



MCB 482/582

Modeling Human Disease

Spring 2022

Tuesday/Thursday: 2:00 pm – 3:15 pm

Location: C E Chavez Bldg, Rm 103

Office hours: Wed 2-3 pm or by appointment

Description of the Course

The course is scheduled to be taught in person. It is designed for MCB juniors/seniors and first/second year graduate students. The material focuses on methods for using various experimental models to study human diseases. Emphasis will be placed on discoveries that identify causes of, and therapies for various human diseases. Students will gain an appreciation of the challenges involved in identifying the molecular mechanisms underlying human diseases and in developing therapeutics including stem cell-based strategies. Students will be required to participate in critical thinking activities throughout the course.

Instructor and Contact Information

Instructor

Daniela C Zarnescu, Ph.D.

Professor, Molecular and Cellular Biology

Office hours: Wednesday, 2-3 pm, LSS RM 548A or by appointment

zarnescu@arizona.edu

TA

Ondrej Cernicky

Office hours: Thursday, 12:30-1:30 pm, LSS 4th floor lobby or by appointment

cernicky@email.arizona

URL: <http://D2L.arizona.edu>

Equipment and software requirements: For this class you will need daily access to the following hardware: laptop or web-enabled device with webcam and microphone; regular access to reliable internet signal; ability to download and run the following software: web browser, Adobe Acrobat, Microsoft Word, Powerpoint.

Course Format and Teaching Methods

Topics and Lecture Format:

Topics will be determined by instructor and will be available at the beginning of the semester.

Lectures will consist of an introduction by Instructor, research paper presentations by Instructor and students, and student group discussions with in-class problem sets.

Course Objectives and Expected Learning Outcomes

By the end of this course, each student will appreciate contributions made by model organisms to our current mechanistic understanding of human diseases and the development of therapeutic strategies. Students will be able to critically read primary research papers in the topics covered throughout the course and beyond. They will also be able to design experiments, interpret data and draw conclusions based on experimental evidence. This course is aligned with the conceptual and skill outcomes expected to be acquired by MCB majors. Graduate students will acquire a more in depth understanding of disease modeling, cell and molecular biology concepts and writing skills through exploration of additional topics and writing a report on a topic mutually agreed on with the Instructor.

Registration and Prerequisites

MCB181R (or equivalent), completion of at least one upper division Cell, Molecular Biology or Biochemistry (unless explicit instructor permission is received).

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>.

Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See: <https://deanofstudents.arizona.edu/absences>

Participating in the course and attending lectures and other course events are vital to the learning process. As such, attendance is required at all lectures. It is recommended that students who miss class due to illness or emergency notify the instructor as soon as possible. Failure to do so may result in unexcused absences and missed in class assignments.

Note: We are in a pandemic. All attendees are expected to comply with UArizona's mask wearing and whenever possible, social distancing. If you feel sick, or may have been in contact with someone who is infectious, stay home. Except for seeking medical care, avoid contact with others and do not travel. Campus Health is offering COVID-19 vaccines and testing free of charge. Please call (520) 621-9202 before you visit in person. Visit the UArizona COVID-19 page for regular updates.

Makeup Policy for Students Who Register Late

Students who register after the first class meeting may make up missed assignments/quizzes. Consult with Instructor for deadline.

Course Communications

All course related communications will be conducted through email and D2L. Please use MCB482_582 in the subject line. The instructor and TA will aim to respond to student emails within 24 hrs.

Required Texts or Readings

Primary research articles (TBD by instructor) will be available in D2L or PubMed.

Assignments and Examinations: Schedule/Due Dates

Undergraduate students:

- **Quizzes:** Short on-line quizzes will be assigned for each research paper. These are due before the beginning of the lecture corresponding to the assigned research paper.
25 quizzes x 5 pts = **125 pts**
- **In-class problem sets:** A list of questions will be handed in during class. Time will be allowed for group discussion of assigned questions and for submitting the answers to the questions.
10 problem sets x 5 pts = **50 pts**
- **Homeworks:** 3 x 25 pts = **75 pts**
- **Exams:** There will be three exams consisting of questions on the topics presented in class.
Exams 1 and 2: 75 pts each; Final exam: 100 pts. Total exam points: **250 pts**

Graduate students:

- **Quizzes:** Short on-line quizzes will be assigned for each research paper. These are due before the beginning of the lecture corresponding to the assigned research paper.
25 quizzes x 5 pts = **125 pts**
- **In-class problem sets:** A list of questions will be made available during class. Time will be allowed for group discussion of assigned questions and for submitting the answers to the questions.
10 problem sets x 5 pts = **50 pts**
- **Homeworks:** 3 x 15 pts = **45 pts**
- **Written report and discussion: 30 pts (graduate students only)**
- **Exams:** There will be three exams consisting of questions on the topics presented in class.
Exams 1 and 2: 75 pts each; Final exam: 100 pts. Total exam points: **250 pts**

Final Examination or Project

The date and time of the final exam or project, along with links to the Final Exam Regulations, <https://www.registrar.arizona.edu/courses/final-examination-regulations-and-information>, and Final Exam Schedule, <http://www.registrar.arizona.edu/schedules/finals.htm>

Grading Scale and Policies

Grading

Undergraduate and graduate students:

Regular grades are awarded for this course A B C D E. There will be no grade curving. Grades will be assigned as follows: A= 90-100%; B = 80-89%; C=65-79%; D=55-64%; E =<55%.

Grades will be based 50% on in-class problem sets, quizzes and homeworks and 50% on exams. Extra credit may be offered.

Graduate students will be required to write an additional, graded report on a topic that will be determined in consultation with the Instructor. They will also be required to participate in a separate discussion session on that same topic.

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.

Honors Credit

Students wishing to contract this course for Honors Credit should enroll in MCB582.

Scheduled Topics/Activities

See class calendar in D2L.

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, reading a newspaper, making phone calls, web surfing, etc.).

Threatening Behavior Policy

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.

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. 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 UArizona 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.

UArizona 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 for Students

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

Student Assistance and Advocacy information is available at <http://deanofstudents.arizona.edu/student-assistance/students/student-assistance>

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.

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.

Confidentiality of Student Records

<http://www.registrar.arizona.edu/personal-information/family-educational-rights-and-privacy-act-1974-ferpa?topic=ferpa>

Subject to Change Statement

Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor.