BIO 181: GENERAL BIOLOGY (MAJORS) I
Lecture Section #11046 with Lab Sections #11047, #11048 and #11054
Glendale Community College Main: Spring 2019

Instructor Information
- **Instructor:** Robert H Reavis, Ph.D.
- **Office Location:** LS 221
- **Office Hours:** MWF 11:30-11:50, M 14:00-15:30, TR 14:30-15:30 and by appointment
- **Phone:** 623-845-3277 (Office) / 623-738-5782 (Text)
- **Email:** robert.reavis@gccaz.edu
- **Web:** [http://web.gccaz.edu/~robru21251/](http://web.gccaz.edu/~robru21251/)

Course Information
- **Course format:** In-person
- **Credit hours:** 4
- **Lecture location, days & times:** NU 104, MWF 12:00 -12:50
- **Lab location, days & times:** LS 326; Either M 8:30 - 11:20 (Section #11047), or W 8:30 - 11:20 (Section #11048), or F 8:30 - 11:20 (Section #11054),
- **Instructional Contact Hours & Out-of-Class Student Work:** You are expected to study 6-8 hours per week outside of class, in addition to your time in lecture and lab (5.5 hours per week).
- **Final Exam day and time:** Monday, May 6, 12:00-12:50
- **College Holidays**
  - Observance of Martin Luther King, Jr. Holiday – Monday, January 21
  - Observance of Presidents’ Day – Monday, February 18
  - Spring Break – March 11-17

Official Course Description
[https://aztransmac2.asu.edu/cgi-bin/WebObjects/acres.woa/wa/freeForm2?id=81735](https://aztransmac2.asu.edu/cgi-bin/WebObjects/acres.woa/wa/freeForm2?id=81735)

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.

Official Course Competencies
[http://aztransmac2.asu.edu/cgi-bin/WebObjects/MCCCD.woa/wa/freeForm2?id=81735](http://aztransmac2.asu.edu/cgi-bin/WebObjects/MCCCD.woa/wa/freeForm2?id=81735)

Course Goals and Objectives

*Welcome to General Biology!* The study of life is the most fascinating and complex of the sciences; *complex* because living things consist of matter (described by physics, chemistry & geology) yet exhibit new, *emergent properties* with each level of organization; *fascinating* in the ways these levels are integrated, and because of our self-interest as living beings. This course will introduce students to the *scientific method* and its application to the real world, in five modules:

1. The scope of biology, basic chemistry and the chemistry of life.
2. Structure and function of cells and membranes.
5. DNA structure, DNA replication, genes, protein synthesis and mutations.
Strategies for Success

This is an introductory course to general biology. The main objective of this course is to acquaint students with the basic knowledge of biology and science, and to help them learn the terms, concepts and processes associated with living organisms. For most students, this course represents your first opportunity to study biology at the college level. Some of you may be recently out of high school, while others are returning to school to develop a new career, or to satisfy your curiosity about life.

To do well, you must schedule enough time to adequately learn the subject matter and make use of all the materials available. Plan to study 6-8 hours per week outside of class. These work sheets can help you estimate your time needs and how to schedule for success:

- [http://web.gccaz.edu/~robru21251/TimeAndDemands.pdf](http://web.gccaz.edu/~robru21251/TimeAndDemands.pdf)
- [http://web.gccaz.edu/~robru21251/SampleSchedule.pdf](http://web.gccaz.edu/~robru21251/SampleSchedule.pdf)

SUGGESTIONS FOR YOUR STUDY TIME

**Lecture:** Read the appropriate chapter before lecture (my best advice) and complete the Mastering Biology assignment. Come to class with an attentive mind and take detailed notes. Re-read your notes and text after lecture to ensure comprehension, and come to your instructor for any questions. Finally, practice writing out an outline of each lecture from memory, starting with the main points, then adding more details. Refer back to your notes as necessary until you can complete the outline with each of the details from the lecture. Other study ideas: test yourself with the end of chapter questions in your text and Mastering Biology; form a study group that meets at least once a week; make & use flash cards.

