

GRADUATE STUDENT HANDBOOK
BIOMEDICAL RESEARCH TECHNOLOGIES (BMRT)
MASTER OF SCIENCE (MS) PROGRAM
UNIVERSITY OF CINCINNATI

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STATEMENT OF COMPLIANCE

Contents are in compliance with the rules and policies of the University of Cincinnati Graduate School and should be considered a supplement to those policies and procedures outlined in the University of Cincinnati's Graduate Student Handbook.

In cases where both handbooks provide guidance on the same topic, the program handbook should be considered the standard.

I. APPLICATION AND ADMISSION TO GRADUATE DEGREE PROGRAMS

A. Application

1. Process

Completion of the UC Graduate School Online Application is required. Apply online at: <https://grad.catalyst.uc.edu/apply/>. Payment of the application fee is required in order to submit your application. For further instructions, please see the application instructions on the Graduate School website: <http://www.grad.uc.edu/admissions.aspx>.

The UC Graduate School Online Application requires a minimum of two (2) Recommendations from people qualified to assess the applicant's ability to succeed in the graduate program. The online application will direct applicants to submit names and contact information for their recommenders. Listed recommenders will receive an email with instructions for submitting recommendations approximately 1-2 days after the student submits an online application.

Official transcripts from every undergraduate and graduate institution attended should be sent directly from the issuing institution to the University of Cincinnati Graduate School as soon as possible. GRE scores and/or transcripts supplied by the applicant are not acceptable for admittance to the program but may be used to evaluate an application. NO documents should be sent directly to the BMRT program.

After preliminary screening of applications, selected applicants may be scheduled for an interview.

Applications and all supporting documents are accepted between August 1 and March 1 of each academic year for admission in the fall of the following academic year. Decisions for admission will be made in a rolling fashion through the application period.

2. Requirements

The prospective student is expected to have a strong undergraduate background in biology. Some background in chemistry, physics and mathematics is also preferred. Applicants are encouraged, but not required, to take the general test of the Graduate Record Exam (GRE), administered by the Educational Testing Service, Princeton, New Jersey, 08540. The student may request official GRE Scores to be sent to the University of Cincinnati (institution code 1833). Advanced subject tests are also accepted, but not

required. All applicants are required by the Graduate School to have obtained a baccalaureate degree, or its equivalent before entering the graduate program.

3. Admissions and Financial Aid

a. Admission Decisions

The program's Admissions Committee, in consultation with the Program Director, makes all decisions concerning admissions to the graduate program. The committee has the authority to set application deadlines, require certain pre-admission examinations, require satisfactory completion of certain course work prior to admission, and to establish other pre-admission requirements. Admission decisions must not be made on the basis of race, age, sex, color, religion, sexual orientation, or handicap except in those disciplines in which handicap will place the student, other students, faculty or staff in physical danger (Affirmative Action Guidelines). Decisions to admit or not to admit are final unless it can be demonstrated that the Admissions Committee violated a BMRT Program policy or failed to apply fairly and consistently the criteria established by the program.

No international student will be granted admission on any basis other than full graduate standing. For admission to full graduate standing at the University of Cincinnati, a student must have a baccalaureate degree from a college or university regarded as standard by a regional or general accrediting agency. The applicant should have at least a "B" grade average in relevant undergraduate course work, or otherwise give evidence of promise satisfactory to the program. Admission will be made at the discretion of the program.

In instances where an international student holds a degree for which the U.S. equivalent is not known or if it is determined by the department and/or the International Student Services Office that the applicant does not have the equivalent of a bachelor's degree, the program must submit a petition for admission without a bachelor's degree to the Graduate Council and provide any supporting documentation deemed pertinent. Before their admission to the university is completed, all international students must fulfill U.S. Immigration Service requirements and register with the International Student Services Office at the University of Cincinnati.

The Test of English as a Foreign Language (TOEFL) is required of all applicants whose native language is not English. The test must be taken before admission is granted and test scores are only good for two years. This requirement may be waived for international students who have a degree from an accredited American college or university and who have studied oral and written English while a student

in the American college or university, as defined by the International Student Services Office (ISSO) of the University of Cincinnati. Presently, the minimum UC Graduate School TOEFL score for graduate work is 520 (paper), 190 (computer) and 68 (internet).

Upon arrival at the University of Cincinnati, all international students are required to carry student health insurance. Insurance fees (reflecting the number of accompanying dependents) will be assessed at each registration period.

b. Financial Aid Decisions

Program awarded Financial Aid will not be provided for students in the BMRT program. Students are encouraged to apply for need-based support from federal and state sources, though the program can offer no assistance in finding such sources.

