BIOL402 - Evolution
Winter 2026

This course explores the evidence supporting evolution as a scientific theory, its role as the main unifying theory of biology, and how it guides scientific inquiry. Topics covered include phylogeny, the history of life, natural selection and adaptation, the evolution of sex, speciation, coevolution, and macroevolution. This course will also explore controversies and common misconceptions about evolution.

Instructor:
Dr. Stavrinides
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Office: LB250

Lecture time: MWF 9:30-10:20

Location: CL128

Learning Objectives:

- Gain an understanding of the link between evolution and other disciplines within the life sciences
- Understand common ancestry and how evolutionary processes operate
- Develop an understanding of the genetic underpinnings of the evolutionary process, and how evolutionary forces impact genetic variation
- Understand how different methods and approaches are used to explore evolutionary history

Recommended Textbook (library copies available for short-term loan):

Zimmer and Emlen. *Evolution - Making Sense of Life.* (1st, 2nd or 3rd ed). Roberts and Company.

Online Resources:

The URCourses site will be continually updated with lecture notes and supplementary material.

Grading:

*Exam I	25%
*Exam II	25%
*Exam III	25%
Presentation	15%
Participation	10%
	100%

*Required course component.

Lecture Outline:

Date	Lecture	Topic
January 7, 2026	Lecture 1	History of Evolutionary Theory
January 9, 2026	**Class Discussion**	**Misconceptions in Evolution**
January 12, 2026	Lecture 2	Tree of Life
January 14, 2026	Lecture 3	Raw Material I
January 16, 2026	**Presentations**	**Group 1**
January 19, 2026	Lecture 4	Raw Material II
January 21, 2026	Lecture 5	Genetic Drift
January 23, 2026	**Presentations**	**Group 2**
January 26, 2026	Lecture 6	Selection
January 28, 2026	Lecture 7	Genetical Theory
January 30, 2026	**Presentations**	**Group 3**
February 2, 2026	**EXAM I (Lectures 1-7)**	
February 4, 2026	Lecture 8	Molecular Evolution I
February 6, 2026	**Presentations**	**Group 4**
February 9, 2026	Lecture 9	Molecular Evolution II
February 11, 2026	Lecture 10	Genes to Traits
February 13, 2026	**Presentations**	**Group 5**
February 16, 2026		
February 18, 2026	**WINTER BREAK**	
February 20, 2026		
February 23, 2026	Lecture 11	History of Life
February 25, 2026	Lecture 12	History of Life
February 27, 2026	**Presentations**	**Group 6**
March 2, 2026	Lecture 13	Macroevolution
March 4, 2026	Lecture 14	kt Extinction
March 6, 2026	**Presentations**	**Group 7**
March 9, 2026	**EXAM II (Lectures 8-14)**	
March 11, 2026	Lecture 15	Sex
March 13, 2026	**Presentations**	**Group 8**
March 16, 2026	Lecture 16	Speciation
March 18, 2026	Lecture 17	Coevolution
March 20, 2026	**Presentations**	**Group 9**
March 23, 2026	Lecture 18	Behaviour I
March 25, 2026	Lecture 19	Behaviour II
March 27, 2026	**Presentations**	**Group 10**
March 30, 2026	Lecture 20	Human Evolution
April 1, 2026	**EXAM III (Lectures 15-20)**	
April 3, 2026	**HOLIDAY**	
April 6, 2026	**Presentations**	**Group 11**
April 8, 2026	**Presentations**	**Group 12**
April 10, 2026	**Presentations**	**Group 13**
April 13, 2026	**Presentations**	**Group 14**

Exams

Exams are non-cumulative, and are held during scheduled lecture times. Each exam covers lecture material and presentations since the last exam. There are no make-up exams. Students who fail to write an exam will be assigned a grade of zero for that exam. Students with a legitimate reason for missing an exam must write a missed exam within 36 hours of the scheduled exam date, otherwise a grade of zero will be assigned for that exam. The value of the exam cannot be transferred to any other course component. Exam grading is based on a standardized rubric that is applied to all students; consequently, individual exams cannot be regraded.

