SCOTTSDALE COMMUNITY COLLEGE
A MARICOPA COMMUNITY COLLEGE

Course Information

Semester & Year:	Spring 2023
Course Title:	Biology for Majors I
Course Prefix & Number:	BIO 181
Section Number:	25185 (lecture) & 25188 (lab)
Credit Hours:	4
Start Date:	17 January 2023
End Date:	12 May 2023
Room Number:	NS 211
Meeting Days:	Lecture: On Your Time Online with weekly assignments Lab: Tuesdays 6:00 p.m. - 8:50 p.m. in NS 211

Course Format

The course format for this course is HYBRID.

- Lecture is On Your Time Online with weekly assignments from 17 January – 9 May, 2023.
- Lab meets in person Tuesdays from 6:00 p.m. – 8:50 p.m. in NS 211 from 24 January – 2 May, 2023.

Instructor Information

Instructor:	Jennifer McCulley
Email:	jennifer.mcculley@scottsdalecc.edu
Office Location:	In person in NS 211 or online (see hours for more detail)
Office Hours:	In weeks with in-person labs: Tuesdays, NS211, 9:30 a.m. – 10:15 a.m., 4:30 p.m. – 5:30 p.m. OR by appointment in person or online.

Course Description

The study and principles of structure and function of organisms at the molecular and cellular levels. A detailed exploration of the chemistry of life, the cell, and genetics.

Prerequisites

A grade of C or better in RDG100, or RDG100LL, or higher, or eligibility for CRE101. One year of high school or one semester of college-level biology and chemistry is strongly recommended.

Course Competencies

1. Describe and apply the scientific method to investigate biological phenomena. (I, XI)
2. Describe the characteristics of life. (I)
3. Describe the principles of evolution by natural selection and their relationship to the distinguishing properties of living things. (I)
4. Compare and contrast the most stable subatomic particles and describe how they affect the chemical characteristics of matter. (II)
5. Describe the relationship between atoms and molecules and the importance of chemical bonds to atomic stability, molecular structure and chemical characteristics. (II)
6. Describe the relationships between the structure and functions of the four major kinds of organic macromolecules found in living things. (II)
7. Identify the components of eukaryotic cells and describe their structure and functions. (III)
8. Compare and contrast prokaryotic and eukaryotic cells. (III)
9. Describe the structure and functions of biological membranes. (IV)
10. Describe the importance of membrane structure to cellular permeability and transport processes. (IV)
11. Describe the laws of thermodynamics and their relationship to the energy dynamics of living things. (V)
12. Explain the importance of enzymes to metabolic processes and their mode of action. (V)
13. Explain the importance of adenosine triphosphate (ATP) to living things. (V)
14. Explain the importance of cellular respiration and describe the steps in its metabolic pathway. (VI)
15. Explain the importance of photosynthesis and describe the steps in its metabolic pathway. (VI)

16. Compare and contrast the biological processes of binary fission, mitosis and meiosis. (IX)
17. Describe the process of DNA replication and its relationship to cell division. (VII, IX)
18. Describe the relationship between DNA sequence and the synthesis and conformation of proteins. (II, VII, VIII, IX)
19. Compare and contrast the inheritance patterns of Mendelian and non-Mendelian traits and use standard statistical methods to predict the outcome of monohybrid and dihybrid crosses. (X)
20. Describe gene expression and regulation and the genetic basis of development. (X)
21. Describe common biotechnological techniques and analyze the results of their application. (X)
22. Demonstrate laboratory procedures and safe practices. (XI)
23. Apply principles of scientific method while conducting laboratory activities and experiments. (XI)
24. Perform laboratory activities using relevant equipment, chemical reagents, and supplies to observe biological specimens, measure variables, and design and accurately conduct experiments. (XI)
25. Prepare wet-mount slides of biological materials and correctly operate the light microscope to locate and observe these specimens at various magnifications.(XI)
26. Demonstrate the ability to accurately use pipettes, micropipettes, and other volumetric devices, chemical glassware, balances, pH meters or test papers, spectrophotometers, and separation techniques such as chromatography, differential centrifugation and/or gel electrophoresis to perform activities relevant to other course competencies. (XI)
27. Demonstrate the ability to construct a graph that accurately portrays quantitative data. (XI)
28. Calculate appropriate proportions of solvent and solute(s) to make molar and/or percent solutions of varying concentrations. (XI)
29. Analyze and report data collected during experiments and/or other laboratory activities. (XI)

