

IB 302: Evolution – Course Syllabus

Spring 2021

Instructors

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Course Information

Course website: <https://learn.illinois.edu/course/view.php?id=56458>

Lecture Time & Location: 12-12:50PM MWF, Zoom Online Conference

Credit: 4 hours

Prerequisites: IB150, MCB150, IB204

Communication

If you have questions on course logistics, planned absences, homework or exam questions, please contact the Course Coordinator (Jules Chabain). If you have questions regarding the labs or lab assignments, first contact your lab TA, and if that does not resolve your question/issue, contact our Lab Coordinator (Dr. Lily Arias).

Required Texts and Materials

1. ***Evolutionary Analysis, Fifth Edition, Jon C. Herron, Scott Freeman, and Benjamin Cummings***
 - (a) Physical copies are available at the University Bookstore.
 - (b) E-Textbook: <http://www.coursesmart.com/evolutionary-analysis-fifth-edition/jon-c-herron-scott-freeman/dp/9780321706966>
2. Lab Manual Online in Moodle (updated each week with the next weeks lab)
3. SimBio Lab. Students will also be required to purchase a license from SimBio to complete lab #1 for \$6. This purchase must be made online. Details as to how to do this will be arriving during lecture, and posted/emailed on the course Moodle.

Introduction to IB302

“Nothing in biology makes sense except in light of evolution” – T. Dobzhansky.

Welcome to Evolution! Evolution is the unifying concept of biological science. Most people are familiar with evolution as the subject of controversy in elementary and high school education. In reality, evolutionary ideas link all the different fields of biology.

This course is a broad introduction to evolutionary biology, including natural selection and microevolution, phylogeny, speciation, molecular evolution, macroevolution and the fossil records. The laboratory emphasizes a survey of biodiversity and processes and patterns of evolution.

Student Learning Outcomes

1. Students learn how evolution is the central theoretical explanation for all of life and all its diversity of form and function.
2. Students learn that evolution is a significant part of understanding who we are as humans.
3. Students learn practical skills like constructing phylogenetic trees (used in understanding the great diversity of medically important bacteria and viruses), calculating the statistics of genetic differences between populations (used in medical genetics), and calculating genetic relatedness of individuals (used in forensics).

Course Structure

IB302 is a four-hour credit course and it therefore has both lecture and lab components. The lecture component will comprise 70% of your final grade, and the laboratory component will comprise 30%. You should expect to spend 9 hours per week outside of class working on course and lab materials.

Course Component	Points	Percent
Exam 1	150	15%
Exam 2	150	15%
Exam 3	150	15%
Participation	250	25%
Labs	300	30%
Course Total	1000	

Participation

Component	Points	Percent
Homework Assignments	132	13.2%
In-class Participation	118	11.8%
Participation Total	250	25%

Labs

Week	Lab	Points	Percent
Week 1	No Lab		
Week 2	Lab 1 - HIV Clock	25	8.3%
Week 3	Lab 2 - Phylogenetics	25	8.3%
Week 4	Lab 3 - Genetic Drift	25	8.3%
Week 5	Lab 4 - Selection	25	8.3%
Week 6	Lab 5 - Quantitative Genetics	25	8.3%
Week 7	Lab 6 - Human Evolution	25	8.3%
Week 8	Lab 7 - Fossils 1	25	8.3%
Week 9	Lab 8 - Fossils 2	25	8.3%
Week 10	Lab 9 - Diversity 1	25	8.3%
Week 11	Lab 10 - Diversity 2	25	8.3%
Week 12	No Lab		
Week 13	Lab 11 - Diversity 3	25	8.3%
Week 14	Lab 12 - Practical Exam	25	8.3%
Lab Total		300	30%

Labs

There will be 12 weekly labs, each is worth 25 points. If you miss a lab, you may attend another lab section during the same week, at the discretion of the TA in charge of the section. Labs will not be accepted once the due date has passed without an excused absence.

Homeworks

There will be 12 weekly homeworks on Moodle. Each is worth 12 points and we will drop your lowest grade. Late homeworks will not be accepted.

In-class Participation

Every lecture there will be one or more Zoom poll questions. Students are responsible for ensuring that they are logged into the Illinois zoom system (illinois.zoom.us) using your University of Illinois NetID. Each individual class with a poll question will provide 2 points toward the participation grade. *If a student is found using the NetID of another student or misusing the Zoom login system, it will be considered a violation of Academic Integrity.*

In addition, at least once a week we will supply class time for in-class assignments. For these assignments, you will work in groups, based on your lab section, and you will turn in the in-class work which will be worth 4 points per assignment toward the participation grade. You will turn in the assignment on the Moodle website.

If a student were to complete all in-class assignments (Zoom poll and group work), they would earn 136 total points. However, the participation grade maxes out at 118 points, so it is possible to miss a few participation assignments without affecting your grade. **This means it is not possible to make up participation points if missed, whether or not a particular absence is excused.**

Exams

You must take all three exams. If you have a known conflict, you must notify the instructors in advance. If you have an unavoidable medical or personal emergency, then you may take a make-up exam given the absence is properly documented (see below). Exams will cover lecture material, assigned readings, and material covered in labs, homework and recommended problems. You may use basic scientific calculators for exams.

