

BIOSCIENCE II

Spring, 2015

BIO 1413.002 (23409) Monday and Wednesday 2:30 - 3:45; FLN 2.03.12

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Syllabus: The syllabus that we follow in this course is the one found on Blackboard; syllabi distributed in class, that appear in Bluebook or any other location do not "govern".

Course Description: Bioscience I and II are designed to provide an overview or survey of the various subjects that one may explore in greater detail in more advanced courses as students pursue an education in biology. Students develop a familiarity with terminology essential to being conversant in biology, a firm foundation in basic principles that govern living systems and an introduction to various topics in biology. Students develop sufficient familiarity with these principles such that they can both describe and explain those biological principles and can make predictions of expected outcomes when offered hypothetical conditions. Students become comfortable with interpreting data as they are presented in various forms, analyzing and solving problems using a scientific methodology, and effectively communicating those methods and results to others. To most effectively achieve these ends, the course relies on a team approach that not only involves collaborative learning among students but close communication between students and instructor as we endeavor to reach our shared objectives.

This is the second course in a two-part introduction to the science of biology for students majoring in biology or interested in pre-health professions. Topics include evolutionary biology, biotic diversity, the history of life on Earth, and ecology. Satisfactory completion of the course may be applied toward the Core Curriculum requirement in Life and Physical Sciences. (Formerly known as BIO 1143 and BIO 1223. Credit cannot be earned for both BIO 1413 and BIO 1143 or BIO 1223.)

This course will be taught in a "flipped" format, and that is to say that instead of coming to class and receiving instruction which will be the foundation for doing subsequent work out-of-class, in the flipped configuration, you will do the background work outside of class. You will view on-line videos and narrated-powerpoints that take the place of an in-class lecture, work on problems, read pertinent articles and the appropriate portions of the textbook. When we meet, you will do what in the "old" days was homework-that is using the background you have acquired outside of class to solve problems. During the in-class sessions, there may be presentations, videos, and group problem-solving activities. It is essential for your success in the course to keep up with the assignments and come to the in-class sessions prepared to participate in group activities.

Learning Outcomes for Biosciences II: By the end of the semester, students will:

- * Appreciate that there is a basic "unity" to all life that has existed on Earth and be able to explain the significance of that unity in accounting for current biological diversity.
- * Have a clear understanding of what is meant by "science" and explain how the "scientific method" is used to investigate the natural world.
- * Explain the difference between scientific theories and those that have their origins in other modes of inquiry.
- * Explain how scientific theories develop, their significance in advancing our body of knowledge and how they are refined.
- * Explain what is meant by the word "evolution", explain and analyze how it occurs at both the genetic and population levels, the impact it has on populations and why there are limits to evolutionary change.
- * Explain how Earth, its environments and the diversity and assemblage of its inhabitants have changed over time and explain how we have come to develop an understanding of these changes
- * Have a basic understanding of the diversity of the many life forms, with regard to their history, how they have come to be and their biological characteristics.
- * Explain selected aspects of the structure and function of plants and their significance in the biosphere
- * Characterize the variety of ecological settings that have existed in the past or are currently present on Earth, explain what accounts for the differences in those settings and the implications those differences have for the assemblages of organisms they support.
- * Be comfortable with analyzing and interpreting data presented in various formats; explain limitations on drawing conclusions from a set of data.
- * Be able to collaborate with peers in analyzing a biological question, developing a research strategy to address the question and presenting a protocol that implements that strategy in a manner that clearly communicates the question and methodology to the audience.
- * Be able to explain how science has had an impact on the development of social policy and political debate.

