UTRGV COURSE SYLLABUS

BIOLOGICAL EVOLUTION 3301-02  Instructor: Dr. Lucia Carreon
FALL 2018  Telephone: 956 882 5197
Email: lucia.carreonmartinez@utrgv.edu

T R 12:05-1:20 PM  Classroom: MAIN 2.502
Office location: BHLSB 2.712 (through doors 2.720)  Office Hours: TBA

Other times by appointment only.

Textbook and/or Resource Material
Evolution, Second Edition- REQUIRED
Carl T. Bergstrom and Lee Alan Dugatkin
W. W. Norton & Company, Inc.
ISBN: 978-0-393-93793-0

Course Purpose and Goals:
This course examines the origins of the incredible diversity of life that has evolved on Earth. The purpose of this course will be to provide you with a foundation in evolutionary biology.

Dr. Carreon’s Teaching philosophy: As a teacher, I aim to help you understand how each of the individual parts and/or concepts come together as part a “whole”. To achieve this I use some examples and analogies, as well as asking questions during class so you exercise retrieving the information and try to explain it in your own words.

On occasion, I will apply quizzes on material that you should have read ahead of class or on topics specifically assigned by me the lecture before. These quizzes count as participation points and the information is used as material to focus on students misconceptions and discuss the material in class. Grades for these quizzes will not be posted on blackboard.

In addition as part of an upper level course, you will be in charge of presenting certain topic (from the syllabus/textbook) to your classmates. This will enhance your communication and critical thinking skills.

Department of BIOLOGY Student Learning Outcomes
1. Role of the Cell: The Biology graduate knows the role of the cell in life and living systems, and understands the interrelationships among sub-cellular structures that contribute to its functioning as a unit.
2. Role of Genetics: The Biology graduate understands the role of genetics in inheritance and can explain how environmental conditions influence natural selection processes and contribute to adaptation.
3. Diversity of Life: The Biology graduate is aware of the diversity of life and interrelationships between an organism and its environment.
4. Structure and Function: The Biology graduate understands how the organization of a specific structure within an organism is related to a specific function, understands interrelationships among organs and organ systems within an organism, and how interaction between structure and function contribute to the survival of the organism.
5. Scientific Method: The Biology graduate can formulate a testable hypothesis, evaluate and design experiments, analyze and interpret data, and communicate research findings in both oral and written form.

Specific Course Objectives
- Restate the major arguments for and against evolutionary biology. Provide a scientifically accurate definition for basic evolutionary terminology. Relate evolution to humans or human health.
- Draw a timeline, placing each contributor to the development of evolutionary ideas on the timeline and indicating their contribution and links to other people’s ideas.
- Draw and interpret phylogenetic trees and use those trees to analyze the evolution of character traits.
- Explain some ideas of macroevolution including species diversification, species turnover, punctuated equilibria, mass extinctions, and recent hominid evolutionary history
- Review basic principles of genetics e.g. genotype, phenotype, Punnett squares, dominant, recessive, homozygous, heterozygous, DNA structure and expression.
• Distinguish between the types of mutations, their consequences for phenotype, and their evolutionary importance. Explain the random and non-random nature of mutations. If given allele or gene frequency data use Hardy Weinberg Equilibrium equations to calculate other values and predict frequencies in future generations.
• Explain the consequences of mutation and natural selection as evolutionary mechanisms, including under a variety of different conditions such as selection against dominant vs recessive alleles
• Explain the consequences of migration, genetic drift, and non-random mating on populations, discuss how these might result in non-adaptive evolutionary change. Use population data to compare the relative contributions of the evolutionary mechanisms
• If given a scenario or set of data distinguish among the contributions of phenotypic plasticity and heredity to variation. Explain how selection and heritability interact to affect the strength and rate of evolution (if any) of an organism.
• Define and explain basic concepts of evo-devo such as: homeobox, co-option and the evolution of complex traits, changes in regulation, developmental constraints, and pleiotropy
• Describe a variety of species concepts and paths leading to speciation. If given a set of data apply the various species concepts to decide how many species are present, be able to justify your decision based on each species concepts' criteria
• Define sexual selection and kin selection. Distinguish these from natural selection. Use Hamilton’s rule to calculate when behaviors would be favored by kin selection
• Describe reciprocal selection and relate that process to the geographic mosaic theory of coevolution and to species diversification
• Explain “the allocation problem” and discuss how it affects an organism’s life-history. Explain why the strength of natural selection varies with the age of an organism.

