



EVOLUTION – PCB 4674

Fall 2015, Biscayne Bay Campus
Glenn Hubert Library, room 265
Tuesdays, 3.30 pm – 6.00 pm



Professor: Dr. Jose M. Eirin-Lopez
Marine Sciences Building, Office 360 (BBC)
lab website: chromevol.com
lab facebook: [/chromevol](https://www.facebook.com/chromevol)
lab twitter: [@chromevol](https://twitter.com/chromevol)

The goal of this course is to learn the main theories and concepts behind the biological process known as **Evolution**: the **change over time** in one or more **inherited traits** (anatomical, behavioral, biochemical) **found in populations of individuals**. The major sources of such inherited variants are mutation, genetic recombination and gene flow, which will be the major emphases of this course. This course will integrate topics from **Ecology** and **Genetics**, which are pre-requisites.

A. COURSE WEBSITE

FIU-Blackboard educational tool (<http://fiu.blackboard.com>). The course is identified here as: "**1158 - PCB4674 - Evolution - Section B51 - Fall 2015**".

B. COURSE DESCRIPTION

The course is a survey of modern evolutionary theory, including experimental and empirical evidence for evolution from a variety of scientific disciplines. For that purpose, it is divided into four parts: **Part I** will introduce the students to the **evidence of evolutionary change** and to natural selection as an agent of these changes; **Part II** will explore the other **mechanisms that cause change through time**: mutation, migration and genetic drift; **Part III** will explore **adaptation** in depth; **Part IV** deals with the **consequences of the four evolutionary processes** over the sweep of Earth's history with an emphasis on humans.

C. COURSE REQUIREMENTS

This course bridges the Ecology (PCB 3043) and Genetics (PCB 3513) courses taken previously by upper division students. Students who enroll to PCB 4674 **MUST HAVE PREVIOUSLY TAKEN AND PASSED WITH A SATISFACTORY GRADE (C or higher grade) PCB 3043 and PCB 3513**. These two courses are mandatory (see course catalogues) and are required for all students who want to enroll in PCB 4674. While permit numbers will not be usually issued to students who have not fulfilled these requirements, exceptions can be made in specific circumstances (please contact Professor Eirin-Lopez for details).

D. COURSE TEXTBOOK AND LECTURES

Main Text: Evolutionary Analysis, 4th/5th Edition, by Scott Freeman & Jon C. Herron, Pearson Education.

Additional Bibliographic Sources: Evolution, 3rd Edition, by Douglas Futuyma, Sinauer Associates. Origins of Genome Architecture, by Michael Lynch, Sinauer Associates. Evolution, 3rd Edition, by Mark Ridley

Lecture notes and online material: Will be available at the FIU-Blackboard educational tool (<http://fiu.blackboard.com>) organized in the folders corresponding to the different sessions.

E. CLASS SCHEDULE

Each session will be organized into 2 parts: **part "a"** runs from 3.30 to 4.45 pm, followed by a short break (15 min) after which **part "b"** takes place, from 5.00 to 6.00 pm.

