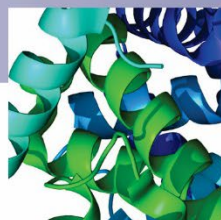


First Experience in Biomedical Research



MEDS2130 First Experience in Biomedical Research

Syllabus—Spring 2025

This course will guide the medical sciences student's first exposure to primary research in a modern biomedical research laboratory. The course is designed to bridge the gap between the expectations of MEDS2030C Biomedical Sciences Lab Techniques and the initiation of a defined research project expected as part of MEDS3030 Biomedical Research Rotation. Under the direction of a faculty research mentor, the student will learn research methods, assays, instrumentation, and other research procedures in the host laboratory. The student will gain familiarity with the area of research being pursued in the host laboratory by participating in regular laboratory meetings and by exploring the literature. The student will catalog their progress, both practical and intellectual. The course culminates in the student's developing a scientific hypothesis and creating a research proposal to test the hypothesis.

Course Objectives Upon completion, the student will be able to do the following:

1. Remember and apply best practices in laboratory safety and regulatory compliance.
2. Understand the primary research questions being addressed in the student's host biomedical research laboratory of choice.
3. Gain proficiency in the use of instrumentation or computational tools, in running assays, and in performing other essential research tasks.
4. Apply research skills to the collection of data in the host lab.
5. Analyze the primary literature to gain an understanding of the scientific questions or clinical problems being addressed in the host laboratory.
6. Develop a scientific hypothesis and create a brief research proposal to test the hypothesis.

Course Director Bryan Mackenzie, PhD (Email: bryan.mackenzie@uc.edu)
Tel: (513)558-3627 • Office: MSB 4257A • Office hours: By appointment

Registration	Course #	Section	Class #	Credits ^a	Class Schedule	Location
	MEDS2130	001	52055	1–2	Variable	Uptown Campus East (Medical)

Course Delivery and Attendance The course will be delivered via a hybrid in-person and online approach. In-person attendance is required in the lab (by arrangement with the faculty research mentor). Some lab tasks may be performed remotely (e.g. data analysis, computational research approaches). Attendance is required (online or in-person) at course events. **^aYou are expected to work in the lab 4 hours per week per credit hour enrolled.** (Your mentor may assign reading that you may be expected to complete outside of lab time.)

- Prerequisites**
1. Permission of Course Director
 2. You must have taken MEDS2030C Biomedical Science Lab Techniques (minimum grade C–) or be simultaneously enrolled in the course

Auditing No auditing option

Canvas & Email Policy Messages sent via the Canvas learning management system (LMS) will be considered sufficient notice. It is your responsibility to review notification settings in Canvas to ensure that you do not miss critical announcements.

Assessment Assessment is based on participation in laboratory research, attendance at regular lab meetings, and timely completion of assignments. At the end of the semester, the faculty research mentor will provide a written assessment of the student's aptitude and progress in the laboratory and will recommend to the Course Director a letter grade. The Course Director will consider the faculty mentor's recommendation, the student's performance in required components, and the Course Director's own assessment to assign a final grade.

Grading The following passing grades will be awarded to students satisfactorily completing this course:

A, A-, B+, B, B-, C+, C, C-, D+, D

A grade of **SP** (In Progress—Satisfactory Progress) will be assigned to any student who has made satisfactory progress but who has been unable to complete one or more required components due to illness or excused absence. An excused absence is an absence for a legitimate reason (e.g. attendance at a research conference, schedule conflict with an exam) that has been communicated to, and approved by, the Course Director in advance of the absence. A grade of **SP** must be remediated by completing the required component(s) in a subsequent semester or by otherwise arranging with the Course Director to complete an equivalent exercise, after which the Course Director will assign a final grade. A grade of SP that has not been remediated within one year will convert automatically to an **I/F** (Incomplete/Fail) grade (which carries 0.00 quality points).

Textbook There is no required textbook for this course. The laboratory faculty advisor may recommend that the student refer to a textbook as appropriate. The student is also expected to search and read relevant published journal articles relating to the topic of the student's project.

Laboratory Safety and Compliance Training Safety in the laboratory is of paramount importance. Prior to starting work in the laboratory, all students must complete EH&S training online by visiting <http://ehs.uc.edu/itc/compliance.asp>. If this is your first time, you must complete all of the following training modules:

1. Lab Safety Orientation (<https://ehs.uc.edu/webtrain/login.asp?shell=orientation>)
2. Hazard Communication (<https://ehs.uc.edu/webtrain/login.asp?shell=compliance>)
3. Bloodborne Pathogens (<https://ehs.uc.edu/webtrain/login.asp?shell=compliance>)
4. Hazardous Waste (<https://ehs.uc.edu/webtrain/login.asp?shell=compliance>)

If you are a returning student, check your transcript at <http://ehs.uc.edu/itc/transcript.asp> to ensure that you are up to date with your safety training. A refresher for modules 2–4 above must be completed annually by the date indicated.

Depending on the research in which you will participate, you may be required to complete additional compliance/safety training, e.g. radiation safety, IACUC (animals) orientation and species-specific training, HIPAA. Discuss with your faculty research mentor what additional training you will need.

Emergency Closing Policy When the university announces a campus closure such as due to weather emergency, undergraduate and graduate classes at the college of medicine will be canceled. Undergraduate students enrolled in MEDS2130 should not attend their lab during a campus closure, or should leave the lab by the time the university is to close as indicated in the announcement. If the student has been given responsibility for certain critical tasks that must be done during a campus closure (e.g. animal care), the student should notify their faculty research mentor or lab mentor (via email or otherwise) so that such tasks can be reassigned.

