

# Syllabus: MCB 181L: Introduction to Cellular and Molecular Biology Laboratory

## Spring 2023 · Sections 003-030

Class: Tuesdays 11:00 am – 1:50 pm; 2:00 pm – 4:50 pm; Wednesdays 8:00 am – 10:50 am; 11:00 am – 1:50 pm; 2:00 pm – 4:50 pm, Thursdays 8:00 am – 10:50 am; 11:00 am – 1:50 pm; 2:00 pm – 4:50 pm, Fridays 8:00 am – 10:50 am; 11:00 am – 1:50 pm; 2:00 pm – 4:50 pm in Koffler 420, 430, 450 or 460

Class website: <http://www.d2l.arizona.edu>

### Instructor and Contact Information

Course Director: Chad Park ([ckpark@arizona.edu](mailto:ckpark@arizona.edu))  
Office Hours: By appointment in Life Sciences South (LSS)

Asst. Director: Emily Dykstra ([edykstra@arizona.edu](mailto:edykstra@arizona.edu))  
Office Hours: By appointment in Life Sciences South (LSS)

Course Coordinator: Tina Gingras  
Best way to contact: Email - ([tmgingras@arizona.edu](mailto:tmgingras@arizona.edu)) or phone (520) 621 - 9267  
Office Hours: By appointment in LSS 433

Instructors: Vary by section. Please see UAccess or D2L for the instructor of your section.  
Office Hours: Lab Instructors for individual sections will announce their office hours the first week of class.

### About the Course

Welcome to Introductory Biology at the University of Arizona! MCB 181L is the laboratory companion course to the BIO181R lecture course. The two courses are independent: the credit and grade for MCB181L is separate from the lecture, and you are not required to take the two courses simultaneously (but note that it is **highly** recommended). In this section, we will be applying the content covered in the MCB181R lecture course to a series of questions about how and why certain biological systems behave the way that they do. While we will review the key concepts, **it will benefit you greatly to be taking or to have taken the MCB181R lecture course**. We will emphasize critical thinking, problem-solving and cooperative learning.

- **Classroom Attendance:** If you feel sick, or if you need to isolate or quarantine based on [University protocols](#):
  - Stay home. Except for seeking medical care, avoid contact with others and do not travel.
  - Notify your lab instructor ASAP if you anticipate being absent or were absent from lab so that they can assist you as best as possible.

- Visit the [UArizona COVID-19](#) page for regular updates including information about COVID-19 testing.
  - Please see the attendance policy below for additional information.
  - Students who need to miss more than one week of classes (2 or more labs in a row) in any one semester will be required to provide a doctor's note of explanation to [DOS-deanofstudents@email.arizona.edu](mailto:DOS-deanofstudents@email.arizona.edu) (link sends e-mail). The Dean of Students Office will communicate the receipt of the note (with expected end date) out to the relevant faculty.
  - Voluntary, free, and convenient [COVID-19 testing](#) is available for students on Main Campus.
  - If you test positive for COVID-19 and you are participating in on-campus activities, you must report your results to Campus Health. To learn more about the process for reporting a positive test, visit the [Case Notification Protocol](#).
  - The COVID-19 vaccine and booster is available for all students at [Campus Health](#).
  - Visit the [UArizona COVID-19 page](#) for the most up-to-date information
- **Life Challenges:** If you are experiencing unexpected barriers to your success in your courses, please note the Dean of Students Office is a central support resource for all students and may be helpful. The [Dean of Students Office](#) can be reached at 520-621-2057 or [DOS-deanofstudents@email.arizona.edu](mailto:DOS-deanofstudents@email.arizona.edu)
  - **Physical and mental-health challenges:** If you are facing physical or mental health challenges this semester, please note that Campus Health provides quality medical and mental health care. For medical appointments, call (520-621-9202. For After Hours care, call (520) 570-7898. For the Counseling & Psych Services (CAPS) 24/7 hotline, call (520) 621-3334.
  - **Academic advising:** If you have questions about your academic progress this semester, or your chosen degree program, please note that advisors at the [Advising Resource Center](#) can guide you toward university resources to help you succeed.

## Course Learning Objectives

Throughout the entire course, we will be focusing on the following learning objectives. If our time in lab is successful, by the end of the semester you will have made gains in the following:

- Organize background knowledge and observations to construct explanatory mechanistic models about biological phenomena.
- Generate predictions based on an explanatory model.
- Design experiments to test predictions with technical advising from your research advisors (i.e., section instructors).
- Analyze experimental results to evaluate elements of an explanatory model.
- Revise an explanatory model in light of additional evidence and/or critique from your research community (i.e., your fellow classmates and section instructors).