Session	Topic	Part	Textbook Chapter
Aug 25 (1)	a. Organization/Introduction	I	
	b. What about God? (video)	I	
Sep 01 (2)	a. Evolution in action: lessons from HIV	I	1
	b. Why evolution is true	I	2
Sep 08 (3)	a. Your Inner Fish (video)	I	
	b. free time for discussion	I	
Sep 15 (4)	a. Darwin's hard road to natural selection	I	3
	b. What lies behind natural selection?	I	3
Sep 22 (5)	a. Evolutionary trees tell evolutionary stories	II	4
	b. The power of mutation	II	5
Sep 29 (6)	a. Do I evolve or do we evolve?: genes in populations (I)	II	6-7
	b. Ch-ch-ch-ch-changes: genes in populations (II)	II	6-7
Oct 06	EXAM PREP 3.30 pm - 6.00 pm		
	Professor available online & office (NO CLASS)		
Oct 13	MIDTERM EXAM 01 (sessions 1 - 6)		
	Glenn Hubert Library 265, 3.30 pm - 6.00 pm		
Oct 20 (7)	a. It all comes down to adaptation	II	10
	b. Is sex necessary after all?	II	8
Oct 27 (8)	a. How attractive do you need to be? Sexual selection	II	11
	b. Family values: The evolution of social behavior	III	12
Nov 03 (9)	a. Aging and other life-history characters	III	13
	b. Pathogens vs Humankind: Evolution of human health	III	14
Nov 10 (10)	a. Genome evolution: Changes in our instructions manual	III	15
	b. How do new species form?: Mechanisms of speciation	III	16
Nov 17 (11)	Student's Evaluation of the Course (extra credit)	IV	17
	a. Evolution pioneers: The first living things	IV	17
	b. Take your stinking paws off me you damn dirty ape!: A primer of human evolution	IV	20
Nov 24	Thanksgiving break		
	Thanksgiving break		

Dec 01	EXAM PREP 3.30 pm - 6.00 pm		
	Professor available online & office (NO CLASS)		
Dec 08 (12)	FINAL EXAM		
	Glenn Hubert Library 265, 2:15pm - 4:15pm		

This is a TENTATIVE class schedule. Therefore material for exams will be based only on lectures covered during the regular class hours prior to the exam day (EXCEPT FOR EXTRA CREDIT, see details in section L). DATES OF EXAMS ARE SUBJECT TO CHANGE depending on how far the Professor proceeds with the lectures. All students are expected to be available to take an exam or fulfill any class assignment such as pop-quizzes during the regular class days indicated in this syllabus.

F. TEACHING STAFF

Professor: Dr. Jose M. Eirin-Lopez

Room: MSB360, Marine Science Building, Biscayne Bay Campus

Phone: 305-919-4000

Email: jeirinlo@fiu.edu

Website: chromevol.com

Office Hours: Fridays 10AM - 1PM (or any other time, **BUT ALWAYS make appointment by email first**)

G. CLASS SCHEDULE

Class will begin at 3:30 pm SHARP. Please be on time, as IMPORTANT ANNOUNCEMENTS WILL BE MADE AT THE BEGINNING OF THE CLASS, most of them critical to pass the course.

H. COMMUNICATION WITH PROFESSOR AND INSTRUCTOR

Dr. Eirin-Lopez will be always available for questions and help. However, if you need to meet outside office hours **PLEASE SEND AN EMAIL IN ADVANCE TO SCHEDULE AN APPOINTMENT** (Dr. Eirin-Lopez may be reached by phone or email). In this latter case **it is CRITICAL that you CLEARLY identify yourself in the subject of the email to avoid spam filters and similar**, to this end please include the following in the email subject: "PCB4674, Evolution, (add your LAST NAME, FIRST NAME)".

Important announcements regarding the progress and organization of the course will be posted in the FIU-Blackboard educational tool (<http://fiu.blackboard.com>). This notifications will be sent to **YOUR FIU EMAIL ACCOUNT** associated to the FIU-Blackboard, please **CHECK THIS EMAIL AT LEAST ONCE A DAY** for important messages (in case you don't check your FIU email account that often, YOU MUST MAKE SURE that you have it linked to your main email account).

Please note that questions about exam content will NOT be answered on the day of the exam. Issues concerning the course will **ONLY BE DISCUSSED** between the Professor and the student; **third parties (such as relatives, spouses, friends, class-mates) CANNOT be involved in any discussions concerning any particular issue that the student may have during this course.** These issues include but are not limited to grades, class performance, etc.

