

# Biology 100 – Principles of Biological Science

4 Credits, CRN # 20216

Spring 2014

**Instructor:** Dr. Daniel Gilison  
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**Blackboard:** <http://imperial.blackboard.com>  
**Office Hours:** Mon 12-1 PM, Tues 1:30-2:30 PM, Wed 12-1 PM, Thurs 1:30-2:30 PM

## Class Schedule:

Lecture	Monday/Wednesday	8:35 – 10:00 AM	Room 2735
Laboratory	Tuesday	8:35 – 11:45 AM	Room 2711

## Required Materials:

**Textbook:** Biology: The Essentials, 1<sup>st</sup> ed. Hoefnagels  
**Lab Manual:** Principles of Biological Science BIOL100 Lab Manual

## Course Description:

A comprehensive one semester general biology course for non-majors. Includes life from the molecular to the organismic level of both plants and animals and their interactions within the environment. Special emphasis is put on human biology within appropriate areas of study. Appropriate for general education as well as nursing, pre-professional, and higher level biology courses. Includes laboratory component.

## Course Objectives:

1. The student will identify the basic characteristics of all living things.
2. The student will name basic chemical aspects that pertain to life and the concept of homeostasis.
3. The student will describe the subcellular components of the cell including their structure and function.
4. The student will explain the light and dark reactions of photosynthesis.
5. The student will explain cellular respiration and its relations to the entire organism.
6. The student will demonstrate knowledge of the structure and function of DNA and RNA.
7. The student will explain protein synthesis and site the central dogma of cell biology.
8. The student will compare and contrast the fundamentals of asexual and sexual reproduction.
9. The student will define ecology and the overall impact of ecology to conditions in the environment.
10. The student will solve problems in general genetics and in human genetics and relate advances in genetics to social responsibility of geneticists.
11. The student will identify and relate the functions of the major systems of the human body, the interrelationship among body systems and nature of disease.
12. The student will classify organisms in the kingdoms of plants and animals, discuss their evolutions and their relationships.

## Student Learning Outcomes (SLOs): (1) Communication Skills, (2) Critical Thinking Skills, (3) Personal Responsibility, (4) Information Literacy, (5) Global Awareness

Upon completion of this course students will be able to:

1. Demonstrate an understanding of the steps of the scientific method. (2)
2. Communicate an understanding of the various patterns of inheritance of genetic traits. (1 & 2)
3. Explain how the processes of natural selection influence evolution. (1 & 2)
4. Perform lab activities properly, and correctly analyze lab data. (1 & 2)

### **Class Policies:**

1. Class attendance and tardy policy follows the regulations in the IVC catalog.
2. Attendance will be taken at the start of each lecture and lab.
3. Students may be asked to drop the class if absent from more than 3 lectures and/or labs. **NOTE:** Family issues, travel issues, work-related problems, alarm clock failure, UFO sightings, etc., are not valid reasons for being late or absent to class! Only real emergencies will be considered to be excused absences. Excused absences must be documented.
4. The deadline for dropping a course without appearing on transcript is **Sunday, February 2**.
5. The deadline for dropping a full-term class is **Friday, April 11**.
6. No food or drinks in the lab. Only bottled water allowed in the classroom.
7. **Cell phones must be turned off at all times!** Ringing cell phones are a distraction both to me and to other students in the class. If you must use your cell phone during class, please take it outside, and then come back in when you are done. You should not be checking your phone, or texting, during lectures. If you are caught checking your phone, or texting, during class, you may be asked to leave for the day.
8. **No talking during class!** Talking is a distraction to me and other students in the class. If you have questions during the lecture, please ask me! If you are caught talking, you may be asked to leave for the day.
9. **Cheating and plagiarism will not be tolerated at all!** **Plagiarism** is defined as copying entire sections or parts from the lab manual, textbook, or any other source (including other students) for any assignment. Students will receive a **zero** for any assignment if they are caught **cheating** or **plagiarizing**. Students may work together for worksheets and lab worksheets, but each student must turn in **their own work in their own words**. If students turn in assignments with the same or similar wording (i.e., from copying off another student), they will all be given a **zero** for that assignment. Additional disciplinary action may be taken if needed.
10. Lab groups cannot leave the lab until **all** members of the group have finished the experiments. Lab groups will have to show me the data from the lab, and may be asked to explain the data before the lab group is allowed to leave the lab. Lab groups **must** thoroughly clean up after themselves, or else groups will be assigned to do clean up at the end of the next lab!
11. When doing labs, make sure that you observe the results from all parts of the experiments. You may be asked about your results before you can leave the lab, so make sure you have seen the results, or else you may have to repeat that experiment!
12. Any student with a documented disability who may need educational accommodations should notify the instructor or Disabled Student Programs and Services Office (DSP&S; Room 2117, Health Science Building; 355-6312) as soon as possible.