**Laboratory:** Read the lab manual and complete the pre-lab before lab. Come to lab with your manual and pre-lab on time and ready to work. Ask questions as necessary. Answer all questions in your lab manual or other handout, and review the material after lab for comprehension and to make connections between lab exercises and lectures. Finally, review for the lab quiz - given at the start of the next lab.

**Written Assignments:** Follow the directions! Ask questions. Be sure written assignments are typed and double-spaced. Use the ‘spelling and grammar’ tool. Ask someone else to proof-read your paper.

Biology classes require much memorization of new terms and identification of structures, as well as the ability to understand and describe the function of these components. Besides your individual study time, study groups can be an excellent way to improve your knowledge through teaching a concept to your comrades.

Organize yourself for success today! As your instructor, I am here to help you learn the fundamentals of biology covered this semester. Please contact me early - by phone, e-mail, or at my office - for any questions about the course or biology in general. Tutoring and other services are also available on campus. Ultimately, your success depends on your efforts. Good studies!
Grading Standards & Practices

Your final grade will be based on all lecture and lab work assigned according to the following scale:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Percent Range</th>
<th>Total Points</th>
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<tbody>
<tr>
<td>A</td>
<td>90-100%</td>
<td>900 – 1000</td>
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<tr>
<td>B</td>
<td>80-89%</td>
<td>800 – 899</td>
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<td>C</td>
<td>70-79%</td>
<td>700 – 799</td>
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<td>D</td>
<td>60-69%</td>
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<td>F</td>
<td>Less than 60%</td>
<td>&lt; 660</td>
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Lecture examinations (5 @ 100 pts) = 500 pts
Pre-lab assignments (10 @ 5 & 2 @ 10 pts) = 70 pts
Lab quizzes (9 @ 20 pts) = 180 pts
Lecture quizzes (various, weekly) = 50 pts
Mastering biology (17 chapters) = 100 pts
Written Assignments (vary) = 100 pts

Total 1,000 pts

LECTURE EXAMS

Five written exams will be given this semester based on lecture and related material from lab. Exam dates will be specified at least one week prior to the exam. The first four exams will take place during regular class sessions. The fifth exam will be given Monday, May 6; it is NOT cumulative.

- Exam questions will be asked in several formats: multiple choice, matching, short answer/essay.
- Each exam will be limited to 55 minutes.
- Exam questions come from all course materials: lectures, labs, and texts.
- No student will be admitted to the exam after the first student has left the room.

Make-Up Policy Students may make up one exam missed due to an excused absence. These exams will be given the last week of classes and will consist primarily of essay questions. You need to make an appointment with your instructor to take your make-up exam; it will be administered in the Testing Center. Missing the fifth exam will lead to either the grade earned (with a zero for the fifth exam), an Incomplete (if other course work is satisfactory and arrangements made by May 6) or an F (if the student is failing).

LABORATORY QUIZZES, PRE-LABS & PROCEDURES

A pre-lab will be handed out prior to each lab (also available online). Read your lab manual, text and handout to complete the Pre-lab prior to lab. Bring your lab manual, completed Pre-lab and any other handouts to lab at your scheduled lab time. Pre-labs are due at the start of lab (5 points), followed by a quiz (20 points). Quizzes will cover material from the previous lab. Quizzes are picked up 5-10 minutes after the start of lab. Your lowest quiz score will be dropped from your final grade. Neither the pre-labs nor lab quizzes can be made up. However, if you will be late or absent from lab, you may submit a pre-lab as an e-mail attachment by the scheduled start of your lab.
LECTURE QUizzes

Lecture quizzes will be given at the start of lectures and cover material from the last lecture(s) or current reading. An index card will be handed out at the start of the course. Bring it to each class session to write your answers. Answers will not be accepted on paper. No make-up quizzes; come on time! Alternatively, your instructor may try online quizzes before the class this semester. Pay attention to any announcements to that effect.