Expectations of Students

Students are expected to

1. Come to class (lecture and lab).
2. Read the textbook before each lecture. Read the lab manual and reading for discussion before each lab.
3. Complete the weekly homework assignment online (similar questions will be on exams).

Read and abide by the Code of Policies and Regulations Applying to All Students at <http://www.admin.uiuc.edu/policy/code/i>
Please be aware that this syllabus may change during the semester. Changes to the syllabus will be announced in class and on the Moodle site.

Absences

Attendance in lecture, labs, and exams is mandatory. If a student misses part of the course due to illness or a family emergency, work may not be made up without a note from the Dean of Students. For planned absences, students must make arrangements with the instructors prior to the event, at the discretion of the instructor. If a student is involved in a University-sponsored team or activity or military service etc. requiring regular travel, arrangements for completing work off-schedule must be made at the beginning of the course.

Student Accommodations

To ensure that disability-related concerns are properly addressed from the beginning, students with disabilities who require assistance to participate in this class are asked to contact the instructors as soon as possible. All accommodations will follow the procedures as stated in Article 110 of the Student Code (http://studentcode.illinois.edu/article1_part1_1110.html).

Academic Integrity

According to the Student Code, "It is the responsibility of each student to refrain from infractions of academic integrity, from conduct that may lead to suspicion of such infractions, and from conduct that aids others in such infractions." Academic integrity means being honest about your intellectual work. In the context of our course, this means that you assert that work you submit for the course is a product of your own intellectual effort and not the work of someone else. Please know that it is our responsibility as instructors to uphold the academic integrity policy of the University, which can be found here: http://studentcode.illinois.edu/article1_part4_1-401.html. Some specific examples of activities that are prohibited in the course and may result in serious penalties, up to receiving a failing grade in the course, include:

1. Cheating on exams, having someone else take your exam, or having someone else answer in-class questions in your absence;
2. Copying the work of others (plagiarism), whether during an exam or in problem sets or lab work;
3. Posting of course materials, including, but not limited to, lectures, assignments, or test questions, on any website or in any online forum, whether privately or publicly available.

Incidences regarding academic integrity may be adjudicated through the University Faculty Academic Integrity Reporting system.

Maintaining a good learning environment

We expect everyone to be respectful of TAs, class members, and instructors. During lecture or lab, we should all maintain an environment conducive to learning and refrain from interrupting the course environment. Harassment or other like misconduct will not be tolerated.

Netiquette

Online interactions can easily become heated and fraught. Typing something rashly can happen to the best of us on accident. This means that we have to be kind toward and cognizant of everyone around us when we participate in the forums or other discussions. With this in mind, let's follow these best practices.

1. Write or speak in a way that is affirming of everyone's right to be a member of the class. We will all get more out of the course if we conduct ourselves in neighborly and gracious ways.
2. Stay on topic. Posts to the website and questions or comments during lectures and discussion should pertain directly to the topic at hand. Do not post anything that might be regarded as harassing or inflammatory. If you have a question about a specific item that you would like to post but are worried that it may not be appropriate, please feel free to consult with us about it.
3. Respect one another's privacy. If someone does not want to engage with you on a topic, respect their decision and leave them be. Likewise, in a highly connected environment, it is very easy to pester someone to the point where they feel they are being stalked. Moderate your communication to what is necessary and respect people's boundaries.
4. Don't type in anger or frustration. It is very easy to type things you wouldn't ordinarily say to someone in a face to face setting. If you are feeling upset or excited, take in a breath of fresh air and give what you want to say some thought.
5. Expect to be welcomed and respected. If you find yourself in a situation where you feel put upon by others, be sure to contact us about it and the problem will be corrected.

Copying material to outside sources

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We ask you to refrain from doing so because we put considerable effort into creating material for the course and we wish to maintain control over that material to enhance the experience of students yet to take evolution. Disseminating course materials to unauthorized recipients also cheapens your experience in the course.

We routinely monitor online websites and forums to ensure course materials are not being re-distributed.

Sexual Misconduct Policy and Reporting Statement

The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University's Title IX and Disability Office. In turn, an individual with the Title IX and Disability Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options. A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found here: <https://wecare.illinois.edu/resources/students/#confidential>. Other information about resources and reporting is available here: wecare.illinois.edu.

Inclusivity Statement

The effectiveness of this course is dependent upon the creation of an encouraging and safe classroom environment. Exclusionary, offensive or harmful speech (such as racism, sexism, homophobia, transphobia, etc.) will not be tolerated and in some cases subject to University harassment procedures. We are all responsible for creating a positive and safe environment that allows all students equal respect and comfort. We expect all of us to help establish and maintain an environment where we can contribute without fear of ridicule or intolerant or offensive language.

