

## BIOL 610 Evolution (Fall 2019)

<b>Day:</b>	Tuesday/Thursday	<b>Location:</b>	BSBW 025
<b>Time:</b>	2:20-3:35 pm	<b>Number of Credits:</b>	03 Credits

### *Instructors*

#### **Dr. Kira Delmore**

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**Course Pre-requisites:** Graduate classification. We **strongly recommend** that students without a graduate or undergraduate evolution course keep the suggested texts handy for reference.

#### **Suggested Texts:**

Futuyma, D. J. and Kirkpatrick, M. 2017. *Evolution*, 4<sup>th</sup> ed.

Herron, J.C. and Freeman S. 2013. *Evolutionary Analysis*, 5th ed.

**Course description:** This lecture- and inquiry-based course is suitable for life-sciences and conservation-oriented graduate students at advanced levels. We focus on the fundamentals of evolutionary biology with an emphasis on evolutionary theory. The course is intended to be an integrative complement to more focused courses in population genetics, quantitative genetics, and phylogenetics. We examine how the enduring questions in the field can be addressed by integrating next-generation phenotypic and genotypic approaches, with an emphasis on

evolution in natural systems. The course emphasizes critical analysis and synthesis of the primary literature in the context of key paradigms and concepts in evolutionary biology.

**Course requirements:** Please refer to <https://student-rules.tamu.edu/rule07/> for policies on attendance. Each student will research and prepare a presentation on a paper in a research area chosen by the instructors that will expand upon topics presented in class. Each student will write three drafts of a candidacy, GRFP, research, or similar proposal and present oral and written critiques of their peers' proposals. Students will take two in-class and one take-home exam, and submit a short bibliography assignment early on in the course.

**Course goals:** The goal of this course is to provide a foundation course emphasizing critical thinking and scholarly tools for understanding the fast-evolving field of evolutionary biology and its broader applications. Readings will be drawn from contemporary reviews and the primary literature. We will teach students how to identify appropriate literature and how to approach reading and presenting peer-reviewed research articles. Students will also be offered assistance in scientific writing during production of a professional-style proposal via feedback on multiple drafts. Students will also participate in an NSF-style grant panel to critically evaluate proposals from members of the class.

**Research proposal:** Each student will write the "Graduate Research" statement from an NSF-style pre-doctoral proposal, a draft of their research proposal for candidacy, or a draft of an application for a small grant (minimum four and maximum six pages, not counting references). Due dates are indicated below. Failure to submit drafts on time will result in a **5 point reduction per day** from the grade for each late submission. Drafts and final proposals are due before the beginning of the class period **via email to both instructors**.

**Grading:** Letter grades will be assigned based upon three exams (5, 10, and 20% for 35% total), research proposal drafts (5, 10, and 20% for 35% total), leading discussion of a research paper (15%), a bibliography assignment early in the course (5%), and participation and reviewing for two grant review panels (10% total). The first two exams will be given during class. The remaining assignments, including the final exam, will be due **by email to both instructors at 2:20 pm** on the day indicated. Late assignments will be assessed a 10-point penalty per day, starting at 2:21 pm.

#### **Grading Scale:**

A 90-100%; B 80-89; C 70-79; D 60-69; F <60%

#### **Americans with Disabilities Act (ADA) Policy Statement**

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 believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the

Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information visit <http://disability.tamu.edu/>

### **Title IX and Statement on Limits to Confidentiality**

Texas A&M University and the College of Science are committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws provide guidance for achieving such an environment. Although class materials are generally considered confidential pursuant to student record policies and laws, University employees — including instructors — cannot maintain confidentiality when it conflicts with their responsibility to report certain issues that jeopardize the health and safety of our community. As the instructors, we must report (per Texas A&M System Regulation 08.01.01) the following information to other University offices if you share it with me, even if you do not want the disclosed information to be shared:

- Allegations of sexual assault, sexual discrimination, or sexual harassment when they involve TAMU students, faculty, or staff, or third parties visiting campus.

These reports may trigger contact from a campus official who will want to talk with you about the incident that you have shared. In many cases, it will be your decision whether or not you wish to speak with that individual. If you would like to talk about these events in a more confidential setting, you are encouraged to make an appointment with the Student Counseling Service (<https://scs.tamu.edu/>).

Students and faculty can report non-emergency behavior that causes them to be concerned at <http://tellsomebody.tamu.edu>.

### **Important dates**

Sept. 3	Proposal topics due
Sept. 6	Bibliography assignment due
Sept. 10	First proposal draft due before class via email
Sept. 26	Second proposal draft due before class via email
Oct. 1	Exam 1 (in class)
Oct. 3	Grant panel 1
Oct. 15	Final proposal due before class via email
Oct. 17	Grant panel 2
Nov. 7	Exam 2 (take home)
Nov. 15	Last day for Q-drop (withdrawal without penalty)
Dec. 4	Exam 3 (take-home) due by email to Gil and Kira by 2:20

**Academic Integrity:** For additional information please visit: <http://aggiehonor.tamu.edu>. Please pay close attention to guidelines on avoiding plagiarism: <http://aggiehonor.tamu.edu/Descriptions/Plagiarism.aspx>.

***“An Aggie does not lie, cheat, or steal, or tolerate those who do.”***

**Course Materials** will be made available in eCampus ([ecampus.tamu.edu](http://ecampus.tamu.edu))

The **course schedule** appears on the next page. Review papers and/or chapters will be assigned for each lecture and should be read before the start of each module. Similarly, discussion papers should be read in advance of the lecture for which they are assigned and students should arrive ready to participate in the discussion. All material in review and discussion papers will be covered on the exams. *Readings are subject to change up to a week before the day they're to be discussed.*

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Tues., Aug. 27 Course introduction  
Thurs., Aug. 29 How to write a grant proposal [**via Zoom**]  
Tues., Sept. 3 Class discussion of proposal topics; bibliography assignment due  
Thurs., Sept. 5 Work on draft proposals in class (**plan to share draft 1**)  
Tues., Sept. 10 Evolution before math and DNA  
Thurs., Sept. 12 the Modern Synthesis and evolutionary genetics  
Tues., Sept. 17 Why population and quantitative genetics still matter(SNPs, IGEs)  
Thurs., Sept. 19 Gene flow and hybridization  
Tues., Sept. 24 Natural selection and adaptation  
Thurs., Sept. 26 Natural selection and adaptation; **2nd draft due**  
Tues., Oct. 1 **Exam 1**  
Thurs., Oct. 3 **Grant panel 1**  
Tues., Oct. 8 Speciation  
Thurs., Oct. 10 Speciation  
Tues., Oct. 15 Evolutionary stable strategies; final proposal due  
Thurs., Oct. 17 **Grant panel 2**  
Tues., Oct. 22 Sexual conflict and sex-chromosome evolution  
Thurs., Oct. 24 Sexual selection and coevolution  
Tues., Oct. 29 Sexual conflict and sex-chromosome evolution  
Thurs., Oct. 31 Molecular evolution of sexual communication  
Tues., Nov. 5 Sexual selection and speciation  
Thurs., Nov. 7 **Exam 2 (take home)**  
Tues., Nov. 12 G X E effects and the instinct to learn  
Thurs., Nov. 14 Indirect genetic effects and epigenetics  
Tues., Nov. 19 Evolution of social systems  
Thurs., Nov. 21 Interspecific coevolution  
Tues., Nov. 26 Eco-evolutionary dynamics  
Tues., Dec. 3 Macroevolution  
Friday, Dec. 6 **take-home exam due**