I. CLASS CONDUCT & EMAIL LIST

Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas, and community service. **All students should respect the right of others to have an equitable opportunity to learn and to honestly demonstrate the quality of their learning.**

Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. **All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook.**

1. Students are expected to BEHAVE AS REASONABLE ADULTS JUST LIKE IN ANY UNIVERSITY CLASSROOM IN ANY OTHER SCHOOL. It is important to have respect towards the Professor and fellow classmates. Inconsiderate, disrespectful, dishonest, or disruptive behavior, as the instructor or your fellow classmates perceive it, or as is **described in the Student Handbook**, is unacceptable for adults in this course. The instructor reserves the right to ask you to leave or have you removed if such behavior is present. Such behavior may bring about official disciplinary procedures as outlined in the Student Handbook.

2. **Please turn off your cell phones, laptops and beepers. NO LAPTOPS (unless related to class tasks), NO EATING, and NO CHATTING are allowed during class sections.** Students are not allowed to bring pets, family members, friends, etc. during class sections. Students who attend the lectures are expected to take notes. During lectures, students are **NOT ALLOWED TO READ NOTES/NEWSPAPERS/BOOKS/MAGAZINES OR PREPARE HOME-WORK FOR OTHER COURSES**, such behavior is disruptive toward the instructor and the rest of the students. Students are welcome to interrupt the instructor any time that an idea of concept is not clear. Students who are not officially registered for this course are not allowed to attend the class lectures (see section I.6 of this syllabus for students with an incomplete grade).

3. Students are required to arrive ON TIME to class. **Class attendance WILL NOT be taken, and WILL NOT be required to pass the course. Student performance will be evaluated ONLY on the basis of MIDTERM and FINAL EXAMS (see below details on exam policy).** That being said, **you will be able to pass the course with HALF the effort** if you attend the lectures.

4. All students MUST follow the directions outlined in this syllabus, announced in class, and distributed via email or computer mailing list, plus others. **THE PROFESSOR IS NOT RESPONSIBLE FOR ISSUES RESULTING FROM LACK OF KNOWLEDGE DUE TO STUDENTS NOT CHECKING THESE RESOURCES.** Also, not having access to these resources is not an excuse (email not working, internet was down, biology web-site is not working, library web-site is not working, I wasn't in class when an announcement was made, etc). ALL the important announcements of this course will be made at the beginning of class (first five minutes) and notified through **Blackboard**. However, there is a chance that some class announcements (including material for the exam) will NOT BE posted on the web-page of this course and/or will not be sent by email. **THIS SYLLABUS AND THE CLASS SCHEDULE ARE SUBJECT TO CHANGES.** Announcements made in class will have priority, therefore although class attendance will not have any direct effect on exam grades it will help the student to be aware of any class development not announced by email. Please be sure you do not come late because you don't want to miss any important announcements.

5. An incomplete grade will be delivered under VERY EXCEPTIONAL documented circumstances such as MAJOR sudden and unexpected serious health problem of the student or his/her family. Other excuses will NOT BE ACCEPTED to provide an incomplete grade.

6. **Students with an incomplete grade from a previous section of Evolution MUST contact Dr. Eirin-Lopez during the first week of the semester** so that they she/he may be included in the list of students who are allowed to join the course activities. Dr. Eirin-Lopez will check with the previous instructor of the student before allowing him/her to join the course. These students can come to the lectures. These students **WILL NEED TO CONTACT Dr. Eirin-Lopez the**

week of the final exam so that their final grade can be implemented.

7. Cheating policy: **The “Student Handbook” will be STRICTLY ENFORCED regarding cheating.** Procedures for both formal and informal procedures can be found under the section “Academic Misconduct” in the “Conduct & Policies” chapter. Anyone caught cheating will be asked to leave the class, will be given an “F” for the whole course and a petition will be sent to Academic Affairs. **NO EXCEPTIONS.**

J. TEST BANKS

Self-evaluation tests with multiple choice questions (and their corresponding answers) will be available in Blackboard after each session (2 tests consisting of 5 questions/each per session). Results from these tests WILL NOT be taken into account for the final grade, on the contrary, these tests will give students a hint on which topics are more relevant, types of questions in the exams, etc.