Teaching and Learning Philosophy: It has been my personal good fortune to work and develop friendships with some very fine and sometimes renowned individuals who find the study of biology to be an extraordinarily satisfying enterprise. I invite you to join that collegium. Our relationship should be viewed as a partnership with all of us focusing on a set of mutually-beneficial goals, and therefore it is important that those objectives be articulated clearly. We should do all we can to prepare you for success in the sciences and biology in particular. Immediate goals include reinforcing your understanding of what was covered in Biosciences I, accomplishing the learning objectives outlined above and preparing you for success in the next biology course you take in your program of study which for most of you is Genetics. This means not only that we become familiar with a certain body of knowledge, but that we also become increasingly comfortable with being able to read biology texts and listen to presentations and assimilate the content without resorting to rote memorization. The more familiar we become with the subject matter, the less valuable rote memorization is as a tactic for preparing to answer questions. To encourage your maturation as biologists, it is important that we apply ourselves to our various tasks which means that I must do

my best to nurture your development and you must work hard to get the most out of our time together. I expect students to be respectful of each other, listen to and profit from constructive criticism in the manner in which it is intended—thoughtful commentary and not a personal challenge, to take responsibility their progress and success, communicate freely with class mates and me, to come to class prepared and to apply themselves with enthusiasm and vigor. In my view, the successful student is not only one that can recite facts, but more importantly can think critically, solve problems, ask questions, use common sense, and one that reflects on science and biology not just in class but in their every-day life by being familiar with the scientific developments and related social and policy issues relevant to their areas of interest. What you do in college sets the foundation for your future career. Please take ownership of your education.

Fortunate are those who have learned to see, in the wild things of nature, something to be loved, something to be wondered at, something to be revered, for they will have found the key to a never-failing source of recreation and refreshment.

Hugh B. Cott, ***Adaptive Colouration in Animals*** (1940)

Prerequisite: Successful completion of Bioscience I, or its equivalent, with a grade of C or better. If you have not satisfied this prerequisite, you may be dropped from the course by the university or on my initiative. It is assumed that you remember the material that was covered in Bioscience I and it is expected that, as necessary, you will revisit the textbook to review with material upon which Bioscience II is predicated.

Course enrollment: It is entirely your responsibility to confirm that you are, in fact, enrolled in this course. Even if you initially enrolled in the course, if the University has not received funds to cover your enrollment fees, you may be automatically dropped from the course. If a student's enrollment is dropped by the University (because of non-payment of fees, for example), that student must re-enroll as soon as practicable. Petitions to add the course late in the semester will not be approved.

Be aware of the published deadline for withdrawing from the course and getting an automatic grade of W. After that date, you will receive whatever grade you have earned when grades are due at the end of the course.

Attendance and Participation: Attendance is mandatory. You are responsible for any substantive or procedural information (eg. alterations in the exam schedule and coverage as well as reading requirements) given in class. You are expected to attend all in-class sessions, to be fully-engaged in group activities and to complete all assignments. In the event you are absent from a class, do not look to the instructor to repeat for you personally what has already been presented to the larger class—nor will any documents and papers distributed in class be available at other times. Allowance however are made for those with medical excuses and those that have legitimate reasons for not being in class, as for example, attendance at a university-sponsored commitment, observance of a religious holy day or military service. Do not schedule, or have anyone schedule on your behalf, a personal or family activity that will conflict with your participation in this course.

When you are in attendance, please refrain from engaging in any behavior that may be distracting to fellow students while class is in session. In consideration of all in attendance, classroom decorum is required. Audio headsets and empowered mobile phones are not permitted in class. Laptop/tablet activity must be directly related to this course. If you can not conform to these restrictions, you must leave the classroom. Continued enrollment in this class represents your agreement with these conditions.

Check your exam schedule for all your classes. You may find that you have an unmanageable number of exams scheduled for a single day or that your work schedule will preclude your being available for an exam. If so, make the appropriate adjustments or arrangements immediately; do not try to reschedule exams later. Occasionally the University adjusts its working hours because of inclement weather. If there is the possibility of that impacting this course, consult 458-SNOW and the ASAP website for information.

It is expected that as of the first day of class, you are prepared to fully participate in the course. That includes, but is not limited to, having a textbook, a fully-functioning iClicker, and access to Blackboard-Learn.