Presentation (Individual)

Each student will select one data paper that describes a recent advance or finding (published in 2024 or later) and will explain that paper to their peers. The paper must be a data paper on evolution (has a Materials and Methods section), not a review article. Guides for potential topics (which are in the form of discussion questions) are available on URCourses. These are only guides, so you can select a topic that does not appear in the list of questions. Any paper you select should cover one of the topics we covered in the 3 lectures before or 3 lectures after your presentation date.

Your presentation date will be assigned at random (see Presentation Schedule), with 5-6 students presenting each presentation day. **SAVE YOUR PRESENTATION DAY.**

Students presenting should arrive early with their presentation on a USB/Flash drive, ready to copy it to the PC Desktop before class begins as students will not have time to access their email. If you intend to show a video embedded in your Powerpoint presentation, ensure you bring the video along as an MP4 on your flash drive in the event that the video will not play from within the presentation.

The **8 minute** Powerpoint presentation must include:

1) A **Here's My Paper** slide that clearly shows the title, authors, and publication year of the article
2) a general **Background** to the topic. You can use other primary literature to help provide your audience with a good understanding of the topic. Please feel free to use resources (images, graphs, illustrations, videos) to provide a proper background.
3) an introduction to the paper's **Research Question**/ purpose/ impetus/ rationale of the study
4) a description of each of the major **Results** of the paper, which includes a very very brief description of the experimental methods used to obtain each major result (just enough for the class to understand how the researchers got their results):

   Result 1, here's what they did, here's what they discovered;
   Result 2, here's what they did, here's what they discovered;
   etc.

   Do not describe the Materials and Methods in detail, or separately from the Results, and do not include a "Discussion" section in the presentation.

5) the **Significance**/implications/contributions of the work.
6) You can cite the source directly on the slide (author, year), and include the **References** (in any format) at the end.

Presentation Schedule:

Day	Date	Group
Fri	16-Jan	Group 1
Fri	23-Jan	Group 2
Fri	30-Jan	Group 3
Fri	6-Feb	Group 4
Fri	13-Feb	Group 5
Fri	20-Feb	**BREAK**
Fri	27-Feb	Group 6
Fri	6-Mar	Group 7

Day	Date	Group
Fri	13-Mar	Group 8
Fri	20-Mar	Group 9
Fri	27-Mar	Group 10
Fri	3-Apr	**HOLIDAY**
Mon	6-Apr	Group 11
Wed	8-Apr	Group 12
Fri	10-Apr	Group 13
Mon	13-Apr	Group 14

Evaluation

Content (Relevant, Engaging)	6%
Clarity of Speaker/Explanations/Engagement	5%
Logic of Organization/Proper Structure/Flow	3%
Slide Style/Aesthetics	1%
TOTAL:	15%

Penalties
-2% (out of 15%) if overtime
-2% (out of 15%) if reading or sounds memorized/scripted

Topic Selection Tips:

- Avoid articles that are focused on mutations that are not inherited, articles on cancer, and articles that are heavy on mathematical modeling of evolution
- Read and understand the article before you decide to present it. If you are unsure whether an article is suitable, you may send the PDF to the instructor no later than 72 hours (3 days) before your presentation time.
- If you are having trouble identifying an article, contact the instructor no later than 108 hours (4 days) before your presentation time.

Slide Tips:

- Do not fill your slides with text.
- Use 3-5 bullet points (not complete sentences), and use relevant images
- Be careful of using themes (font style and colour, and colour combinations) that make your text difficult to see.

Speaking Tips:

- Speak directly to the class, and make eye contact when possible.
- Convey enthusiasm and interest in your topic.
- Do not memorize what you want to say. Do not read your slides. Do not read from a script. Do not read from the Notes section below the Powerpoint slide. Do not bring cue cards. Do not write cues on your hand, arm, or any other part of your body. Do not hold anything from which you can read.

- Identify key talking points for each slide, and try to hit those points. If you forget a point, just say, "I forgot to mention….." and then say what you missed.
- Do not spend too long on one slide.
- Do not let your voice go up at the end of a sentence.