- Communicate and defend the elements of your research (explanatory model/hypothesis, predictions, experimental design, results, analysis and conclusions) to your research community.
- Respectfully and productively critique the elements of research produced by other members of your research community.
- Collaborate with other members of your research community at all research stages.

Additional learning objectives specific to each lab will be provided throughout the semester.

## Course Attendance Policies

- The University of Arizona's policy concerning class attendance, participation and administrative drops is available at <http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop>. The specific policies for this course are outlined below.
- 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>. Please notify the section Lab Instructor and Tina Gingras ([introbio@email.arizona](mailto:introbio@email.arizona)) of any need for religious accommodation **within the first two weeks of class**, so that we can work together to arrive at a reasonable and fair solution.
- Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See: <https://deanofstudents.arizona.edu/absences>. **Note: If you know that you will have a number of Dean's Excused Absences, it is your responsibility to register for a lab section that will conflict with the fewest number of these absences.**

## Laboratory Attendance is Expected for ALL labs

- Attendance is worth 2 points per day and accounts for 5% total of your grade.
- You are considered absent from lab if:
  - You are not present at lab (0 pt. attendance).
  - You arrive less than 20 minutes late to lab (1 pt. attendance).
  - You leave lab before exercises and discussion are complete (0 pt. attendance).
- **A maximum of 3 make-up assignments will be allowed.** Any missed labs/assignments after these 3 will be given a grade of zero.
- Absence from **more than 3 labs** regardless of whether a make-up assignment was completed will result in a failing grade in the course.
- If you miss a lab, your instructor will email you the make-up assignment for that lab and you will have until your next lab to complete it.

We understand that these are difficult times, and everyone will have their own unique challenges that they are faced with. The above outlined absence policy is what we feel is most fair to our students as a whole. However, we do understand that unforeseen complications may arise which are beyond your control. If you feel you have an extenuating circumstance which prevents you from contacting your Lab Instructor to gain access to the quiz and/or being able to

complete laboratory assignments by their due dates and/or causes you to miss more than three labs you may email the Assistant Director of Introductory Molecular Biology Labs (Emily Dykstra) at [edykstra@arizona.edu](mailto:edykstra@arizona.edu) to have your situation reviewed. She will base her decision on communications she receives about your situation from the Dean of Students.

## Required Reading

Your section of the lab requires the lab manual, **Authentic Inquiry through Modeling in Biology: A manual for the Molecular and Cellular Biology 181 Laboratory**, available through the UArizona Bookstore. **Be sure to purchase the correct manual by the second laboratory meeting.** Additional online reading will be assigned throughout the semester via the course D2L website.

## Required Materials

You are required to provide your own laboratory coat, gloves, and safety goggles by the second week of class. Be sure to purchase a 100% cotton lab coat (NOT polyester or other synthetic fabric, which is flammable) and goggles that seal against the side of your face (the same kind that are required for Chemistry labs).

## Course Website

Course materials and announcements for this section are available on the course website, at <http://www.d2l.arizona.edu>. Log on using your regular UA e-mail username and password, then click on the appropriate course link. **To access the class website, you must be registered as a student in this section of the course.**

- **Each week, you are responsible for completing the activities that are listed under Content, Week 1, etc., on D2L. These will include a pre-lab assignment before each lab and at-home lab assignments for selected labs.**
- D2L provides a convenient way for us to get in touch with you. **If you do not use your D2L e-mail account, set your preferences so that D2L e-mail is forwarded to an e-mail account that you check frequently.**
- The D2L grade book is the official list of your scores for all of the work in the class. **Check your grades frequently to ensure that the scores recorded in the D2L grade book are correct.** If you suspect that an error has occurred, please contact your section instructor immediately.

## Course Assignments and Grading Policy

### ***Attendance (5% of final grade)***

Attendance will be assessed at the beginning of class each day, counting towards 2 points per day. Student arrival after class has started but before 20 minutes is worth 1 point. Arriving after 20 minutes is worth 0 points. Late students are encouraged to stay in class to obtain in-class assignment points. The lowest two attendance scores will be dropped.

### ***Pre-class Assignments (20% of final grade)***

Pre-class assignments will be assigned through D2L for each lab. Each will consist of an online reading and an online quiz. Online quizzes will be in D2L and will be due at 7:00 am the morning before class.

### ***In-Lab Assignments (40% of final grade)***

In-Lab assignments represent the process of your research in the lab and will be assigned each week. They will be completed in D2L via an online Lab Notebook.