Support Resources and Supporting Students in Distress

As members of the Illinois community, we each have a responsibility to express care and concern for one another. If you come across a classmate whose behavior concerns you, whether in regards to their well-being or yours, we encourage you to refer this behavior to the Student Assistance Center (1-217-333-0050) or online at odos.illinois.edu/community-of-care/referral/. Based upon your report, staff in the Student Assistance Center reaches out to students to make sure they have the support they need to be healthy and safe. Further, as a Community of Care, we want to support you in your overall wellness. We know that students sometimes face challenges that can impact academic performance (examples include mental health concerns, food insecurity, homelessness, personal emergencies). Should you find that you are managing such a challenge and that it is interfering with your coursework, you are encouraged to contact the Student Assistance Center (SAC) in the Office of the Dean of Students for support and referrals to campus and/or community resources. The SAC has a Dean on Duty available to see students who walk in, call, or email the office during business hours. For mental health emergencies, you can call 911 or contact the Counseling Center.

Family Educational Rights and Privacy Act (FERPA) Statement

Any student who has suppressed their directory information pursuant to Family Educational Rights and Privacy Act (FERPA) should self-identify to the instructor to ensure protection of the privacy of their attendance in this course. See <https://registrar.illinois.edu/academic-records/ferpa/> for more information on FERPA.

Emergency Response Statement

Emergency response recommendations can be found at the following website: <http://police.illinois.edu/emergencypreparedness/>. We encourage you to review this website and the campus building floor plans website within the first 10 days of class. <http://police.illinois.edu/emergency-preparedness/buildingemergency-action-plans/>.

Course Schedule

Date	Day	Topic	Instructor	Reading
Jan 25	Mon	Introduction - HIV & Evolution 1	Roseman	Ch 1
Jan 27	Wed	HIV & Evolution 2	Roseman	Ch 1
Jan 29	Fri	HIV & Evolution 3	Roseman	Ch 1
Feb 1	Mon	The Pattern of Evolution/Natural Selection	Roseman	Ch 2
Feb 3	Wed	Phylogeny 1: Reading trees	Roseman	Ch 3
Feb 5	Fri	Phylogeny 2: Making trees	Roseman	Ch 4
Feb 8	Mon	Variation	Catchen	Ch 5
Feb 10	Wed	Mendelian Genetics 1: Selection and Mutation	Catchen	Ch 6
Feb 12	Fri	Mendelian Genetics 1: Selection and Mutation	Catchen	Ch 6
Feb 15	Mon	Mendelian Genetics 2: Migration and Drift	Catchen	Ch 7
Feb 17	Wed	No class: Break		
Feb 19	Fri	Mendelian Genetics 2: Migration and Drift	Catchen	Ch 7
Feb 22	Mon	Linkage and Sex	Catchen	Ch 8
Feb 24	Wed	Linkage and Sex	Catchen	Ch 8
Feb 26	Fri	Exam 1		
Mar 1	Mon	Quantitative Genetics	Roseman	Ch 9
Mar 3	Wed	Quantitative Genetics	Roseman	Ch 9
Mar 5	Fri	Adaptation	Roseman	Ch 10
Mar 8	Mon	Adaptation	Roseman	Ch 10
Mar 10	Wed	Adaptation	Roseman	Ch 10
Mar 12	Fri	Sexual Selection	Catchen	Ch 11
Mar 15	Mon	Sexual Selection	Catchen	Ch 11
Mar 17	Wed	Sexual Selection	Catchen	Ch 11
Mar 19	Fri	Social Behavior	Catchen	Ch 12
Mar 22	Mon	Social Behavior	Catchen	Ch 12
Mar 24	Wed	No class: Break		
Mar 26	Fri	Aging and life history	Roseman	Ch 13
Mar 29	Mon	Aging and life history	Roseman	Ch 13
Mar 31	Wed	Evolution and Human Health	Roseman	Ch 14
Apr 2	Fri	Evolution and Human Health	Roseman	Ch 14
Apr 5	Mon	Exam 2		
Apr 7	Wed	Genome Evolution	Catchen	Ch 15
Apr 9	Fri	Genome Evolution	Catchen	Ch 15
Apr 12	Mon	Genome Evolution	Catchen	Ch 15
Apr 14	Wed	Species and Speciation	Catchen	Ch 16
Apr 16	Fri	Species and Speciation	Catchen	Ch 16
Apr 19	Mon	Origin and Evolution of Early Life	Roseman	Ch 17
Apr 21	Wed	Evolution and the Fossil Record	Roseman	Ch 18
Apr 23	Fri	Evolution and the Fossil Record	Roseman	Ch 18
Apr 26	Mon	Evolution and the Fossil Record	Roseman	Ch 18
Apr 28	Wed	Development and Evolution	Catchen	Ch 19
Apr 30	Fri	Development and Evolution	Catchen	Ch 19
May 3	Mon	Human Evolution Fossils	Roseman	Ch 20
May 5	Wed	Exam 3		