Basic Course Information

Semester	**Spring 2017**	Instructor Name	**Dr. Daniel Gilison**
Course Title & #	**General Biology: Molecules, Cells, and Genetics – BIOL 180**	Email	**daniel.gilison@imperial.edu**
CRN #	**20993**	Webpage	**http://imperial.blackboard.com**
Room	**2722 (lecture), 2711 (lab)**	Office	**Room 2770**
Class Dates	**2/16 – 6/10**	Office Hours	**MTW 11:45-12:45** **R 2:15-3:15**
Class Days	**MTW**	Office Phone #	**(760) 355-5759**
Class Times	**2:00-3:25 PM (MW lecture)** **2:00-5:10 PM (T lab)**	Office contact if student will be out or emergency	**(760) 355-5759 or daniel.gilison@imperial.edu**
Units	**4**		

Course Description

This is one of two entry-level courses designed for life science majors, health care, and science educators intending to transfer to four-year institutions. However, the course is open to all students. This course will introduce students to molecules of cells, cell structures and functions, cell division, cellular respiration, photosynthesis, molecular biology, and genetics. (CSU, UC)

Student Learning Outcomes

Upon course completion, the successful student will have acquired new skills, knowledge, and or attitudes as demonstrated by being able to:

1. write lab reports that demonstrate an understanding of the lab and the ability to draw conclusions based on data. (ILO1, ILO2)
2. discuss primary research literature and understand how science is performed and described. (ILO4)
3. demonstrate the ability to think like a scientist by coming up with a valid experimental design. (ILO2)
4. demonstrate critical-thinking skills on exam essay questions. (ILO2)

Course Objectives

Upon satisfactory completion of the course, students will be able to:

1. Understand the basic concepts of biology and explain and use the scientific method.
2. Describe the structure of atoms, and understand why chemical bonds form.
3. Explain the important properties of water molecules and carbon atoms for life.
4. Describe the different macromolecules in living organisms, and give examples of each type.
5. Understand the functions of cell organelles.
6. Explain the functions of the cell membrane.
7. Describe metabolism, and understand how enzymes assist in chemical reactions.
8. Explain the processes of cellular respiration and photosynthesis.
9. Understand the processes of cell communication.
10. Describe the processes of mitosis and meiosis, and how they are regulated.
11. Explain Mendelian inheritance, give examples of inheritance patterns, and work problems dealing with basic Mendelian genetics.
12. Describe chromosome structure and function, including DNA replication and repair, and give examples of genetic diseases at the chromosomal level.
13. Understand the processes of transcription and translation, and how DNA mutations cause changes in protein sequences.
14. Discuss modern DNA technologies, and their importance in life.

Textbooks & Other Resources or Links

- Reece, J.B., Urry, L.A., Cain, M.L., Wasserman, S.A., Minorsky, P.V., Jackson, R.B. (2015). *Campbell Biology, Custom Edition* (10th/e). San Francisco Pearson/Benjamin Cummings. ISBN 1-269-70075-8
  - **CLASS WILL BE USING A CUSTOM EDITION OF THE ABOVE TEXTBOOK**
- Morgan, Judith G., and Carter, M. Eloise Brown (2015). *Investigating Biology Lab Manual* (8th/e). San Francisco Pearson/Benjamin Cummings.
  - **CLASS WILL BE USING A CUSTOM EDITION OF THE ABOVE LAB MANUAL**
- BioRad Lab Manual (provided by STEM Club)