Texts and Course Materials

- **Text** (required): Biology 2e from OpenStax, Print ISBN 1947172514, Digital ISBN 1947172522, www.openstax.org/details/books/biology-2e.
    - **Your book is available in web view and PDF for free**. You can also choose to purchase on iBooks or get a print version via the campus bookstore or from OpenStax on Amazon.com.

    - You can use whichever format(s) you want. Web view is recommended -- the responsive design works seamlessly on any device. If you buy on Amazon, make sure you use the link on your book page on openstax.org so you get the official OpenStax print version. (Simple printouts sold by third parties on Amazon are not verifiable and not as high-quality.)
- **Calculator** (required): Must be a scientific calculator, able to calculate logarithms and exponentials. (TI-80 series allowed, but not required.)
- **Spreadsheet software** (required): Any standard spreadsheet package, like Excel, Numbers or Open Office Calc, will work.

Course Technologies

View the Accessibility Statements & Privacy Policies of technologies used in this course.

Maricopa Systems

This course uses key Maricopa systems for course management and communication.

- Canvas Learning Management System
- Student Maricopa Gmail Account
- Maricopa Open Educational Resource Learning System (MOER)

Synchronous Communication Tools

This course implements the use of web conferencing and/or other synchronous course tools.

- Cisco Webex (primary)
- Google Meet
- Zoom

Streaming Media/Audio/Video Tools

This course uses webcasting, lecture capture systems, YouTube, and/or other streaming media services.

- YouTube

Student Assignment Tools

This course requires students to participate in or submit assignments using desktop or cloud-based applications.

- Google Products
- Microsoft Office 365
- Screencast-O-Matic
- Adobe Creative Cloud

Exam Proctoring Tool

Respondus LockDown Browser

Respondus LockDown Browser secures online exams by locking down the testing environment within Canvas. LockDown Browser prevents access to other applications, and many common functions on a computer while an assessment is active. Some of the exams in this course require the use of this software. A LockDown Browser download link will be provided within the Canvas course. For further information, see the Student Resources page provided. For your reference, read the System Requirements for LockDown Browser and LockDown Browser Terms of Use.

Please note that Respondus LockDown Browser with Monitor requires a room scan prior to all testing sessions.

Plagiarism Checker Tool (Turnitin)

Turnitin is a plagiarism check tool that matches text to a vast database of sources including the internet, published works, commercial databases and student work submitted to Turnitin in institutions internationally. Students must submit designated papers to Turnitin when instructed. Information and instructions for Turnitin are provided in the course. For your reference, read the Turnitin Terms of Service.

Course Policies

The following are policies specific to this course. Students are also responsible for the college policies included on the Student Regulations page of the Maricopa Community College District website.

1. **Important Dates**:

   Last day to withdraw with refund : January 23

   Unrestricted withdrawal ends : March 4

2. **Completion policy**: Students are required to complete all learning modules, laboratory exercises, quizzes, lecture exams, and the final exam for full credit. Any student who fails to submit more than 3 quizzes or 1 lecture exam will be

withdrawn for lack of participation at the instructor's discretion. The final exam is required and missing the exam without an official excuse will result in an F for the course (see Final Exam policy below for full details).

3. **Withdrawal policy**: The following are official policies of the college.

   - Students may initiate an official withdrawal from any course by submitting a withdrawal form with required signatures to the Admissions and Records office within the published deadline dates.
   - Failure to attend any classes is not a guarantee for a refund or an excuse of debt incurred through registration. See "Refund Policy" in the College Catalogue, available from a link on this course's Canvas site.
   - Official date of withdrawal is the last date of attendance as determined by student's withdrawal or as reported by the instructor.
   - The official date of withdrawal will determine degree of refund, if any.
   - Failure to file official withdrawal form within published deadlines can result in a failing grade and may affect refund of course tuition and fees.
   - Additional information on withdrawals can be found in the College Catalogue.