MASTERING BIOLOGY HOMEWORK

Mastering Biology provides many online study aids. A ‘Dynamic Study Module’ has been assigned from each chapter. These assignments are time sensitive to encourage reading of your text before lecture; no late work accepted. Collectively, these assignments make up 10% of your grade. Assignments and due dates are posted within Canvas in the ‘MyLab and Mastering’ section. Note the many other resources available on Mastering Biology, including an extensive test bank for your practice. Note that the points earned within Mastering Biology (172 points possible) are not directly equivalent to points on your grade sheet (100 points maximum). Rather, they will be transformed proportionally. See page 9 for more details.

WRITTEN EXERCISES

Four types of written work will be assigned over the course of the semester: (1) short homework assignments, (2) a summary report based on scientific article or speaker, (3) formal laboratory reports, and (4) sustainability reports. Written homework will be assigned during the semester and may take several forms. Reports (2-4) must be typed and double-spaced (see the following pages for details). One summary report, two laboratory reports and two sustainability reports will be written per student. Each student must write his or her own paper (see Plagiarism, page 10). You are encouraged to submit written exercises electronically via Canvas as Word documents (e.g. Word.doc or Word.docx). Include your name in the title of the document. Papers are due at the start of lecture or lab. Late work may be accepted at the instructor’s discretion, but will be marked down (approximately 10% per day).

EXTRA CREDIT: Maximum of 25 points possible for the semester

• The two sustainability reports will be considered extra credit this semester (10 points each).
• Students may write a second ‘Summary Report’ (see next page)
• Other Extra Credit opportunities will be announced in class.

REGRADES AND COMPLAINTS

Graded work will be returned to students in a timely manner with an explanation of grades. Note: papers graded on Canvas will include instructor comments. You may need to use a computer (vs. phone) to see these comments. Students may request a regrade, in writing, within one week of the return of any work. If you have a complaint about your course or instructor, you need to first approach your instructor with your concerns. If you cannot reach a satisfactory resolution with your instructor, write a letter to the department chair (Biology Chair is Dr. Karen Conzelman).

INCOMPLETE GRADE:

An incomplete grade (I) is given only to students doing acceptable work (C or better) who are unable to complete the course requirements due to severe illness or extenuating circumstances during the last week or two of the semester. It is the student’s responsibility to initiate and file the incomplete grade contract.

WRITTEN EXERCISES: Summary Report 25 points, Due in Lecture April 26 (OR Extra Credit? TBA)
The purpose of this report is to introduce you to scientific communications from actual researchers. You may report on two types of materials: journals and seminars.

Papers from scientific journals

Scientists publish thousands of articles every week. These publications make up the ‘primary literature’ of science. They include much jargon, however, and may be inappropriate for our purposes. Other journals present similar work at a level meant for a general science audience. American Scientist is the preferred source for this assignment. It is available online at our library. Other sources may be used, but the articles should be at least 7 pages in length and must contain a tested hypothesis. Articles from Scientific American are NOT suitable for this assignment.

Seminars: On or Off Campus

Local universities often sponsor seminars. Seminar schedules will be provided as available. To receive credit for seminar reports, you must attend the seminar.

Assignment

You are to write one report (a second may be written for extra credit). The exact topics can be chosen at your discretion and you may choose an article or seminar. Regardless of your source, use full articles, not summaries. Your report should summarize the article/seminar in your own words - avoid direct quotes. Each of the items below should require only one or a few sentences. It is your responsibility to find an appropriate article to fulfill all parts of this assignment and summarize the article in your own words. Your instructor has several suggestions for articles (see: Bio181 webpage).

Be sure to include:

- the initial observation or earlier study that stimulated the research
- the hypothesis tested and specific predictions of the hypothesis
- basic methods/experimental design of the study; how was the hypothesis tested? compare the experimental vs. control groups. You are not expected to describe detailed methods. However, if you cannot understand the methods, you should choose a different topic.
- results: what did the authors find from their experiment (the facts or measurements)?
- the author’s conclusion; state clearly the author’s conclusion about the hypothesis. For example, ‘Dr. Seymour concluded that the results supported (rejected?) her hypothesis.’
- your critique: do you agree with author’s conclusion? why or why not? apply logic and your knowledge of the scientific method to critique the study’s design, controls, etc. You are not expected to bring in your own experience or other data.
- the complete reference of the article or lecture (author, date, title, publication and pages, or ‘Lecture at . . . ’ etc.)