B. Pre-Registration Procedures and Requirements

1. Immunization Records

A copy of each student's immunization records will be required at the time of acceptance into the program. These records will be released to Employee Health at Cincinnati Children's Hospital Medical Center (CCHMC) for review. If additional immunizations are needed prior to CCHMC badging the student must obtain the required immunizations and provide documentation prior to their start date. Failure to fulfill this requirement and any others mandated by CCHMC may result in the student's expulsion from the program. This will include evidence of 2 MMR immunizations and either a negative Tb test in each of the last two years, a 2-step Tb test completed within the last 6 months or a Quantiferon Gold Tb test, also completed within the last 6 months. If a student has any prior positive Tb test results, chest x-rays and a transcript of the radiologist's report of those x-rays will be required.

2. Transfer of Credits

Limits are set on the amount of work completed at other institutions which can be included as fulfilling graduate degree requirements. The Program Director will determine which credits are transferrable.

II. MASTER DEGREE PROGRAM

A. Course of Study

The course of study for the master's degree is set by the Program Director. The program will recommend students for degrees only after they have developed and demonstrated the necessary intellectual maturity and have fulfilled all other university requirements.

B. Credit Hours

The University of Cincinnati utilizes a semester system. Although qualification for the master's degree is not based exclusively upon the completion of a definite number of hours of course work, the satisfactorily completed graduate work must consist of a minimum of one academic year of full-time graduate study consisting of at least 30 graduate semester credit hours, including any thesis or research project. Credits earned in professional law or medicine programs are not applicable to the 30-credit minimum. Some master's programs are completed in one year whereas other programs require two or three years. It is anticipated that a master's degree in Biomedical Research Technology will take at least 2 years to complete. At least 20 of the graduate semester credit hours applied toward a master's degree must be derived from formal course work, i.e., any course taken for graduate credit for which the graduate student receives a letter grade of A, A-, B+, B, B-, C+, or C.

C. Minimum Academic Standards and Procedures for the Evaluation of Student Progress

1. Students in the Biomedical Research Technologies Program are required to maintain a minimum of a B (3.0) average in both their didactic and research courses.
2. Students obtaining a C+ or below in any course, including elective coursework, are automatically placed on academic probation during the semester following receipt of the grade of C+ or below. Students who obtain a D or F will be required to retake the course for credit and earn a B or better. Obtaining two grades of C+ or below in any one semester may be cause for immediate dismissal from the program.
3. Failure to find a lab placement and Advisor by March 31 of the first year (for full-time students) is grounds for dismissal at the discretion of the Program Director.
4. Determination of normal progress in the Program is defined as:
 - a. Obtaining a grade of at least a B- or Pass (in courses where Pass/Fail is the grading mechanism) in all didactic and research courses required by the Biomedical Research Technologies Program.

- b. Completion of a total of 30 graduate credit hours within the specified time stipulated by the rules of the Graduate School of the University of Cincinnati.
 - c. Submission and oral defense of a satisfactory thesis.
- 5. Regular laboratory evaluations will be requested of advisors by the program. These evaluations must continue to reflect satisfactory progress.
- 6. As of 2014, the National Institutes of Health (NIH) requires every graduate student to have an Individual Development Plan (IDP) on file with his or her graduate program. Students must have their first IDP on file with the Program Coordinator by October of the second year of study. A cover sheet for the IDP will require signatures from the student, advisor and Program Director.

D. Options when Minimum Academic Standards are Not Met

- 1. Any student who fails to meet any of the Minimum Academic Standards as set forth by either the Program or the University of Cincinnati Graduate School will be placed on academic probation. The student will be notified of his/her status with a letter from the Program Director, which will outline the offense and clearly state the terms of probation. Academic probation will last for one semester and the official notice of academic probation becomes part of the student's permanent academic record. No student who is currently on academic probation can be nominated for any awards. Past instances of academic probation will be a consideration in the nomination and presentation for all awards.
- 2. If a student is placed on academic probation for a second time, one of two courses of action will be followed, at the discretion of the Program Director in consultation with the Advisory Committee for the BMRT Program:
 - a. Dismissal from the program.
 - b. A student may be given the option to withdraw from the program. This allows the student to prevent a dismissal action from appearing on their academic transcript.
- 3. Process for Appeal: If the student believes there are extenuating circumstances that indicate why his/her performance has not met the minimum requirements of the program, he/she may submit a written petition to the Program Director explaining these circumstances. The Program Director in consultation with the Advisory Committee for the BMRT Program may either accept or reject the petition. Rejection of the petition constitutes dismissal from the program.

