Biology: Science for Life
Biology 100

Section 19
MWF 1:00 to 1:50 p.m.
247 MARB (Martin Building)
Section 20
MWF 2:00 to 2:50 p.m.
248 MARB (Martin Building)

Instructor: Dr. Mikel R. Stevens
Phone: 422-4032
Office: 287 WIDB
Email: mikel_stevens@byu.edu

Office Hours: M, W 3:00 – 4:00 pm (or by appointment)

TAs: Kaitlynn Fernelius
     Nicole England

TA office hours: TBA

Course Objectives

The purpose of this course is to help you understand biology and apply your knowledge to an ever-expanding suite of biological issues in our world. Each chapter of Biology: Science for Life has been structured around a compelling story in which biology plays an integral role. Through the story you will not only learn the relevant biological principles, but you will also see how science can be used to help answer complex questions. As you learn to apply the strategies modeled by the text you will begin developing your critical thinking skills.

Required Course Materials


iClicker: You will have to purchase this through the Bookstore as all quizzes will be taken in class via the iClicker. Your course materials bundle will include a coupon for $10 off the purchase of an iClicker.

Course Work

1. Reading and Homework Assignments. We will cover a lot of material in this course. Most of the reading will come from the text “Biology: Science for Life.” Please refer to the Class Schedule below for specific reading assignments. Homework assignments will be given as we proceed with the semester using Mastering Biology on the web (http://www.masteringbiology.com/). Because these assignments are available for several days there will be NO MAKEUP HOMEWORK ASSIGNMENTS, you are the one responsible for completing each assignment ON TIME. Please come to class having read the material assigned that day as you may get a quiz covering the material
AND it makes for a much more informed discussion and a better classroom experience. Reading and homework will be worth 20% of your final grade.

2. **Term Paper.** You will be required to write a term paper (see below) on a topic related to biology. This will account for 10% of your final grade (see Grading Procedures below). There will be more information coming on this assignment. However, due to repeated violations from past classes please be aware that Plagiarism, of any form, is wrong and will treated as an Honor Code violation.

3. **Participation/Attendance/Quizzes.** We will use the iClicker in this course for attendance, mid-lecture participation questions and quizzes over the reading material and the topics that will be discussed. There will be **NO MAKEUP QUIZZES/ATTENDANCE POINTS available FOR ANY REASON.** However the LOWEST THREE SCORES for this category of your grade WILL BE DROPPED at the end of the semester. This is to encourage your attendance, attentiveness and diligence in reading the assigned material prior to class. The points accumulated here will equal 15% of your final grade.

4. **Exams.** Exam material will come from material presented in lecture, the course textbook and possible supplemental reading as may be assigned (depending on what may become available in the world around us). Exams 1, 2, and 3 will each be worth 12% of your final grade. The final exam will be 19% of your final grade (~12% from the final fourth of the course, and ~7% comprehensive). Make-up exams will be allowed **ONLY if the student has a valid excuse and notifies the instructor or the teaching assistant BEFORE the scheduled test.** All exams will be offered in the Testing Center (see Schedule below). If the notification is not done before the exam and there is very legitimate reason for missing the exam 15% will be taken off the top before the rest of the score will be calculated.

**Grading Procedures**

*Please note: The grading structure listed below may be modified during the semester depending on circumstances.*

This course has been structured to provide ample opportunities for students to demonstrate mastery of the course material. Your course grade will be based on:

<table>
<thead>
<tr>
<th>Reading &amp; Homework –</th>
<th>20% of your grade.</th>
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<tbody>
<tr>
<td>Attendance/Participation/Quizzes –</td>
<td>15% of your grade.</td>
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<tr>
<td>Term Paper –</td>
<td>10% of your grade.</td>
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<tr>
<td>Exams –</td>
<td>55% of your grade.</td>
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**Grading**

<table>
<thead>
<tr>
<th>PERCENT</th>
<th>LETTER GRADE</th>
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<tr>
<td>93.3-100</td>
<td>A</td>
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<tr>
<td>90.0-93.2</td>
<td>A-</td>
</tr>
<tr>
<td>86.7-89.9</td>
<td>B+</td>
</tr>
<tr>
<td>83.3-86.6</td>
<td>B</td>
</tr>
<tr>
<td>80.9-83.2</td>
<td>B-</td>
</tr>
<tr>
<td>76.7-80.8</td>
<td>C+</td>
</tr>
<tr>
<td>73.3-76.6</td>
<td>C</td>
</tr>
<tr>
<td>70.0-73.2</td>
<td>C-</td>
</tr>
<tr>
<td>66.7-69.9</td>
<td>D+</td>
</tr>
<tr>
<td>63.3-66.6</td>
<td>D</td>
</tr>
<tr>
<td>60.0-63.2</td>
<td>D-</td>
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<tr>
<td>&lt;60.0</td>
<td>E</td>
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**BYU Learning Suite**

BYU Learning Suite will be used to post grades, announcements, and additional reading materials. The only exception to using BYU Learning Suite will be that Mastering Biology grades will be maintained on their website during the semester. We will make between-class announcements via e-mail. If you do not use myBYU as your primary e-mail, you need to change your directory listing in myBYU to point to your preferred address.

