Evolutionary Biology (GENE 3000)

T/Th 3:30 – 4:45 pm, Forestry 100

INSTRUCTORS

Dr. Tessa Andrews, Email: tandrews@uga.edu

Nick Arthur, Email: narthur@uga.edu

Nick Batora, Email: batorani@uga.edu

Use the UGA email addresses listed above to email the instructor and teaching assistants. We will not check eLC email. Please email us from your UGA email account, rather than a personal account.

OFFICE HOURS **10:30 – 11:30 am Tuesday** **12:30 – 1:30 pm Friday**

I want *all* students to come to office hours, including students who have a few questions; students who feel overwhelmed or want study advice; and students who are excited about evolution.

C208A Davison Life Sciences Complex**,** Phone: 706-542-3340

*My office can be hard to find. Call if you get lost on your way.

COURSE GOALS

The overall goals for this course are for students to:

1. Be able to accurately *explain* evolutionary concepts and principles to both biologists *and* non-biologists. Be able to *apply these concepts* to novel scenarios (i.e., questions), including (but are limited to):
    - The origin and role of genetic variation in populations
    - Adaptive *and* non-adaptive genetic change in populations
    - How evolutionary relationships can be understood using phylogenies
    - History of life on earth
    - Origin and extinction of species
    - Human evolution
    - Evidence for evolution and how evolution is studied
2. Demonstrate skills in scientific reasoning and problem-solving, including:
    - Reason about scientific principles, theories, and models
    - Analyze and evaluate scientific explanations and predictions
    - Reason about and critically evaluate the design and execution of research, identify and interpret sources of uncertainty and assess the quality of the data
    - Interpret patterns in data presented in tables, figures, and graphs
    - Reason about data and draw conclusions from them
3. Recognize the impact of human activity on biodiversity, including the maintenance of genetic variation in populations, how humans impact the genetic structure of natural populations, and how human activity impacts speciation and extinction.
4. Develop and/or refine strategies and skills for learning on your own, learning with others, and working productively in groups.
5. Gain an appreciation of the benefits of research in evolutionary biology to society, and how it helps us solve problems in our lives.

COURSE ORGANIZATION AND DESIGN

The course is divided into four (4) units.

Unit	Approximate Dates	Exam date
Unit 1. **Fundamentals of natural selection**	August 14 – September 12	Tues Sept 12
Unit 2. **Selection in interesting contexts**	September 13 – October 5	Thurs Oct 5
Unit 3. **Population and conservation genetics**	October 6 – November 2	Thurs Nov 2
Unit 4. **History of life**	November 3 – November 30	Tues Nov 28 *we will have class on Thurs Nov 30

Each unit will be outlined in a Unit Calendar, which will be posted in the corresponding Content folder on eLC at the beginning of the unit. The unit calendars list required pre-class preparation, assignments, evaluations, and exams on a day-by-day basis. You are responsible for regularly consulting the unit calendar.

COURSE RESOURCES

- **Required texts.** Unit calendars will specify required pre-class preparation. Assignments and homework will build on this pre-class preparation. Exams will also include questions specific to the assigned reading.
    - ***Why We Get Sick*** (Neese and Williams). Buy used!
    - ***The Journey of Man: A Genetic Odyssey*** (Wells). Buy used!
    - ***Other assigned reading:*** Many days there will be other assigned reading for the class, including research articles. These will be posted on eLC.
- **Top Hat.** We will be using the Top Hat (www.tophat.com) classroom response system in class. You will submit answers to in-class questions using your phone (as long as you having texting abilities). On specified days when laptops are allowed, you may opt to use a laptop to respond to Top Hat questions.
    - You can visit the Top Hat Overview (https://success.tophat.com/s/article/Student-Top-Hat-Overview-and-Getting-Started-Guide) within the Top Hat Success Center which outlines how you will register for a Top Hat account, as well as providing a brief overview to get you up and running on the system.
    - An email invitation will be sent to you by email, but if don't receive this email, you can register by simply visiting our course website: https://app.tophat.com/e/877562 Note: Our Course Join Code is 877562
    - Top Hat will require a paid subscription, and a full breakdown of all subscription options available can be found here: www.tophat.com/pricing.
    - Should you require assistance with Top Hat at any time, due to the fact that they require specific user information to troubleshoot these issues, please contact their Support Team directly by way of email (support@tophat.com), the in app support button, or by calling 1-888-663-5491.

- **Simbio simulation**. We will use online simulations through SimBio. You will need to set up an account with SimBio and pay $12 ($6/simulation). I will provide more information when you need it.