4. **Incompletes**: The following is the policy covering assignments of incomplete for this course:

   A grade of "I" may be assigned at the end of the semester to a student who has completed at least 80% of the required coursework, is passing, and is unable to complete the remaining coursework due to illness or other circumstances beyond the student's control (documentation is required). If approved by the instructor, the student and instructor will fill out the Incomplete contract, which will specify the work that needs to be done and the deadline for completion (not to exceed 7 months). A student WILL NOT re-register for the class in order to remove the grade of "I."

5. **Student misconduct policy**: The classroom is an educational learning environment where students are expected to engage in behaviors which are conducive to their own learning and the learning of their peers. To facilitate this, respect for self and others is mandatory and necessary. Should a student exhibit disruptive behavior and/or use profane language to the extent that it interferes with the learning environment, an academic consequence may be imposed. Any

student found by a faculty member to have committed academic misconduct may be subject to the following academic consequences:

- **Warning**—A notice in writing to the student that the student has violated the academic code.
- **Grade Adjustment**—Lowering of a score on a test or assignment.
- **Discretionary Sanctions**—Additional academic assignments determined by the faculty member.
- **Course Failure**—Failure of a student from a course where academic misconduct occurs. Further information can be found in the SCC Student Handbook, Academic Misconduct 2.3.11, page 277.

6. **Academic honesty**: Cheating, including but not limited to copying another student's work on any assignment or test and plagiarism of published literature, cannot be tolerated. With one exception a first offense will result in earning 0 points for the associated exam/quiz/assignment and a report to the Vice President of Academic Affairs. The exception is the final examination. If a student cheats on the final or commits a second offense, that student will be assigned a failing grade (F) for the course and a recommendation to the VP of Academic Affairs to enact the policies outlined in the College Catalog.

   Academic dishonesty is defined in the current SCC College Catalog as the following:

   - **Academic misconduct**—includes any conduct associated with the classroom, lab- oratory, or clinical learning process that is inconsistent with the published course competencies/objectives and/or academic standards for the course, program, department, or institution. Examples of academic misconduct include, but are not limited to: (a) cheating and plagiarism (including any assistance or collusion in such activities, or requests or offers to do so); (b) excessive absences; (c) use of abusive or profane language; and (d) disruptive behavior.
   - **Cheating**—any form of dishonesty in an academic exercise. It includes, but is not limited to, (a) use of any unauthorized assistance in taking quizzes, tests, examinations, or any other form of assessment whether or not the items are graded; (b) dependence upon the aid of sources beyond those authorized by the faculty member in writing papers, preparing reports, solving problems, or carrying out other assignments; (c) the

acquisition, without permission, of tests or other academic material belonging to or administered by the college or a member of the college faculty or staff; and (d) fabrication of data, facts, or information.

- **Plagiarism**—a form of cheating in which a student falsely represents another person's work as his or her own. It includes, but is not limited to: (a) the use of paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgment; (b) unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials; and (c) information gathered from the internet and not properly identified.

7. **Academic and student support services**: A variety of student services can be accessed online. Services are free of charge to all registered SCC students. Refer to the SCC College Resources Student Home Page (www.scottsdalecc.edu/college-resources).

8. **Accommodations**: Scottsdale Community College provides equal opportunity to qualified students. If you have a documented disability (medical, physical, learning, psycho- logical, etc.) and wish to request disability-related accommodations to complete course requirements, contact Disability Resources and Services (located in SC building; 480-423-6517). Course requirements cannot be waived, but reasonable accommodations may be provided based on disability documentation and course objectives.

Grading Standards & Practices

Grade Scale

Letter Grade	Points Range
A	90 – 100%
B	78 – 89%
C	66 – 77%
D	50 – 65%
F	0 – 49%

Assignments

Assignment Name	Points
12 Quizzes, 1 dropped	110
24 Discussion Questions, 2 dropped	110
11 20-pt Laboratories, 1 dropped	200
Mendelian Genetics Lab	40
Molecular Genetics Lab Project	
Proposal	20
Lab Report	40
Professional Research Project	
Literature Packet	30
Research Presentation Outline	10
Research Presentation	70
3 Lecture Exams, 1 dropped	200
Final Exam	200
TOTAL:	**1030**

1. **Learning Modules**: These and the laboratory exercises form the heart of the course. Each module corresponds to a standard lecture in a regular 16-week term.
2. **Lecture Quizzes**

   Number of quizzes : 12 (one each non-exam week).