If you are considering requesting that I deviate from the guidelines outlined in this syllabus, first consider whether the granting of your request would be fair to the other students in the class and whether, if a large number of students were to similarly make that request, the granting of such requests would be workable. In order to be fair to all students, the prescriptions outlined here must apply to all students.

Required Textbook: *Campbell BIOLOGY IN FOCUS* (First Edition) by Urry, et al.

Course Blackboard-Learn Web Site: <http://learn.utsa.edu>

On Blackboard, you will see a number of folders including "Introduction to Course and Syllabus", "Course Topics", and "Assessments". Occasionally, there will be "notifications" posted and following exams, keys will be posted and directions for calculating your grades.

When you first visit the Blackboard website and click on the "Log In" button, you will have two options: "Checking Your Browser" and "Login to Blackboard". BE SURE TO SELECT THE BROWSER OPTION AND MAKE SURE YOURS IS CONFIGURED

PROPERLY. YOUR SUCCESS IN COMPLETING BLACKBOARD ASSIGNMENTS WILL REQUIRE THAT YOUR BROWSER IS PROPERLY CONFIGURED AND WITHOUT PROPER CONFIGURATION, YOUR BLACKBOARD SESSION MAY BE TRUNCATED AND IF YOU ARE IN THE MIDDLE OF A GRADED ASSIGNMENT, YOU WILL NOT BE PERMITTED TO CONTINUE AND YOUR GRADE WILL BE NEGATIVELY IMPACTED. WHEN YOU ARE PERFORMING GRADED EXERCISES ON BLACKBOARD, IT IS BEST TO HAVE A "HARD" CONNECTION TO THE WEB, AND NOT RELY ON A WIRELESS CONNECTION THAT MAY DROP YOU. An exception to this general rule will apply if there is a documented loss of power on the power grid that serves the general public.

If you need any assistance with Blackboard-Learn, you can consult Ms. Tamara Popescu in the COS Blackboard Support Office, MS 1.03.08 from 8 AM until 5 PM, Mondays through Fridays or email her at maria.popescu@utsa.edu.

On-Line Powerpoint Presentations: Narrated Powerpoint presentations are available on Blackboard-Learn. These are a substitute for in-class lectures and should be reviewed prior to the class period when they will be the subject of in-class exercises.

Videos: There are a number of videos that will be required viewing for the course. These are listed on the syllabus. Some links to videos can be found in the file on Blackboard-Learn corresponding to the topic and some are imbedded in the syllabus.

Problem Sets: There is a collection of problem sets on Blackboard-Learn. These will serve as the basis of questions that appear on Blackboard, and in iClicker and exam exercises. The problem sets are listed in the syllabus to indicate at what point in the semester they should be completed.

iClicker Exercises: During the class sessions, responses will be solicited from students using electronic "iClickers". Any of the iClicker models is adequate for this course. Other brands of classroom response systems are not acceptable. I do not recommend using the cell phone application because it is not reliable. Only electronic answers will be accepted. Therefore make sure you come to class equipped with a fully-functioning device, and I suggest having spare batteries. The clickers can be purchased at the bookstore or borrowed from the library which has a limited number that can be checked out. Your iClicker must be registered as soon as possible. The website for registration is <http://www.iclicker.com/registration>. I do not recommend registering your iClicker device through Blackboard as there have been problems with that feature. Use your "abc123"-styled identifier when registering. In order to see your scores in Blackboard, you must have a properly-registered iClicker at the beginning of the course. Be sure your iClicker is set to the correct frequency for communicating with the "base". To determine if you are using the proper frequency for those with an iClicker "plus", turn on the device and depress the "a", or any other selector, key. If a red light appears, you are not on the proper frequency.

Students can, and are encouraged to, cooperate in class when determining how they choose to respond to **iClicker** questions. However, a student must be in class to receive credit for quiz questions. A student can only respond using her/his own device. Responding for another student will not be permitted and will be penalized severely; offending students will receive a grade of zero (0) for the entire **iClicker** grade in the course.

