



PCB 4674
Organic Evolution
80120 001
Fall 2026

Instructor Name

Yu-San Yang

Bethany Burns

University Course Description

An introduction to modern evolutionary theory. Lecture on population genetics, adaptations, speciation theory, phylogeny, human evolution, and related areas.

Course Requisites

Prerequisite(s):

(Biology Minimum Score: 5
or BSC 2011 Minimum Grade: C-
or BSC 2011C Minimum Grade: C-
or BSC 1011 Minimum Grade: C-
or BSC 1011C Minimum Grade: C-)
and (PCB 3063 Minimum Grade: C-
or PCB 3063C Minimum Grade: C-)

Corequisite(s):

Course Format

PARTICIPATION (20%):

Beginning **Wednesday, 8/26/26**, attendance and participation during our class sessions will be assessed using iClicker. Questions will be asked throughout the class and will include questions that: 1) cover material from the previous lectures, 2) assess comprehension of the material just discussed, and 3) make students reflect on future concepts before we fully cover them in class.

This will include **2 graded questions** on the previous lecture at the beginning of each class, and a few **ungraded questions** during. For all questions, 2 points will be awarded for a recorded response. For graded questions, a correct response will earn an additional point, so a correct answer for a graded question will earn a total of 3 clicker points. Your final score will be the average across all the class periods.

The two class periods in which you earn the lowest score of the semester (i.e. most detrimental to your grade) will be dropped from the overall attendance and participation grade. There will not be further opportunities to make-up attendance and participation points if you miss a class session, forget your iClicker, or cannot get the iClicker to work. You are responsible for bringing a working device to class each day. Sharing iClicker remotes or using the app without coming to class represents academic dishonesty—all students involved will be penalized accordingly.

DISCUSSION (15%)

There will be **three in-class discussions** in small groups throughout the term. Discussions can be problem sets or reading of primary scientific literature. You will be complete an individual worksheet before class, participating in active group discussion in class, and then submitting a group worksheet at the end of the class. **Completing the individual worksheet secures half credit, while participation and turning in the group worksheet secures the other half.** As the individual worksheet is meant to ensure you prepare for the group discussion, late assignments will receive a grade of 0. Contents covered in the discussions are fair game in midterm and final exams.

HOMEWORK (20%)

There will be **8 homework assignments** during the semester through Canvas to provide students with practice answering exam-style questions and keep current on the subject matter. Homework is opened on the indicated date on the schedule (Mon or Wed), and **due the Sunday of the same weekend** (see Canvas for exact due dates). Homework will be open book and have no time limits. Each homework can be taken twice. Late assignments will be graded with a late penalty (up to 50%) without documentation of a university recognized excuse (see below).

MIDTERM (30%)

There will be **three midterm exams**. Exams will last 75 min and be administered in the classroom during our normal class time. The **lowest grade (including missed exam) will be dropped**. Make-up exams will only be offered if you have a university-approved reason (see below). All exams must be taken in person and your student ID must be presented.

FINAL EXAM (15%)

There will be **one cumulative final exam** that lasts 2 hours at the end of the semester. A make-up exam will be offered only if you have a university-approved reason (see below). The final exam must be taken in person and your student ID must be presented.

Student Learning Outcomes

By the end of this course, students will be able to:

1. Explain basic concepts of evolution to both scientists and non-scientists.
2. Describe five key mechanisms of microevolution.
3. Recognize that evolution can be either adaptive or non-adaptive.
4. Interpret phylogenetic trees and explain how species relationships are inferred.
5. Explain the speciation process and macroevolutionary patterns.
6. List and describe the major lines of evidence for evolution.
7. Interpret research data and design experiments to test hypotheses.

Course Objectives

This course will:

1. Introduce terminology and core concepts in evolutionary biology
2. Explain the five key mechanisms of microevolution.
3. Discuss adaptive versus non-adaptive evolution.
4. Explain how species relationships are inferred using phylogenetic trees.
5. Explain the speciation process and macroevolutionary patterns.
6. Discuss the major lines of evidence for evolution.
7. Interpret research data and practice designing experiments to test hypotheses.