Course Requirements and Instructional Methods

1. There will be **4** written exams, worth **100 points** each (**400 points** total). Exams will begin at the start of class, and will consist of 40 multiple choice/matching questions, and 4 short-answer questions. 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 exam, worth **100 points**. This lab exam will test your ability to think like a scientist by using lab techniques and the scientific method covered in the class to answer a scientific question. This lab exam will be open book/notes/papers. There are no make-ups for this exam.
4. We will be reading and discussing scientific papers during some of the labs. Reading the papers and discussing them are part of your grade. There are **3** paper discussion sessions worth **20 points** each (**60 points** total). **5 points** from each discussion will be an "open paper" 5 minute quiz about the paper before the discussion. The other **15 points** will be for the group discussion.
5. There will be **9** lab worksheets worth **10 points** each (**90 points** total). Lab worksheets are due at the end of the lab. Lab worksheets cannot be made up, except for extreme circumstances.
6. There will be **4** lab reports worth **50 points** each (**200 points** total). Lab reports are due at the **start** of class as outlined on the schedule. Late lab reports will **NOT** be accepted, unless under extreme circumstances. Lab reports will be due for the following labs – Osmosis, Enzymes, DNA Fingerprinting, and PV92.
7. 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.
8. There will be extra credit available during the review sessions and some assignments.

Out of Class Assignments: The Department of Education policy states that one (1) credit hour is the amount of student work that reasonably approximates not less than one hour of class time and two (2) hours of out-of-class time per week over the span of a semester. WASC has adopted a similar requirement.

Course Grading Based on Course Objectives

4 exams	=	400 points
1 comprehensive final	=	150 points
1 lab exam	=	100 points
3 Paper discussions	=	60 points
9 Lab worksheets	=	90 points
4 Lab reports	=	200 points
Total	**=**	**1000 points**

A	900 – 1000 points
B	800 – 899 points
C	700 – 799 points
D	600 – 699 points
F	0 – 599 points

Attendance

- A student who fails to attend the first meeting of a class or does not complete the first mandatory activity of an online class will be dropped by the instructor as of the first official meeting of that class. Should readmission be desired, the student's status will be the same as that of any other student who desires to add a class. It is the student's responsibility to drop or officially withdraw from the class. See General Catalog for details.
- Regular attendance in all classes is expected of all students. A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week may be dropped. For online courses, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.
- Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as 'excused' absences.

Classroom Etiquette

1. No food or drinks in the lab. Only bottled water allowed in the classroom.
2. **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.

3. **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.
4. 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 lab!
5. The deadline for dropping a course without appearing on transcript is **Sunday, February 26**.
6. The deadline for dropping a full-term class is **Saturday, May 13**.

Academic Honesty

- Plagiarism is taking and presenting as one's own the writings or ideas of others, without citing the source. You should understand the concept of plagiarism and keep it in mind when taking exams and preparing written materials. If you do not understand how to 'cite a source' correctly, you must ask for help.
- Cheating is defined as fraud, deceit, or dishonesty in an academic assignment, or using or attempting to use materials, or assisting others in using materials that are prohibited or inappropriate in the context of the academic assignment in question.

Anyone caught cheating or plagiarizing will receive a zero (0) on the exam or assignment, and the instructor may report the incident to the Campus Disciplinary Officer, who may place related documentation in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the General School Catalog for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to, the following: (a) plagiarism; (b) copying or attempting to copy from others during an examination or on an assignment; (c) communicating test information with another person during an examination; (d) allowing others to do an assignment or portion of an assignment; (e) using a commercial term paper service.

Students may work together for lab worksheets and lab reports, 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 Help

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 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. You will have a general feel for the subject matter, which will help your understanding of the material during lecture. Look through the figures for the chapter, and try to understand them.
4. Read through the lab activity before coming to lab. It will make you 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. Study, study, study! You should spend at least 6 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!
7. 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.

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

Disabled Student Programs and Services (DSPS)

Any student with a documented disability who may need educational accommodations should notify the instructor or the Disabled Student Programs and Services (DSP&S) office as soon as possible. The DSP&S office is located in Building 2100, telephone 760-355-6313, if you feel you need to be evaluated for educational accommodations.

Student Counseling and Health Services

Students have counseling and health services available, provided by the pre-paid Student Health Fee. We now also have a fulltime mental health counselor. For information see http://www.imperial.edu/students/student-health-center/. The IVC Student Health Center is located in the Health Science building in Room 2109, telephone 760-355-6310.

