutorials</td>
<td>80</td>
</tr>
</tbody>
</table>

Total lecture: 1000

### Grade Scheme

The following grading standards will be used in this class:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100 % to 93.0%</td>
</tr>
<tr>
<td>A-</td>
<td>&lt; 93.0 % to 90.0%</td>
</tr>
<tr>
<td>B+</td>
<td>&lt; 90.0 % to 87.0%</td>
</tr>
<tr>
<td>B</td>
<td>&lt; 87.0 % to 83.0%</td>
</tr>
<tr>
<td>B-</td>
<td>&lt; 83.0 % to 80.0%</td>
</tr>
<tr>
<td>Grade</td>
<td>Range</td>
</tr>
<tr>
<td>-------</td>
<td>------------------</td>
</tr>
<tr>
<td>C+</td>
<td>&lt; 80.0 % to 77.0%</td>
</tr>
<tr>
<td>C</td>
<td>&lt; 77.0 % to 73.0%</td>
</tr>
<tr>
<td>C-</td>
<td>&lt; 73.0 % to 70.0%</td>
</tr>
<tr>
<td>D+</td>
<td>&lt; 70.0 % to 67.0%</td>
</tr>
<tr>
<td>D</td>
<td>&lt; 67.0 % to 60.0%</td>
</tr>
<tr>
<td>F</td>
<td>&lt; 59.0 % to 0.0%</td>
</tr>
</tbody>
</table>

**Course Schedule/Outline**

See Schedule Below

**Attendance and Excused Absences Policy**

I will not formally take attendance but attendance is very important for success in this course and not optional. There will be no make up options for the quizzes or exams.

**Nonattendance Policy**

**Students May Be Dropped For Nonattendance**

If a student does not attend a class during the first week of the term or by the second class meeting, whichever comes first, the instructor may submit a request to have the student dropped from the course. *(This does not remove responsibility from the student to drop courses which he or she does not plan to attend.)* This option is typically used for classes that are full and the instructor is trying to make a seat available for another student, but may be considered for other courses. Requests must be made during the first 20 percent of the course and will be considered on an individual student basis. Students who are dropped from courses will be notified by the Registrar’s Office through their preferred e-mail account (see 2018-2019 General Catalog [link](http://catalog.usu.edu/content.php?catoid=12&navoid=3955)).

**Assumption of Risk**

All classes, programs, and extracurricular activities within the University involve some risk, and certain ones involve travel. The University provides opportunities to participate in these programs on a voluntary basis. Therefore, students should not participate in them if they do not care to assume the risks. Students can ask the respective program leaders/sponsors about the possible risks a program may generate, and if students are not willing to assume the risks, they should not select that program. By voluntarily participating in classes, programs, and
extracurricular activities, a student does so at his or her own risk. General information about University Risk Management policies, insurance coverage, vehicle use policies, and risk management forms can be found at: http://www.usu.edu/riskmgt/ (http://www.usu.edu/riskmgt/)

Library Services

All USU students attending classes in Logan, at our Regional Campuses, or online can access all databases, e-journals, and e-books regardless of location. Additionally, the library will mail printed books to students, at no charge to them. Students can also borrow books from any Utah academic library. Take advantage of all library services and learn more at libguides.usu.edu/rc. (http://libguides.usu.edu/rc)

Classroom Civility.

Utah State University supports the principle of freedom of expression for both faculty and students. The University respects the rights of faculty to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede the learning process. Disruptive classroom behavior will not be tolerated. An individual engaging in such behavior may be subject to disciplinary action. Read Student Code Article V Section V-3 (https://studentconduct.usu.edu/studentcode/article5) for more information.

University Policies & Procedures

Academic Freedom and Professional Responsibilities

Academic freedom is the right to teach, study, discuss, investigate, discover, create, and publish freely. Academic freedom protects the rights of faculty members in teaching and of students in learning. Freedom in research is fundamental to the advancement of truth. Faculty members are entitled to full freedom in teaching, research, and creative activities, subject to the limitations imposed by professional responsibility. Faculty Code Policy #403 (http://www.usu.edu/hr/files/uploads/Policies/403.pdf) further defines academic freedom and professional responsibilities.

Academic Integrity – "The Honor System"

Each student has the right and duty to pursue his or her academic experience free of dishonesty. To enhance the learning environment at Utah State University and to develop student academic integrity, each student agrees to the following Honor Pledge:

"I pledge, on my honor, to conduct myself with the foremost level of academic integrity."

A student who lives by the Honor Pledge is a student who does more than not cheat, falsify, or plagiarize. A student who lives by the Honor Pledge:

- Espouses academic integrity as an underlying and essential principle of the Utah State University community;
- Understands that each act of academic dishonesty devalues every degree that is awarded by this institution; and
- Is a welcomed and valued member of Utah State University.

Academic Dishonesty

The instructor of this course will take appropriate actions in response to Academic Dishonesty, as defined the University’s Student Code. Acts of academic dishonesty include but are not limited to:

- **Cheating**: using, attempting to use, or providing others with any unauthorized assistance in taking quizzes, tests, examinations, or in any other academic exercise or activity. Unauthorized assistance includes:
• Working in a group when the instructor has designated that the quiz, test, examination, or any other academic exercise or activity be done “individually;”
• Depending on the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments;
• Substituting for another student, or permitting another student to substitute for oneself, in taking an examination or preparing academic work;
• Acquiring tests or other academic material belonging to a faculty member, staff member, or another student without express permission;
• Continuing to write after time has been called on a quiz, test, examination, or any other academic exercise or activity;
• Submitting substantially the same work for credit in more than one class, except with prior approval of the instructor; or engaging in any form of research fraud.