Academic Integrity Policy The University Rules, including the Student Code of Conduct, and other documented policies of the department, college, and university related to academic integrity will be enforced. Any violation of these regulations, including acts of plagiarism or cheating, will be dealt with on an individual basis according to the severity of the misconduct.

Artificial Intelligence Policy The use of artificial intelligence (AI) tools or AI-assisted tools in study design, performance of experiments, generation of the conclusions, preparation of figures, or in any written work is strictly prohibited. All work submitted must be primarily authored by the student. Your faculty research mentor and colleagues in the lab may provide limited portions (e.g. standard methods in the lab) and offer suggestions for edits. The AI policy excludes tools that are used solely to improve grammar or spelling (e.g. Grammarly, Wordtune) or reference managers (e.g. EndNote, RefWorks), the use of which is always permissible.

Special Needs Policy If you have any special needs related to your participation in this course, including identified visual impairment, hearing impairment, physical impairment, communication disorder, and/or specific learning disability that may influence your performance in this course, you should meet with the instructor to arrange for reasonable provisions to ensure an equitable opportunity to meet all the requirements of this course. At the discretion of the instructor, some accommodations may require prior approval by Disability Services.

Student Religious Accommodations Ohio law and the university's Student Religious Accommodations for Courses Policy 1.3.7 permits a student, upon request, to be absent for reasons of faith or religious or spiritual belief system or to participate in organized activities conducted under the auspices of a religious denomination, church, or other religious or spiritual organization and/or to receive alternative accommodations with regard to examinations and other course requirements due to an absence permitted for the reasons described above. Not later than fourteen days after the first day of instruction in the course, the student should provide the course director with written or email notice of the specific dates for which the student requests alternative accommodations. For additional information about this policy, please contact the Executive Director of the Office of Equal Opportunity and Access at (513) 556-5503 or oeohelp@ucmail.uc.edu.

Counseling Services Students have access to counseling and mental health care through the University Health Services (UHS), which can provide both psychotherapy and psychiatric services. In addition, Counseling and Psychological Services (CAPS) can provide professional counseling upon request; students may receive five free counseling sessions through CAPS without insurance. Students are encouraged to seek assistance for anxiety, depression, trauma/assault, adjustment to college life, interpersonal/relational difficulty, sexuality, family conflict, grief and loss, disordered eating and body image, alcohol and substance abuse, anger management, identity development and issues related to diversity, concerns associated with sexual orientation and spirituality concerns, as well as any other issue of concerns. After hours, students may call UHS at 513-556-2564 or CAPS Cares at 513-556-0648. For urgent physician consultation after-hours students may call 513-584-7777.

Title IX Title IX is a federal civil rights law that prohibits discrimination on the basis of your actual or perceived sex, gender, gender identity, gender expression, or sexual orientation. Title IX also covers sexual violence, dating or domestic violence, and stalking. If you disclose a Title IX issue to me, the course director, I am required to forward that information to the Title IX Office. They will follow up with you about how the University can take steps to address the impact on you and the community and make you aware of your rights and resources. Their priority is to make sure you are safe and successful here. You are not required to talk with the Title IX Office. If you would like to make a report of sex or gender-based discrimination, harassment or violence, or if you would like to know more about your rights and resources on campus, you can consult the website www.uc.edu/titleix or contact the office at 513-556-3349.

First Experience in Biomedical Research MEDS2130

Schedule—Spring 2025

Date / Due Date	Event / Module	Time
November 15, 2024	<p>Submit your enrollment form To ensure adequate time to place you with a laboratory in a research area that fits with your interests and goals, you must submit to the Program Manager (michele.glassmeyer@uc.edu) by the deadline at left your MEDS2130 enrollment form (download enrollment form).</p>	
December 1	<p>Confirm placement For guidance in getting started in research and to explore research opportunities, please visit the Medical Sciences Research Nexus (Canvas community page). You will interview (in person or virtually) with faculty research mentors whose research areas fit with your interests and goals (you may contact investigators directly or you may be referred to them by the Course Director). Once you and your mentor have reached an agreement for you to conduct research for credit in their lab and agreed on the number of credit hours, you must contact the Course Director (bryan.mackenzie@uc.edu) by the deadline at left to confirm your placement if you did not already do so on your enrollment form.</p>	
January 13, 2025	<p>Semester begins</p>	
January 13 – April 25	<p>Laboratory research and independent study Days and times spent in the lab by arrangement with your mentor (or laboratory designee). You are expected to spend 4 hours per week per credit hour working in the laboratory. Additional reading time may be required. You are expected to attend regular lab meetings (ask your mentor about the time, day, and location).</p>	
January 15	<p>Module 1: Laboratory Safety and Compliance Training Prior to working in the lab, you must complete laboratory safety training. Ask your mentor about additional safety training or compliance training you will need for your project. Visit the Canvas class for full instructions and to complete training.</p>	5:00 pm
January 17	<p>Module 2: Setting Personal Goals Visit the Canvas class for full instructions and to submit your assignment.</p>	5:00 pm
Throughout the semester	<p>Module 3: Practical Competency Diary Visit the Canvas class for full instructions on how to catalog your progress in the assays, procedures, instrumentation, and methods (applications and basic principles) in which you are gaining proficiency.</p>	
Throughout the semester	<p>Module 4: Exploring the Literature Visit the Canvas class for full instructions on how to catalog your progress in exploring the literature. You are expected to study a review article relevant to the work in the lab, and two research articles from the host lab that introduce (1) the overarching research objectives and (2) key methods used in the lab.</p>	
April 25	<p>Module 5: Research Proposal Visit the Canvas class for full instructions and to submit your research proposal for a defined project.</p>	5:00 pm
April 28	<p>Module 6: Evaluating Personal Goals Visit the Canvas class for full instructions and to submit your assignment.</p>	5:00 pm
May 1	<p>Semester ends</p>	