Student Rights and Responsibilities

Students have the right to experience a positive learning environment and due process. For further information regarding student rights and responsibilities, please refer to the IVC General Catalog available online at http://www.imperial.edu/index.php?option=com_docman&task=doc_download&gid=4516&Itemid=762

Information Literacy

Imperial Valley College is dedicated to helping students skillfully discover, evaluate, and use information from all sources. Students can access tutorials at http://www.imperial.edu/courses-and-programs/divisions/arts-and-letters/library-department/info-lit-tutorials/

Anticipated Class Schedule / Calendar

Tentative Class Schedule (Mon/Wed 2:00 – 3:25 PM lecture, Tues 2:00 –5:10 PM lab)

Week	Lecture (Mondays)	Lab (Tuesdays)	Lecture (Wednesdays)
2/13-15	Introduction to the class	Introduction to the lab Ch. 1.1,3,4 – Biology & Scientific Inquiry	Ch. 1.1,3,4 – Biology & Scientific Inquiry
2/20-22	**PRESIDENT'S DAY – NO CLASS**	Ch. 2.1-3 – Chemical Context of Life	Ch. 3.1-3 – Water
2/27 – 3/1	Ch. 4.2,3 – Carbon	Ch. 5.1-5 – Large Biological Molecules Pipets lab	Ch. 5.1-5 – Large Biological Molecules
3/6-8	Ch. 5.1-5 – Large Biological Molecules Ch. 6.2-7 – Tour of the Cell	Got Protein? Lab **Exam 1 review due online**	**Exam 1 – Ch. 1 – 4**
3/13-15	Ch. 6.2-7 – Tour of the Cell	Ch. 6.2-7 – Tour of the Cell Microscope and Cells lab (1,2, 5C)	Ch. 6.2-7 – Tour of the Cell Ch. 7.1-5 - Membranes
3/20-22	Ch. 7.1-5 - Membranes **Breast Cancer paper quiz due online**	Breast Cancer paper discussion Osmosis lab (3A)	Ch. 8.1-5 – Metabolism
3/27-29	Ch. 8.1-5 – Metabolism	Ch. 9.1-4 – Cellular Respiration Enzymes lab (1, 2)	Ch. 9.1-4 – Cellular Respiration
4/3-5	Ch. 10.1-3 – Photosynthesis	Ch. 10.1-3 – Photosynthesis Cellular Respiration lab (2A) **Osmosis Lab Report due**	Ch. 11.1-4 – Cell Communication **Exam 2 review due online**
4/10-12	**Exam 2 – Ch. 5 – 9**	Ch. 12.1-3 – Cell Cycle	Ch. 13.1-4 – Meiosis
4/17-19	**SPRING BREAK**	**SPRING BREAK**	**SPRING BREAK**
4/24-26	Ch. 16.1-2 – Molecular Basis of Inheritance	DNA Fingerprint lab (Ch. 20.1 – Restriction enzymes & Gel electrophoresis) **Enzymes Lab Report due**	Ch. 17.1-5 – Gene to Protein **Life Span paper quiz due online**
5/1-3	Life Span paper discussion	pGLO I lab (Ch. 20.1 – Bacterial transformation)	Ch. 17.1-5 – Gene to Protein **Exam 3 review due online**
5/8-10	**Exam 3 – Ch. 10 – 13, 16**	PV92 I lab (Ch. 20.1 – PCR) pGLO II lab **DNA Fingerprint Lab Report due**	Ch. 14.1-4 – Mendel and the Gene Idea
5/15-17	Ch. 14.1-4 – Mendel and the Gene Idea	PV92 II lab	Ch. 15.2-5 – Chromosomal Basis of Inheritance
5/22-24	Ch. 15.2-5 – Chromosomal Basis of Inheritance **Telomerase paper quiz due online**	Telomerase paper discussion Ch. 20.1,2,4 & 21.1,2 – Biotechnology & Genomes	Ch. 20.1,2,4 & 21.1,2 – Biotechnology & Genomes
5/29-31	**MEMORIAL DAY – NO CLASS**	Lab exam review **PV92 Lab Report due** **Exam 4 review due online**	**Exam 4 – Ch. 17, 14, 15, 20, 21**
6/5-7	Final exam review **Final exam review due online**	**Lab Exam**	**Comprehensive Final (all chapters)**