In-Class Quizzes: These are open-note, open-book quizzes on which you can consult with neighbors.

Blackboard Quizzes: There will be quizzes administered on Blackboard. One such quiz is entitled the "Pre-test" quiz. It covers material you had in Biosciences I and will be expected to be familiar with in this course. Another quiz requires that you be familiar with this syllabus, the "Syllabus Quiz". Both of these quizzes will be available for you to complete during the first week of classes. Once you begin Blackboard quizzes, you will not be able to stop the quiz and return to it. You must complete it in one "sitting". As you take the quiz, you will proceed from the first question to the last with no opportunity to return to a previous question once you have submitted your answer for the question.

Exams: There will be one multiple choice exam-the final exam. The value of each of the exam is 100 points. **FINAL EXAM** Thursday May 7 at 3:15 PM. You will complete this exam without help from neighbors.

For the final exam, you will need a photo ID and a ParSCORE Scantron (Form X-101864-PAR-L, or its equivalent). Your scantron is the only record of your responses that will be graded. You will not be permitted to receive an exam booklet and subsequently leave the classroom for any reason. If you arrive to take the final exam after a student has completed the exam and left the room, you will not be permitted to take that exam.

Final Examination Instructions: The following are the general instructions that will apply to the final exam. I suggest that you read them carefully prior to coming to the exam so that you will have the maximum possible time to answer the exam questions and not be handicapped because of unfamiliarity with these instructions. The final exam will be printed in the same font as this syllabus. If you have difficulty reading this font, let me know and I can print an exam in a larger font.)

This exam is a closed-book exam. You are not to use any materials nor receive or give any assistance to another student while taking the exam. You are not to discuss the exam with any student in any other section of this course that Dr. Jordan teaches until the graded exams are returned. Violation of these stipulations will result in a grade of zero on your exam. It is expected that you are familiar with the University's honor code and that you will adhere to that code and be bound by its prescriptions.

1. You are to use an unwrinkled, ParSCORE scantron.
2. Enter your name in the space provided on your scantron. Enter your eight-digit Banner ID number in the first eight spaces of the "I.D. Number" field on your scantron and darken the corresponding slots. Leave the remaining two rectangles blank.
3. Darken the slot corresponding to your test form in the space provided on your scantron.
4. There should be no extraneous marks on your scantron; erasures should be clean.
5. There is a time limit on this exam. You will have xxxxx (00) minutes to complete the exam. This xxxxx-minute

period will begin to run when the class is so instructed. Therefore, should you arrive late to the exam, you will still have to turn in your exam by the expiration of that same xxxxx-minute time period. THE EXAM MUST BE PASSED IN BY THE END OF CLASS IN ORDER FOR IT TO BE GRADED.

6. On any questions where use of a calculator is permitted, smart phone calculators can not be used.
7. Pick the one best answer and mark the corresponding entry on your scantron with a number 2 pencil AND INDICATE YOUR SELECTION ON YOUR EXAM BOOKLET.
8. Pass in your scantron and the exam booklet. Your scantron is the only record of your responses that will be graded.

FIVE POINTS WILL BE DEDUCTED FOR EACH OF THE ABOVE DIRECTIONS THAT IS NOT FOLLOWED COMPLETELY.

TURN OFF ALL CELL PHONES, AUDIO HEADSETS, PAGERS AND ANY OTHER SIGNALING OR DATA-STORAGE DEVICE.

AN INDIVIDUAL WHO LEAVES THE EXAM THEATER WILL NOT BE PERMITTED TO RETURN AND CONTINUE TAKING THE EXAM.

COMPLETED EXAMS MUST BE IN THE PROCTOR'S/PROFESSOR'S POSSESSION BY THE END OF TIME ALLOTTED FOR THE EXAM. EXAMS NOT PASSED IN BY THE APPOINTED TIME MAY NOT BE GRADED RESULTING IN A GRADE OF ZERO (0) ON THE EXAM.

