



## **BSC 535: Evolution – Summer II - 2022**

### **Web Based Course**

#### **Instructor Information:**

Bjorn Schmidt

Office: STC 212

Email: [bjorn.schmidt@tamuc.edu](mailto:bjorn.schmidt@tamuc.edu)

Preferred contact: email

Virtual office hours: available 9-5, M-F, scheduled by appointment through email

#### **Required Textbook**

1) Evolution, 4<sup>th</sup> ed. 2017. Futuyma, Douglas J. & Kirkpatrick, M. ISBN: 978-1605356051

#### **Course Description**

Evolution is a fundamental theory of biology, linking many disciplines within the field. As Theodosius Dobzhansky famously wrote in 1973, “nothing in biology makes sense except in the light of evolution”. That said, evolution itself is a very broad topic that covers a myriad of subjects, each of which could also have their own course devoted to it. This course is designed in two parts to provide a broad overview of several core evolutionary concepts. The first part gives a general background and introduction to evolution and how selection acts to change populations over time. The second part mainly looks at speciation, evaluating evolutionary relatedness among groups, and other topics such as the history and geography of evolutionary change on Earth, and evolutionary changes to biodiversity over geologic time scales.

#### **Student Learning Outcomes**

- Students will understand and know the history of evolutionary theory
- Students will know phylogenetic trees, how they are constructed and how to interpret them
- Students will understand natural selection and adaptations in populations
- Students will understand sexual selection and how concepts of fitness are related to evolution
- Students will know species concepts and mechanisms for speciation and lineage divergence over time
- Students will be familiar with the evolutionary history of life on earth and the fossil record

- Students will understand how geographic biodiversity patterns are related to long-term evolutionary change in groups
- Students will understand concepts of mass extinction, adaptive radiations, and how biodiversity patterns change over geologic time scales

### **Course Materials and Online Presentation**

All course materials will be presented through d2l. The class format will be asynchronous, following the schedule that appears later in the syllabus. Lecture videos and corresponding powerpoint slides will be uploaded to d2l on indicated dates. Students will need to read along in the textbook and prepare chapter summaries by due dates as indicated. The course is a full semester of material, condensed over four and a half weeks. Students are highly encouraged to keep up with materials according to the schedule, as there is limited time to make up assignments in the short semester if they fall behind. Virtual office hours for the course are available by appointment through email. Questions will also be responded to promptly through email (generally within 24 hours).

### **Course Evaluations**

**Tests:** There will be a midterm (2<sup>nd</sup> week) and a comprehensive final exam (5<sup>th</sup> week)

**Quizzes:** There will be two multiple choice quizzes, generally before exams intended to aid students with studying

**Review paper:** There will be a semester long mini-review paper (~5 pages long). The review paper will cover how human activities in the Anthropocene have changed global biodiversity patterns through promoting speciation and loss of species (ties in with Ch 19). More details for the paper are available in d2l. Students will be provided with two references for the paper, and will need to independently find eight other peer-reviewed articles for the paper. While some time is given at the end of the course for working on the paper, it is better to start earlier in the semester on the paper to avoid writing the whole paper the last week of the semester.

**Assignments:** There will be three assignments during the course that use online materials to reinforce concepts covered. These assignments will require using the online resource, answering questions on a worksheet, and then uploading answers into d2l. Generally, assignments will have ~a one week long due date.

Assignment One: Use an online module to simulate the combined effects of sexual selection and natural selection on evolutionary change over time in spot presence in male guppies (recreating a hallmark study from the 1980s in sexual selection: Endler's guppies).

Assignment Two: Download genetic sequence data from online repositories and use free online software to upload sequence data to construct a phylogenetic tree. Use the constructed tree to analyze evolutionary relationships for other "unknown" sequences.

Assignment Three: Use an online module to explore and contrast mass extinctions on the geologic time scale of Earth.

**Chapter summaries:** Students will need to summarize chapters covered in the course in their own words. Chapter summaries will need to be turned into d2l by the due dates indicated in the schedule. Summaries should cover all the key concepts of the chapter, and should be around 1-2 pages long.

### Grading

A: 89.96-100%

B: 79.96-89.95%

C: 69.96-79.95%

D: 59.96-69.95%

F: <59.96%

### Evaluation Points

Midterm exam – 100 points	(~16% of total)
Final exam - 100 points	(~16% of total)
Two quizzes – 40 points (20 points each)	(~6% of total)
Mini review paper – 80 points	(~12% of total)
Assignments – 120 points (40 points each)	(~19% of total)
Chapter summaries – 200 points (20 points each)	(~31 % of total)

Total points = 640 points

**General Makeup Policy:** The student is responsible for requesting a makeup when they are unable to submit the regularly scheduled assessment and must schedule the makeup within **3 days** after the due date. If the assessment is not made-up, the student will receive a zero for that item. **Note:** makeups for the final exam due on 08/11 will not be available as final grades will need to be calculated on 08/12, if you have extenuating circumstances for the final or other materials at the end of the summer semester, please contact me by email.

### General Course Outline

-Lecture videos and slides for the corresponding week's topics will be published on d2l under the content tab, generally on Mondays, Wednesdays, and Fridays.

-Quizzes and Exams will be posted on indicated dates under the activities:quizzes tab in d2l and will be available during the time period indicated; these need to be completed in d2l before 11:59 pm of the last date indicated for that item in the schedule.

-Chapter summaries, assignments, and the mini review paper will need to be submitted by the due dates indicated. Submission should be made in the assignments tab in d2l, (**please use doc, docx, or pdf format for your submission**).