Style: You are expected to describe the work and explain your conclusions in language that other students (family, friends) can understand. Avoid jargon; write in a clear, direct format. Articles may include multiple hypotheses and experiments. Report on only one hypothesis and a single experiment. Papers should be typed, double-spaced, and grammatically correct. Spell check and ask a fellow student, friend or family member to proof read it (can they understand your summary?). Maximum: 2 pages.
WRITTEN EXERCISES: Laboratory Reports* 2 papers, 50 points each Due in Lab (see page 11)

Purpose

Successful scientists need to be able to communicate. This report gives you an opportunity to present your own scientific findings. One key to your success is simple, well-written prose. Keep to your subject and avoid words that convey little information (e.g. ‘very’). Papers must be typed and double-spaced (other papers will be returned to the student ungraded). You may want to consult with tutors at the language arts building for other suggestions on style and have someone you know proof read it. Each student must write his or her own report (see plagiarism, page 10).

Assignment

You will report on two experiments designed and conducted by yourself (Membrane Transport and Enzymes). Your report should conform to the standard format of a scientific journal that includes: Abstract, Introduction, Methods, Results, Discussion, Acknowledgments, and Literature Cited. Use these terms as headings at the start of each section; they provide an outline for your paper. You may want to break up each section and use additional sub-headings. Print your name and an informative Title at the top of the first page. Suggested length: 4-5 pages.

Abstract: The abstract summarizes the rest of the paper: background, hypothesis & key findings.

Introduction: This section informs the reader why you made the study. What observation or question stimulated you to perform these experiments? What background information relates to the question? Be sure to write a clear, explanatory hypothesis that you tested. Finally, provide clear predictions of your hypothesis that will be addressed by your study.

Methods: What did you do? How did you test your hypothesis? What materials were used, at what temperatures, and why? What were your control groups and controlled variables? This section should provide enough information to allow the reader to replicate your study. Write this section and the results in the past tense.

Results: What did you find (measure, count)? You need to present your data clearly; however, too much detail can swamp the reader. One solution is to summarize the data in your written section (e.g. mean, sample size, range) and present the entire data set in a table, figure (e.g. graph) or both. Write this section in past tense. Limit this section to the facts; avoid interpretations (no mention of Hypothesis).

Discussion: Restate your hypothesis and key results and tell us: Do your results support or reject your original hypothesis? If not, why? Were your methods appropriate for this study? Why or why not? (refer to your controls). How could you improve the study, or what is the next step? Finally, what can you conclude? (hypothesis well tested? Supported or Rejected?).

Acknowledgments: Thank your colleagues, family or friends who helped (in the lab, reading your manuscript, etc.) and funding (e.g. grants, scholarships, parents).

Literature Cited: Scientific papers cite background studies for comparison to other organisms/systems and methods. You will need to cite your textbook and lab manual for details of enzyme activity: author, date, title, pages, and journal or publisher.

* Specific details for each lab report will be provided in lab. Use the description above as general information. Be sure to address all of the details provided on the lab handout.
SUSTAINABILITY STATEMENT: Sustainability Reports

MCCD has developed a **Global Sustainability Initiative.** “Sustainability is to meet the needs of the present without compromising the ability of future generations to meet their own needs” (Brandt Report, 1980). Higher education plays a key role in building such sustainable societies.

