

| Basic Course Information | | | |
|--------------------------|---|--------------------|--|
| Semester: | Spring 2020 | Instructor Name: | Dr. Daniel Gilison |
| Course Title & #: | General Biology: Molecules, Cells, and Genetics – BIOL 180 | Email: | daniel.gilison@imperial.edu |
| CRN #: | 20993 | Webpage: | http://www.imperial.edu/students/canvas |
| Classroom: | 2734 (lecture), 2711 (lab) | Office #: | 2770 |
| Class Dates: | 2/18 – 6/12 | Office Hours: | M-R 1:30-2:30 PM |
| Class Days: | MTW | Office Phone #: | (760) 355-5759 |
| Class Times: | 4:20-5:45 PM (MW lecture) 2:40-5:50 PM (T lab) | Emergency Contact: | (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)

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 use logical and scientific thinking to test a hypothesis. (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* (11th/e). San Francisco Pearson/Benjamin Cummings. ISBN 9780134093413
 - **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)

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 50 multiple choice/matching 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.

- 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.
- There will be **3** scientific thinking activities that will take place during lab that are worth **50 points** total (**10 points** for the 1st discussion, **20 points** for the 2nd, and **20 points** for the 3rd). These cannot be made up, except for extreme circumstances.
- There will be **3** lab reports worth **50 points** each (**150 points** total). Lab reports are due at the **start** of lab 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, Cellular Respiration, and DNA Fingerprinting.
- 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.
- There will be extra credit available during the online reviews and on 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 |
| 10 Lab worksheets | = | 100 points |
| 3 Thinking activities | = | 50 points |
| 3 Lab reports | = | 150 points |
| ----- | | |
| Total | = | 850 points |
| A | | 765 – 850 points |
| B | | 680 – 764 points |
| C | | 595 – 679 points |
| D | | 510 – 594 points |
| F | | 0 – 509 points |

- | Attendance |
|---|
| <ul style="list-style-type: none"> 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 |
|---|
| <ol style="list-style-type: none"> No food or drinks in the lab. Only bottled water allowed in the classroom. 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. 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! Students who disrupt or interfere with a class may be sent out of the room and told to meet with the Campus Disciplinary Officer before returning to continue with coursework. Disciplinary procedures will be followed as outlined in the General Catalog. Due to college rules and state laws, no one who is not enrolled in the class may attend, including children. 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! The deadline for dropping a course without appearing on transcript is Sunday, March 1. The deadline for dropping a full-term class is Saturday, May 16. |

Academic Honesty

Academic honesty in the advancement of knowledge requires that all students and instructors respect the integrity of one another's work and recognize the importance of acknowledging and safeguarding intellectual property.

There are many different forms of academic dishonesty. The following kinds of honesty violations and their definitions are not meant to be exhaustive. Rather, they are intended to serve as examples of unacceptable academic conduct.

- 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 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.

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 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.
4. 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!
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 in groups. Nothing makes you learn the material better than having to explain it to someone else!
6. 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.
7. 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!

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. Please contact them if you feel you need to be evaluated for educational accommodations.

Information Literacy

Imperial Valley College is dedicated to helping students skillfully discover, evaluate, and use information from all sources. The IVC [Library Department](#) provides numerous [Information Literacy Tutorials](#) to assist students in this endeavor.

Additional Student Services

Imperial Valley College offers various services in support of student success. The following are some of the services available for students. Please speak to your instructor about additional services which may be available.

- **CANVAS LMS.** Canvas is Imperial Valley College's main Learning Management System. To log onto Canvas, use this link: [Canvas Student Login](#). The [Canvas Student Guides Site](#) provides a variety of support available to students 24 hours per day. Additionally, a 24/7 Canvas Support Hotline is available for students to use: 877-893-9853.
- **Learning Services.** There are several learning labs on campus to assist students through the use of computers and tutors. Please consult your [Campus Map](#) for the [Math Lab](#); [Reading, Writing & Language Labs](#); and the [Study Skills Center](#).
- **Library Services.** There is more to our library than just books. You have access to tutors in the [Study Skills Center](#), study rooms for small groups, and online access to a wealth of resources.