### **Grading Policies:**

1. There will be **4** exams, worth **100 points** each (**400 points** total). Exams will begin at the start of class. Exams will last 60 minutes, and will consist of 50 multiple choice/matching questions dealing with lecture material. Figures from the lectures and textbook will appear on the exams. Scantron sheets will be provided, but make sure you bring good-quality #2 pencils with working erasers. If you are late to the exam, you will not be given extra time to finish it. There will be no make-up exams, except for extreme circumstances. If you have a valid, documented reason for missing an exam, it is **your responsibility** to tell me about it and provide valid documentation by the **next class meeting**, otherwise you will not have the opportunity to make up the exam, and will be given a **zero** for that exam.
2. There will be **1** comprehensive final exam worth **150 points**. It will consist of 75 multiple choice/matching questions, and will cover all of the lecture material covered in the course. There are no make-ups for this exam.
3. There will be **1** lab practical exam, worth **150 points**. This lab practical exam will cover all lab activities during the course. The exam will consist of 20 stations. At each station, you will view some results or other aspects from the lab, and have to answer a question about them. This exam will **not** be multiple choice. There are no make-ups for this exam.
4. There will be **10** lab worksheets worth **10 points** each (**100 points** total). Lab worksheets are due at the end of the lab. Lab worksheets cannot be made up, except for extreme circumstances.

5. There will be **13 on-line** worksheets worth **10 points** each (**130 points** total). These worksheets will deal with various lecture topics, and will be due on the date in the schedule listed at 11:59 PM. Worksheets cannot be made up, except for extreme circumstances. **Worksheets will be found on the Blackboard site under the Worksheets link.**
6. Spelling and grammar count on all written assignments! You will lose up to **20% of the points** on each assignment if you have excessive spelling or grammatical errors.
7. There will be **7 on-line** quizzes worth **10 points** each (**70 points** total). These quizzes will cover interesting articles that demonstrate practical applications of the various topics covered during class. These quizzes will last for 15 minutes, and they will be “open article.” Quizzes will consist of 5 multiple choice questions. Quizzes cannot be made up, except for extreme circumstances. Quizzes will be due on the date in the schedule listed at 11:59 PM. Remember, if you are taking the quiz late at night on the due date, it will be automatically submitted at 11:59 PM, so take it early so you have the entire 15 minutes! **Quizzes will be found on the Blackboard site under the Quizzes link.**
8. There will be extra credit available during the review sessions, and on some assignments.

**Grading scale:**

4 exams	=	400 points
1 final exam	=	150 points
1 lab practical exam	=	150 points
10 Lab worksheets	=	100 points
13 <b>online</b> worksheets	=	130 points
7 <b>online</b> quizzes	=	70 points
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<b>Total</b>	<b>=</b>	<b>1000 points</b>

<b>A</b>	900 - 1000 points
<b>B</b>	800 - 899 points
<b>C</b>	700 - 799 points
<b>D</b>	600 - 699 points
<b>F</b>	0 - 599 points

**How to do well in this class:**

1. Make sure you come on time to all lectures and labs! Arriving late or missing a class for any reason (excused or unexcused) can cause you to miss lecture and lab material, and will only put you at a disadvantage in this class.
2. Make sure you know what will be happening each day for class! Keep the class schedule handy.
3. Skim through or read the chapter before coming to lecture, and lab activities before coming to lab. You will have a general feel for the subject matter, which will help your understanding of the material during lecture. You will also be more prepared to do the lab activity, and you can perform it better, quicker, and will be able to easily understand what is happening in the lab.
5. Pay attention during lectures! I will say things during lecture that are not written on the PowerPoint slides or the board that will be on the exams. Make sure you take good notes during class. Don't just mindlessly write down word-for-word what is on the slides. Listen to what I have to say, and take notes on that also!
6. Read the articles before the quizzes! Even though you can use the articles during the quiz, you will not have enough time to find all the answers before the quiz is over.
7. Study, study, study! You should spend at least 4-5 hours studying for this class each week. You should study in an area where there are no distractions (television, radio, computers, iPods, other people, etc.). However, you should also spend time studying in groups. Nothing makes you learn the material better than having to explain it to someone else!
8. Don't cram! It's better to spend some time each week studying as compared to saving it all until the night before the exam.
9. It is not enough just to memorize facts! On the exams, you will be responsible for using the information learned and applying it to new situations. You need to understand what these facts mean!