**Teaching Assistants and TA Tutorial Schedules**

The TAs will grade your term paper and exams. They will review lecture material and answer questions that were not answered in class during hours that will be announced during the semester.

**Class Schedule**

Class meets three days a week and are 50 minutes in length. We will meet 42 times during the semester. Exams 1-3 will be available over a minimum of a 3 day period in the BYU Testing Center. The final (Exam 4) will be available over a 5 day period in the BYU Testing Center (go to https://testing.byu.edu/info/finals.php).

**Fall Semester 2012 Class Schedule**

We will aim to follow the schedule listed below. Reading assignments come from the course textbook “Biology: Science for Life.”

**August**

27 Introductions, Course Overview, & Expectations
29 The Process of Science (Ch 1.1)
31 Hypothesis Testing (Ch 1.2) & Understanding Statistics (Ch 1.3)

**September**

5 Evaluating Scientific Information (Ch 1.4) & Is there a Cure for the Common Cold? (Ch 1.5)
7 What Does Life Require? (Ch 2.1)
10 Life on Earth (Ch 2.2)
12 Nutrients (Ch 3.1) Transport Across Membranes (Ch 3.2); Term Paper Discussion
14 Enzymes and Metabolism (Ch 4.1) & Cellular Respiration (Ch 4.2)
17 Cellular Respiration (4.2) & Body Fat and Health (4.3)
19 The Greenhouse Effect (Ch 5.1) & The Flow of Carbon (Ch 5.2)
21 Can Photosynthesis Reduce the Risk of Global Warming? (Ch 5.3)
24 How Global Warming Might Reduce Photosynthesis (Ch 5.4) & Decreasing the Effects of Global Warming (Ch 5.5)
26 Exam 1 Lecture Catch-up
26-28 Exam 1 – Chapters 1-5: Available all days in Testing Center.
28 What is Cancer? (Ch 6.1), & Passing Genes and Chromosomes to Daughter Cells (Ch 6.2)

**October**

1 The Cell Cycle and Mitosis (Ch 6.3), & Cell Cycle Control and Mutation, (Ch 6.4)
3 Cancer Detection and Treatment (Ch 6.5), & Meiosis (Ch 6.6)
5 Inheritance of Traits (Ch 7.1) & Mendelian Genetics: When the Role of Genes is Clear (Ch 7.2)
8 Quantitative Genetics: When Genes and Environment Interact (Ch 7.3)
10 Genes, Environment, and the Individual (Ch 7.4)
12 Extensions of Mendelian Genetics (Ch 8.1) & Sex Determination and Sex Linkage (Ch 8.2)
Pedigrees (Ch 8.3) & DNA Fingerprinting (Ch 8.4)
Protein Synthesis and Gene Expression (Ch 9.1) & Producing Recombinant Proteins (Ch 9.2)
Genetically Modified Foods (Ch 9.3) & Genetic Modified Humans (Ch 9.4)

Exam 2 Lecture Catch-up
24-26 Exam 2 – Chapters 6-9: Available all days in Testing Center.
26 What is Evolution (Ch 10.1) & Charles Darwin and the Theory of Evolution (Ch 10.2)
29 Examining the Evidence for Common Descent (Ch 10.3)
31 Are Alternatives to the Theory of Evolution Equally Valid? (Ch 10.4)

November
2 Return of an Ancient Killer (Ch 11.1)
5 Natural Selection Causes Evolution (Ch 11.2)
7 Natural Selection Since Darwin (Ch 11.3) & Natural Selection and Human Health (Ch 11.4)
9 What is a Species? (Ch 12.1) & Are Human Races Biological? (Ch 12.2)
12 Why Human Groups Differ (Ch 12.3) & Biological Classification (Ch 13.1)
14 The Diversity of Life (Ch 13.2) & Learning About Species (Ch 13.3)
16 Exam 3 Lecture Catch-up
16-20 Exam 3 – Chapters 10-13: Available all days in Testing Center.
19 A Growing Human Population (Ch 14.1) & Limits to Population Growth (Ch 14.2)
20 The Future of the Human Population (Ch 14.3) & The Sixth Extinction (Ch 15.1)
26 The Consequences of Extinction (Ch 15.2) & Saving Species (Ch 15.3)
28 Protecting Biodiversity Versus Meeting Human Needs (Ch 15.4)
30 Global and Regional Climate (Ch 16.1) Terrestrial Biomes (Ch 16.2)

