

MCB 181R Syllabus Spring 2020 Jorstad

Course Description:

MCB 181R is Introduction to Biology I -- is an introduction to molecular and cellular biology. Specifically, we will learn about

- molecules and their interactions in living cells
- the structures of cells, including molecular machinery,
- some of the processes that cells undergo (e.g., cell division, photosynthesis, cellular respiration),
- the principles of genetics that determine inheritance of traits
- some specialized functions that cells perform, including the workings of the immune system

It is a "majors" class, in that it is designed to lay the conceptual foundations for students majoring in the life sciences, health sciences, agricultural sciences, etc., and prepare them for upper-division course work. Thus, a very broad range of topics is covered fairly intensively. Attendance in class is imperative!

The laboratory class, MCB 181L, is a separate course, usually taken concurrently with lecture. If the lab is required for your major, you must register for that class separately. Lab as a separate course is offered only in the Fall and Spring semesters.

Structure of Course: MCB 181R is an interactive-learning course, characterized by independent student preparation *before* class (a reading and a pre-class quiz), and then application exercises during class, involving work in small groups, supported by preceptors and augmented by mini-lectures from the instructor and clicker questions throughout the class period. [There will be short pre-class on-line quizzes on each topic we cover \(accessed in the D2L Quizzes menu or through the Content menu for each chapter\); they will be due before every class meeting.](#) In addition, there will be [LaunchPad on-line homeworks](#) due once per week; these are accessed through the LaunchPad link in the D2L blue nav bar.

[Our goal is to build long-term student understanding of biological concepts, and critical thinking skills, so we approach the material and measurement of your understanding a bit differently than a traditional lecture class.](#) I encourage questions and discussion during the lecture periods.

[Your learning will be evaluated in 3 different ways:](#)

- in-class, open-note exams
- regular on-line quizzes and homework assignments via LaunchPad.
- your participation in in-class activities that involve the use of personal response devices ("clickers").

This course is reporting **Early Progress Grades in UAccess** after the first exam. The Early Progress Grade will include all graded coursework up through Exam I. This is an opportunity to assess your current performance and make adjustments as needed to earn the grade that you want this semester. Make a plan to finish strong!

Access to Teaching Staff: You will have easy access to instructors and learning assistants before, during and after class; at discussion sessions; during office hours, or by appointment; and via D2L email. See contact info in the Contact Us section of the Syllabus links (in Content).

Email etiquette: please put a relevant topic in the subject line, address the recipient (such as "Hi, Dr Jorstad"), clearly state your question or concern, and sign your email with your full name. Please confine email correspondence with instructors to course-related matters that can be answered in a few sentences; questions requiring longer explanations should be posed in some other setting (such as before or after class, or during office hours). You may expect responses to emails within 24 hours, except over weekends.

Course Goals: Our goal is that, by the end of the semester, you will have solid understanding of the structure of cells; the ways in which molecules interact with one another during various cellular processes, such as cell division, cell signalling, and genetics; how DNA encodes information that directs cell activities; how the activity of genes and proteins are regulated in cells; and some of the consequences of breakdowns in these processes, such as cancer and diabetes.

Absence and Class Participation Policy

- The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at: <http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop>
- The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy>. Arrangements to reschedule exams for religious observations must be made at least one week in advance.
- Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See: <https://deanofstudents.arizona.edu/absences>

Accessibility and Accommodations: It is the University's goal that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please let me know immediately so that we can discuss options. You are also welcome to contact Disability Resources (520-621-3268) to establish reasonable accommodations. Please be aware that the accessible table and chairs in this room should remain available for students who find that standard classroom seating is not usable.

Code of Academic Integrity: Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See: <http://deanofstudents.arizona.edu/academic-integrity/students/academic-integrity>.

The University Libraries have some excellent tips for avoiding plagiarism, available at <http://www.library.arizona.edu/help/tutorials/plagiarism/index.html>.

Selling class notes and/or other course materials to other students or to a third party for resale is not permitted without the instructor's express written consent. Violations to this and other course rules are subject to the Code of Academic Integrity and may result in course sanctions. Additionally, students who use D2L or UA e-mail to sell or buy these copyrighted materials are subject to Code of Conduct Violations for misuse of student e-mail addresses. This conduct may also constitute copyright infringement.