E. Foreign Language Requirement

There is no foreign language competency requirement for the program.

F. Requirements for the Master of Science Degree

1. Overview of Requirements

- a. Satisfaction of all requirements outlined in Section IIC above, and any additional requirements specified in the Graduate Handbook of the University of Cincinnati.
- b. Removal or waiver of all I, NG, UP/SP grades and confirmation of satisfactory repetition or waiver of required course in which an F was originally received, in compliance with Graduate School requirements.
- c. Completion of all activities required for graduation:
 - 1) Follow the Graduate School checklist for [graduation](#)
 - 2) Complete the official online Application to Graduate and pay the application fee required by the Graduate School by the deadline for the semester in which the student expects to graduate. Per Graduate School policy, deadlines are firm and failure to meet them will delay graduation until the following semester, when they must submit a new application for their revised graduation date.
 - 3) Submit your Thesis for Advisor and Thesis Committee approval. Once they have approved your report the program will approve your application for graduation.
 - 4) Confirm your graduation status online.

2. Initial Start Date

All incoming students will be required to start the Friday prior to the start of the Fall Semester unless there are extenuating circumstances approved by the Program Director. Program and College Orientation will be conducted on that day.

3. Lab Rotations and Selection of Advisor

All students will participate in laboratory rotations for hands-on education. These rotations will last a minimum of 8 weeks, with most lasting approximately 10 weeks

(12 hours per week). In unforeseen circumstances outside of the students control, a minimum of 6 weeks may be granted by the Program Director. A minimum of two laboratory rotations is required unless the Program Director approves an exception. Final selection of a laboratory and advisor for conducting the second-year internship must be completed by March 31 of the first year of study. The internship must begin no later than May 1 of the second year of study for full-time students. Each laboratory may host only one full-time MS student at a time for their internship research. Exceptions to this rule may be granted under unusual circumstances and needs to be specifically approved by program leadership.

4. Advisor

The Advisor directs the research that will constitute the Master of Science Thesis document. The Advisor shall be a member of the faculty of the University of Cincinnati and the choice shall be mutually acceptable to student and faculty member.

5. Thesis Document

As a partial fulfillment of the requirements for graduation, all students will be required to:

- a. Submit a written thesis on the topic of their internship project. This report should not exceed 8 pages (not including references). Following NIH R01 page (8 ½ x 11 paper size)/font (11 size, Arial, Georgia, & Helvetica are recommended)/margins (at least ½”-top, bottom, left & right for all pages) formatting guidelines. It must be submitted by May 15 of the final year of study (for full time students). Thesis is due to the student’s thesis committee a **minimum of three weeks before defense date** or as stipulated by specific committee members. Thesis should include the following sections:
 - 1) Introduction/background: provide the scientific rationale for the project and the choice of experimental techniques used.
 - 2) Experimental Design and Protocols: Details of techniques, controls, collection and documentation of results, methods of data analyses used, statistical analyses, limitations and alternate approaches considered.
 - 3) Results: A summary of primary data obtained and relevant analyses.
 - 4) Conclusions: What did these studies reveal about the scientific question being asked? If the approach(es) did not work, what alternate methods should be considered? What are the next questions that need to be addressed?

5) Statement of work: A brief summary of work performed specifically by the student, and contribution of others in the laboratory. This would include items such as experimental design, collection of primary data, experimental analysis and interpretation, statistical analysis.

6) References: List references in the order of appearance in the thesis document using NIH format.

A committee appointed by the Program will evaluate this report based on the following criteria:

- 1) Student's understanding of the scientific background,
- 2) Skill in performing, recording and reporting experiments,
- 3) Interpretation of the results.

Recognizing the limited time available to the students for this project, originality in hypothesis-generation and experimental strategies are encouraged, but not required for the thesis. The thesis project can be a part of a larger project conducted in the laboratory, but data reported in the thesis needs to be primarily generated by the student.

Furthermore, the student is expected to have an understanding of, and familiarity with, associated studies in the laboratory that contribute to the overall scientific effort and rationale reported in the thesis.

b. Orally present and defend the thesis

For the oral presentation of the thesis students should prepare a power-point talk approximately 30-45 minutes long. The presentation will be followed by a question and answer period from the audience and assigned committee members in order to ascertain the student's command of the thesis material, including the points summarized above.