> We do not inherit the earth from our ancestors; we borrow it from our children.
> -- Native American Proverb” (MCCD website)

Ecology, a biological discipline, studies the interactions between organisms and their environment that determine the distribution and abundance of organisms. The scientific community today considers the threat of global climate change to be the greatest challenge of the 21st century (for details: access the IPCC reports on Wikipedia). Indeed, we have already entered the 6th great extinction event of Earth’s history – the Anthropocene. As students of biology, we will spend some time on the causes and possible solutions to sustainable issues including climate change. You will have two assignments on sustainability this semester:

1) A short summary of the first chapter of the book: **Plan B 4.0: Mobilizing to Save Civilization** (available free @ [http://www.earth-policy.org/books/pb4](http://www.earth-policy.org/books/pb4)),

2) A test of your **driving efficiency**.

We will demonstrate and implement sustainable practices as part of our course. Handouts will either be printed on both sides, or printed on one side of used paper (when practical) or posted on Canvas. Similarly, you are requested to turn in written assignments electronically (Canvas), or printed as above. We will also note the recycling program on campus, examine our transportation choices and try some alternatives. Your suggestions are encouraged! Finally, you will have extra credit opportunities related to sustainable practices. Please visit our ‘Green Efforts’ webpage: [http://www.gccaz.edu/greenefforts/](http://www.gccaz.edu/greenefforts/)

**Sustainability Reports: These reports are not required this semester; they count as extra credit**

**I. Report on Plan B 4.0: Mobilizing to Save Civilization** (Extra Credit, 10 pts) Due February 22

This book is available for free as a download @ [http://www.earth-policy.org/books/pb4](http://www.earth-policy.org/books/pb4)

Assignment: Read Chapter 1 of this book, ‘Selling Our Future’ and

- **Summarize three problems** described in this chapter; include: the source of the problem, its current effect, and expected future consequences. For example:

  > Human overpopulation is a growing problem for the world’s ecosystems. Overpopulation is due to a combination of relatively high survivorship (new) and continuing high birth rates (mostly unchanged). Ecologists have determined the human population today exceeds a sustainable density, at least as humans currently ‘use’ the world. Collectively we use more resources (water, wood) than the world can replace. If the human population continues to grow, ecosystems will eventually collapse leading to droughts and floods, and a lack of arable land for agriculture.

- **Identify one of these problems as the most urgent and suggest a possible solution.**

**Maximum length: 2 pages** (no cover sheet).
Sustainability Reports

II. Report on Driving Efficiency (Extra Credit, 10 points) Due April 10

We will begin this assignment March 20. You will track the amount of gas used, miles driven and compute your miles per gallon (mpg) for two weeks of driving. During week two, you will be asked to modify your driving to improve your gas efficiency. Finally, you will write a one-page report that includes:

For single passenger cars:

1. Week One: Total miles driven, total gallons of gas used & mpg
2. Week Two: Total miles driven, total gallons of gas used & mpg
3. Explain: Difference in mpg between Week One vs. Week Two
   a. Driving differences? Car maintenance?
4. Cost vs. Benefit Analysis
   a. How much $$$ did you save Week Two versus Week One? (if any)
   b. Were there any increased costs to your driving during Week Two? (e.g. time)
   c. Were the benefits (money saved) greater than the costs (longer travel times)? Explain
   d. Re-evaluate the longer-term trade-offs of your driving choices considering that CO₂ is the primary greenhouse gas implicated in Climate Change,
5. Finally, what changes, if any, do you plan to make in your future transportation choices?

Carpoolers: Follow the format above, but consider your per-person cost based as a proportion of the number of passengers.


Attendance and Withdrawal Policies

College policy states that students are to attend all lecture and laboratory meetings. Official excuses given for college activities must be presented with the appropriate form three days before the class that will be missed (see district policies for other excuses*). Regardless of cause, you are responsible for all material covered during that class (handouts, assignments, announcements & subject matter). If you miss the first class or have more than four unexcused absences (from any combination of lecture and lab meetings) you will be dropped.

You may drop the class any time before the student initiated drop date and receive a “W” (withdrawn). If you drop the class after the student initiated drop deadline and do not have a passing grade (D or above), you will receive an F as your final grade. See My.Maricopa for specific withdrawal deadlines for this course.