Participation

Students must attend all student presentation days, and must submit a paper copy of the Presentation Feedback Worksheet at the end of each presentation class to be eligible for participation marks. Worksheets must be completed in their entirety. Worksheets containing lazy responses, including "n/a", "can't think of anything", "it was perfect", and "none", or worksheets that excessively recycle the same types of comments will be penalized. Students must be physically present in the class, and may only submit their own worksheet. Students may not submit someone else's sheet. Students submitting more than one worksheet will forfeit their participation marks as well as those of the individuals whose worksheets they are submitting. If you miss a presentation day for any reason, you cannot make up the missed participation points, and the points cannot be assigned to any other graded component. Electronic submissions will not be accepted. You do not need to submit a Feedback Worksheet for your presentation day, but you must remain for the entire class.

Course Policies:

1) This course is governed by the University of Regina *Academic Regulations* and the *Student Code of Conduct*.
2) The passing grade for this course is 50%.
3) There is no final exam and there are no make-up exams. Students who fail to write an exam will be assigned a grade of zero for that exam. For students with a legitimate reason for missing an exam must write a missed exam within 36 hours of the scheduled exam date, otherwise a grade of zero will be assigned for that exam. The value of the exam cannot be transferred to any other course component.
4) The grading scheme for the course is the same for all students in the course. Grades cannot be increased through any means, such as redoing assignments or doing extra work, and the grade allocation for each course component cannot be adjusted or altered.
5) Exams, assignments, and presentations cannot be regraded as the initial grading is based on a common rubric that is applied to all students. Students who identify a calculation error or who believe that the assessment rubric was not applied correctly should bring the error to the attention of the instructors.

Plagiarism:

Plagiarism is using the words, ideas or thoughts of others and presenting them as your own. All students must read "Recognizing and Avoiding Plagiarism" located here:
https://www.uregina.ca/student/ssc/assets/docs/pdf/Recognizing-and-Avoiding-Plagiarism.pdf
Students must also review the Plagiarism Spectrum located here:
https://www.turnitin.com/static/plagiarism-spectrum/

Accommodations:

Students in this course who may require specialized accommodations should contact the Center for Student Accessibility (https://www.uregina.ca/student/accessibility/). Accommodations must be requested each term, and are not retroactive.

Grade Appeals

Grade appeals are described in the Academic Calendar (see the Academic Calendar for the most up to date information). For both procedural and substantive appeals, students must submit their appeal within 20 business days of receiving the grade for a piece of course work. In the case of an appeal of the final grade, the appeal must be made within 20 business days of the final grade being posted to the student's UR Self-Service account.

Procedural (ie. handled by the course instructor)
A procedural appeal of grade is initiated when a student believes that there has been a procedural error in the calculation of their grade. In these cases, the student will contact the instructor of the course and make a request for the calculation of their grade to be reviewed. The instructor will review the grading records and, if an error is found, the grade will be changed accordingly. A student who is unable to contact the instructor should contact the faculty, federated college, or academic unit offering the course so that it can be escalated to the appropriate faculty member for assistance. Grade changes will be submitted to the Registrar's Office.

Substantive (ie. handled by the Department Head or designate)
A substantive appeal of grade should be initiated **ONLY** if:

1. a student believes a grade to course work was assigned on some basis other than academic achievement;
   OR
2. the published evaluation standards differ from the evaluation standards applied to the assigned grade.

Substantive grade appeals initiated due to something other than one of the above two scenarios will be denied.

To initiate a substantive appeal of grade, the student must first have an informal discussion about the grade with the course instructor. This informal discussion can help to resolve any misunderstandings as well as to help the student understand how the grade was determined. If a student is not satisfied with the outcome of the informal discussion, the student may submit a formal appeal of grade to the Registrar's Office:

https://www.uregina.ca/registrar/grade-appeals.html

The following must be submitted:

- a completed Appeal of Grade form;
- a letter specifying the grounds for the appeal and the date of the informal discussion with the instructor;
- the original (graded) copy of the course work (students are responsible to retain original (graded) copies of their course work, including downloading copies of graded course work from URCourses.
- the required fee.

Students are not to contact the Department Head, Associate Deans, or the Dean for grade appeals.