The date for the presentation of the thesis to the MS committee will be decided by the Program and will take place sometime in June. Every effort will be made to give students a minimum of a one-week notice.

A final draft of the thesis document will need to be uploaded to the University of Cincinnati and approved by the committee by the third week of July (exact dates vary by year). Your degree will be officially conferred in August with the Summer Semester Commencement, though you will not need to register for any credits in the summer

semester. You will be able to obtain a letter of degree completion from the program upon successfully defending your thesis, as determined by the committee.

6. Time Limitations

A master's student must complete all requirements in his/her degree no later than five years from the date of matriculation into the degree program. Under extenuating circumstances, an extension may be requested from the Associate Dean of the Graduate School.

III. PROGRAM REQUIREMENTS

A. Graduate Course Requirements

1. Students complete a minimum of 30 credit hours. Students must complete required coursework as outlined by the program as well as elective coursework (minimum of 6 credit hours) selected in consultation with the Program Director.
2. Students are expected to register for, and complete, classes in a timely fashion. Dropping classes after the first three lectures will not be permitted except in cases of personal emergency as determined by the program.

Course Number	Course Name	Credits Earned
BMRT7010L	Introduction to Biomedical Research Techniques	6
BMRT7011C	Advanced Methods in Biomedical Research: Histology and Microscopy	3
BMRT8000	Laboratory Research	1

B. Course Schedule for full-time students:

Year 1 Fall Semester (10 required credit hours)

Year 1 Spring Semester (10 required credit hours)

Course Number	Course Name	Credits Earned
BMRT7011C	Advanced Methods in Biomedical Research	6
GNTD7003	Ethics in Research	1
BMRT7000	Journal Club	1
BMRT8000	Laboratory Research	2

Year 1 Summer Semester ****MANDATORY LABORATORY EXPERIENCE****

Year 2 Fall Semester (2 required credit hours)

Course Number	Course Name	Credits Earned
GNTD 7001	Principles of Molecular and Cellular Biology	1-4
	<i>Choice of at least ONE section</i>	
	Section 001 – Biomolecules	
	Section 002 – Basic Genetic Mechanisms	
	Section 003 – Cell Cycle & Trafficking	
	Section 004 – Cell Communication & Movement	
BMRT8000	Laboratory Research	1

Year 2 Spring Semester (2 required credit hours)

Course Number	Course Name	Credits Earned
BMRT 7000	Journal Club	1
BMRT8000	Laboratory Research	1

IV. ADMINISTRATION OF THE PROGRAM

The program shall be administered by a Program Director, Associate Director, an Associate Director for Graduate Studies, and an Associate Director for Admissions supported by Course Directors and a Program Management Specialist. Administration of the Program will meeting annually with the student body to address programmatic issues and any students concerns.

A. Role of Director of the Program

The Director of the Program shall have responsibility for administration of the Program. The Director shall call program meetings, bring appropriate issues to the administrative committee for resolution, carry out policy decisions, and appoint individuals and committees (including the Admissions Committee) to carry out duties of the Program. It is ultimately the Program Director's responsibility to assure that activities related to the Program are carried out in compliance with University policies and needs.

B. Role of the Associate Director of the Program

The Associate Director is appointed on a bi-annual basis and will partner with the Program Director in overall administration of the program. The Associate Director will help adjudicate student affairs, participate in admissions decisions, help make or revise program policy, and help oversee all of the teaching activities.

C. Role of the Associate Director for Graduate Studies

The AD for graduate studies shall participate in all decisions regarding student performance and progress in the MS program. She/he will be consulted on all curriculum changes

D. Role of the Associate Director for Admissions

The AD for graduate studies shall participate in all decisions regarding student interviews and admissions in the MS program.

B. Role of Course Directors

The Course Directors shall have responsibility for overseeing all graduate courses in the program. The Program Director will appoint the Course Directors at his/her discretion.

C. Role of Program Management Specialist

The Program Management Specialist is the main contact person for the Program. This individual attends to and coordinates the day-to-day activities of the program, including providing clerical support, monitoring budgetary activities, tracking student progress, providing guidance to faculty and coordinating committee activities.

V. APPENDIX

A. Rotation Advisor Research Rotation Evaluation

ROTATION ADVISOR EVALUATION

Rotation Date: _____

ROTATION ADVISOR RESEARCH ROTATION EVALUATION

Biomedical Research Technologies Graduate Program

Student: _____ Date: _____

Rotation Advisor: _____

Briefly summarize the goals of the rotation. Please summarize the strengths and weaknesses demonstrated by the student in this rotation period.

