



Syllabus for General Biology I Fall 2021

Course and Instructor Information

CRN: 70124 (Mon lab) and 70416 (Wed lab)

Instructor: Beth Miller, Ph.D.

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Office: LMC 213



Tea Time (Office hours): M W 3:00-4:30 in LMC 213

3-4 pm T Th <https://vcccd-edu.zoom.us/j/96288206806>

or by appointment

Division Office Information

- **PHONE:** (805) 378-1459
- **EATM 212:** Monday-Friday: 8:00-4:30
- **STAFF: Dean:** Carol Higashida **Administrative Assistant:** Stephanie Kostezak
- **EMAIL:** MCdivision124@vcccd.edu
- **DEPARTMENT CHAIR:** Audrey Chen achen@vcccd.edu

Prerequisites: Math M03 or equivalent and CHEM M12 or high school chemistry, all with a grade of C or better

Course Description

Introduces students to major biological themes and principles that are fundamental to an understanding of life processes in any field of biology today. Includes the scientific process, experimental design, biological chemistry, prokaryotic and eukaryotic cell structure and function, cellular metabolism, cell reproduction and its controls, cell communication, genetics, molecular biology, DNA technology and evolutionary processes.

Class Format

This class is hybrid format. Lectures will be done asynchronously, but students are expected to keep up with reading and lecture and homework and discussions each week. Most assignments are due at 11:59 pm on their due dates. Labs and exams will be completed on campus in LMC 219 or LMC 220. In the event of campus closure due to health, fire, security, power or other emergency, the lab and exams may also be moved to online format; proposed schedule and dates are dependent on State and County orders beyond our control. Also, to maintain safe physical distancing, lab sections will be subdivided so that only half the students attend the first 1.5 hours and other students complete their lab during the other 1.5 hour block. **Students must attend lab only during the assigned time.** There are no exceptions. Because of time constraints, some lab activities will need to be completed outside of the lab room. Be sure to read the lab and watch the introductory lesson prior to coming to the lab.

Important: Students should check with their specific transfer schools and programs to determine if online labs will be accepted. Some schools and programs will accept them and some won't.

Course units and limitations: 5 Units 1. Student cannot complete both BIOL M02A and BIOL M02AH courses because credit will only be awarded to the first course completed.

2. No credit for BIOL M01 if taken after BIOL M02A or BIOL M02AH.

Student Learning Outcomes

- Students will understand how evolutionary principles provide a comprehensive model for understanding the origins and relationships of living organisms
- Students enrolled in Biology MO2A will be able to critically analyze data and interpret results from experiments throughout the course.

Course Objectives

Upon successful completion of the course, a student will be able to:

1. understand and discuss the basic themes of biology that permeate all levels of organization:
 - a. Define the basic vocabulary
 - b. Compare and contrast the interactions between the basic vocabulary words
 - c. Construct mental models for the various systems studied
 - d. Evaluate and appraise the evidence behind the various models discussed
 - e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.
2. discuss the chemical basis of biological systems including the structure and function of biological molecules:
 - a. Define the basic vocabulary
 - b. Compare and contrast the interactions between the basic vocabulary words
 - c. Construct mental models for the various systems studied
 - d. Evaluate and appraise the evidence behind the various models discussed
 - e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.
3. explain the concepts and processes of cellular metabolism including photosynthesis, cellular respiration and the role of adenosine triphosphate in the thermodynamics of living systems:
 - a. Define the basic vocabulary
 - b. Compare and contrast the interactions between the basic vocabulary words
 - c. Construct mental models for the various systems studied
 - d. Evaluate and appraise the evidence behind the various models discussed
 - e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.
4. identify and describe prokaryotic and eukaryotic cell structures, relating structure to function, including the current model of membrane structure and function and a discussion of cellular transport:
 - a. Define the basic vocabulary
 - b. Compare and contrast the interactions between the basic vocabulary words
 - c. Construct mental models for the various systems studied
 - d. Evaluate and appraise the evidence behind the various models discussed
 - e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.
5. describe current models of cell communication:
 - a. Define the basic vocabulary
 - b. Compare and contrast the interactions between the basic vocabulary words
 - c. Construct mental models for the various systems studied
 - d. Evaluate and appraise the evidence behind the various models discussed
 - e. Given a body of data from a scientific paper, analyze how that evidence affects

the scientific models studied.