Imperial Valley College Course Syllabus – BIOL 180 – General Biology: Molecules, Cells, and Genetics

Tentative Class Schedule (Mon/Wed 4:20-5:45 PM, Tues 2:40-5:50 PM)

| Week | Lecture (Mondays) | Lab (Tuesdays) | Lecture (Wednesdays) |
|-------------|--|--|--|
| 2/17 | PRESIDENT'S DAY – NO CLASS | Introduction to the lab Scientific thinking activity 1 | Introduction to the Class |
| 2/24 | Ch. 1.1,3,4 – Themes in the Study of Life | Metrics Lab | Ch. 2.1-3 – Chemical Context of Life |
| 3/2 | Ch. 2.1-3 – Chemical Context of Life | Scientific thinking activity 2 | Ch. 3.1-3 – Water |
| 3/9 | Ch. 4.2,3 – Carbon | Pipets lab | Ch. 5.1-5 – Macromolecules |
| 3/16 | Ch. 5.1-5 – Macromolecules <u>Exam 1 review due online</u> | Ch. 6.2-7 – Cells Microscope and Cells lab (1, 2, 5C) | Exam 1 – Ch. 1 – 4 |
| 3/23 | Ch. 6.2-7 – Cells | Got Protein? Lab (BIO-RAD) | Ch. 7.1-5 – Membranes |
| 3/30 | Ch. 8.1-5 – Metabolism | Osmosis lab (3A) | Ch. 8.1-5 – Metabolism |
| 4/6 | Ch. 9.1-4 – Cellular Respiration | Enzymes lab (1, 2) Osmosis Lab Report due | Ch. 9.1-4 – Cellular Respiration |
| 4/13 | SPRING BREAK | NO LAB | NO CLASS |
| 4/20 | Ch. 10.1-3 – Photosynthesis <u>Exam 2 review due online</u> | Ch. 10.1-3 – Photosynthesis Cellular Respiration lab (2A) | Exam 2 – Ch. 5 – 9 |
| 4/27 | Ch. 11.1-4 – Cell Signaling | Scientific thinking activity 3 Cellular Respiration Lab Report due | Ch. 12.1-3 – Cell Cycle |
| 5/4 | Ch. 13.1-4 – Meiosis | DNA Fingerprint I lab (BIO-RAD) (Ch. 20.1 – Restriction enzymes) | Ch. 16.1-2 – DNA |
| 5/11 | Ch. 17.1-5 – Gene to Protein <u>Exam 3 review due online</u> | DNA Fingerprint II lab (BIO-RAD) (Ch. 20.1 – Gel electrophoresis) Ch. 17.1-5 – Gene to Protein | Exam 3 – Ch. 10 – 13, 16 |
| 5/18 | Ch. 14.1-4 – Mendel and the Gene Idea | pGLO I lab (BIO-RAD) (Ch. 20.1 – Bacterial transformation) DNA Fingerprint Lab Report due | Ch. 14.1-4 – Mendel and the Gene Idea |
| 5/25 | MEMORIAL DAY – NO CLASS | PV92 I lab (BIO-RAD) (Ch. 20.1 – PCR) pGLO II lab (BIO-RAD) | Ch. 15.2-5 – Chromosomes |
| 6/1 | Ch. 20.1,2,4 & 21.1,2 – Biotechnology & Genomes | PV92 II lab (BIO-RAD) (Ch. 20.1 – PCR) <u>Exam 4 review due online</u> | Exam 4 – Ch. 17, 14, 15, 20/21 (no PCR) |
| 6/8 | <u>Final exam review</u> <u>Final exam review due online</u> | PV92 III lab (BIO-RAD) | Comprehensive Final (all chapters) |

Veteran's Center

The mission of the [IVC Military and Veteran Success Center](#) is to provide a holistic approach to serving military/veteran students on three key areas: 1) Academics, 2) Health and Wellness, and 3) Camaraderie; to serve as a central hub that connects military/veteran students, as well as their families, to campus and community resources. Their goal is to ensure a seamless transition from military to civilian life. The Center is located in Building 600 (Office 624), telephone 760-355-6141.