Will the student co-author on a publication? ☐ Yes ☐ No
If the manuscript has been submitted, please include a copy.

Would you consider taking this student in your lab? ☐ Yes ☐ No

ROTATION GRADE:

Attendance: Was the student present at the times required by your lab and project?

Technical Aptitude: Did the student display adequate familiarity with routine laboratory techniques and pick up new techniques easily?

Knowledge: Did the student do sufficient background reading and attempt to understand the scientific basis for his/her project?

Overall Assessment: Did the student perform well enough for you to be interested in recruiting him/her into your lab for an open position?

Please assign a number 1 (unsatisfactory) -100 (outstanding):

Attendance		Knowledge	
Technical Aptitude		Overall	

Weighted Rotation Grade (to be completed by program): _____

Rotation Advisor Signature

Date

B. Student Internship Progress Update

**STUDENT INTERNSHIP PROGRESS UPDATE
BIOMEDICAL RESEARCH TECHNOLOGIES MS PROGRAM**

Student Name: _____ Date: _____

Summary of Student Progress: ☐ Satisfactory ☐ Unsatisfactory

Is the student regularly attending lab? ☐ Yes ☐ No

Projected Graduation Date: _____

What is the title of the student's research project?

***REMINDER: STUDENTS MUST SUBMIT THEIR THESIS TO THE PROGRAM BY MAY 15th
THESIS REQUIREMENTS HAVE BEEN EMAILED TO ALL STUDENTS AND ADVISORS.
PLEASE CONTACT JENNIFER CROFFORD IF YOU HAVE ANY QUESTIONS OR CONCERNS.***

Is the student likely to be an author on a paper? ☐ Yes ☐ No ☐ Possibly

Please list any specific requests or areas for improvement for the student to focus on in the next three months:

Please note that information reported above this line will be shared with the student. The information shared below is for programmatic feedback only and will remain confidential.

Would you recommend this student for a PhD program? ☐ Yes ☐ No

Would you recommend this student for an advanced Research Assistant position? ☐ Yes ☐ No

Would you consider retaining this student as an employee after graduation? ☐ Yes ☐ No

Internship Advisor Signature

Date

Program Director Signature

Date

C. Academic Standards

Reminder of the minimum academic performance requirements for the MS program. Before you apply for graduation it is your responsibility to ensure that any and all requirements (such as reinstatements/extensions, grade changes) are resolved in a timely manner to avoid graduation delays. Please refer to the UC Graduate School Handbook (<https://grad.uc.edu/fac-staff/handbook.html>) & BMRT Handbook ([Curriculum | MS Program, Biomedical Research Technologies \(cincinnatichildrens.org\)](https://cincinnatichildrens.org/uc/graduate-school/handbook/ms-program)) for details. Specifically, you need to complete the following check-list:

- Finalization and submission of the online [Graduation Application](#) by the deadline;
- Removal of all I grades from transcript; please refer to the UC handbook for specific instructions;
- Removal of all UP/SP grades from unapproved courses and/or the final semester in the approved courses were taken;
- Assignment of letter grades rather than UP/SP grades for courses in the final semester of the student's program;
- Removal of previously awarded NG grades and blank grade awards;
- Confirmation of satisfactory repetition of required courses in which an F was originally received
- Confirmation of completion of work and changes of I grades within the one-year limit
- Confirmation that the student was registered for at least one credit in his/her graduate program in each academic year, including the year of expected graduation;
- Confirmation that the student completed degree requirements within the prescribed time-to-degree;
- 30 graduate credits completed to the satisfaction of the MS program;
- completion of all program requirements for the degree;
- 3.0 GPA has been earned while a matriculated graduate student in the program;
- The electronic thesis (ETD) with chair approval is uploaded by the deadline date, which is posted on the Graduation Deadlines website.

Please be aware that:

- If you get a grade that is C+ or below you are automatically on probation in the MS program. Two such grades represent grounds for dismissal.
- In order to ensure that all grade related concerns are addressed well before graduation you must email the program (BMRT@cchmc.org) with a grade report at the end of each semester. This will be reconciled with Jenny's milestone reports.
- You must get program approval before you register for electives. Please email your choices to the program (BMRT@cchmc.org).
- If you have any grade related questions, please make sure to check the Graduate School Handbook.
- It is recommended that you meet with the Program Director & Program Management Specialist at least four months before graduation for a thesis defense planning meeting to ensure all deadlines are met.