BREAKOUT SESSIONS

Breakout sessions will be used to augment class time and are required**.** Breakout sessions will be run by the teaching assistants. You must attend the breakout session for which you are registered most weeks. If you have a conflict, you can attend another section. If you are in a breakout session that meets on Monday or Friday of a school holiday, you can attend another breakout session during the week. You are responsible for making sure the instructor records your attendance. Note the times below. All breakouts are 50 minutes long. Breakout will begin the second week of classes (Monday August 21) and meet weekly for 14 weeks. Y**ou must participate in breakout during at least 13 weeks to earn full credit.**

Day of the week	Meeting time	Location	Leader
Monday	4:40 – 5:30 pm	Life Sciences, C114	Nick Arthur
Tuesday	9:30 – 10:20 am	Life Sciences, C114	Nick Arthur
Tuesday	5:00 – 5:50 pm	Life Sciences, C130	Nick Batora
Wednesday	9:05 – 9:55 am	Life Sciences, C114	Nick Batora
Thursday	5:00 – 5:50 pm	Life Sciences, C114	Nick Batora
Friday	10:10 – 11:00 am	Life Sciences, C114	Nick Arthur

COURSE ACTIVITIES

1. **Learning objectives.** In each unit (and each class period) there are content and skills you are responsible for learning. These are called learning objectives. Exams are designed to assess the degree to which you have achieved these objectives. Each class period I will specify the objectives for the day. Use these as a guide after class each day and in preparation for exams. Simply reading the learning objectives to determine if you understand them is unlikely to prepare you to pass exams in this class. Instead, take time to write out full paragraphs in answer to each learning objective and work with your colleagues to compare and improve your ability to address each objective.

2. **Groups.** You will engage in small group learning in this course. You will engage in discussions in small groups in class and complete some work together. Explaining your thinking and analyzing what other students say will help you develop deeper understanding of concepts in evolutionary biology, which will be crucial to doing well on exams. You will be assigned to groups and each group will have a designated location in the classroom.

3. **Problem sets/case studies.** These will be sets of questions that require you to think deeply about the material, apply concepts to novel scenarios, and to practice scientific reasoning skills. You will primarily work on these in class and in groups. There will be no make-up problem sets, regardless of the reason you miss a problem set. Late problem sets will not be accepted. *Your lowest problem set grade will be dropped.*

4. **Reading quizzes.** Most weeks you will have a reading quiz due on Thursday at noon in eLC. These quizzes cover all required pre-class preparation through the Thursday on which they are

due, as well as concepts covered previously in class. The questions focus on fundamental concepts from the readings. They are NOT representative of exam questions, which will focus more on application of material than recall. You will be able to take each quiz twice. Your grade will be calculated as an average of your two attempts. Your lowest reading quiz grade of the semester will be dropped. No make-up reading quizzes will be allowed.

5. **In-class questions.** We will answer questions using Top Hat (TH) during class. You will text your responses using your cell phone. Asking questions in Top Hat will allow me to gauge your understanding of key concepts and plan my teaching accordingly and will give you feedback on how well you understand concepts. **You will earn points based on the percent of Top Hat questions you respond to in class (not your accuracy): 14 pts (full credit) for responding to 90% of the questions.** For lower than 90%, you will receive that percentage (e.g. if you earn 85%, you earn 11.9 pts). ***It is your responsibility to make sure your responses are recorded as you submit them.*** It is also your responsibility to ensure you have a charged phone at each class period. I will not accept technology excuses.

6. **Evaluations to inform learning and teaching.** You will complete several evaluations during the semester. Some will assess your knowledge of topics in evolution. The results of these evaluations help me identify and focus on the areas students find most difficult. These data also help the instructors and the Genetics Department assess how much you have learned. Other times you will complete self-evaluations of your learning. Lastly, I will ask you to provide feedback about the course. Together these will be called "Evaluations." Evaluations will be completed outside of eLC, and links to evaluations will be posted in eLC.

7. **Exams.** There will be one examination at the end of each unit. Exams will include short-answer questions, and maybe some forced-response questions (e.g., multiple choice, T/F). **No make-up exams will be given under any circumstances.** If you have a medically-excused absence, your final grade will be calculated based on the remaining grades. There are other valid reasons why you might miss an exam, but Dr. Andrews has the ultimate discretion as to whether not she will excuse you from an exam and you must always provide documentation. If you know ahead of time that you will miss an exam, you must notify Dr. Andrews one week before the exam. If you miss more than one exam, for any reason, you will be withdrawn from the class. You must document any absence from an exam in writing to Dr. Andrews within one week of the missed exam (e.g., a detailed doctor's note). You may find it helpful to contact the Office of Student Affairs (201 Holmes-Hunter Academic Building) for assistance in documenting your absence. Without an acceptable written excuse, your grade on a missed exam will be 0.