### ***Lab write-ups (30% of final grade)***

Lab write-ups represent the products of your research in the lab. These will include lab report type assignments completed outside of class as well as a limited number of in-class presentations. Lab write-ups completed outside of class will be turned in via D2L Assignment folders and will be due by 11:59 pm the night before your next weekly lab meets.

### ***Lab Reflections & Surveys (5% of final grade)***

Considering your performance on assignments and your experience in the course will be an important part of your learning process in this course. You will be asked to complete reflections and surveys throughout the semester to facilitate this.

### ***Calculating final grades***

The final grade will be calculated by combining scores for each category as indicated above. The cutoffs will be  $A \geq 90.0\% > B \geq 80.0\% > C \geq 70.0\% > D \geq 60.0\% > E$ .

### ***Late work***

A 10% credit deduction will be assessed prior to grading for late work turned in within 24 hours of due date. After 24 hours, a 30% credit reduction will be assessed prior to grading.

- Assignments will only be accepted for credit if turned in within one week of the original due date.
- Pre-class assignments prepare you for the coming laboratory activities. For this reason, pre-class assignments are not accepted late for credit. Please plan accordingly.

### ***Groups and group work***

Students will most often work in groups of three (3). Students are guaranteed at least one partner so they are in a group of two. However, there may be instances when even this is not possible. In some sections there may be groups of 2 and groups of 4. Groups may change as needed especially as students drop or add the class. Groups may be seated in different parts of the lab as the semester progresses in order to facilitate active learning for the entire section.

### ***Grade Appeals***

If you believe that an error has been made in grading one of your lab reports, you must submit a written regrade request to your instructor via e-mail **within one week** of receiving the graded report. In your regrade request, you should describe what you believe was graded incorrectly, and why you believe it is incorrect.

Typed re-grade requests must also be submitted to the D2L Assignments folder entitled 'Re-grade requests'. Requests not submitted to this folder will not be considered. Please include your name, the assignment name and your LIs name in the file name of the document.

For other grading or grade-entry errors, please contact your section instructor by e-mail **within two weeks** of the results being posted.

Lab Instructors will not discuss re-grade requests during class time. All questions/concerns via grading will be handled in Office Hours or via email.

### **Requests for incomplete (I) or withdrawal (W)**

Requests for incomplete (I) or withdrawal (W) must be made in accordance with University policies, which are available at <http://catalog.arizona.edu/policy/grades-and-grading-system#incomplete> and <http://catalog.arizona.edu/policy/grades-and-grading-system#Withdrawal> respectively.

### **Dropping the Course**

Please see the Office of the Registrar for information regarding dates and deadlines:

<https://www.registrar.arizona.edu/courses/dates-deadlines>

### **Whom to contact regarding course questions**

- For administrative questions (Which section am I registered in? Can I drop or transfer into the course?), please contact the course coordinator, Tina Gingras, ([tmgingras@arizona.edu](mailto:tmgingras@arizona.edu)).
- For questions about lab material or assignments, contact your Lab Instructor (TA).
  - Email is the best way to contact them. Their email can be found in the D2L 'Classlist' next to the designation 'TA Specific Sections'
  - Lab Instructors will respond to emails within 24 hrs. (except on weekends).
  - Lab Instructors will do their best to respond to you as quickly as possible, but please realize that if you send us an e-mail entitled "URGENT" on Saturday, they may not respond until Monday.
  - Always include the course and section number in the Subject line.
  - Email communications should be courteous and informative. Emails that do not achieve this minimum standard may receive no reply.
- For questions regarding general course policies, concerns about section specific Lab Instructors, information about processing withdrawals and incompletes, etc. contact the course director, Emily Dykstra ([edykstra@email.arizona.edu](mailto:edykstra@email.arizona.edu)).

### **Classroom Behavior Policy**

To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming, and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (e.g., texting, chatting, making phone calls, web surfing, etc.).

#### ***Disruptive Behavior***

"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 cell phone use, refusing to collaborate, interrupting class activities, sleeping, newspaper reading, etc. In the event of disruptive behavior by one of the students in the course, the student engaging in the disruptive behavior will be asked to cease

the behavior. Those who continue to disrupt the class will be asked to leave class and may be reported to the Dean of Students. More information can be found here:

<https://deanofstudents.arizona.edu/accountability/disruptive-student-behavior>

### ***Electronic Devices in the Classroom***

Computers are used for many of the labs and there are desktops provided for your use in the lab classrooms. For some labs, you may want to use your own laptop. This is perfectly acceptable, but the course is not responsible for your laptop should you choose to use it during class. The use of other devices such as cell phones and tablets are a possible disruption to class. Unless otherwise instructed, keep these electronic devices powered off and stowed away.

