



Basic Course Information

Semester:	Spring 2021	Instructor Name:	Dr. Daniel Gilison
Course Title & #:	General Biology: Molecules, Cells, and Genetics – BIOL 180	Email:	daniel.gilison@imperial.edu
CRN #:	21531	Webpage (optional):	http://www.imperial.edu/students/canvas
Classroom:	N/A	Office #:	2770
Class Dates:	2/15 – 6/10	Office Hours:	M – R 5-6 PM
Class Days:	M - R	Office Phone #:	(760) 355-5759
Class Times:	Asynchronous online	Emergency Contact:	(760) 355-5759 or daniel.gilison@imperial.edu
Units:	4	Class Format:	Asynchronous online

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)

Course Prerequisite(s) and/or Corequisite(s)

Appropriate placement as defined by AB705; or MATH 098 or MATH 091 with a grade of “C” or better.

Student Learning Outcomes

Upon course completion, the successful student will have acquired new skills, knowledge, and or attitudes as demonstrated by being able to: demonstrate the ability to think like a scientist by coming up with a valid experimental design. (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. (2016). *Campbell Biology, Custom Edition* (12th/e). San Francisco Pearson/Benjamin Cummings. ISBN 9780135188743
 - **CLASS WILL BE USING A CUSTOM EDITION OF THE ABOVE TEXTBOOK**
- Morgan, Judith G., and Carter, M. Eloise Brown (2017). *Investigating Biology Lab Manual* (9th/e). San Francisco Pearson/Benjamin Cummings. ISBN 9780134473468
 - **CLASS WILL BE USING A CUSTOM EDITION OF THE ABOVE LAB MANUAL**
- BioRad Lab Manual (provided by STEM Club)
- IVC Bookstore: <https://www.bkstr.com/imperialvalleystore/home>
- Online textbook: <https://console.pearsoned.com/enrollment/3ui9iv>

Course Requirements and Instructional Methods

1. There will be **4 on-line** exams, worth **100 points** each (**400 points** total). Exams will consist of 50 multiple choice/matching questions. Figures from the lectures and textbook will appear on the exams. You will be given a 2-hour time block to take the exam. You must start and finish the exam within this time block. 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 **as soon as possible**, otherwise you will not have the opportunity to make up the exam, and will be given a **zero** for that exam. **Exams will be found on the Canvas site under the Assignments link.**
2. There will be **1 on-line** 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. **Exams will be found on the Canvas site under the Assignments link.**
3. There will be **18 on-line** homework assignments worth **10 points** each (**180 points** total). Homework will be due on the date in the schedule listed at 11:59 PM. **Lab Worksheets will be found on the Canvas site under the Assignments link.**
4. There will be **13 on-line** lab worksheets worth **10 points** each (**130 points** total). Lab worksheets will be due on the date in the schedule listed at 11:59 PM. **Lab Worksheets will be found on the Canvas site under the Assignments link.**
5. There will be **5 on-line** review quizzes for extra credit and they will be due on the date in the schedule listed at 11:59 PM. **Review quizzes will be found on the CANVAS site under the Assignments 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 may be extra credit available on some assignments.
- 8.

Course Grading Based on Course Objectives

4 Exams	400 points	Grade	Points
1 Lab exam	130 points	A	774 - 860 points
10 lab worksheets	100 points	B	688 - 773 points
21 homework assignments	210 points	C	602 - 687 points
Total	860 points	D	516 - 601 points
		F	0 - 515 points

Course Attendance Policies

- 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.
- 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.
- The deadline for dropping a course without appearing on transcript is **Sunday, February 28**.
- The deadline for dropping a full-term class is **Saturday, May 15**.



Additional Help

1. Make sure you watch all lectures and labs! Not watching the lecture or lab videos, or just skipping through them, 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 watching the lectures, and lab activities before watching the labs. You will have a general feel for the subject matter, which will help your understanding of the material during lecture. You will also be able to easily understand what is happening in the lab.
4. Pay attention during lectures! I will say things during lecture that are not written on the PowerPoint slides that will be on the exams. Make sure you take good notes during lecture. 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!
5. 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, music, other people, etc.). However, you should also spend time studying with other students (online, of course!). Nothing makes you learn the material better than having to explain it to someone else!
6. Spend time doing the online homework! It is there to help you learn the material, so not doing it, or waiting until the due date to start the homework will only hurt your grade in the class.
7. Don't cram! It is better to spend some time each day studying as compared to saving it all until the night before the exam.
8. 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!