Early and Make-up Exams: If you anticipate being absent for an exam, it MAY be possible to arrange for you to take the same exam that the rest of the class is scheduled to take but only if you arrange to take that exam prior to the scheduled exam time. Early exams are available in only limited situations such as when a student is participating in a University-sponsored program, a military obligation, observance of a religious holy day or in certain medical situations.

Make-up exams (those administered after scheduled exam) are only available to (a) those that have made arrangements with me PRIOR to the scheduled time of the exam, and (b) those who, within a few days of the missed exam, can SUBSTANTIATE that through no fault of their own they were unable to attend an exam as scheduled. ("Through no fault of their own" includes such things as illness, emergency military service and auto accident in route to class but does not include situations such as absence due to penal incarceration, heavy traffic, misreading of the syllabus and oversleeping).

A request for a make-up exam must be made IN WRITING as soon as practicable after the missed exam. Evidence supporting your claim of no-fault WILL be required. A request for a make-up exam does not automatically qualify you for a make-up exam; permission MUST be granted to those who the instructor determines meet the qualifications for a make-up exam.

For those who do qualify and receive instructor approval, a portion of the final exam will substitute for the missed exam. You will not actually "sit" for a separate make-up exam. Permitting the taking of an exam at an unscheduled time is exclusively at the discretion of the instructor. WHILE THESE GUIDELINES WILL SERVE TO DEAL WITH MOST INSTANCES, THE INSTRUCTOR RETAINS COMPLETE DISCRETION ABOUT THE ULTIMATE AVAILABILITY OF ANY SPECIAL CONSIDERATION.

The guidelines above governing examinations are **strictly** enforced.

Grading: There is a total of 200 points that will be the basis for your final grade. These points will be apportioned as follows:

In-class Quizzes and Blackboard Quiz Questions (including the Pre-Test): A student can accumulate a maximum of 100 quiz points.

Grades will be awarded as follows:

A: 90% and above B: 80 - 89% C: 70 - 79% D: 60 - 69% F: 59% and below

A "plus/minus" system of grading is not used in this, or any Department of Biology, course.

Extra-Credit: There is no "extra credit".

Receiving Course Grades:

You will not be able to receive any grades by telephone or e-mail communication with the instructor.

After taking the final exam, there will be no discussion about the calculating of a student's grade until the course grades are available on ASAP. After the posting of course grades on ASAP, you are welcomed to visit with me about the determination of your grade. If you receive an incomplete (IN) in this course, it is **entirely** your responsibility to know the University's rules regarding disposing of that incomplete in favor of a final grade.

Office Hours: Monday through Thursday, 3:00 - 4:00 (BSE 2.110), and by appointment. There will be no regularly-scheduled office hours during end-of-semester days dedicated to study and exams.

Email: craig.jordan@utsa.edu This is the electronic communication I read and to which I respond. Email is not to be used as a substitute for class attendance, for not reading the syllabus, nor is it to be used because of a reluctance to see me personally-there is value in face-to-face meetings. With that caveat, email can be used, and I encourage its use, if you have a question about the material you are reading, what we are covering in class or perhaps what you have read or have seen outside of class. Please be aware that I am trying to manage the "weight" of the mail that I receive; I am not trying to discourage thoughtful discourse. If you address an email, it must be written properly, which means that capitalization, punctuation, grammar and spelling should be correct. Always identify yourself and indicate which class and section with which you are associated. Email should be used sparingly; never assume that you will receive an answer, though in appropriate instances, a response will appear as soon as I see the mailing. If your inquiry is clearly covered by this syllabus, it may not receive a response.

Supplemental Instruction: xxxxx is our supplemental instructor this semester. He will organize study sessions. I strongly encourage your participation in these sessions.