### ***Lab safety***

These labs have been developed to minimize dangers posed to students. However, we occasionally use equipment or reagents that can cause injury, and accidents sometimes happen.

- Closely follow your instructor's instructions in the use of dangerous equipment, and in the disposal of all reagents and supplies.
- Report any injury to the prep-room staff or your instructor immediately!
- Showers, eyewashes, fire extinguishers, and first-aid kits are present in case of an emergency.

### **Threatening Behavior**

The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself. See

<http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>.

### **Accessibility and Accommodations**

At the University of Arizona, we strive to make learning experiences as accessible as possible. If you anticipate or experience barriers based on disability or pregnancy, please contact the Disability Resource Center (520-621-3268, <https://drc.arizona.edu>) to establish reasonable accommodations.

### **Academic Integrity**

Integrity is expected of every student in all academic work. The guiding principle of academic integrity is that a student's submitted work must be the student's own. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See:

<http://deanofstudents.arizona.edu/codeofacademicintegrity> &  
<http://deanofstudents.arizona.edu/academic-integrity/students/academic-integrity>.

**Any case of cheating or plagiarism will, at the very least, receive zero points for that assignment, and could result in failing the course and/or your expulsion from the university as described at <http://studpubs.web.arizona.edu/policies/cacaint.htm>. If you are not sure whether something counts as plagiarism, ask your Lab Instructor. When in doubt, cite your sources!**

- The University Libraries have some excellent tips for avoiding plagiarism, available at <http://new.library.arizona.edu/research/citing/plagiarism>.

- Lying about submission of electronic work will result in a loss of credit for that work and potentially submission of appropriate Honor Code violation paperwork
- Corrupt, empty or unreadable submissions to D2L Assignment folders will be treated at the very least as late work and may be dealt with as Academic Integrity issues
- If you decide to take and continue in this course, your written submissions may be filtered through a plagiarism-prevention program called TurnItIn.com. You should note that **TurnItIn.com** – always without your name and any personal information – will retain your paper as part of their database so that students who plagiarize your work can be detected. Because of this program, you will not have to compete with students who commit undetected plagiarism. Anyone who has questions or problems with TurnItIn.com may talk privately about these with the instructor.
- *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.

### **Nondiscrimination and Anti-Harassment Policy**

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>. Our classroom is a place where everyone is encouraged to express well-formed opinions and their reasons for those opinions. We also want to create a tolerant and open environment where such opinions can be expressed without resorting to bullying or discrimination of others.

### **Additional Resources**

UA Academic policies and procedures are available at <http://catalog.arizona.edu/policies>

#### **ThinkTank**

Help with general study skills and time/task management, as well as tutoring services, are available through the campus resource ThinkTank. Check them out at <http://thinktank.arizona.edu/>.

#### **Campus Health**

<http://www.health.arizona.edu/>

Campus Health provides quality medical and mental health care services through virtual and in-person care.

Phone: 520-621-9202

#### **Counseling and Psych Services (CAPS)**

<https://health.arizona.edu/counseling-psych-services>

CAPS provides mental health care, including short-term counseling services.

Phone: 520-621-3334

#### **The Dean of Students Office's Student Assistance Program**

<http://deanofstudents.arizona.edu/student-assistance/students/student-assistance>



Student Assistance helps students manage crises, life traumas, and other barriers that impede success. The staff addresses the needs of students who experience issues related to social adjustment, academic challenges, psychological health, physical health, victimization, and relationship issues, through a variety of interventions, referrals, and follow up services.

Email: [DOS-deanofstudents@email.arizona.edu](mailto:DOS-deanofstudents@email.arizona.edu)

Phone: 520-621-7057

### **Survivor Advocacy Program**

<https://survivoradvocacy.arizona.edu/>

The Survivor Advocacy Program provides confidential support and advocacy services to student survivors of sexual and gender-based violence. The Program can also advise students about relevant non-UA resources available within the local community for support.

Email: [survivoradvocacy@email.arizona.edu](mailto:survivoradvocacy@email.arizona.edu)

Phone: 520-621-5767

### **Changes to this syllabus**

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

### **Addendum**

Any information that individual MCB 181 Lab Instructors provide that is contradictory to the policies laid out in this syllabus will not be honored by course administration. Please be sure to consult the syllabus regarding any course policy questions.

