Biomedical Research Rotation

MEDS3030 Biomedical Research Rotation

Summer 2027 Syllabus

Biomedical Research Rotation exposes students to the rigors and excitement of original biomedical research. The course is designed to give a highly personalized laboratory research experience to students who are interested in biomedical careers by matching them with some of the best and most accomplished scientists in the College of Medicine and Cincinnati Children's Hospital Medical Center. Students gain experience in specific biomedical research techniques and develop good laboratory practices. Students gain an appreciation of the research process from studying the literature and developing a hypothesis through conception of the study, experimentation, data analysis, and written and oral presentation of their findings. Throughout the semester, students will work closely with their faculty research mentor to develop a hypothesis and research plan, receive the necessary laboratory and compliance training, troubleshoot in the laboratory, analyze and interpret data, and prepare written and oral reports.

Course Objectives

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

1. Formulate a hypothesis on a specific scientific question
2. Read and analyze the literature to determine various approaches to answering the question
3. Design an experiment or series of experiments to test the hypothesis
4. Collect, analyze and interpret experimental data accurately
5. Communicate the findings in written reports and oral presentations

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
MEDS3030	**001**		**2–6**	Variable	Uptown Campus East (Medical)

Permission of Course Director is required to enroll in MEDS3030. Please complete the Application to enroll in MEDS 3030 Biomedical Research Rotation (Microsoft Forms).

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. **[a]You 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

Permission of Course Director

Auditing

No auditing option

Web Page https://med.uc.edu/education/undergraduate-education/undergraduate-program-in-medical-sciences/undergraduate-courses/3030-biomedical-research-rotation

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 required class sessions, and completion of the required assignments. Ad hoc reviewers will participate in the assessment of some or all of the assignments (e.g. research proposal and written report). 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 (e.g. oral presentation of project) 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 making arrangements 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 faculty research mentor 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 specific project you will undertake, 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 MEDS3030 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 Accommo-dations 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.

Biomedical Research Rotation MEDS3030

Summer 2027 Schedule

Date/Due Date	Event / Module	Location	Time
April 1, 2027	**Contact Course Director** To ensure adequate time to place you with a laboratory in a research area that fits with your interests and goals, you must submit your Application to enroll in MEDS 3030 Biomedical Research Rotation (Microsoft Forms) by the deadline shown at left.		
April 15	**Confirm placement** You will interview with faculty research mentors whose research areas fit with your interests and goals (you may contact investigators directly or you may be referred 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 the enrollment application form.		
May 10	**Semester begins**		
May 10 – August 7	**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.		
May 11	**Module 1: Laboratory Safety and Compliance Training** Prior to working in the lab, you must complete laboratory safety training. Visit the Canvas class for instructions and to complete training. Ask your mentor about additional safety training or compliance training you will need for your project (e.g. radiation safety, IACUC, HIPAA).		5:00 pm
May 13	**Module 2: Setting Personal Goals** Visit the Canvas class for instructions and to submit your assignment.		5:00 pm
May 28	**Module 3: Research Proposal** Visit the Canvas class for instructions and to submit your research proposal.		11:59 pm
June 3	**Module 4: Goals and Approaches Oral Presentation** Visit the Canvas class for instructions and to submit a copy of your presentation.	MSB 4104	4:00 – 6:00 pm
June 11	**Module 5: Revised Research Proposal** Visit the Canvas class for instructions and to submit your revised research proposal and response to reviewer comments.		5:00 pm
July 29/30	**Module 6: Poster Presentation** You will present your work-in-progress via a poster presentation at the undergraduate Summer Capstone Event. More information to follow. Visit the Canvas class for instructions and to submit a copy of your poster presentation.	CARE/Crawley Atrium and MSB E-Level	9:00 am – 12:00 pm
August 6	**Module 7: Written Report** Visit the Canvas class for instructions and to submit your written report.		5:00 pm
August 7	**Module 8: Evaluating Personal Goals** Visit the Canvas class for instructions and to submit your assignment.		5:00 pm

Note: Class meeting dates/times are subject to change in order to best accommodate students' and faculty mentors' schedules.