If you need any technical assistance with Blackboard, please visit the IVC Blackboard Support website at: <http://www.imperial.edu/students/blackboard-support/>

**Tentative Class Schedule (Mon/Wed 8:35-10:00AM, Tues 8:35-11:45AM)**

<b>Week</b>	<b>Lecture (M)</b>	<b>Lab (T)</b>	<b>Lecture (W)</b>
Jan 20-22	<b>NO CLASS – MLK Day</b>	Introduction to the class and lab / Ch. 1.1,3 – Scientific Study of Life	Ch. 1.1,3 – Scientific Study of Life / Ch. 2 – The Chemistry of Life
Jan 27-29	Ch. 2 – The Chemistry of Life	Ch. 2 – The Chemistry of Life / Chemical Composition of Cells (Lab 3.1, 2)	Ch. 3.1,2,4,5 – Cells / <b>Study of Life Worksheet due</b>
Feb 3-5	Ch. 3.3, 4.5 – Membranes / <b>Animals Quiz due</b>	Metric Measurement and Microscopy (Lab 2.1, 4, 5) / <b>Chemistry Worksheet due</b>	<u>Review for Exam 1</u> / <b>Mad Cow Quiz due</b>
Feb 10-12	Ch. 8.1,4,5 – Cell Division / <b>Cells Worksheet due</b>	Cell Structure and Function (Lab 4.3, 4) / <b>Membranes Worksheet due</b>	<b>Exam 1 – Ch. 1-4 (Membranes)</b>
Feb 17-19	<b>NO CLASS – President’s Day</b>	Cellular Division (Lab 8.1)	Ch. 9.1-6 – Sexual Reproduction and Meiosis
Feb 24-26	Ch. 4.1,3,4 – The Energy of Life	Enzymes (Lab 5.1-3) / <b>Cell Division and Meiosis Worksheet due</b>	Ch. 23.1,2 –Tissues / <b>Blood Quiz due</b>
Mar 3-5	Ch. 27.1,3-5 – Circulation	Ch. 27.6,7 – Respiration / <b>Energy Worksheet due</b>	<u>Review for Exam 2</u> / <b>Tissues Worksheet due</b>
Mar 10-12	Ch. 28.7 – Digestion / <b>Circulation Worksheet due</b>	Fetal Pig Dissection 1 (Lab 26.3, 27.5)	<b>Exam 2 – Ch. 4 (Energy), 8, 9, 23, 27</b>
Mar 17-19	Ch. 28.9,10 – Urination	Fetal Pig Dissection 2 (Lab 26.4-6, 27.5)	Ch. 24.1,2,4-6 – Nervous System
Mar 24-26	Ch. 24.7-11 – Senses / <b>Digestion and Urination Worksheet due</b>	Fetal Pig Dissection 3 (Lab 27.1) / <b>Nutrition Quiz due</b>	Ch. 2.5D, 7.1, 8.2 – DNA Structure and Replication / <b>Ginkgo Quiz due</b>
Mar 31 – Apr 2	Ch. 7.2,3,4,6 – Gene Function	Ch. 7.2,3,4,6 – Gene Function / Senses (Lab 30.2-4)	<u>Review for Exam 3</u> / <b>DNA Worksheet due</b>
Apr 7-9	Ch. 10.1,2,3,7,8 – Patterns of Inheritance / <b>Diet Quiz due</b>	Ch. 10.1,2,3,7,8 – Patterns of Inheritance / DNA Isolation (Lab 11.3, 4)	<b>Exam 3 – Ch. 28, 24, 7, 8</b>
Apr 14-16	Ch. 10.1,2,3,7,8 – Patterns of Inheritance	Human Genetics (Lab 10.2)	Ch. 8.6 – Cancer / <b>Genetics Worksheet due</b>
Apr 21-23	<b>SPRING BREAK</b>	<b>SPRING BREAK</b>	<b>SPRING BREAK</b>
Apr 28-30	Ch. 12.1,2,3,5 – Forces of Evolutionary Change	HIV Lab / <b>Cancer Worksheet due</b>	Ch. 18.2,4,6 – Population Ecology / <b>Cancer Quiz due</b>
May 5-7	<u>Review for Exam 4</u>	<u>Review for Lab Exam</u> / <b>Populations Worksheet due</b>	<b>Exam 4 – Ch. 10, 8 (Cancer), 12, 18</b>
May 12-14	<u>Review for Final Exam</u>	<b>Lab Exam (all labs)</b>	<b>Final Exam (all chapters)</b>