Creating a Supportive Classroom:

Disruptive behavior is prohibited. "Disruptive behavior" means conduct that materially and substantially interferes with or obstructs the teaching or learning process in the context of a classroom or educational setting. This type of behavior includes talking that prevents others from hearing, inappropriate use of cell phone, tablet, or laptop, refusing to collaborate, refusing to cooperate with classroom support staff (TAs, preceptors), interrupting class activities, etc. In the event of disruptive behavior by one of the students in the course, official policies and procedures will be followed as described at <http://policy.arizona.edu/disruptive-behavior-instructional>

UA Nondiscrimination and Anti-harassment Policy

Required: The University is committed to creating and maintaining an environment free of discrimination; see <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>

Threatening Behavior is Prohibited. "Threatening behavior" means any statement, communication, conduct or gesture, including those in written form, directed toward any member of the University community that causes a reasonable apprehension of physical harm to a person or property. In the event of threatening behavior by one of the students in the course, official policies and procedures will be followed as described at <http://policy.web.arizona.edu/~policy/threaten.shtml>

Nondiscrimination and Anti-Harassment Policy: The University of Arizona is committed to creating and maintaining an environment free of discrimination. In support of this commitment, the University prohibits discrimination, including harassment and retaliation, based on a protected classification, including race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, gender identity, or genetic information. The University encourages anyone who believes he or she has

been the subject of discrimination to report the matter immediately as described in the section below, “Reporting Discrimination, Harassment, or Retaliation.” All members of the University community are responsible for participating in creating a campus environment free from all forms of prohibited discrimination and for cooperating with University officials who investigate allegations of policy violations. <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>

Changes to this syllabus:

The information contained in this syllabus, other than the grading and missed-exam policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.

A. The text required for this course is: Biology: How Life Works, 3rd edition (2019) with Launchpad homework platform, which you will access in the follow way:

Inclusive Access Text and Online Support Materials

The course textbook and online activities are being delivered digitally via D2L through the Inclusive Access program. The textbook for the course is *Biology: How Life Works, 3rd edition Volume 1* with Launchpad, by J. Morris, D. Hartl, and colleagues. The cost to students is \$95.80. **Note: You will be required to access many of the materials/exercises/activities that are on Launchpad and completion of these assignments will count toward your grade for this course.**

Please access the material through D2L on the first day of class to make sure that there are no issues with delivery so any problems can be addressed quickly. You will find links at the top of the Content menu, under Vital Source Inclusive Access.

You automatically have access to the course materials FREE through Jan 23.

You **must** take action (even if you have not accessed the materials) to opt-out if you do not wish to pay for the materials and choose to source the content independently. **The deadline to opt-out is January 24, 2020.** **Note:** If you took the course in the past 4 years and purchased the 2nd edition of the book with Launchpad through the bookstore, please contact Dr. Jorstad before January 24.

If you do not opt-out and choose to retain your access, the cost of the digital course materials will appear on your September Bursars account.

Please refer to the Inclusive Access FAQs at <https://shop.arizona.edu/textbooks/Inclusive.asp>

[Textbooks Inclusive Access | UA BookStores](#)

The Inclusive Access program is a digital textbook model in collaboration with top publishers to reduce the cost of required course materials.
shop.arizona.edu

for additional information.

- If you have problems with the etext or Launchpad, please [contact Macmillan Customer Support](#).
- You can reach a representative 7 days a week:
 - through the online form
 - by chat
 - by phone at (800) 936-6899

C. You must also purchase a "clicker" -- a remote response device that will allow you to participate in in-class activities that generate class participation points in the course. Only one brand of clicker will work with our classroom software: the TurningTechnologies QT2, QT, or NXT devices. New QT2's are available at the University Bookstore bundled with a 4 year license for \$79.99. You can get this from the TurningTechnology's website for \$59.99, but you may have to wait for delivery. Used QT and NXT clickers work just fine, and if you have already registered a clicker with the University in a prior semester, you will not have to buy the license.

If you buy/borrow a used QT or NXT that you have NOT already registered, you will have to buy the license online from TurningTechnologies for \$19.99 for one year, or \$29.99 for 2 years. The clickers run on 2 AAA batteries; you might want to carry a few extras. **We will NOT be using Responseware in this class--** i.e., you will NOT be able to use your smartphones, tablets, or other wireless devices for this purpose.

