

# Biomedical Research Rotation



## MEDS3030 Fall Semester 2021 Syllabus & Schedule

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](mailto:bryan.mackenzie@uc.edu))  
Tel: (513)558-3627 • Office: MSB 4257A • Office hours: By appointment

Registration	Course #	Section	Class #	Credits <sup>a</sup>	Class Schedule	Location
	<b>MEDS3030</b>	<b>001</b>	15316	<b>2-6</b>	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. **<sup>a</sup>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. 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 together with the student's performance in required components and 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 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 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.

**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.

**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](http://www.uc.edu/titleix) or contact the office at 513-556-3349.

**Biomedical Research Rotation MEDS3030  
Schedule—Fall Semester 2020**

<b>Date / Due Date</b>	<b>Event / Module</b>	<b>Location</b>	<b>Time</b>
April 15, 2021	<p><b>Contact Course Director</b> To ensure adequate time to place you with a laboratory in a research area that fits with your interests and goals, you must contact the Course Director (<a href="mailto:bryan.mackenzie@uc.edu">bryan.mackenzie@uc.edu</a>) by the deadline at left to indicate your interest in taking MEDS3030 in the semester noted above.</p>		
April 30	<p><b>Confirm placement</b> You will interview (in person or by telephone) 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 (<a href="mailto:bryan.mackenzie@uc.edu">bryan.mackenzie@uc.edu</a>) by the deadline at left to confirm your placement.</p>		
August 23	<p><b>Semester begins</b></p>		
August 23 – December 3	<p><b>Laboratory research and independent study</b> 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.</p>		
August 25	<p><b>Module 1: Laboratory Safety and Compliance Training</b> 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. <b>Visit the Canvas class for full instructions and to complete training.</b></p>		5:00 pm
September 13	<p><b>Module 2: Research Proposal</b> At the beginning of the semester, you will discuss with your mentor the scientific background and design of a project that you will undertake for the semester. With direction from your mentor, you will develop a hypothesis and research plan, and write a one-page proposal. <b>Visit the Canvas class for full instructions and to submit your research proposal.</b></p>		5:00 pm
September 23	<p><b>Module 3: Goals and Approach Oral Presentation</b> You will make a brief (5-min) presentation of your hypothesis, central aims, and approach. This session also provides you the opportunity to meet and network with other students in the class. <b>Visit the Canvas class for full instructions and to submit a copy of your presentation.</b></p>	MSB 4104 or via WebEx	4:00 pm
December 2	<p><b>Module 4: Oral Presentation of Research</b> With the guidance of your mentor, you will make an oral presentation of your project to other students in the class, course directors, and laboratory colleagues. Your presentation should run 10 minutes, followed by questions from the audience. <b>Visit the Canvas class for full instructions and to submit a copy of your presentation.</b></p>	MSB 4104 or via WebEx	4:00 – 7:00 pm
December 10	<p><b>Module 5: Written Report</b> You will prepare a final written report of the project and your progress in the laboratory. The report should be written by you under the direction of your faculty mentor who may provide comments to help you edit the final report. <b>Visit the Canvas class for full instructions and to submit your written report.</b></p>		5:00 pm

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