This program offers student-led study groups using collaborative learning. If you have questions, call 458-7251. The Tomas Rivera Center (<http://.utsa.edu/trcss> and click on "TRC Hours") also offers at no cost, two additional programs: Tutoring Services and Learning Assistance. The former provides walk-in tutoring (458-6783) and the latter provides one-on-one study skills assistance through Academic Coaching (458-4694) and group study skills assistance through Expert Learner Series Workshops.

Students with a Disability:

If you may need special consideration because of a disability, I suggest you discuss your situation with me at the very beginning of the course. If you are registered with Disability Services and anticipate having your exams administered in a manner that varies from what other students will experience, I must, as early as practicable, be made aware of the special testing circumstances that you might require. It is essential that there be an agreement on a reasonable and satisfactory accommodation, and not one that is excessively burdensome to the conduct of the course or unfair to the other students. Information about Disability Services is available in the UTSA Information Bulletin. As a general rule, students are only eligible for special treatment or consideration if they are registered with Disability Services and I am instructed by that office as to the special treatment or consideration that is to be allowed. Consult: <http://utsa.edu/disability/>

Every student is expected to be familiar with The University's stance regarding scholastic dishonesty:

"The University expects every student to maintain a high standard of individual integrity for work done. Scholastic dishonesty is a serious offense which includes, but is not limited to, cheating on a test or other class work, plagiarism (the appropriation of another's work and the unauthorized incorporation of that work in one's own work), and collusion (the unauthorized collaboration with another person in preparing college work offered for credit). In cases of scholastic dishonesty, the faculty member responsible for the class may initiate disciplinary proceedings against the student." (You may wish to consult the UTSA Information Bulletin on the matter. In the directory, select "Academic Dishonesty".) <http://utsa.edu/infoguide/appendices/b.html>

My position regarding scholastic dishonesty is that such behavior is intolerable. One of my obligations as a faculty member is to do my best to assure that the performance of students is evaluated fairly and that all students are treated similarly. Acts of scholastic dishonesty are inconsistent with both and will be dealt with severely

The University of Texas at San Antonio Academic Honor Code

A. Preamble

The University of Texas at San Antonio community of past, present and future students, faculty, staff and administrators share a commitment to integrity and the ethical pursuit of knowledge. We honor the traditions of our university by conducting ourselves with a steadfast duty to honor, courage, and virtue in all matters both public and private. By choosing integrity and responsibility, we promote personal growth, success, and lifelong learning for the advancement of ourselves, our university, and our community.

B. Honor Pledge

In support of the ideals of integrity, the students of the University of Texas at San Antonio pledge:

"As a UTSA Roadrunner I live with honor and integrity."

C. Shared responsibility

The University of Texas at San Antonio community shares the responsibility and commitment to integrity and the ethical pursuit of knowledge and adheres to the UTSA Honor Code.

The Roadrunner Creed

The University of Texas at San Antonio is a community of scholars, where integrity, excellence, inclusiveness, respect, collaboration, and innovation are fostered.

As a Roadrunner, I will: Uphold the highest standards of academic and personal integrity by practicing and expecting fair and ethical conduct; Respect and accept individual differences, recognizing the inherent dignity of each person; Contribute to campus life and the larger community through my active engagement; and Support the fearless exploration of dreams and ideas in the advancement of ingenuity, creativity, and discovery.

Guided by these principles now and forever, I am a Roadrunner!



The following link will take you to a source of University information concerning policies and services regarding disabilities, dishonesty, counseling and tutoring.

<http://provost.utsa.edu/syllabus.asp>

THE COURSE WILL FOLLOW THE SEQUENCE OF TOPICS OUTLINED BELOW:

Introduction to the Course

There is one quiz (a "Pre-Test") administered in Blackboard which is to be completed between April 6 and 10. Answering the questions on the Pre-Test relies on being familiar with the content of Biosciences I. In the event you have difficulty with any of the pre-test questions, I recommend you revisit the relevant topics in your Biosciences I course materials. Biosciences II assumes that you remember this material from Biosciences I. Once you begin the pre-test, you will have only one opportunity to complete it. Therefore, when you take the pretest, it is imperative that your browser be configured properly; follow the directions in Blackboard. For the same reason, be sure that you have a secure connection to the web; if your connection is dropped, you will not be able to log into the quiz again. I suggest you use a computer with a "hard" connection and not rely on wireless connectivity. Using university computers may be your best option. The same applies to the "Syllabus Test".