Required Texts and/or Readings and Course Materials

Textbook: *Evolutionary Analysis (5th Edition)*

Scott Freeman & John C. Herron

Pearson (2014) ISBN-13: 978-0321616678

All other required reading materials will be uploaded to Canvas.

Textbook is optional. The textbook readings reinforce important terminology and basic concepts that will be expanded upon in lecture. The chapter(s) from the course textbook corresponding to the topics covered in a given lecture are listed on the course calendar. Each lecture study guide contains the specific chapter sections that will be covered. You are not expected to know the material that we do not explicitly discuss during lecture.

How to Succeed in this Course

1. Check **Canvas/email** daily for announcements.
2. Stay on top of the materials from the beginning! It's a lot and cramming everything into one session is likely not going to work well. Spread it out and stick to a schedule. **Homework schedule** is designed to help you with this.
3. Attend and be engaged in lectures. **Clicker questions** and **think-pair-share** are designed to help you with this.
4. **Ask questions** in class or via the exit poll. If something is unclear to you, it is likely unclear to someone else. There are no stupid questions.
5. Keep the learning objectives and the large picture in mind when studying; don't just read from front to back. **Study guides** are designed to help with this.

6. Know your knowledge gap. Many concepts in earlier units are used in later units, and the final is cumulative. Coming to **office hours** to view your graded exam and ask questions is one effective way to do so.

Grading Scale

A	90.00-100
B+	86.60-89.99
B	83.30-86.59
B-	80.00-83.29
C+	76.60-79.99
C	70.00-76.59
D+	66.60-69.99
D-	60.00-63.29
F	<59.99

Grade Categories and Weights

Participation (21 classes; 2 lowest dropped)	20%
In-class Discussion (3x; no dropping)	15%
Homework (8x; lowest dropped)	20%
Midterm exams (lowest dropped)	30%
Final exam (no dropping)	15%

Major Topics and Course Schedule

FALL 2026					
DATE		CLASS	TOPIC	CHAPTER	HW ¹
UNIT 1 – Foundations of Evolutionary Biology					
08/24	M	Lecture 1	Intro to Evolutionary Biology	2 & 3	
08/26	W	Lecture 2	Natural Selection	2 & 3	

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08/31	M	Lecture 3	Evolutionary Trees (1)	4	HW1
09/02	W	Lecture 4	Evolutionary Trees (2)	4	
09/07	M		NO CLASS - LABOR DAY		
09/09	W	Lecture 5	Variation	5	HW2
09/14	M	EXAM 1	L1-5		
UNIT 2 – Evolutionary Genetics					
09/16	W	Lecture 6	Intro to Population Genetics	6	D1
09/21	M	Discussion I	Lab: Simulating evolution		
09/23	W	Lecture 7	Selection, Mutation, and Migration	6 & 7	HW3
09/28	M	Lecture 8	Drift and Non-random Mating	7	
09/30	W	Lecture 9	Quantitative Genetics	9	
10/05	M	Lecture 10	Genome Evolution	15	HW4
10/07	W	EXAM 2	L6-9 + D1		
UNIT 3 – Studying Adaptation					
10/12	M	Lecture 11	Experimental Design	10	

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10/14	W	Lecture 12	Life History	13	
10/19	M	Lecture 13	Coevolution	X	HW5
10/21	W	Lecture 14	Sex and Sexual Selection (1)	8 & 11	
10/26	M	Lecture 15	Sex and Sexual Selection (2)	11	D2
10/28	W	Discussion II	Journal club: TBD		
11/02	M	Lecture 16	Social Behavior	12	HW6
11/04	W	EXAM 3	L11-16 + D2		
UNIT 4 – Macroevolution and Human evolution					
11/09	M	Lecture 17	Speciation (1)	16	
11/11	W	Lecture 18	Speciation (2)	16	D3
11/16	M	Lecture 19	Evo-Devo	19	HW7
11/18	W	Discussion III	Journal club: TBD		
11/23	M	Lecture 20	Fossil Record	18	
11/25	W		<i>NO CLASS (or catch-up if hurricane)</i>		
11/30	M	Lecture 21	Human Evolution & Medicine	14 & 20	HW8