   Value : 10 points each, lowest score dropped.

   Dates : Each week with no exam. See course schedule.

   Format : Multiple choice, matching, short answer.

   Material covered : Current week only (see schedule).

   Quizzes are due before 11:59 PM Arizona time on the day indicated on the schedule. **No late quizzes will be accepted.**

   You will be given 3 attempts to complete each quiz. Your highest score will be recorded and added to your points.

3. Discussion Questions

Number of questions	:	24 (two per non-exam week).
Value	:	5 points each, lowest two scores dropped.
Dates	:	Two each week with no exam.
Format	:	Short essay discussion.
Material covered	:	One week only (see schedule).

Discussion questions are due before 11:59 PM Arizona time on the day indicated on the schedule. **No late discussion questions will be accepted**.

Each week you will be asked to answer two short discussion questions. Questions will vary each week, but generally will help you develop your critical thinking abilities, help you clarify content, or be otherwise relevant to the week. Your responses will generally be expected to be less than 200 words in length, often much shorter. Instructions and a rubric will be posted as part of each discussion question.

4. **Lecture Examinations**

Number of examinations	:	3
Value	:	100 points each, lowest score dropped
Dates	:	See course schedule.
Format	:	Multiple choice, matching and short answer.
Material covered	:	Current unit only (see schedule).

Exams focus on concepts developed in the lecture modules and laboratory exercises. Only a small portion of each exam will test your ability to memorize. Most questions are designed to test your ability to reason, synthesize ideas and solve problems.

There are absolutely no make-up examinations. If a student fails to submit an examination before the deadline (see schedule below), that exam will earn the student 0 points. If a student misses two exams, that student will be assigned a failing grade and/or withdrawn from the course at the instructor's discretion.

Students must abide by the examination rules as set out on the exam cover sheet and instructions from the professor prior to the exam. Exams will be taken using Respondus Lockdown software. If a student fails to abide by the rules of

the exam, that student will earn zero points for that examination. The student will also face potential dismissal from class and the college with a permanent record of the infraction of the student's transcript (see "Student Misconduct" section below).

Exams may be taken any time between the posting and due date and time. Once you begin the exam, you will have 2 hours to complete it, although it should not take you nearly that long.

5. **Final Examination**

Value	:	200 points.
Date of exam	:	Tuesday, 9 May 2023
Time of exam	:	Exam window opens at 5 a.m. and closes at 11:59 p.m. Arizona time. Once you begin the exam you will have 3 hours to complete it.
Format	:	Multiple choice, matching, and short answer.
Material covered	:	All lecture and lab material throughout the course.

The final exam is comprehensive and required. Questions can be derived from any lecture or lab material.

Students are required to follow the rules of the examination as described in the exam instructions. Students who do not follow the rules automatically fail the course (grade of F) and face potential dismissal from the college with a permanent record of the infraction on their transcript. (See the "Student Misconduct" section.)

If a student misses the final exam (i.e., fails to take it before the deadline) with a college-sanctioned excused absence approved by the professor, that student will receive a grade of "incomplete." If a student misses the final with an unexcused absence, that student will automatically fail the course. Note: early vacation, including pre-purchased airline tickets, other exams or work-related conflicts do not constitute valid excuses.

The final exam must be completed on the date listed in the class schedule before midnight. Once you begin the exam, you will have 3 hours to complete it (if it takes you that long).

6. **Laboratory**

There are 13 laboratories in this class (see lab schedule). Eleven include a 20-point write-up, the lowest of which is dropped. Two have 40-point reports, and one of these requires a 20-point proposal. You will also be submitting a 30-point packet of literature on a topic of your choosing and presenting one of those articles to the class at the end of the semester (70 points). Therefore, the lab is worth a total of 400 points (200 for the 20-point labs, 80 for the two lab reports, 20 for the proposal, and 100 points for the literature packet and presentation).