6. discuss cellular reproduction and its controls in prokaryotes and eukaryotes including sexual and asexual life cycles: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

7. apply the principles of classical and molecular genetics to solve problems in genetics or biotechnology: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

8. explain prokaryotic and eukaryotic genome organization, DNA structure, DNA replication, gene expression and the control of gene expression. Relate theoretical models to the practical applications of biotechnology: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

9. discuss and relate evolutionary processes to the origin and evolution of cells, species and populations: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

10. Explain and apply the scientific method in the study of biological concepts and laboratory exercises: a. Define the basic vocabulary b. Compare and contrast the interactions between the basic vocabulary words c. Construct mental models for the various systems studied d. Evaluate and appraise the evidence behind the various models discussed e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

11. acquire, read, evaluate, apply and cite scientific literature.

Upon successful completion of the Natural Science general education requirement, students will:

- demonstrate an understanding of the way that the sciences describe the universe and the nature of scientific inquiry (scientific paradigms and methods).
- formulate an appropriate hypothesis to explain provided and/or acquired observations.
- distinguish between relevant and irrelevant evidence to evaluate a scientific question.
- demonstrate an understanding of how theories and scientific findings affect future research, as well as society.

Required course materials

Text: Campbell Biology by Urry 12th Edition 2021. Pearson. ISBN: 9780135188743 or 9780135987988

Lab Manual: General Biology Lab Manual by Audrey Chen. Only available at Moorpark College bookstore. ISBN: 9781640432727

Scantron 882 forms, number 2 pencils, good erasers, colored pencils, 3 ring binder for Lab Manual pages

Computer requirements: Computer with high speed internet and Chrome operating system to use Canvas LMS and view lectures recorded in Zoom. If exams need to be proctored at home due to campus closure, your computer (or Chromebook) must have a microphone and camera for proctoring, and you will need to download Proctorio into your Chrome browser. You will also need a microphone to record your Journal Club presentation. Turnitin.com subscription is required for submission of some assignments

STUDENT ONLINE SUPPORT DESK for online, hybrid and classes that use Canvas: Moorpark College has technical support for students studying online or using CANVAS in their classes! Contact INFO:

- Phone: 805-553-4188; Email: MConlineSTUDENTsupport@vcccd.edu.
- Emails and calls during off hours will be returned within one regular business day.

IMPORTANT: COMPUTERS AND HOT SPOTS CAN BE BORROWED FROM THE MOORPARK LIBRARY IF YOU DO NOT HAVE EQUIPMENT THAT MEETS THESE REQUIREMENTS. PLEASE DO THIS ASAP

Safety: Students must wear eye protection in the lab room. Although goggles are available, I recommend purchasing your own eye protection.

Announcements

Log into Canvas a minimum of 3 times a week for announcements. I will use the Announcements feature in Canvas to alert you of course activities.

Modules

The course is organized into modules. Click onto Modules in Canvas on the left side of the navigation bar. We will cover 2-3 modules per week. Each module contains:

- Textbook reading
- PowerPoint lecture in Zoom
- Online activities such as discussion or quiz
- Lab activities. Some labs will be done partly on campus and partly at home. Some labs will be done entirely online/at home.
- Starting in September, the modules will also contain scientific literature assignments, student presentations and mandatory discussions (see Journal Club below).

Calendar and Pace and Attendance

The class is NOT self-paced. You can choose when to read and submit assignments, but there are deadlines. It is essential for you to pace your reading and completion of assignments. Assignments are due at 11:59 pm on the due date. Interruptions to internet can happen, so plan accordingly and submit your work ahead of the deadline. **Extensions for assignments or absences in lab or make-up exams are only permitted in the event of a documented illness of you or your child or the documented death of an immediate family member or for religious accommodations.**

Assignments must be submitted by the date/time indicated. **5 points penalty for late assignments, quizzes, etc, so get your work submitted early. Zero credit for assignments 1 week past due date or valued less than 5 points.** No emailed assignments. All assignments are due by 11:59 pm. Assignments will be open prior to the due dates for students to submit early.

Exams

- Unit exams (4) Each exam will be based on material covered in the lecture and in the assigned reading and in the labs. These exams will consist of true/false, multiple-choice, matching, identification, short-answer, and/or short essay.
- Lab practical exam (1) The lab practical exam is a hands-on exam. Questions will be based on all of the home and “wet” labs including: understanding of scientific method, identification and USE of lab equipment and procedures, genetics problems, metric conversions, scientific notation, microscopy and cells, graphs, etc. It is essential for **each student** to participate in the use of lab equipment and interpretation of results in order to learn. Taking notes is encouraged for review. No make-up exam will be given for lab practical exam.