\*All students are expected to submit their own course materials and work on their own on exams; plagiarism on assignments and cheating on online exams are acts of serious academic misconduct (see the academic misconduct section later in syllabus). Examples of cheating include copying another student's test or assignment, or collaborating with other students to provide advance knowledge of specific exam questions. A first offence of cheating or plagiarism will result in a score of zero for the assignment. A second offense will result in an F for the course or potentially other disciplinary actions.\*

-Virtual office hours can be scheduled by appointment for 9am - 5pm M-F by email request; other specific questions or concerns can be answered by email, within 24 hours.

### **Tentative Course Schedule:**

#### **week 1 – 07/11**

**Mon:** Ch1 – Evolutionary Biology

Watch Ch 1 videos and read Ch 1 in text book

Ch1 summary (1-2 pages) – due on **Thursday, July 14 at 11:59 pm**

**Wed:** Ch2 – The Tree of Life

Watch Ch 2 videos and read Ch 2 in text book

Ch2 summary (1-2 pages) – due on **Monday, July 18 at 11:59 pm**

**Fri:** Ch3 – Natural Selection and Adaptation

Watch Ch 3 videos and read Ch 3 in text book

Ch3 summary (1-2 pages) – due on **Wednesday, July 20 at 11:59 pm**

#### **week 2 – 07/18**

**Mon:** Ch10 – All About Sex

Watch Ch 10 videos and read Ch 10 in text book

Ch10 summary (1-2 pages) – due on **Thursday, July 21 at 11:59 pm**

**Mon:** Assignment one: sexual selection assignment posted (Endler's Guppies) – due on **Tuesday, July 26 at 11:59 pm**

**Tue:** **Quiz 1** (Chs, 1,2,3,10): in d2l, available from Tue 07/18 - Thu 07/20

**Wed:** Ch11 – How to be Fit

Watch Ch 11 videos and read Ch 11 in text book

Ch11 summary (1-2 pages) – due on **Monday, July 25 at 11:59 pm**

**Thu:** **\*Midterm Exam posted\*** (Chs 1, 2, 3, 10, 11): in d2l, available from Thursday 07/20 – Monday 07/25

### week 3 – 07/25

**Mon:** Ch9 – Species and Speciation

Watch Ch 9 videos and read Ch 9 in text book

Ch9 summary (1-2 pages) – due on **Thursday, July 28 at 11:59 pm**

**Wed:** Ch16 – Phylogeny: The Unity and Diversity of Life

Watch Ch 16 videos and read Ch 16 in text book

Ch16 summary (1-2 pages) – due on **Monday, August 01 at 11:59 pm**

**Wed:** Assignment two: phylogeny assignment posted – due on **Friday, August 05 at 11:59 pm**

**Fri:** Ch17 – The History of Life

Watch Ch 17 videos and read Ch 17 in text book

Ch17 summary (1-2 pages) – due on **Wednesday, August 03 at 11:59 pm**

### week 4 – 08/01

**Mon:** Ch18 – The Geography of Evolution

Watch Ch 18 videos and read Ch 18 in text book

Ch18 summary (1-2 pages) – due on **Thursday, August 04 at 11:59 pm**

**Wed:** Ch19 – The Evolution of Biological Diversity

Watch Ch 19 videos and read Ch 19 in text book

Ch19 summary (1-2 pages) – due on **Monday, August 08 at 11:59 pm**

**Wed:** Assignment three: mass extinctions assignment posted – due on **Tuesday, August 09 at 11:59 pm**

**Thu: Quiz 2** (Chs 9, 16, 17, 18, 19), in d2l, available from Thu 08/04 - Fri 08/05

**Fri:** time for writing review paper, studying for final

week 5 – 08/08

**Mon:** time for writing review paper, studying for final

**Tue:** \*Review paper due at 11:59 pm\*

**Tue:** \*Final Exam posted (cumulative)\*, in d2l, available from Tue 08/09 - Thu 08/11

## Technology Requirements

### LMS

All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:

<https://community.brightspace.com/s/article/Brightspace-Platform-Requirements>

LMS Browser Support:

[https://documentation.brightspace.com/EN/brightspace/requirements/all/browser\\_support.htm](https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm)

### **Access and Navigation**

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or [helpdesk@tamuc.edu](mailto:helpdesk@tamuc.edu).

### **Communication and Support**

If you have any questions or are having difficulties with the course material, please contact your Instructor by email.

### **Technical Support**

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

<https://community.brightspace.com/support/s/contactsupport>

### **Syllabus Change Policy**

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced.

## **University Specific Procedures**

More details about the following procedures can be located in the graduate student handbook:

[Office of Student Rights & Responsibilities \(tamuc.edu\)](#)

### **Student Conduct**

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the graduate student handbook: [Office of Student Rights & Responsibilities \(tamuc.edu\)](#)

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: [Netiquette  
http://www.albion.com/netiquette/corerules.html](http://www.albion.com/netiquette/corerules.html)

## **TAMUC Attendance**

For more information about the attendance policy please visit the school's [Attendance](#) webpage.

<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

## **Academic Integrity**

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work, including specifically cheating in online exams and acts of plagiarism in assignments and papers. For more details and the definition of academic dishonesty, please see the following:

[Graduate Student Academic Honesty - Texas A&M University-Commerce \(tamuc.edu\)](#)

## **ADA Statement**

### **Students with Disabilities**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

*Office of Student Disability Resources and Services*

Texas A&M University-Commerce

Gege Library- Room 162

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: [studentdisabilityservices@tamuc.edu](mailto:studentdisabilityservices@tamuc.edu)

Website: [Office of Student Disability Resources and Services](#)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

### **Nondiscrimination Notice**

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.