ONLINE CLASSES:

1. Online classes are typically harder, not easier, for most students. You need to be self-sufficient with studying and keeping up with the material and work needed to be done for the class.
2. I will be sending out constant announcements about when lectures are available and when assignments are due. However, this is not a substitute for reading the syllabus and class schedule.
3. **Check your IVC email** constantly! All announcements and major forms of communication will be sent to it.
4. Exams and review quizzes will use **Proctorio**. You have to have Google Chrome to use Proctorio (<https://www.google.com/chrome/>) and after downloading it, you need to add the Proctorio extension (<https://getproctorio.com/>). I will give you a practice quiz first to check that everything works for you so there are no problems with the review quizzes or exams.
5. You need to **watch the full lectures** – and probably multiple times! Don't treat lectures like regular videos that you can just skip through. You need to treat the online lecture videos as if you were really in the classroom listening to the lecture. Not doing so will hurt your grade in this class.
6. Any questions about the course material or anything else about the class? Ask me! DO NOT rely on Google or random websites to get the information. If you are confused about something in the class, your primary resources should be the lecture videos, lecture notes, textbook, and myself.

IVC Student Resources

IVC wants you to be successful in all aspects of your education. For help, resources, services, and an explanation of policies, visit <http://www.imperial.edu/studentresources> or click the heart icon in Canvas.



Anticipated Class Schedule/Calendar

Week	Lecture (Mondays)	Lab (Tuesdays)	Lecture (Wednesdays)	Assignments (Thursdays)
2/15	PRESIDENT'S DAY – NO CLASS	Intro to class/lab	Intro to class/lab	Lab safety worksheet due Syllabus quiz due
2/22	Ch. 1.1,3,4 – Biology & Scientific Inquiry	Metrics Lab	Ch. 2.1-3 – Chemical Context of Life	<u>Proctorio practice quiz due</u> Metrics Lab 1 worksheet due
3/1	Ch. 2.1-3 – Chemical Context of Life Chapter 1 Homework due	Metrics Lab 2	Ch 3.1-3 – Water	Metrics Lab 2 worksheet due
3/8	Ch 4.2,3 – Carbon Chapter 2 Homework due	Pipets Lab	Ch. 5.1-5 – Large Biological Molecules Chapter 3 Homework due	Pipets Lab worksheet due <u>Exam 1 review due online</u> Chapter 4 Homework due
3/15	Exam 1 – Ch. 1 – 4	Got Protein? Lab	Ch. 5.1-5 – Large Biological Molecules	Got Protein? Lab Worksheet due
3/22	Ch. 6.2-7 – Tour of the Cell	Microscope and Cells lab	Ch. 6.2-7 – Tour of the Cell Chapter 5 Homework due	Microscope and Cells lab worksheet due
3/29	Ch. 7.1-5 – Membranes	Osmosis lab	Ch. 8.1-5 – Metabolism Chapter 6 Homework due	Osmosis lab worksheet due
4/5	SPRING BREAK	SPRING BREAK	SPRING BREAK	SPRING BREAK
4/12	Ch. 9.1-4 – Cellular Respiration Chapter 7 Homework due	Enzymes lab	Ch. 10.1-3 – Photosynthesis Chapter 8 Homework due	Enzymes lab worksheet due <u>Exam 2 review due online</u> Chapter 9 Homework due
4/19	Exam 2 – Ch. 5 – 9	No lab	Ch. 11.1-4 – Cell Communication Chapter 10 Homework due	No lab worksheet due
4/26	Ch. 12.1-3 – Cell Cycle	Mitosis lab	Ch. 13.1-4 – Meiosis Chapter 11 Homework due	Mitosis lab worksheet due
5/3	Ch. 16.1-2 – Molecular Basis of Inheritance Chapter 12 Homework due	DNA Fingerprint lab (Ch. 20.1 – Restriction enzymes)	Ch. 17.1-5 – Gene to Protein Chapter 13 Homework due	DNA Fingerprint lab worksheet due <u>Exam 3 review due online</u> Chapter 16 Homework due
5/10	Exam 3 – Ch. 10 – 13, 16	No lab	Ch. 17.1-5 – Gene to Protein	No lab worksheet due
5/17	Ch. 14.1-4 – Mendel and the Gene Idea Chapter 17 Homework due	pGLO lab (Ch. 20.1 – Bacterial transformation)	Ch. 14.1-4 – Mendel and the Gene Idea	pGLO lab worksheet due
5/24	Ch. 15.2-5 – Chromosomal Basis of Inheritance Chapter 14 Homework due	Human Genetics lab	Ch. 20.1,2,4 & 21.1,2 – Biotechnology & Genomes	Human Genetics lab worksheet due Chapter 15 Homework due
5/31	MEMORIAL DAY – NO CLASS	PV92 lab (Ch. 20.1 – PCR) <u>Exam 4 review due online</u> Chapter 20/21 Homework due	Exam 4 – Ch. 17, 14, 15, 20, 21	PV92 lab worksheet due
6/7	<u>Final exam review</u>	<u>Final exam review due online</u>	Comprehensive Final (all chapters)	No lab worksheet due