- Final Exam (1) The Final Objective Exam is cumulative. About half the material will be new material, and about half the material will be material covered on the previous four unit exams. The unit exams will be proctored on campus at your scheduled lab time unless the campus is closed as a result of health or other emergency. In the event of campus closure, the exams will be proctored online and timed and must be completed during the scheduled lab time; students are required to use a computer with microphone and camera for proctoring. **Make up exams are only permitted in the event of a documented illness of you or your child or the documented death of an immediate family member. You must take exams during your scheduled lab period.**

Journal Club and Discussion board

Scientific literacy is an important part of the class. We will begin by reading a short article about the unique features of journal articles and discuss these features using the Canvas discussion board. Then each student will work on a 6-part project.

1. Explore topics in Biology using ScienceNews
2. Select a topic and sign up for your topic in the Discussion board. If your topic is already taken, please choose another topic.
3. Find an original journal article on your topic. This can be found using the citations from your ScienceNews article or by using the library's databases.
4. Summarize the journal article in a written paper submitted to Turnitin.com
5. Present the journal article to the class using a PowerPoint or similar presentation.
6. Facilitate a discussion about your paper in the Canvas discussion board.

These discussions are an essential part of the class and will be graded for thought-provoking comments and questions based on the article or presentations. Discussion windows will close at 11:59 pm Sunday night.

COVID Policy

- If you are unvaccinated and exposed to COVID-19 or test positive, you must self-isolate for 10 days.
- **All students must be fully vaccinated by October 15 or they will be dropped from the class. This means your last dose must be 2-3 weeks before October 15 and your vaccination must be uploaded to the MYVCCCD App.**
- All COVID-19 test results should be uploaded to the MYVCCCD App. This will allow contact tracing. Also, please inform your instructors.
- COVID 19 testing is available in the parking lot by the campus observatory.
- PPE (gloves, goggles, masks) are required as protection. Masks are required at all times indoors.

Class Behavior

1. No food or drinks. Eating and drinking in lab is hazardous due to potential exposure to toxins and pathogens. Masks must be worn indoors.
2. Be on time to lab
3. No disruptive behavior. Using cell phones and other electronic devices is distracting and will not be tolerated. The amount of time in lab is very limited. Please avoid excessive conversation and stay focused

on your lab activities. Offences will result in deduction of lab points and submission of a BIT form with the dean.

4. **NO Cheating or Plagiarism:**

- You are NOT allowed to HAVE OR USE any notes or dictionary or translator, electronic or print, or any device with memory function (electronic watches, PDAs, cell phones, pagers, etc.) on any exam. These items must be kept in a bag in the rear or front of the classroom. They may not be in your pocket, on your person, or on/in the furniture. **Although quizzes are open-note, exams are NOT.**
 - No hats or hoodies may be worn during an exam
 - You are NOT permitted to leave the room during an exam. This is true either on campus or if you take the exam from home.
 - Exams and scantrons MUST remain flat on the desk during an exam.
 - Students may not share exam questions or answers. Students must look straight forward or up at the ceiling if they need time to “think” while not looking at the exam paper. Hands should be visible to the instructor.
 - Students caught cheating will receive a zero (F) for the assignment and sent to the Dean’s Office for disciplinary action.
 - **Cheating and/or plagiarism will NOT be tolerated in this course.**
5. Students must conform to all campus COVID policies, safety and other regulations. Students who violate COVID or other regulations will receive a zero (F) for the exam or entire lab assignment and sent to the Dean’s office for disciplinary action.

Assignments and Grading

Lab assignments: Approximately 15 @ 10-20 points each

Unit exams: Four @ 100 points each

Lab practical exam: One @ 100 points

Final exam: One @ 200 points

Online quizzes and assignments: Approximately 30 @ 1-16 points each

Written and oral report: 80 points

Discussions: Approximately 10 @ 5 points each

Letter grades will be based on point totals compared to the maximum possible. Instructor will keep exams. Keep all other graded materials.

90%+ A, 80 – 89% B, 70 – 79% C, 60 – 69% D, below 60 F

Attendance

Students are expected to attend all lab sessions and engage in the class online each week. Alternative assignments will be provided if you cannot come to campus if you are sick or self-isolating. If the student misses more than 2 weeks of school and still cannot complete their work/assignments, the student should request a medical withdraw (if appropriate) or drop the course.

To be considered present the first week, you must complete the first module by August 19 and attend the first lab session or you will be considered a NO-SHOW and will be dropped from the class.

ACCESS:

Students with a disability, whether physical, learning, or psychological, who believe they will need accommodations in this class, are encouraged to contact ACCESS as soon as possible so accommodations can be set up in a timely fashion. Accommodations are based on eligibility and can only be provided if you have submitted verification from ACCESS in the form of a Confidential Memo. The ACCESS office can be reached at (805) 378-1461 or MCACCESS@vcccd.edu and is located in the LMC.