*See Maricopa Community Colleges attendance policy for definition of excused and unexcused absences:
https://chancellor.maricopa.edu/public-stewardship/governance/administrative-regulations/2-students/2.3-scholastic-standards/2.3.2-attendance
Textbooks, Materials and Technologies

Textbooks

Required, Lecture:

Title: *Campbell Biology BIO 181 Package*: includes subscription to MasteringBiology (older editions – 9th & 10th – are acceptable, but you will need to buy MasteringBiology separately)

Author: Urry et al.
Publisher: Pearson
ISBN: 978-1-323-65082-0

Required, Lab:

Title: *BIO 181 Laboratory Manual* (3-hole punched; suggested: 3-ring binder)
Author: GCC Biology faculty (will be provided to you during the first lab period)
Publisher: N/A
ISBN: N/A

Other Required Materials

Safety goggles are required. (See Safety Regulations on page 12 of this syllabus)

Course Technology Information

CANVAS

The course materials will be online in the course materials folder. In addition, there will be laboratory experiments, readings from the text, journals and website links posted on Canvas by the instructor throughout the semester.

In this class, students will be using Maricopa’s Canvas Learning Management System to access course materials (in Course Materials Folder), complete assignments, communicate with instructor and/or access your gradebook (limited). You may be required to submit work and/or download information from Canvas. There is, therefore, the possibility that accessing Canvas may place personal information you’ve shared there at a risk of disclosure.

- Terms of Use: https://www.canvaslms.com/policies/terms-of-use-canvas
- Privacy Policy: https://www.canvaslms.com/policies/privacy
- Accessibility statement: https://www.canvaslms.com/accessibility

MASTERING BIOLOGY

Online homework for this course is found within our Canvas classroom: *MyLab and Mastering*. Instructions for registration are found within this folder. You will need to purchase an access code (the bookstore version of the text includes the access code). Also, you will be required to set up an account with a third-party vendor (Pearson Publishing) to subscribe. Therefore, there is the possibility that personal information you’ve shared with the textbook publisher to set up that account or records of your work/scores on its activities may be at risk of disclosure.

- Terms of Use: https://register.pearsoncmg.com/reg/include/license2.jsp
- Privacy policy: https://register.pearsoncmg.com/w3c/privacy.htm
- Accessibility statement: https://support.pearson.com/getsupport/s/article/Mastering-ADA-and-Section-508-Accessibility
Student Rights & Responsibilities, and Expectations

Every student is expected to know and comply with all current published policies, rules and regulations as printed in the college Academic Catalog, Syllabus, and Student Handbook.

Academic Catalog: http://www.gccaz.edu/gcc-catalog

The student handbook includes policies and procedures regarding:

• Instructional Grievances
• Sexual Harassment and Misconduct
• Student Code of Conduct (including Disruptive Behavior)

GCC expects and demands ethical participation in their courses. Ethical violations will lead to suspension or expulsion, and a grade of F. **Plagiarism** is the presentation of other’s work as your own. In elementary school, junior high school and even some high schools, ‘copying and pasting’ is an accepted method for a report. In college ‘copying and pasting’ is considered plagiarism, i.e. cheating.

• **Please turn off any Cell Phones or Pagers before the start of class/lab.** Use of these devices during class time will be lead to your immediate removal.

• **Photography and videography** in the classroom and lab are forbidden without explicit permission. However, **lectures may be audio recorded for personal use.**

• **Disruptive students will be reported to College Safety and expelled.**

College policy prohibits anyone from attending lectures, labs, or field trips that are not enrolled in the course (e.g. spouses, children, family members, friends, etc.).

The information in this syllabus is tentative and subject to change at the discretion of the instructor in response to student needs. Students will be notified by the instructor of any changes in course requirements, policies and due dates via GCC email, Canvas announcement, and/or in-class notification. It is important that you check your college email regularly so that you do not miss any important communication. Students are responsible for being familiar with and abiding by the policies articulated in this syllabus and any subsequent updates.