### **Tentative Schedule of Labs and Assignments**

Below is an overview schedule of labs and assignments for this semester. This is a tentative schedule and the need for changes may arise. Due dates, etc. on your D2L course site supersede anything found on this tentative schedule so always be sure to double check D2L for course information.

**SPRING 2023**

Week/Lab	Date	Lab	In-Lab Assignments (Due in lab)	At-Home Assignments assigned during the lab and <i>generally</i> due at 7am the day of the next lab. (some are due a few days before so we can give you feedback)
1	January 17, 18, 19 & 20	Introduction to the Lab	Week 1 In-Lab Assignment	Complete Week 2 Pre-Lab Reading Complete Week 2 Pre-Lab Assignment, Pre survey, Nature of Science, Pre Estrada <b>Due 7am on January 24, 25, 26 &amp; 27</b>
2	January 24, 25, 26 & 27	Introduction to Viewing Cells and Membrane Transport	Week 2 In-Lab Assignment	Complete Week 3 Pre-Lab Reading Complete Week 3 Pre-Lab Quiz <b>Due 7am on January 31, February 1, 2 &amp; 3</b>
3	January 31, February 1, 2 & 3	Membrane Transport in Different Cell Types	Week 3 In-Lab Assignment	Investigating Transport of Water Across the Plasma Membrane Lab Assignment <b>Due 11:59pm on February 6, 7, 8 &amp; 9</b> Complete Week 4 Pre-Lab Reading Complete Week 4 Pre-Lab Quiz <b>Due 7am on February 7, 8, 9 &amp; 10</b>
4	February 7, 8, 9 & 10	Bacteria Lab Part 1	Week 4 In-Lab Assignment	Complete Week 5 Pre-Lab Reading <b>Complete Week 5 Pre-Lab Quiz</b> <b>Due 7am on February 14, 15, 16 &amp; 17</b>
5	February 14, 15, 16 & 17	Bacteria Lab Part 2	Week 5 In-Lab Assignment	Lab Reflection 1; <b>February 28, March 1, 2, &amp; 3</b> Bacteria Lab Assignment
6	February 21, 22, 23 & 24	Bacteria Lab Part 3	Week 6 In-Lab Assignment	<b>Due 11:59pm on February 27, 28, March 1 &amp; March 2</b> Week 7 Pre-Lab Reading Week 7 Pre-Lab Quiz <b>Due 7am on February 28, March 1, 2, &amp; 3</b>
7	February 28, March 1, 2, & 3	Modeling Tumor Metastasis - Part 1	Week 7 In-Lab Assignment	Complete Week 8 Pre-Lab Reading Complete Week 8 Pre-Lab Quiz <b>Due 7am on March 14, 15, 16 &amp; 17</b>
	March 7, 8, 9 & 10	SPRING BREAK	SPRING BREAK	SPRING BREAK
8	March 14, 15, 16 & 17	Modeling Tumor Metastasis - Part 2	Week 8 In-Lab Assignment	<b>Lab Reflection 2</b> , Complete Week 9 Pre-Lab Reading Complete Week 9 Pre-Lab Quiz <b>Due 7am on March 21, 22, 23 &amp; 24</b>
9	March 21, 22, 23 & 24	Chlamydomonas - Part I	Week 9 In-Lab Assignment	Complete Week 10 Pre-Lab Reading Complete Week 10 Pre-Lab Quiz <b>Due 7am on March 28, 29, 30 &amp; 31</b>
10	March 28, 29, 30 & 31	Chlamydomonas - Part II	Week 10 In-Lab Assignment	Nothing
11	April 4, 5, 6 & 7	Chlamydomonas - Part III	Week 11 In-Lab Assignment	Chlamydomonas Lab Assignment <b>Due 11:59am on April 10, 11, 12 &amp; 13</b> Complete Week 12 Pre-Lab Reading Complete Week 12 Pre-Lab Quiz <b>Due 7am on April 11, 12, 13 &amp; 14</b>
12	April 11, 12, 13 & 14	Yeast - Part I	Week 12 In-Lab Assignment	Complete Week 13 Pre-Lab Reading Complete Week 13 Pre-Lab Assignment <b>Due 7am on April 18, 19, 20 &amp; 21</b>
13	April 18, 19, 20 & 21	Yeast - Part II	Week 13 In-Lab Assignment	Post Survey Nature of Science, Estrada Survey, Project Ownership Survey <b>Due 11:59 on May 3</b>
14	April 25, 26, 27 & 28	Yeast - Part III	Week 14 In-Lab Assignment	Yeast Lab Assignment <b>Due 11:59 on May 3</b>
	May 2, 3, 4 & 5	No Labs - Finals start May 5		