Tobacco Policy

Moorpark College is 100% TOBACCO FREE – No smoking, vaping, chewing. No tobacco is permitted on or in buildings, campus grounds or parking lots at all times. Violators shall be subject to appropriate disciplinary action. AP 6800, BP 6810, AB 846.

Title IX / Sexual Misconduct

Incidents of sexual misconduct can involve students and employees and include: sexual harassment, gender/sexual orientation based slurs, electronic harassment related to sex/gender/sexual orientation/gender identity, sexual assault of any type, stalking (including digital stalking), dating/domestic violence, gender/sex-based hate crimes, etc. If you or another student has experienced any of these types of events, please immediately contact your instructor, Dean or the Title IX Coordinator: Priscilla Mora (pmora@vcccd.edu). It is the responsibility of the College to investigate the matter and provide support and appropriate assistance to the students who may have been affected. Questions? Visit our website on TIX/Sexual Misconduct: [MC Title IX / Sexual Misconduct website](#).

Schedule

Week	Date	Lecture	On campus lab	Home lab
1	Aug 16 Aug 18	Chemical Context of Life (2) Water and Life (3)	Class format/syllabus Scientific investigation (lab 1)	Lab Safety Scientific Investigation (lab 1)
2	Aug 23 Aug 25	Carbon and Molecular Diversity of Life (4) Structure and Function of Large Molecules (5) AUG 27: Last day to drop with refund or credit	Macromolecules (lab 5)	Measurement (lab 2)
3	Aug 30 Sep 1	Tour of the Cell (6) Membrane Structure and Function (7) SEP 3: Last day to drop a semester-length class without a "W"	Microscopes and cells (lab 6) Microscopes and cells (lab 6)	pH and Buffers (lab 4) pH and Buffers (lab 4)
4	Sep 6 Sep 8		HOLIDAY NO CLASS EXAM 1 *Both the Monday and Wednesday lab section will take Exam on Wednesday Sep. 8 Covers 2-6	

Week	Date	Lecture	On campus lab	Home lab
5	Sep 13 Sep 15	Intro to Metabolism (8) Cell Respiration and Fermentation (9) SEP 17: Last day to apply for Pass/No Pass (not recommended for most programs)	Diffusion/Osmosis Lab (lab 7) Diffusion/Osmosis Lab (lab 7)	
6	Sep 20 Sep 22	Photosynthesis (10) Cell communication (11)	Enzyme lab (lab 8) Enzyme lab (lab 8)	

7	Sep 27 Sep 29	Cell Cycle (12) Meiosis and Sexual Life Cycles (13)	Photosynthesis lab (lab 9) Photosynthesis lab (lab 9)	
8	Oct 4 Oct 6		EXAM 2 Covers 7-13 EXAM 2 Covers 7-13	
9	Oct 11 Oct 13	Mendel and the Gene Idea (14) Chromosomal Basis of Inheritance (15)	Genetics, Mitosis and Meiosis (labs 10 and 11) Genetics, Mitosis and Meiosis (labs 10 and 11)	
10	Oct 18 Oct 20	Molecular Basis of Inheritance (16) From Gene to Protein (17)	PTC PCR DNA Extraction (lab 12) PTC PCR DNA Extraction (lab 12)	
11	Oct 25 Oct 27	Regulation of gene expression (18) Biotechnology (20)	PTC Digestion (lab 12) PTC Digestion (lab 12)	Oct 27 and 28 Anat lab
12	Nov 1 Nov 3		EXAM 3 Covers 14-18 EXAM 3 Covers 14-18	
13	Nov 8 Nov 10	Viruses (19) Genomes & Evolution (21)	Transformation (lab 13) Transformation (lab 13)	
14	Nov 15 Nov 17	Darwinian View of Life (22) Review for Lab Exam NOV 19 : Last day to drop a semester-length class with a "W"	Gel Electrophoresis/Tran result Gel Electrophoresis/Tran result (labs 12 and 13)	ANAT lab Nov 15, 16, 17, 18
15	Nov 22 Nov 24	Evolution of Populations (23) Evolution of Species (24)	Lab Practical Exam Lab Practical Exam	
16	Nov 29 Dec 1	review	EXAM 4 Covers 19, 21-24 EXAM 4 Covers 19, 21-24	
17	Dec 6 Dec 8	Journal Club Journal Club		
18	Dec 13 Dec 15		Final Exam for Mon 12:30-2:30 Final Exam for Wed 2:45-4:45	

The above syllabus is subject to change.