



Research Methods in Biosystems Engineering BE 501 (2 units)

Wednesday and Friday 12:00 - 12:50 pm

Description of Course

To assist graduate students in planning and executing a research project, preparing a thesis or dissertation, and reporting research results in journal publications. Specifically, the course will guide students in the selection and statement of a graduate research project and the development of a research proposal, introduce proper research methods such as record keeping and intellectual property considerations, discuss ethical research methods and review written and oral methods for presentation of research.

Course Prerequisites or Co-requisites

None

Instructor and Contact Information

Jana U'Ren, Ph.D., Assistant Professor, Biosystems Engineering

E-mail: juren@email.arizona.edu

Office Hours

Office hours will be held by appointment only. Please email me to schedule a Zoom meeting.

Course Information

- This class is scheduled to be taught in the **LIVE ONLINE** modality on Wed/Fri at 12:00-12:50 via Zoom.
- **Equipment and software requirements:** For this class you will need daily access to the following hardware: [laptop or desktop computer with webcam and microphone]; regular access to reliable internet signal; ability to download and run the following software: [web browser, Adobe Acrobat, Microsoft Office Suite].
- **Class attendance:** Attending lectures and participating in in-class activities are vital to the learning process. As such, attendance is required at all class sessions.
 - Notify the instructor ASAP if you will be missing class.
 - 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 testing for COVID-19. Please call (520) 621-9202 before you visit in person.
 - Visit the [UArizona COVID-19](#) page for regular updates.
 - 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>
- **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.
- **Class Recordings:**
 - Course recordings will be made available upon request. If you *do not* wish to be identified by name in these recordings please notify the instructor immediately.
 - Students *may not* modify content or re-use content in recorded lectures for any purpose other than personal educational reasons. All recordings are subject to government and university regulations. Therefore, students accessing unauthorized recordings or using them in a manner inconsistent with UArizona values and educational policies are subject to suspension or civil action.
- **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 Format

The course format will include lectures, class discussions, and student presentations over Zoom.

Course Objectives

Students will learn the basics of scientific inference, how to write and review scientific papers and proposals, and research ethics.

These objectives will be accomplished through:

1. Participating in discussions in class.
2. Writing a research proposal and revising it based on peer reviews.
3. Reviewing a scientific paper.
4. Discussion of major issues facing early-career scientists and ethical issues in research.

Expected Learning Outcomes

Upon completing this course students will:

1. Write a draft of their thesis/dissertation proposal

2. Be able to describe the NSF Review Criteria.
3. Be able to perform a literature search and use reference management software to format citations.
4. Be able to describe the peer review process for scientific manuscripts.
5. Be able to describe what constitutes ethical scientific research.

Makeup Policy for Students Who Register Late

Students who register after the first class meeting may make up missed assignments by the deadline.

Course Communications

Online communication, assignments, and grades will be conducted through D2L.

Required Texts or Readings

There is no assigned textbook for the course. Readings will be assigned and posted or linked in D2L. All texts and readings are available free of charge.

Grading Scale and Policies

The final letter grades for the class are based on the TOTAL NUMBER OF POINTS that each student accumulates for the following assessments (see details for each category below):

Attendance and class participation	20 points (20%)
Paper Critique	10 points (10%)
Strategic Plans	20 points (20%)
Research Proposals	
Written Proposal	30 points (30%)
Oral Presentation	20 points (20%)

There is no final exam for this course.

Grading Scale:

Grade	A	B	C	D	F
Points	90 or more	80-89	70-79	60-69	less than 60

University policy regarding grades and grading systems is available at <http://catalog.arizona.edu/policy/grades-and-grading-system>.

Policy on Late Work

If you are unable to meet deadlines for assignments due to an emergency, please contact Dr. U'Ren to arrange an alternative deadline.

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.

Dispute of Grade Policy: Disputes on a grade for an assignment must be made within three days of when the grade is posted.

Course Assignments

All assignments are listed on D2L in the course calendar. Due dates are listed in the course schedule.

Class Behavior Policy

To foster a positive learning environment, students and the instructor have a shared responsibility. I 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 physical or academic barriers based on disability or pregnancy, you are welcome to let me know so that we can discuss options. You are also encouraged to contact Disability Resources (520) 621-3268 to explore reasonable accommodation.

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://new.library.arizona.edu/research/citing/plagiarism>.

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.

UA 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

UA 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>

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

The 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.

Scheduled Topics/Activities

***Topics and deadlines are subject to change, please reference D2L regularly for updates**