

## EEEB G6110: FUNDAMENTALS OF EVOLUTION

**Term:** Fall 2020

**Department:** Ecology, Evolution, and Environmental Biology (E3B)

**Instructors:**

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**Teaching Assistant:**

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**Location:** Zoom remote video calls. Schermerhorn Extension 1015

**Time:** M and W 10:00am - 11:50am.

**Course level:** 6000 (graduate but open to advanced undergraduates with permission.)

**Credits:** 3

**Office hours:** TBD (by zoom)

**Learning objectives:** By the end of this course you will (1) have an improved understanding of major concepts in evolutionary theory; (2) have improved your technical reading skills; (3) have improved your technical writing skills.

**Format:** This course will introduce advanced concepts in evolutionary theory through interactive discussions of the primary literature. It is intended to be accessible to students with or without a strong background in evolutionary theory. Most class sessions will resemble a journal club, but with rotating formats where students may meet in small or large groups, and will occasionally be tasked with leading a discussion. Several meetings will follow different formats involving lectures or technical workshops.

**Reading:** This is a *reading intensive class*. Each session may require you to read a textbook chapter in addition to >3 articles from the primary literature (up to 100 pages per week). As we will discuss, learning to read and comprehend information from technical writing is a difficult but important skill that you can improve through practice. You should come to class with notes on the readings so that you are ready for discussion. In-class discussions are an opportunity to reinforce your understanding of the articles.

**Required textbook:** Futuyma, D. and Kirkpatrick, M. (2017) *Evolution (Fourth edition)*. Sinauer.

**Assigned articles:** Are freely available on Canvas.

**Assessment/Grades:** Grades are based on participation (attendance and discussions), two presentations (student-led article and personal research article) and 4 written essays.

- 40% (class/discussion participation)
- 10% (student-led article discussion)
- 10% (personal research article presentation)
- 40% (4 essays, 10% each)

Grades will not be curved. However, your grade will be assigned relative to the performance of your peers. The maximum grade will earn an A, and grades that are less than one-half of that maximum grade will be assigned an F. Between these values (max and ½ max) intervals equating to letter grades are divided equally.

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**Discussion participation:** The class is largely centered around discussion of journal articles, both in terms of the whole classroom, as well as in *breakout sessions* of smaller groups in zoom. Participation involves asking questions, debating, and discussing the material in these settings. Missed attendance affects your participation grade.

**Student-led Discussion presentations:** Each student will *lead* one article discussion which involves summarizing an article and preparing questions to motivate a class discussion.

**Personal research article presentations:** Each student will present one lightning talk (4 minutes) to share one or more articles of their choosing. This is an opportunity to share a subject of your own interest with the class.

**Essays:** Written essays will be used as the primary form of assessment, and are intended to test your comprehension and ability to synthesize ideas across multiple topics. These are to be written as max 2 page documents, single-spaced, 11pt font (i.e., default options in google docs) with proper citations. You will have the option to choose among several topics to write on, each addressing an open-ended question in evolutionary theory. You will be expected to reference the primary literature articles we discussed in class, and can optionally cite additional readings.

**Writing workshops:** Three class sessions will be devoted to 'writing workshops' that involve a mixture of technical writing training, discussion and debate on essay topics, and opportunities to receive feedback on drafts and outlines in small group settings.

**Attendance policy:** This course relies upon student participation and, thus, attendance is expected. Absences will incur a grade penalty unless excused. Students who are unable to attend class for health or other personal reasons should reach out to the instructors. We understand that there are many legitimate reasons for absences, so do please reach out.

**Statement on policy for students with disabilities:** If you are a student with a disability and have a Disability Services-certified 'Accommodation Letter' please contact the instructors before the course starts to confirm your accommodation needs. If you believe that you might have a disability that requires accommodation, you should contact Disability Services at 212-854-2388 and [disability@columbia.edu](mailto:disability@columbia.edu).

**Statement of academic integrity:** Academic dishonesty is a serious offense and will not be tolerated in the class. Students are expected to reference sources appropriately in any work. Students are allowed to discuss homework assignments but should respond to questions and tasks on their own, not using a group answer. Violation of the rules of academic integrity (e.g., plagiarizing materials) from Columbia College or the Graduate School of Arts and Sciences, will result in automatic failure of the course. Rules and consequences are outlined in Columbia College's Faculty Statement on Academic Integrity: <http://www.college.columbia.edu/faculty/resourcesforinstructors/academicintegrity/statement>

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Date	Session	Day	Topic	chapter	articles	essay
9/9/2020	1	W	Introduction Evo Theory	1	1	.
9/14/2020	2	M	Earth History	19	2-3	.
9/16/2020	3	W	Extinction and biodiversity	.	2-3	.
9/21/2020	4	M	Adaptation I	5	2-3	.
9/23/2020	5	W	Adaptation II	.	2-3	Assigned 1
9/28/2020	6	M	Writing workshop 1	.	.	Workshop 1
9/30/2020	7	W	Population genetics I	7	2-3	.
10/5/2020	8	M	Population genetics II	.	2-3	Due date 1
10/7/2020	9	W	Phylogenetics I	16	2-3	.
10/12/2020	10	M	Phylogenetics II	.	2-3	.
10/14/2020	11	W	Speciation I	9	2-3	.
10/19/2020	12	M	Speciation II	.	2-3	Assigned 2
10/21/2020	13	W	Writing workshop 2	.	.	Workshop 2
10/26/2020	14	M	Macroevolution I	20	2-3	.
10/28/2020	15	W	Macroevolution II	.	2-3	Due date 2
11/2/2020	--	M	-- (no class)	.	.	.
11/4/2020	16	W	Genomes	14	2-3	.
11/9/2020	17	M	Development I	15	2-3	.
11/11/2020	18	W	Development II	.	2-3	.
11/16/2020	19	M	Coevolution	10	2-3	Assigned 3
11/18/2020	20	W	Writing workshop 3	.	.	Workshop 3
11/23/2020	21	M	Epidemiology/Virology	.	2-3	.
11/25/2020	--	W	-- (no class)	.	.	Due date 3
11/30/2020	22	M	Experimental Evolution	.	2-3	.
12/2/2020	23	W	<i>Student presentations</i>	.	.	.
12/7/2020	24	M	<i>Student presentations</i>	.	.	.
12/9/2020	25	W	Human Evolution I	21	2-3	.
12/14/2020	26	M	Human Evolution II	.	2-3	Assigned 4
12/16/2020	27	W	READING WEEK	.	.	.
12/21/2020	--		-- <b>Finals week (no class)</b>	.	.	Due date 4
12/23/2020	--		END OF SEMESTER	.	.	.