Information for Students with Disabilities

If you have a documented disability, including a learning disability, and would like to discuss possible accommodations, please contact the GCC Disability Resources and Services office at 623.845.3080 or email drsfrontdesk@gccaz.edu.

Sexual Harassment Policy

Sexual harassment and discrimination in any college education program or activity are prohibited. Sexual harassment may include hostile environment harassment, sexual assault, sexual exploitation or stalking. Students should report any discrimination and/or harassment they experience and/or observe to the GCC Office of Student Life in the Student Union. Phone (623) 845-3525 or email laura.dodrill@gccaz.edu. To view the full Sexual Harassment Policy refer to the Student Handbook, Sexual Harassment Policy for Students (AR 2.4.4) (see also 5.1.8).
# Course Outline: Lecture Schedule, Exam and Due Dates*

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<tr>
<th>Chapter</th>
<th>Lecture Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Evolution, Themes of Biology, and Scientific Enquiry</td>
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<td>2</td>
<td>The Chemical Context of Life</td>
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<td>3</td>
<td>Water and Life</td>
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<td>4</td>
<td>Carbon and the Molecular Diversity of Life</td>
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<td>5</td>
<td>The Structure and Function of Large Biological Molecules</td>
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<td></td>
<td><strong>Complete online Chemistry Review: Jan 23</strong></td>
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<td></td>
<td>**Lab Report: Salt and Boiling Point, Due on Canvas, Jan 30 (Feb 1, 4)</td>
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<td><strong>Lecture Examination I: Feb 8</strong></td>
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<td>6</td>
<td>A Tour of the Cell</td>
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<td>7</td>
<td>Membrane Structure and Function</td>
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<td>11</td>
<td>Cell Communication: Signal-Transduction Pathways</td>
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<td><strong>Plan B Report- Extra Credit: Due Feb 22</strong></td>
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<td></td>
<td><strong>Lecture Examination II: Mar 1</strong></td>
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<td>8</td>
<td>An Introduction to Metabolism: Enzymes</td>
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<td>9</td>
<td>Cellular Respiration and Fermentation</td>
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<td>10</td>
<td>Photosynthesis</td>
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<td>**Lab Report: Membrane Transport, Due in Lab Mar 18 (Mar 20, 22)</td>
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<td></td>
<td><strong>Lecture Examination III: Mar 29</strong></td>
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<tr>
<td>16a</td>
<td>The Molecular Basis of Inheritance (pp 314-322)</td>
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<td>12</td>
<td>The Cell Cycle: Mitosis</td>
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<td>13</td>
<td>Meiosis and Sexual Life Cycles</td>
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<td>14</td>
<td>Mendel and the Gene Idea</td>
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<td><strong>Lab Report: Enzymes, Due in Lab Apr 1 (Apr 3, 5)</strong></td>
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<td><strong>Driving Efficiency Report- Extra Credit: Due in Lecture April 10</strong></td>
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<td><strong>Lecture Examination IV: Apr 22</strong></td>
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<td>15</td>
<td>The Chromosomal Basis of Inheritance</td>
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<td>16b</td>
<td>The Molecular Basis of Inheritance (pp 322-334)</td>
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<td>17</td>
<td>Gene Expression: From Gene to Protein (and RNA)</td>
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<td></td>
<td><strong>Summary Report – Extra Credit: Due in Lecture April 26</strong></td>
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<tr>
<td></td>
<td><strong>Lecture Examination V: May 6</strong></td>
</tr>
</tbody>
</table>

*Disclaimer* Schedule may be changed to meet the needs of this class.