How to use the clickers: To successfully get points for clicker sessions in class, **you must register your clicker**, (even if you have registered it before) through the **UA Tools menu in the nav bar** at the top of this D2L page; clicker on "Clickers" and follow the instructions. We will begin using clickers on the first day of class; clicker points are a significant part of your grade in class (see Grading Policies in Syllabus for details).

It is your responsibility to verify that responses are being recorded for your clicker. You can do this by regularly checking the D2L gradebook. Grades are usually posted right after class, and the date will be included next to your score in the gradebook. If you're not getting credit for clicker exercises that you participate in, please see Dr Jorstad before or after class. Students with unregistered clickers will receive only partial credit for class participation if the problem is reported more than one calendar week after the clicker session.

Attendance:

This is an introductory class, and we cover a lot of diverse topics; the pace can be intense! **Attendance in class is vital.** Once you begin to fall behind, it is very difficult to

catch up. In addition, we will be using the "clickers" virtually every day; your participation in these exercises will be a significant part of your final grade in the class (50 points out of 750).

Excused absences (for exams) will be only those that involve **documented** emergencies: illness or accident documented by a physician, documented death in the family, etc. The instructor must be notified of such an emergency **before** the exam, if at all possible. **Exam absences due to religious activities must be arranged at least one week in advance, as must absences covered by Dean's notes.**

There is no need to document absences on non-exam days, but no class participation points can be gained by someone not in class, for whatever the reason.

Course Grading Policy: Letter grades will be assigned only once, at the end of the semester--i.e., letter grades are not assigned to individual exams, quizzes or assignments.

Each of the **4 Midterm Exams** is worth 100 points, and will consist of two parts: an individual score (80%) and a group score (20%). The cumulative **Final Exam** is worth 200 points, and will have no group component. All of the midterms will be given outside of class-time, on Friday evenings (see the Exams link in Syllabus or Master Schedule in the Content menu, for exam dates). There are no dropped exam scores.

Clicker (class participation) Points will be worth a maximum of 50 points. (Each clicker session will be worth a maximum of 3 points)

100 points will be assigned to on-line D2L pre-class quizzes and post-class LaunchPad homework assignments; there will be about 40 of these 5-point assignments. This sums to ~200 points, which will be scaled down to fit a 100-point scale (in other words, I will be taking your overall average on these assignments). There are no dropped quiz or homework scores.

Hour Exams (4) 100 pts each	400
Final Exam (1)	200
Class Participation (clickers, worksheets; as a % of 50 max points)	50
Average of Quizzes & LaunchPad homeworks (~40 @ 5 pts each)	100
total	750

The following grade assignment scheme for Final Course Grade is guaranteed:

> 90% of total points	A
80-89%	B
70-79%	C
60-69%	D
<60%	E

Scoring on exams is as follows:

- During each midterm exam, each student will take the exam alone (80% of score) and then again as part of a group (20%).
- Each mid-term exam will consist of ~30 multiple choice questions and 2 short essays
- Each multiple choice question is worth 3 points. The value of each correct answer thus depends on how many there are: if there is only one correct answer, it is worth 3 pts; if there are 2, each is worth 1.5; if 3, each is worth 1pt, etc. **In all cases, the selection of an incorrect answer = minus one (-1) point. Negative scores are rounded up to zero**
- Essays are worth 5 points each, and we are restricted to whole numbers.

There are no make-up exams (except under extraordinary circumstances), and no dropped exam scores.

Anyone wishing to report a scoring error or submit an exam for a re-grade must do so **within 1 week of the release of exam scores**, although extensions on this may be granted. These include: 1) a scoring or scanning error, or 2) a regrade petition to reconsider an alternative interpretation of a question or answer. **BOTH TYPES OF REGRADE REQUESTS MUST BE SUBMITTED TO DR JORSTAD IN WRITING**, via email. A petition to reconsider alternative interpretations (a **regrade petition**) must be submitted as a Word email attachment; please name the file with your last name and exam number, such as "Roberts Ex II Regrade Petition". [Reports of scoring errors](#) can just be described in the body of the email message.

Exam scores are not "curved". Curving refers to shifting of the dividing line between letter grades, and since letter grades will not be assigned until the end of the semester.