December
3 Aquatic Biomes (Ch 16.3) Human Habitats (Ch 16.4)
5 Final Exam – Lecture Catch-up

DO NOT ASK FOR EXCEPTIONS TO TAKE THIS EXAM OUTSIDE OF THE TIMES LISTED BELOW!
10-14 Exam 4 - Chapters 13-15 and review of Chapters 1-12. The availability of this exam will strictly follow the policies of the Testing Center for all 5 days of finals at the BYU Testing Center

The most up-to-date version of this syllabus, including lecture notes and assignments, can be found in Learning Suite.
Extra Credit

You can receive up to a maximum of 50 extra credit points (or 5% added to your grade) by completing a combination of any of the following extracurricular assignments. Thus if you were to get 100% of all the points available in the class (from test, homework etc.) and you were to do 50 points of extra credit then you would have a total of 105% in the class. Extra credit allows for you to compensate for missing points elsewhere in class.

1. **Seminar attendance** – Each year the College of Life Sciences and each department within the college provide a variety of seminar presentations where prominent BYU and non-BYU faculty present their ideas and research. After the seminar, submit a 1-page summary of the presentation, the date, the time, and the location. Each summary is due within One Week after the seminar and worth 10 points.

   **College of Life Science Seminar Schedule for Fall 2012**
   - Sept. 13 (JSB Auditorium; 11:00 am) – Dr. Derocher – Polar Bear specialist
   - Mar. 11 (Pardoe Theater; 11:00 am) – John Frischknecht – Heart Surgeon
   - Nov. 8 (TBA; 11:00 am) – TBA

2. **Reading books** – Read one or both of the following short works:
   - “Mormons and Science, Setting the Record Straight” by Rodney J. Brown
   - “Mormonism and Evolution: The Authoritative LDS Statements” by W. E. Evenson and D. E. Jeffery

   Longer reads are worth more. Examples: “The Botany of Desire” by Michael Pollan, (worth 20 points) and “The Language of God: A Scientist Presents Evidence of Belief” by Francis S. Collins (worth 15 points)

   Write a 1-page summary of the book including your personal evaluation. If you identify other books you would like to read, check with your TA or myself for approval and the number of Extra credit points it is worth. Each summary is worth 10 points except Pollan’s and Collins’ books.

3. **Nature Experienceships** – Attend a nature experienceship workshop hosted by the Monte L. Bean Museum. These are short (a few hours) outdoor trips near Provo that allow you observe nature while interacting with experts. You can read more at: http://mlbean.byu.edu/Education/NatureExperienceships.aspx (or go to http://mlbean.byu.edu/ and go to the bottom right side of the page for the link and read and follow the directions).

4. **Thanksgiving Point Museum of Ancient Life** – Spend two hours at the museum and write up an overall view of the story presented (two pages) with information on specific exhibits that impressed you and why for 10 points.

5. **Watching an Approved Science Video** – For each pre-approved science video you can earn points depending on the video (roughly 5 points for every hour of approved video). Write a 1-page summary for every hour of video. This should include both factual information and your personal evaluation which is to be based on well thought out and substantiated thoughts.

   Examples of videos are the following (all of these are excellent and available at the library or online).
   - **Guns, Germs, and Steel** – by Jared Diamond (National Geographic) (10 points)
   - **Genetic Time Bomb** – John De Graaf (PBS) (5 points)
   - **Ghost in Your Genes** – (BBC Horizon) (5 points for each hour)
Harvest of Fear – Jon Palfreman (PBS Frontline/Nova) (10 points)
Planet Earth – Narrated by David Attenborough (BBC) (20 points for watching the entire thing)
You can also look up and watch videos on line (preapproval needed) at (http://www.pbs.org/wgbh/nova/programs/)

6. On-line Teacher Evaluation – You can earn 5 points for filling out the teacher evaluation form at the end of the semester. Professors need to have input from students in this regard so I offer this incentive.

Instructor Consultation

Many BYU faculty members are not only course instructors but also scientists with ongoing research projects. I am currently conducting involved ornamental flower breeding using intermountain native flora of the Rocky Mountains along crop disease resistance research here at BYU and in Honduras, Spain, and India. Furthermore I have assignments with my department, college, and university. I have a number of research papers in various degrees of completion and must work daily to move them along. To prepare for class instruction takes many hours of uninterrupted study. Needless to say, for me to be effective I have allocated specific time slots (“office hours”) during which time students may drop by for consultation. My office hours for consultation are listed at the beginning of the syllabus. If that time does not work for you please let me know (email is fine) and we can make other arrangements as time permits.

University Policies

We must adhere to the policies of Brigham Young University with regard to sexual harassment, students with disabilities, and academic honesty. You can review honor code policy in depth at http://honorcode.byu.edu/. Any questions, concerns, or issues with any of these policies should be brought to my attention, or that of my teaching assistants, as soon as possible.