**Chemistry Review** is online. Students should complete the review by the due date. There is nothing to turn in. A quiz on this material will be given the day of the due date.

https://docs.google.com/document/d/1GAy9NQdzF8qX-knbaSYmsatIa-GKCb8UQRAw440z91Q/edit
### Course Outline: Laboratory Schedule*

<table>
<thead>
<tr>
<th>Week Of</th>
<th>Topic</th>
<th>Exercise**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 14-18</td>
<td>Safety, Scientific Method Simulation, Computer assignment</td>
<td>Handout</td>
</tr>
<tr>
<td>Jan 21</td>
<td>Martin Luther King, Jr. Holiday: No meeting</td>
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<tr>
<td>Jan 23-25</td>
<td>Laboratory Techniques &amp; Boiling Point Experiment</td>
<td>1</td>
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<tr>
<td>&amp; Jan 28</td>
<td></td>
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<tr>
<td>Jan 30-Feb 1</td>
<td>Organic Compounds</td>
<td>2</td>
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<tr>
<td>&amp; Feb 4</td>
<td></td>
<td></td>
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<tr>
<td>Feb 6-8</td>
<td>Organic Compounds: Application; Microscopes</td>
<td>3</td>
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<tr>
<td>&amp; Feb 11</td>
<td></td>
<td></td>
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<tr>
<td>Feb 13-15</td>
<td>Cells</td>
<td>4</td>
</tr>
<tr>
<td>Feb 18</td>
<td>Presidents' Day: No meeting (students may attend Wednesday or Friday lab)</td>
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<tr>
<td>Feb 20-22</td>
<td>Cell Fractionation of Pea Seeds: Optional for Extra Credit</td>
<td>5</td>
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<tr>
<td>Feb 25</td>
<td>Cells &amp; Membrane Transport I (partial)</td>
<td>4 &amp; 6</td>
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<tr>
<td>Feb 27-Mar 1</td>
<td>Membrane Transport I</td>
<td>6</td>
</tr>
<tr>
<td>Mar 4</td>
<td>Membrane Transport: I (finish) &amp; Application</td>
<td>Student Design</td>
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<tr>
<td>Mar 6-8</td>
<td>Membrane Transport: Application</td>
<td>Student Design</td>
</tr>
<tr>
<td>Mar 11-15</td>
<td>Spring Break: No Lab</td>
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<tr>
<td>Mar 18-22</td>
<td>Enzymes</td>
<td>7</td>
</tr>
<tr>
<td>Mar 25-29</td>
<td>Enzymes: Application</td>
<td>Student Design</td>
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<tr>
<td>Apr 1-5</td>
<td>Mitosis</td>
<td>8</td>
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<tr>
<td>Apr 8-12</td>
<td>Meiosis (&amp; Inheritance)</td>
<td>9 (10)</td>
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<tr>
<td>Apr 15-19</td>
<td>Inheritance</td>
<td>10</td>
</tr>
<tr>
<td>Apr 22-26</td>
<td>DNA Isolation &amp; Genetics Problems</td>
<td>Handout</td>
</tr>
<tr>
<td>Apr 29-May 3</td>
<td>DNA Gel Electrophoresis</td>
<td>Handout</td>
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</tbody>
</table>

### Safety Regulations

Laboratory safety policies are explained in lab. You are expected to abide by these policies for your own safety and the safety of your classmates. There is always some risk in laboratory work and your participation in class is an implicit acceptance of this risk. Eating and drinking is not permitted in lab.

*Arizona Statute ARS15-151 specifies that every student and instructor in a public or private educational institution shall wear appropriate protective eyewear while participating in or observing laboratory science activities involving exposure to such things as potentially hazardous chemicals or biohazardous specimens, glassware and/or heat treatment of materials.*

*Disclaimer* Schedule may be changed to meet the needs of this class.

**Numbers under 'Exercise' refer to chapters in your lab manual. Read before lab.
Statement of Student Understanding  Biology 181: Spring 2019

I ______________________________ have read the syllabus for Biology 181. I understand it is my responsibility as a student to understand and follow the policies for this course, as well as general campus policies. I understand and agree to take responsibility for myself and accept the course policies which include: attendance, grades, make-up exams, laboratory procedures, Mastering Biology, regrade requests, late policies (no late pre-labs nor quizzes accepted), accommodations for disabilities, and the required texts and other materials.

Signed: _______________________________  Date: _______________