D2L Quiz Grading: Each quiz is over the Pre-class Tutorial for that unit. For each D2L quiz, you get five attempts; the highest score is the one that counts. D2L has a system of automated grading in which **both failure to recognize a correct answer and selection of a wrong answer cost you partial credit**. For example, in a one-point question, if there are 4 answer choices, each choice is worth .25; failure to select a correct answer **or** selection of a wrong answer each cost minus .25. Basically, it gives you +.25 for making the right decision regarding an answer choice, and -.25 for making the wrong decision. This is somewhat different from the way in which exams are

graded, and cannot be altered by the instructor. Quiz due dates will be listed in the Master Schedule, the Checklist, and the Events Calendar. Rule of thumb: there is a quiz due before every lecture. No late submissions are accepted, and there are no dropped quiz scores. Each quiz attempt lasts only 120 minutes. If you have a quiz attempt open longer than that, you will get an error message telling you that it is a "late submission"--late in the sense that you have exceeded the 120 minute time limit, not in the sense that the due-date has passed. This type of late submission also receives no credit.

A key for each quiz will be posted at the bottom of the Quizzes link after the quiz due-date has passed; just take the Key like a regular quiz, and it will show you the correct answers. In the quiz keys, **blue arrows** point to the correct answers.

A **green checkmark** means you did the right thing on that answer choice (selected a right answer; left a wrong one blank); a **red X** means you didn't do the right thing (you failed to select a right answer, **or** you chose a wrong one).

Clicker Points: **Class participation points will be awarded for participation in the clicker exercises**, as recorded by the classroom computer software. You can score a maximum of 50 points for class participation; each session is worth a maximum of 3 points. You can check the D2L Grades link after class to make sure your clicker responses are being recorded. **It is up to you to verify that your responses are being registered** (once clicker scores have been posted to the D2L Grades link, the date of the session will appear next to the score.) **Problems must be reported within one calendar week** of the session, or only partial credit will be awarded. **No credit will be given after problems reported after the last day of classes.** If you think you have a problem, see Dr. Jorstad before or after class.

LaunchPad End-of-Week Homework Assignment Grading: Each HW assignment is worth 5pts, and is composed of a variable number of questions drawn from a larger pool. Students get 3 attempts at each HW; the highest score counts. **Problems must be reported within one calendar month for full credit. No credit will be given for problems reported after the last day of classes.**

Drops, Incompletes, etc

Incompletes:

Students who do not take the final exam will, in general, receive a grade of 0 for the final exam and an "E" for the course. In accordance with University policy, the grade of "I," or incomplete, can only be awarded in the case of students whose circumstances prevent them from finishing the required work for the course. In every case, an "I" must be approved, before the last week of classes, by Dr. Jorstad. If a student is expected to repeat the course, the grade of "E" must be assigned. Students must make arrangements with the instructors to receive an incomplete before the last week of classes. Incompletes that are not removed by the instructor within one year are converted to "E" grades. For undergraduate courses, the one-year limit may be

extended if approved by the instructor and the dean of the college in which the student is registered.

Audit Grades:

This course is not offered for Audit or Pass/Fail.

Withdrawals:

Oct 28 is the last day for withdrawing from class using UAccess. After that date, students must submit "late change" petitions to the office of the Dean of their college. Late withdrawal is approved only under exceptional circumstances and requires approval by the course instructor and the student's academic dean. In such a case, a "W" is awarded to students passing at the time of withdrawal, and "E" may be awarded if failing. A "W" may also be awarded in case of complete withdrawal from the University up through the last day of classes with a complete withdrawal from classes.

Exam Policies:

There will be four midterm exams, each worth 100 pts, and a cumulative Final Exam worth 200 pts. For the midterm exams, each student will take the exam alone (80% of the grade) and then again as part of a group (20%). **Students who miss more than 50% of the class meetings may be excluded from the group exams.** The midterm exams will have ~30 multiple choice (some with single and others with multiple correct answers possible), and 2 short essay questions. The Final, which is cumulative, will be ~70 multiple choice (no essay)-- approximately 50% over material covered after Exam IV, and 50% over the whole semester. There is no group portion of the Final Exam.