Grading Policies
Your final grade will be determined by:

- 400 pts 4 exams (100 pts each)
- 200 pts 10 reading quizzes out of 12 (20 pts each), quizzes will be online through blackboard
- 100 pts Socrative app attendance, class activities and participation
- 150 pts Team- Evolution chapter presentation
- 75 pts Inquizzittive 3 modules (Student set #58843)
- 100 pts Group Discussion of Journal Articles

Total possible points: 1,000

The final exam is optional AND cumulative final exam (100 pts, will replace one of the previous exams). Points needed for an A= 1000-900; B= 899-800; C= 799-700, D= 699-600, F= ≥ 599

NOTE: If you decide to take Final Exam, it will be taken into account by replacing the lowest of the previous grades.

UTRGV’s grading policy is to use straight letter grades (A, B, C, D, or F).

Important dates
The UTRGV academic calendar can be found at http://my.utrgv.edu at the bottom of the screen, prior to login. Important dates for spring 2017 include:
August 27 First day of classes
August 30 Last day to add a course or register for fall 2018
September 3 Labor Day – NO classes
November 14 Last day to drop a course; will count toward the 6-drop rule
November 22 - 24 Thanksgiving Holiday – NO classes
December 6 Study Day – NO classes
December 7 - 13 Final Exams
December 14 – 15 Commencement Exercises
Other Course Information

ATTENDANCE:
- Students are required to attend all classes, and must be on time for pre-lecture quizzes and/or exams. Excessive absences will result in a loss of points from participation grade. I am required to report excessive absences (more than three) to the ALERT program.

Exams & Make-up Exam
- **No make-up exams or quizzes will be given.**
- You will be assigned a zero (0) for all missed exams or quizzes. For UTRGV approved extracurricular activities if you know you are to miss an exam, inform the professor as soon as possible and before the exam.
- **Students will not be allowed to start an exam once the first exam has been turned in.**
- During examinations your tabletop must be devoid of books, notes, calculators, cell phones, etc.
- For exams and final exam **YOU MUST BRING A SCANTRON (Form No. 882-E). YOU are responsible of providing pencils, pen and eraser. Exams must be returned with the SCANTRON at the end of the exam.**
- **Students are not allowed to leave the class during exams and quizzes.** If you leave the class during an exam, you will lose the opportunity to complete the exam. If emergency make sure you bring a doctor’s note.
- Cell phones and other electronic devices are not allowed during exams or during lecture (except for quizzes). All devices must be turned off and put away prior to the exam. If there is an emergency situation that requires flexibility in this policy, you must get approval from the instructor prior to the start of the exam.
- Absences: If I am given a notification within 24 hours of your absence, and a valid medical excuse is provided, I will justify your absence, but your quiz will not be taken into account.
- Issues concerning examinations and grading will be addressed for one week after each exam is given, but not later.
- **Cell phones are not allowed for phone calls,** in case of an emergency you need to notify the instructor before the class starts that you are waiting for a call, AND if you take a call during class, go outside to talk. **Do not ever talk on the phone in class.**

NOTE: “This syllabus is subject to change”. Any changes incorporated will be given to you in the classroom as soon as possible. Therefore, it is very important you attend all classes.

BIOL 3301

FALL 2018 Tentative Course Calendar*

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Chapter</th>
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<tbody>
<tr>
<td>Aug 30</td>
<td>An overview of Evolutionary Biology</td>
<td>1</td>
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<tr>
<td>Sept 4</td>
<td>Evolution and Medicine</td>
<td>20</td>
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<tr>
<td>** Sept 13</td>
<td>Early evolutionary ideas and Darwin’s insight</td>
<td>2</td>
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<tr>
<td>** Sept 18</td>
<td>The origins and Evolution of Early Life</td>
<td>11</td>
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<tr>
<td>** Sept 20</td>
<td>Major Transitions</td>
<td>12</td>
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<tr>
<td>Sept 25</td>
<td>Exam 1</td>
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<td>** Sept 27</td>
<td>Natural Selection</td>
<td>3</td>
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<tr>
<td>Oct 2</td>
<td>Phylogenies and Evolutionary History</td>
<td>4, 5.7</td>
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<tr>
<td>Oct 4</td>
<td>Movie “What Darwin Didn’t Know” Transmission Genetics and genetic variation</td>
<td>6</td>
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<tr>
<td>Oct 9 &amp; 11</td>
<td>The genetics of populations – selection, mutation</td>
<td>7</td>
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<tr>
<td>Oct 16</td>
<td>EXAM 2 ** Journal article DUE hard copy</td>
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<td>Oct 18</td>
<td>Evolution in finite populations</td>
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<tr>
<td>Date</td>
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<td>Oct 23</td>
<td>Evolution at Multiple Loci</td>
<td>9</td>
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<td>Oct 25</td>
<td>Genome Evolution</td>
<td>10</td>
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<td>Oct 30</td>
<td>Evolution and Development</td>
<td>13</td>
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<td><strong>Nov 1</strong></td>
<td><em>Species and speciation</em></td>
<td>14</td>
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<td><strong>Nov 3</strong></td>
<td>Exam 3</td>
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<td><strong>Nov 6</strong></td>
<td>Extinction and Evolutionary Trends</td>
<td>15</td>
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<tr>
<td><strong>Nov 8</strong></td>
<td>Sex and Sexual selection</td>
<td>16</td>
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<tr>
<td><strong>Nov 13</strong></td>
<td>Video- parental care in mammals</td>
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<td><strong>Nov 15</strong></td>
<td>The evolution of Sociality</td>
<td>17</td>
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<td>Nov 20</td>
<td>Human Evolution</td>
<td>18</td>
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<td>Nov 27</td>
<td>Catch-up- prepare</td>
<td>19</td>
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<tr>
<td>Nov 29</td>
<td>Group Discussion of Journal Article</td>
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<tr>
<td>Dec 4th</td>
<td>Study Day</td>
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<td></td>
<td>FINAL EXAM - OPTIONAL</td>
<td>Cumulative</td>
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* Exact Dates of subjects covered and all exams (except the final exam) are tentative and may change as needed to coincide with progress in course.