Extended Opportunity Program and Services (EOPS)

The Extended Opportunity Program and Services (EOPS) offers services such as priority registration, personal/academic counseling, tutoring, book vouchers, and community referrals to qualifying low-income students. EOPS is composed of a group of professionals ready to assist you with the resolution of both academic and personal issues. Our staff is set up to understand the problems of our culturally diverse population and strives to meet student needs that are as diverse as our student population.

Also under the umbrella of EOPS our CARE (Cooperative Agency Resources for Education) Program for single parents is specifically designed to provide support services and assist with the resolution of issues that are particular to this population. Students that are single parents receiving TANF/Cash Aid assistance may qualify for our CARE program, for additional information on CARE please contact Lourdes Mercado, 760-355- 6448, lourdes.mercado@imperial.edu.

EOPS provides additional support and services that may identify with one of the following experiences:

- Current and former foster youth students that were in the foster care system at any point in their lives
- Students experiencing homelessness
- Formerly incarcerated students

To apply for EOPS and for additional information on EOPS services, please contact Alexis Ayala, 760-355-5713, alexis.ayala@imperial.edu.

Student Equity Program

- The Student Equity Program strives to improve Imperial Valley College's success outcomes, particularly for students who have been historically underrepresented and underserved. The college identifies strategies to monitor and address equity issues, making efforts to mitigate any disproportionate impact on student success and achievement. Our institutional data provides insight surrounding student populations who historically, are not fully represented. Student Equity addresses disparities and/or disproportionate impact in student success across disaggregated student equity groups including gender, ethnicity, disability status, financial need, Veterans, foster youth, homelessness, and formerly incarcerated students. The Student Equity Program provides direct supportive services to empower students experiencing insecurities related to food, housing, transportation, textbooks, and shower access. We recognize that students who struggle meeting their basic needs are also at an academic and economic disadvantage, creating barriers to academic success and wellness. We strive to remove barriers that affect IVC students' access to education, degree and certificate completion, successful completion of developmental math and English courses, and the ability to transfer to a university. Contact: 760.355.5736 or 760.355.5733 Building 100.

The Student Equity Program also houses IVC's Homeless Liaison, who provides direct services, campus, and community referrals to students experiencing homelessness as defined by the McKinney-Vento Act. Contact: 760.355.5736 Building 100.

Student Counseling and Health Services

Students have counseling and health services available, provided by the pre-paid Student Health Fee.

- **Student Health Center.** A Student Health Nurse is available on campus. In addition, Pioneers Memorial Healthcare District provide basic health services for students, such as first aid and care for minor illnesses. Contact the IVC [Student Health Center](#) at 760-355-6128 in Room 1536 for more information.
- **Mental Health Counseling Services.** Short-term individual, couples, family and group counseling services are available for currently enrolled students. Services are provided in a confidential, supportive, and culturally sensitive environment. Please contact the IVC Mental Health Counseling Services at 760-355-6310 or in the building 1536 for appointments or more information.

Student Rights and Responsibilities

Students have the right to experience a positive learning environment and to due process of law. For more information regarding student rights and responsibilities, please refer to the IVC [General Catalog](#).

Online Netiquette

- What is netiquette? Netiquette is internet manners, online etiquette, and digital etiquette all rolled into one word. Basically, netiquette is a set of rules for behaving properly online. Students are to comply with the following rules of netiquette: (1) identify yourself, (2) include a subject line, (3) avoid sarcasm, (4) respect others' opinions and privacy, (5) acknowledge and return messages promptly, (6) copy with caution, (7) do not spam or junk mail, (8) be concise, (9) use appropriate language, (10) use appropriate emoticons (emotional icons) to help convey meaning, and (11) use appropriate intensifiers to help convey meaning [do not use ALL CAPS or multiple exclamation marks (!!!!)].