Development of Biology as a Science

Chapter 1

What is the meaning of "science"?

Narrated Powerpoint on Blackboard, *What is Science?*

What was Darwin's theory?

Narrated Powerpoint on Blackboard, *Darwin's Theory*

How did Darwin develop his theory?

What was known about biology and geology that was of value to Darwin?

Narrated Powerpoint on Blackboard, *What was known in Darwin's Day?*

What did Darwin learn during his voyage and afterward that contributed to the development of his theory?

Narrated Powerpoint on Blackboard, *What Darwin observed*

Chapter 19

VIDEO: *Charles Darwin and the Tree of Life*

Phylogeny

Narrated Powerpoint on Blackboard, *Phylogeny*

[Optional: *Evolutionary Forensics*]

Chapter 20

The Reception to the Theory

Narrated Powerpoint on Blackboard, *Reception to the Theory*

What did the theory not adequately account for?

[Optional: *Early Eye Evolution*]

The Maturation of a Science: Development of the Modern Synthesis

Narrated Powerpoint on Blackboard, *The Theory Matures*

Social and Political Implications of Evolutionary and Mendelian Genetics Theory

Social Darwinism

Narrated Powerpoint on Blackboard, *Social Darwinism*

Religious Belief and Scientific Inquiry

Narrated Powerpoint on Blackboard, *Evolution in the Public Schools*

VIDEO: *Judgement Day* (Watch this video AFTER we have concluded this section.)

[Optional: *How Texas Inflicts Bad Textbooks On Us*]

Review of Mendelian Genetics

Narrated Powerpoint on Blackboard, *Mendelian Genetics*

Population Genetics and the Hardy-Weinberg Equilibrium

Narrated Powerpoint on Blackboard,

Chapter 21

Mechanisms of Evolutionary Change

Selection, Kin Selection and Sexual Selection

Narrated Powerpoint on Blackboard, *Selection*

Chapter 21, 30, 39.5, 39.6

Gene Flow and Genetic Drift

Narrated Powerpoint on Blackboard, *Other Mechanisms*

[Optional: *Malaria*]

Coevolution

Narrated Powerpoint on Blackboard, *Coevolution*

VIDEO: *The Eternal Arms Race*

Chapter 30

The Origin of Species

Narrated Powerpoint on Blackboard, *The Origin of Species*

Chapter 22

VIDEO: *The Living Planet-Worlds Apart*

[Optional: *A Supergene Paints Wings for Surviving Biological War* and *Daphnia Evolution*]

VIDEO CLIP: [Vogelkop Bowerbird](#)

How Earth has Changed

Narrated Powerpoint on Blackboard, *How Earth Has Changed*

Chapter 23

VIDEO: *How the Earth Was Made*

http://www.youtube.com/watch?v=RLMeA3M_PaU

Extinctions

Narrated Powerpoint on Blackboard, *Extinctions*

VIDEO: *The Living Planet-New Worlds*

History of Life on Earth: Early Life

Narrated Powerpoint on Blackboard, *Early Life-Prokaryotes*

Chapter 24

VIDEO: [First Life with David Attenborough](#)

History of Life on Earth: Origins of Eukaryotes, the Edicarian and Cambrian Faunas

Narrated Powerpoint on Blackboard, *Early Life-Eukaryotes*

Chapter 25

Further Maturation of a Theory: Evo-Devo

Narrated Powerpoint on Blackboard, *The Theory Matures-part two*

Chapter 18

VIDEO: [What Darwin Never Knew](#)