TO BE SUCCESSFUL IN THIS COURSE, I ENCOURAGE YOU TO:

- **Attend class every day**. I design class to provide opportunities for you to work individually and in groups to practice to achieve the learning objectives. You will have a hard time doing well on exams if you are not in class the majority of the time.
- **Focus on the learning objectives**. The exams will assess your accomplishment of the learning objectives. Use the learning objectives as a guide for what to focus on when you are completing assignments and studying for exams.
- **Focus on application & problem-solving, going beyond memorization.** You can look up facts when you are working on assignments. Some facts (e.g., equations) will be provided for you

on exams so that you can focus on applying knowledge rather than just regurgitating facts. You will come to remember the most important facts as you practice solving problems.

- **Study with classmates**, including working on assignments together. *You must submit all work in your own words*, but working with classmates will help you understand key concepts.

COURSE GRADING

You will earn points in the course as follows:

Activity	Points	Approximate % of final grade
Problem sets	14 pts	7.0%
Reading quizzes	14 pts	7.0%
In-class questions (TH)	14 pts (respond to TH questions in class)	7.0%
Breakout session	13 pts (participate in 13 breakout sessions)	6.5%
Exams	140 pts (35 points each, 4 exams)	70%
Evaluations	5 pts	2.5%
Total	**200**	**100%**

Your letter grade for the course will be calculated at the end of the semester and will be based on your final percentage. I will use the following scale for determining letter grades:

A	100-93%	**B**	86-83%	**C**	76-73%	**F**	<60%
A-	92-90%	**B-**	82-80%	**C-**	72-70%		
B+	89-87%	**C+**	79-77%	**D**	69-60%		

OTHER COURSE POLICIES

Academic Honesty and the Honor Code: Academic Honesty means performing all academic work without plagiarism, cheating, lying, tampering, stealing, giving or receiving unauthorized assistance from any other person, or using any source of information that is not common knowledge without properly acknowledging the source. The academic honesty policy of the University is supplemented (not replaced) by an **Honor Code** which was adopted by the Student Government Association and approved by the University Council May 1, 1997, and provides: "*I will be academically honest in all of my academic work and will not tolerate academic dishonesty of others*." All students agree to abide by this code by signing the UGA Admissions Application. For more information on Academic Honesty and the Honor Code, please refer to: http://ovpi.uga.edu/student-opportunities-resources/student-resources.

Attendance Policy: The course content and discussions will be tailored to build on your existing knowledge and address your questions and concerns, **so your attendance in class and breakout is essential to your learning and your grade.** There will be times you will have to miss class because of an emergency or other professional or educational commitment. I have structured the grading in this course to minimize the impact of missing a class for legitimate reasons. Contact classmates to get up to speed on what you missed. You do not need to email the instructor to report an absence unless you will miss an exam.

Disability Accommodations: Reasonable accommodations are available for students who have a disability. The Disability Resource Center in the Division of Student Affairs (114 Clark Howell Hall; 706-542-8719 voice; 706-542-7719 fax; 706-542-8778 tty) coordinates accommodations and services for students with disabilities. Please notify the instructors of any accommodations needed for the course.

Technology during class and exams: Laptop use will only be allowed on some class days and only for part of the class. Computers, cell phones, or other devices are prohibited during exams. Any student using technology during an exam will be asked to leave and will receive a 0 on the exam.

Regrade requests: All exams are graded anonymously by the TAs and the instructor. We try to grade as quickly and fairly as possible. However, if you believe that a question was graded incorrectly and want it regraded, please submit ***a typed and signed request*** to the professor within 1 week of receiving the graded exam. Requests must include a **detailed explanation** of why you think your response is scientifically accurate. **Regrade requests that are not legitimate (e.g., lack an explanation or are incorrect) will result in the loss of a point.** No exams completed in pencil will be regraded. The professor will regrade the question. If a math error was made in calculating your grades, please notify a TA of the mistake during class or a breakout session and they will fix it. In other words, there is no need to submit a regrade request for a math error.

DISCLAIMER:

The course syllabus is a general plan for the course; deviations announced to the class by the instructors may be necessary.