UTRGV Policy Statements

**STUDENTS WITH DISABILITIES:**
Students with a documented disability (physical, psychological, learning, or other disability which affects academic performance) who would like to receive academic accommodations should contact Student Accessibility Services (SAS) as soon as possible to schedule an appointment to initiate services. Accommodations can be arranged through SAS at any time, but are not retroactive. Students who suffer a broken bone, severe injury or undergo surgery during the semester are eligible for temporary services.

**Pregnancy, Pregnancy-related, and Parenting Accommodations**
Title IX of the Education Amendments of 1972 prohibits sex discrimination, which includes discrimination based on pregnancy, marital status, or parental status. Students seeking accommodations related to pregnancy, pregnancy-related condition, or parenting (reasonably immediate postpartum period) are encouraged to contact Student Accessibility Services for additional information and to request accommodations.

**Student Accessibility Services:**
**Brownsville Campus:** Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at ability@utrgv.edu. **Edinburg Campus:** Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at ability@utrgv.edu.

**MANDATORY COURSE EVALUATION PERIOD:**
Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (http://my.utrgv.edu); you will be contacted through email with further instructions. Students who complete their evaluations will have priority access to their grades. Online evaluations will be available on or about:

- **Module 1** October 4 – 10
- **Module 2** November 29 – December 5
- **Full Fall Semester** November 15 – December 5
ATTENDANCE: Recommended on all syllabi; may be modified by the instructor as long as it is not inconsistent with UTRGV policy.
Students are expected to attend all scheduled classes and may be dropped from the course for excessive absences. UTRGV’s attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics; for observance of religious holy days; or for military service. Students should contact the instructor in advance of the excused absence and arrange to make up missed work or examinations.

SCHOLASTIC INTEGRITY:
As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism (including self-plagiarism), and collusion; submission for credit of any work or materials that are attributable in whole or in part to another person; taking an examination for another person; any act designed to give unfair advantage to a student; or the attempt to commit such acts. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.

SEXUAL HARASSMENT, DISCRIMINATION, and VIOLENCE:
In accordance with UT System regulations, your instructor is a “Responsible Employee” for reporting purposes under Title IX regulations and so must report any instance, occurring during a student’s time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at www.utrgv.edu/equity, including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect that is free from sexual misconduct and discrimination.

COURSE DROPS:
According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the “3-peat rule” and the “6-drop” rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.

STUDENT SERVICES:
Students who demonstrate financial need have a variety of options when it comes to paying for college costs, such as scholarships, grants, loans and work-study. Students should visit the Students Services Center (U Central) for additional information. U Central is located in BMAIN 1.100 (Brownsville) or ESSBL 1.145 (Edinburg) or can be reached by email (ucentral@utrgv.edu) or telephone: (888) 882-4026. In addition to financial aid, U Central can assist students with registration and admissions.

Students seeking academic help in their studies can use university resources in addition to an instructor’s office hours. University Resources include the Learning Center, Writing Center, Advising Center and Career Center. Thank you for reading the syllabus thoroughly, please email me a picture of your pet and your favorite animal worth three points. Please do not mention this to your classmate so they can experience the joy of finding it by themselves. The centers provide services such as tutoring, writing help, critical thinking, study skills, degree planning, and student employment. Locations are:
- Learning center: BSTUN 2.10 (Brownsville) or ELCTR 100 (Edinburg)
- Writing center: BLIBR 3.206 (Brownsville) or ESTAC 3.119 (Edinburg)
- Advising center: BMAIN 1.400 (Brownsville) or ESWKH 101 (Edinburg)
- Career center: BCRTZ 129 (Brownsville) or ESSBL 2.101 (Edinburg)