FALL 2026					
12/02	W	Review	Final exam review		
12/07	M		<i>NO CLASS – STUDY!</i>		
12/09	W	FINAL EXAM	10:00-12:00 L1-21 +D1-3		

¹Homework is **opened** on the indicated date, and **due** the weekend of that week (Sunday 23:59)

Schedule is subject to change (e.g. hurricanes), but I will do my best to stick to the plan.

USF Fall 2026 Academic Calendar:

<https://www.usf.edu/registrar/calendars/#fall2026>

USF Core Syllabus Policies

USF has a set of central policies related to student recording class sessions, academic integrity and grievances, student accessibility services, academic disruption, religious observances, academic continuity, food insecurity, pregnancy and related conditions, and sexual harassment that **apply to all courses at USF**.

Be sure to review these online:

<https://www.usf.edu/provost/faculty-success/resources-policies-forms/core-syllabus-policy-statements.aspx>

Student Recordings

Florida Statute 1004.097 Free Expression on Campus

Students may, without prior notice, record video or audio of a class lecture for a class in which the student is enrolled for their own personal, educational use (USF Policy 10-048). A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach enrolled students about a particular subject. Recording class activities other than class lectures, including but not limited to lab sessions, student presentations (whether individually or part of a group), class discussion, clinical presentations such as patient history, academic exercises involving student participation, test or

examination administrations, field trips, private conversations between students in the class or between a student and the faculty member is prohibited. Recordings may not be used as a substitute for class participation and class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the USF Student Conduct Code.

Course Policies: Grades

First Day Attendance Policy

First day attendance will be taken using a Canvas quiz. Students who don't complete the first day activity run the risk of being dropped from the course.

Make-up Work / Extensions

Make-up, extension, or excused absences will only be allowed when due to university-recognized excuses. Acceptable reasons are **medical** (individual or immediate family only), **legal** (accident or court case; individual only), or **funerary** (immediate family only). Other excuses may be approved on a case-by-case basis.

When possible, the student must notify the instructor by the date of the exam/assignment, and the coursework must be made up in a **reasonable time frame** (usually one week) after returning. Reasons for a make-up request must relate to the time period of the missed work and be documented in writing by an involved professional. I may make additional inquiries concerning the documentation, and give a make-up that is different in content and/or style than the missed coursework.

Grade Disputes

You have up to **two weeks** to dispute a grade after it has been posted; after that, the grade is finalized. This goes for exams, homework, and participation grades.

“Incomplete” grades

The current university policy concerning incomplete grades will be followed. An “I” grade may be awarded to a student only when a small portion of the student's work is incomplete and only when the student is otherwise earning a passing grade. The time limit for removing the “I” is to be set by the instructor of the course. For undergraduate students, this time limit may not exceed two

academic semesters, whether or not the student is in residence, and/or graduation, whichever comes first.

Assignment Retention Policy

The completed assignments in this course will be retained for one semester following the current one, and then they will be destroyed.

Grades of "Incomplete"

The current university policy concerning incomplete grades will be followed in this course.

For undergraduate courses: An “I” grade may be awarded to a student only when a small portion of the student’s work is incomplete and only when the student is otherwise earning a passing grade. The time limit for removing the “I” is to be set by the instructor of the course. For undergraduate students, this time limit may not exceed two academic semesters, whether or not the student is in residence, and/or graduation, whichever comes first. For graduate students, this time limit may not exceed one academic semester. “I” grades not removed by the end of the time limit will be changed to “IF” or “IU,” whichever is appropriate.

Campus Free Expression

It is fundamental to the University of South Florida’s mission to support an environment where divergent ideas, theories, and philosophies can be openly exchanged and critically evaluated. Consistent with these principles, this course may involve discussion of ideas that you find uncomfortable, disagreeable, or even offensive.