K. EXAMS AND GRADES

There will be **TWO exams (one midterm and a final exam).**

The **MIDTERM (sessions 1 - 6)** will consist of **100 multiple choice test questions** (only one correct answer possible). **SOME OF THESE QUESTIONS** (no more than 50%) will be **extracted from the TEST BANKS**, the rest of the exam will consist of **questions will be DIRECTLY related with the contents explained in class** and explicitly addressed in the class presentations available in blackboard.

The **FINAL EXAM** will consist of two parts: a first part with **100 multiple choice test questions** (only one correct answer possible) corresponding to sessions 1 - 6. The first part of the final is a "second opportunity" for those students who failed the midterm, didn't take it or who just want to increase their grade in the first part of the course. The second part of the final consists of **100 multiple choice test questions** (only one correct answer possible) corresponding to sessions 7 - 11. ALL STUDENTS MUST TAKE THE SECOND PART OF THE FINAL TO COMPLETE THEIR GRADE. Again, in each case, **SOME QUESTIONS** (no more than 50%) will be **extracted from the TEST BANKS**, the rest of the exam will consist of **questions will be DIRECTLY related with the contents explained in class** and explicitly addressed in the class presentations available in blackboard.

Exams will be graded on the basis of the number of correct answers (over a total of 100 points, **wrong answers DON'T penalize**). The **FINAL GRADE** will be the **sum of the grades obtained in the MIDTERM and the FINAL exams.**

Example I

Grade midterm - 75 points

Grade final (part 2) - 100 points

Final grade = 70+100 = 175 points.

Example II

Grade midterm - 20 points

Grade final (part 1) - 90 points (take the first part of the final to boost grade)

Grade final (part 2) - 87 points

Final grade = 90+87 = 177 points.

Example II

Grade midterm - 65 points

Grade final (part 1) - 60 points (take the first part of the final to boost grade but grade is lower)

Grade final (part 2) - 80 points

Final grade = 90+87 = 145 points.

This policy is implemented in case a student has a serious professional/personal conflict or emergency (i.e., job interview, important family event, interview to join another academic program, family emergency, etc.) the day of the midterm.

Final grades will be calculated as:

Grade	Point total
A	180 – 200 points
B+	172 – 179 points
B	160 – 171 points
C+	152 – 159 points
C	140 – 151 points
D	120 – 139 points
F	< 120 points

Letters of recommendation will **ONLY** be written for students who:

- a) **receive an A in this course.**
- b) **complete ALL extra credit activities.**

L. EXTRA CREDIT ACTIVITIES

a) Extra questions in exams about scientific papers. The Professor will choose 4 scientific papers related with the contents taught (2 papers for the midterm, and 2 papers for the Final, papers available in Blackboard). Students willing to get extra credit will have to **read those papers carefully and answer a set of additional questions (5 questions per paper, 10 questions in total in each exam)**. Those questions will be graded in the same way as the regular ones, and **can add up to 20 extra points towards the FINAL GRADE**

b) Student presentations. Every week, the professor will propose topics for student presentations. Students interested in this activity must prepare a 10 minute talk and present it in front of the class the week after. Presentations must be supported by slides with images and/or videos illustrating the point. In order to sign up for this activity, students must send email to the professor (jeirinlo@fiu.edu) indicating the topic of their choice (topics available will be unveiled in class every week). **This activity is limited to ONE presentation per student** (you cannot do more than one). Completion of this activity will add **10 points of extra credit towards the FINAL GRADE.**

c) Completion of the "Student Evaluation" for the Course. Evaluation questionnaires will be handled to students at the beginning of the last class of the course (November 17th at 3.30 pm). Completion of this activity will add **5 points of extra credit towards the FINAL GRADE.**

Example calculation grade from exams and extra credit:

Grade midterm - 75 points

Grade final (part 2) - 100 points

EXTRA CREDIT activity a) = 13 points

EXTRA CREDIT activity b) = 10 points

EXTRA CREDIT activity c) = 5 points

TOTAL GRADE = 175+28+10+5 = 203 points = A

M. GUIDELINES FOR THE DAYS OF THE EXAMS

1. Please bring two sharpened #2 pencils with erasers to all exams. **STUDENTS MUST BRING A VALID PICTURE ID FOR THEIR IDENTIFICATION.** Valid picture IDs are: driving license, FIU ID card, green-card, voter-registration card, or passport. All other materials (including wallets, bags (any size), cell-phones, bottles of waters/soda, etc.) will have to be placed at the front or back of the class, **so it is best not to carry anything to the room on exam day.**

2. If you expect a phone call during the exam because of any kind of emergency, it is your responsibility to arrange for somebody else to answer this phone-call, as you will not be allowed to speak on the phone during the exam.

3. Each student will be assigned to a particular seat by the instructor. **YOU MUST SIGN YOUR EXAM.** It will be turned in to the instructor or assistant when you are finished. **No one can leave unless they have returned the exam and the scantron sheet with the answers. You are not allowed to write anything on the exam. Instead, you must complete your name, FIU student number and exam answers in the scantron sheet provided.** Each multiple-choice question will have four choices, there is **ONLY ONE POSSIBLE ANSWER PER QUESTION.** When you are finished, you must return all materials given to you during the test whether filled out or not.

4. Talking is not allowed. Cheating will be dealt with seriously and severely.

5. Grades will be posted on the **FIU-Blackboard educational tool** (<http://fiu.blackboard.com>), and students will be informed through email. Students can check their exams, but exams will not be given back to the students. Students must check their grades by themselves and not delegate to somebody else to check for them. All students must check their grades as soon as they are posted. Students who are not officially registered in this course will not be allowed to take the exam (see section I.6 of this syllabus for students with an incomplete grade). Students will be allowed to check their exams during a two week period after the grades of each exam are posted. Students will have a second opportunity to check their exams after the final grade of the course is officially posted.

6. The instructor understands that **all students will check their final grades (by themselves and not by somebody else) during the week after each exam** and that they will immediately contact the instructor if they want to review their class performance and final grade. **STUDENTS WILL HAVE ONLY ONE SEMESTER (Spring 2016) to claim for a change of grade.**

7. The day of the exam **WE STRONGLY RECOMMEND STUDENTS COME TO FIU LONG BEFORE THE TIME OF THE EXAM.** YOU must plan well in advance your schedule; **it is YOUR responsibility to be sure that the day of the exam you will not face any conflict with any other extra-curricular activity.** The instructor understands that when the student registers for this class he/she does not have any major conflict that will not allow him/her to be in FIU at least one hour before the beginning of the exam. The instructor also understands that **ALL THE STUDENTS WHO ENROLL FOR THIS COURSE HAVE READ THIS SYLLABUS AND UNDERSTAND AND ACCEPT THE COURSE POLICY.**

N. ARRIVING LATE

PLEASE READ THIS CAREFULLY AS WE WILL FOLLOW A VERY STRICT POLICY ON THIS ISSUE: If you arrive to an exam more than 30 minutes late, or after the first person finishes the test (whichever comes first) you will not be allowed to take the exam. We will not make any exceptions to this rule.

O. REGISTRATION/DROP DATES

Last day to initiate registration without \$100 late fee	Sunday, August 23rd
Classes begin	Monday, August 24th
Last day to add/drop without financial liability	Monday, August 31st
Last day to apply for graduation	Friday, September 18th
Late registration with instructor signature and department stamp	Tuesday, September 1st – Friday, September 4th
Late registration with instructor signature, department stamp, and dean's signature	Monday, September 7th til the end of term
Last day to drop with DR	Monday, November 2nd