Exam schedule is as follows (you may also see **Checklist** link on the course webpage)

Exam I	Jan 31 (5-7pm)
Exam II	Feb 21 (5-7pm)
Exam III	Mar 20 (5-7pm)
Exam IV	Apr 17 (5-7pm)
Final	May 11 (6-8pm)

There are no make-up exams (except under extraordinary circumstances), and no dropped exam scores. If you have an emergency that prevents you from taking an exam, you must notify the instructor via phone or email **BEFORE** the exam, and you must be able to document your emergency. Personal or family matters such as

anniversaries, birthdays, weddings, reunions, pageants, performances in local theaters, etc. whether documented or not, do not qualify for a makeup exam. **Exam absences due to religious activities must be arranged at least one week in advance, as must absences covered by Dean's notes.**

- The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy>. Arrangements to reschedule exams must be made at least one week in advance.
- Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See: <https://deanofstudents.arizona.edu/absences>

Individual exam scores are not "curved". (Curving means altering the cut-off points between letter grades--i.e., between an A and a B--from the standard 90, 80, 70, and 60%.) Since letter grades are assigned at only one point during the semester-- after the Final Exam has taken place and point totals have been determined for each student-- that is the only time a curve will be considered.

Regrade Petitions (usually accepted for one week after an exam; date will be specified) must be submitted via email as Word documents with internal headings and file names such as this " your last name Exam III regrade petition". As always, be sure to include your section number in your email subject line.

Student Understandings Form:

MCB 181R Student Understandings

Print Name, LAST name first: _____

Please initial each of the following statements to indicate that you understand and accept:

1. I understand that this class will focus on application and practice, not lecture. _____
2. I understand that I will be expected to master some of the course material on my own, and that I will be responsible for monitoring my own learning. _____
3. I understand that on a typical class day I will be working in a small group, and that I will be responsible for taking an active part in advancing the assigned group work and group exams _____
4. I understand that it is more important for me to learn to think scientifically than it is for me to get a correct answer through a rote process that I do not understand. _____
5. I understand that to practice thinking scientifically, I may need to ask questions, and I understand that asking a question is sign of my dedication to improving my learning, not a sign of weakness. _____
6. I understand that like any skill, scientific thinking takes practice. _____
7. I understand that struggle will be a valuable part of the learning process, and that struggle does not reflect badly on me as a person. _____
8. I understand that in order to learn the skill of scientific thinking, I will need to test my ability to recall and use information regularly (I will need to practice metacognition and self-testing). _____
9. I understand that the instructor, TAs, and preceptors are here to guide me in developing my scientific thinking skills, and I will comply with reasonable requests from the support staff. _____
10. I understand that technology can be a useful tool in helping me develop my scientific skills, but that it can also be a distraction to myself and to others. I will comply with the class rules of the use of electronics: no cell phones at any time; laptops and tablets used only for class-related activities. I will comply with support staff requests regarding my use of electronics in the classroom. _____

Signed: _____

Course Objectives and Expected Outcomes

In this course, you will:

- Be introduced to foundational concepts in molecular and cellular biology
- Apply concepts in molecular and cellular biology to novel problems
- Draw conclusions from experimental data

Upon successful completion of the MCB181R, you will be able to:	Which aligns with MCB program outcome*:
Discuss how the molecular structures of biological molecules dictate functional relationships within the cell.	Demonstrate understanding of the molecular and cellular mechanisms that govern life and apply that understanding to novel scenarios.
Describe how cell structure impacts the functions cells can carry out.	Demonstrate understanding of the molecular and cellular mechanisms that govern life and apply that understanding to novel scenarios.
Outline cellular processes capture, transfer, and use energy.	Demonstrate understanding of the molecular and cellular mechanisms that govern life and apply that understanding to novel scenarios.
Discuss how the instructions for building cells and multi-cellular organisms are stored, used, and regulated.	Demonstrate understanding of the molecular and cellular mechanisms that govern life and apply that understanding to novel scenarios.
Discuss how changes in cells' information content can produce changes in function that can impact cell function, individuals' health, and sometimes result in evolution.	Demonstrate understanding of the molecular and cellular mechanisms that govern life and apply that understanding to novel scenarios.
Describe how cells' interactions with molecules and other cells affect cell behavior and, therefore, the function and health of the organism as a whole.	Apply analytical thinking to biological problems
Outline how life scientists collect, use, and interpret data about biological processes.	Apply analytical thinking to biological problems

*MCB181R is a foundation course for many majors beyond MCB.