In the instructional setting, ideas are intended to be presented in an objective manner and not as an endorsement of what you should personally believe. “Objective” means that the idea(s) presented can be tested by critical peer review and rigorous debate, and that the idea(s) is supported by credible research.

In this course you may be asked to engage with complex ideas and to demonstrate an understanding of the ideas. Understanding and engaging with an idea does not require you to believe it or to agree with it.

Course Policies: Technology and Media

Canvas:

Canvas will be used to post course materials, including the course syllabus and schedule, lecture slides, study guides, reading materials, and announcements. Homework assignments will be given through Canvas quizzes.

If you have technical difficulties, you can find Canvas guides and video resources in the "Canvas Help" page on the homepage of your Canvas course. You can also contact the help desk by calling 813-974-1222 in Tampa or emailing help@usf.edu.

iClicker:

iClicker will be used for in class participation. It is available at the bookstore or via direct purchase through your device. We will start in-class participation on Wednesday, 08/26/26, so please register for iClicker by then. Please use your usf email to ensure that your grades are properly synced to Canvas. This link should help with registration: <https://www.iclicker.com/students/>.

Course Policies: Student Expectations

Health and Wellness

Your health is a priority at the University of South Florida. We encourage members of our community to look out for each other and to reach out for help if someone is in need. If you or someone you know is in distress, please make a referral at www.usf.edu/sos so that the Student Outreach & Support can contact and provide helpful resources to the student in distress. A 24-hour licensed mental healthcare professional, offered through the counseling center, is available by phone at 813-974-2831, option 3. Please remember that asking for help is a sign of strength. In case of emergency, please dial 9-1-1.

Title IX Policy

USF is committed to fostering a safe and respectful learning environment, free from sex discrimination and sexual harassment, in accordance with Title IX and USF Policy 0-004. If a student shares an experience of sexual harassment, sexual assault, stalking, or relationship violence with a USF employee (including faculty), that employee will notify the Title IX Office.

This allows the Title IX Office to send the student an email with information about support resources and options—if it is safe to do so. Students are not required to respond to this email. The Title IX Office is a private resource. Information is shared only on a need-to-know basis to provide students with support measures. To speak to a confidential resource, students may contact USF Center for Victim Advocacy at 813-974-5757. Confidential resources do not notify the Title IX Office unless the student requests it. For more information about Title IX, available resources, or to make a report, please visit www.usf.edu/title-ix.

Course Hero / Chegg Policy

The USF Policy on Academic Integrity specifies that students may not use websites that enable cheating, such as by uploading or downloading material for this purpose. This does apply specifically to Chegg.com and CourseHero.com – almost any use of these websites (including uploading proprietary materials) constitutes a violation of the academic integrity policy.

Professionalism Policy

Per university policy and classroom etiquette; mobile phones, iPods, etc. must be silenced during all classroom and lab lectures. Those not heeding this rule will be asked to leave the classroom/lab immediately so as to not disrupt the learning environment. Please arrive on time for all class meetings. Students who habitually disturb the class by talking, arriving late, etc., and have been warned may suffer a reduction in their final class grade.

Turnitin.com

In this course, turnitin.com may be utilized. Turnitin is an automated system which instructors may use to quickly and easily compare each student's assignment with billions of web sites, as well as an enormous database of student papers that grows with each submission. Accordingly, you may be expected to submit all assignments in both hard copy and electronic format. After the assignment is processed, as

instructor I receive a report from turnitin.com that states if and how another author's work was used in the assignment. For a more detailed look at this process visit <http://www.turnitin.com>.