Laboratory completion is mandatory. Students must complete all laboratory exercises to pass the course. Lab due dates are given on the lab schedule.

- Labs submitted late will receive a 10% reduction for every week late up to 5 weeks late (i.e., the grade on a lab submitted 5 weeks late will be reduced by 10 points. So, if you score 16/20 on a lab submitted 5 weeks late, your final grade on that lab will be 6/20 after the late penalty.).
- The last day to submit late labs for grading is 11:59 p.m. Arizona time on the Sunday prior to final exam day.
- Once a lab is submitted for grading, it cannot be re-submitted for re-grading.

Students may be required to purchase materials for some labs. All such materials are available from chain stores throughout the country.

The laboratory is designed to introduce you to important biological research techniques and is absolutely central to your training. Since organization, neatness and attention to detail are critical to successful scientific study, you will be graded on these qualities.

Response Time

Students can expect a response time of 24 - 48 hours for the instructor to respond to messages sent via the Canvas Learning Management System (preferred and faster) or email. Students can expect assignments to be graded within 1 week of the assignment's due date.

Attendance Policy

The course lecture is On Your Time Online with no scheduled class meeting dates. We have one required in-person lab per week. **Any student who misses more than three**

labs or fails to submit more than 3 quizzes or more than 1 lecture exam will be withdrawn for lack of participation at the instructor's discretion. Please contact me immediately if you are struggling to meet the demands of the course or having difficulties with school-life balance so we can discuss your options.

Instructional Contact Hours (Seat Time)

This is a four (4) credit-hour course. Plan to spend at least four hours on course content or seat time (direct instruction) and eight hours on homework each week.

Online Tutoring

SCC's tutors are available online to help with your courses. You may work with an SCC tutor remotely using Google Meet, your phone, or email. Visit the Tutoring & Learning Centers page for detailed information on the five learning center's hours and procedures.

As much as possible, it is highly recommended that you utilize SCC tutors since they are more familiar with SCC coursework, instructor expectations, and assignments; however, if you need to work with a tutor outside regular hours, online and hybrid students now have access to a 24/7 online tutoring service called Brainfuse. Brainfuse provides online tutoring in a variety of academic subjects. Each student may utilize up to 6 hours of online tutoring through Brainfuse per semester, and has the option of requesting additional time if needed.

To access Brainfuse and begin working with a tutor:

1. Visit the SCC Online Tutoring Services Through Brainfuse page (https://www.scottsdalecc.edu/students/tutoring/online-tutoring)
2. Click the **Visit a tutor online** button
3. Enter your MEID and password
4. Choose your topic and subject
5. Click the **Connect** button

Please use your time effectively and be prepared with your questions before you connect to a tutor. Tutors and students communicate in real-time so whatever you type, draw, or share on the screen, the tutor sees, and vice versa. You may also want to have screenshots ready if applicable. All Brainfuse sessions are recorded for review later.

Learning Tools and Your Privacy and Security

SCC utilizes a variety of software applications and web-based tools operated by third party vendors to support student learning. To allow student access to the application, site or tool, certain identifiable information may be required to establish a user name or password, and submit work and/or download information from these tools. Inherent with all internet-based tools, there is a risk that individuals assume when electing to use these tools, as they may place information at risk of disclosure.

To use learning tools responsibly, please observe all laws and the Maricopa Community College District Student Conduct Code, such as copyright infringement, plagiarism, harassment or interference with the underlying technical code of the software. As a student using a learning tool, you have certain rights. Any original work that you produce belongs to you as a matter of copyright law. You also have a right to the privacy of your educational records. Your contributions to learning tools constitute an educational record. By using the tool, and not taking other options available to you in this course equivalent to this assignment that would not be posted publicly on the internet, you consent to the collaborative use of this material as well as to the disclosure of it in this course and potentially for the use of future courses.

Students are responsible for the information contained in this syllabus, the Syllabus page in your Canvas course and the **College Policies & Student Services** page found in the First Steps module of your Canvas course. Students will be notified by the instructor of any changes in course requirements or policies.