• **Falsification**: altering or fabricating any information or citation in an academic exercise or activity.
• **Plagiarism**: representing, by paraphrase or direct quotation, the published or unpublished work of another person as one’s own in any academic exercise or activity without full and clear acknowledgment. It also includes using materials prepared by another person or by an agency engaged in the sale of term papers or other academic materials.

For additional information go to: ARTICLE VI. University Regulations Regarding Academic Integrity (https://studentconduct.usu.edu/studentcode/article6)

**Sexual Harassment/Title IX**

Utah State University is committed to creating and maintaining an environment free from acts of sexual misconduct and discrimination and to fostering respect and dignity for all members of the USU community. Title IX and USU Policy 339 (http://www.usu.edu/policies/339) address sexual harassment in the workplace and academic setting.

The university responds promptly upon learning of any form of possible discrimination or sexual misconduct. Any individual may contact USU’s Affirmative Action/Equal Opportunity (AA/EO) Office (http://aaeo.usu.edu) for available options and resources or clarification. The university has established a complaint procedure to handle all types of discrimination complaints, including sexual harassment (USU Policy 305 (http://www.usu.edu/policies/305/)), and has designated the AA/EO Director/Title IX Coordinator as the official responsible for receiving and investigating complaints of sexual harassment.

**Withdrawal Policy and "I" Grade Policy**

Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances, but not due to poor performance or to retain financial aid. The term ‘extenuating’ circumstances includes: (1) incapacitating illness which prevents a student from attending classes for a minimum period of two weeks, (2) a death in the immediate family, (3) financial responsibilities requiring a student to alter a work schedule to secure employment, (4) change in work schedule as required by an employer, or (5) other emergencies deemed appropriate by the instructor.

**Students with Disabilities**

USU welcomes students with disabilities. If you have, or suspect you may have, a physical, mental health, or learning disability that may require accommodations in this course, please contact the Disability Resource Center (DRC) (http://www.usu.edu/drc/) as early in the semester as possible (University Inn # 101, (435) 797-2444, drc@usu.edu (mailto:drc@usu.edu)). All disability related accommodations must be approved by the DRC. Once approved, the DRC will coordinate with faculty to provide accommodations.

**Diversity Statement**
Regardless of intent, careless or ill-informed remarks can be offensive and hurtful to others and detract from the learning climate. If you feel uncomfortable in a classroom due to offensive language or actions by an instructor or student(s) regarding ethnicity, gender, or sexual orientation, contact:

- Division of Student Affairs: https://studentaffairs.usu.edu, (435) 797-1712, studentservices@usu.edu
- Student Legal Services: https://ususa.usu.edu/student-association/student-advocacy/legal-services, (435) 797-2912, TSC 326
- Access and Diversity: http://accesscenter.usu.edu, (435) 797-1728, access@usu.edu
- Multicultural Programs: http://accesscenter.usu.edu/multiculture, (435) 797-1728, TSC 315
- LGBTQ Programs: http://accesscenter.usu.edu/lgbtqa, (435) 797-1728, TSC 3145
- Provost’s Office Diversity Resources: https://www.usu.edu/provost/diversity, (435) 797-8176

You can learn about your student rights by visiting:
The Code of Policies and Procedures for Students at Utah State University: https://studentconduct.usu.edu/studentcode

**Grievance Process**

Students who feel they have been unfairly treated may file a grievance through the channels and procedures described in the Student Code: Article VII (https://studentconduct.usu.edu/studentcode/article7).

**Full details for USU Academic Policies and Procedures can be found at:**

- Student Conduct (http://www.usu.edu/studentconduct)
- Student Code (https://studentconduct.usu.edu/studentcode/)
- Academic Integrity (https://studentconduct.usu.edu/studentcode/article6)
- USU Selected Academic Policies and Procedures (http://www.usu.edu/provost/faculty-life/syllabus.cfm)

**Emergency Procedures**

In the case of a drill or real emergency, classes will be notified to evacuate the building by the sound of the fire/emergency alarm system or by a building representative. In the event of a disaster that may interfere with either notification, evacuate as the situation dictates (i.e., in an earthquake when shaking ceases or immediately when a fire is discovered). Turn off computers and take any personal items with you. Elevators should not be used; instead, use the closest stairs.

**Additional Policies**

**Instructor’s Responsibilities**

I will help you learn by engaging you in the material and challenging you to understand this topic. You can expect me to attend all lectures, read the assigned material, and prepare examinations and quizzes that are fair and representative of the reading assignments and lecture activities as they relate to the learning objectives provided. I will also be available by email, telephone, or in my office during the day to answer questions and provide any needed assistance toward the course learning objectives.

**Student’s Responsibilities**
You are expected to attend each lecture, participate in activities, take comprehensive notes, and read the relevant material in the text. You should focus your efforts on achieving the learning objectives by doing the appropriate problems in the text, reviewing concepts, and practicing problem solving. In the event that there is any difficulty in keeping up with the pace of the course, it is YOUR responsibility to contact me for advice or assistance. If you cannot take an exam during the scheduled period, you must make other arrangements with me at least 72 hours before the exam is given. If you cannot attend a class, you are still responsible for all content.