Netiquette Guidelines

- Act professionally in the way you communicate. Treat your instructors and peers with respect, the same way you would do in a face-to-face environment. Respect other people's ideas and be constructive when explaining your views about points you may not agree with.
- Be sensitive. Be respectful and sensitive when sharing your ideas and opinions. There will be people in your class with different linguistic backgrounds, political and religious beliefs or other general differences.
- Proofread and check spelling. Doing this before sending an email or posting a thread on a discussion board will allow you to make sure your message is clear and thoughtful. Avoid the use of all capital letters, it can be perceived as if you are shouting, and it is more difficult to read.
- Keep your communications focused and stay on topic. Complete your ideas before changing the subject. By keeping the message on focus you allow the readers to easily get your idea or answers they are looking for.
- Be clear with your message. Avoid using humor or sarcasm. Since people can't see your expressions or hear your tone of voice, meaning can be misinterpreted.

Email and Discussion Board Guidelines

- Use the subject line effectively by using a meaningful line of what your email or discussion is about.
- Keep your emails and postings related to the course content. You should not post anything personal on a discussion board unless it is requested by the instructor.
- Any personal, course or confidential issues should be directly communicated to the instructor via email. The discussion boards are public spaces; therefore, any issues should not be posted there.

End of Semester Student Evaluations

All classes at USF make use of an online system for students to provide feedback to the University regarding the course. These surveys will be made available at the end of the semester, and the University will notify

you by email when the response window opens. Your participation is highly encouraged and valued.

Food and Drink Policy (for in-campus sessions only).

Please adhere to the firm policy of no beverages (other than bottled/capped water), food, tobacco products, or like items in the classroom. Your understanding of the necessity for this policy and cooperation will be greatly appreciated. This policy will be strictly enforced.

Learning Support and Campus Offices

Academic Accommodations

Students with disabilities are responsible for registering with Student Accessibility Services (SAS) in order to receive academic accommodations. For additional information about academic accommodations and resources, you can visit the SAS website.

[SAS website for the Tampa campus and Sarasota-Manatee Teachout site.](#)

[SAS website for the St. Pete campus.](#)

Academic Support Services

The USF Office of Student Success coordinates and promotes university-wide efforts to enhance undergraduate and graduate student success. For a comprehensive list of academic support services available to all USF students, please visit the [Office of Student Success website](#).

Canvas Technical Support

If you have technical difficulties in Canvas, you can find access to the Canvas guides and video resources in the “Canvas Help” page on the homepage of your Canvas course. You can also contact the help desk by calling 813-974-1222 in Tampa or emailing help@usf.edu.

[USF IT Services](#)

Center for Victim Advocacy

The [Center for Victim Advocacy](#) empowers survivors of crime, violence, or abuse by promoting the restoration of decision making, by advocating for their rights, and by offering support and resources. Contact information is available online.

Counseling Center

The Counseling Center promotes the wellbeing of the campus community by providing culturally sensitive counseling, consultation, prevention, and training that enhances student academic and personal success. Contact information is available online.

[Counseling Center website for the Tampa campus and Sarasota-Manatee Teachout site.](#)

[Counseling Center website for the St. Pete campus.](#)

Tutoring

The Tutoring Hub offers free tutoring in several subjects to USF undergraduates. Appointments are recommended, but not required. For more information, email

asctampa@usf.edu.

[Tutoring website for the Tampa campus and Sarasota-Manatee Teachout site.](#)

[Tutoring website for the St. Pete campus.](#)

Writing Studio

The Writing Studio is a free resource for USF undergraduate and graduate students. At the Writing Studio, a trained writing consultant will work individually with you, at any point in the writing process from brainstorming to editing. Appointments are recommended, but not required. For more information or to make an appointment, email: writingstudio@usf.edu.

[Writing studio website for the Tampa campus and Sarasota-Manatee Teachout Site.](#)

[Writing studio website for the St. Pete campus.](#)

Student Ombuds Office

Florida Statute 1006.51 and Florida Board of Governors Regulation 6.011 require that all public institutions provide ombuds services to students. The Student Ombuds Office at USF is a confidential, impartial, informal, and independent resource for students experiencing challenges related to the university. Ombuds can help students safely explore options, clarify processes, and consider next steps. [Learn more or make an appointment at **usf.edu/student-ombuds**.](#)