

BIOCHEMISTRY AND MOLECULAR BIOLOGY (BMB) – EMPLOYEE-PROFESSIONAL MASTERS

- John R. Hawse, IV, Ph.D., *Program Director*
- Matthew J. Schellenberg, Ph.D., *Associate Program Director*

Employee Master's Degree

The Biochemistry and Molecular Biology (BMB) Track offers a customizable course load and training environment for Employee Master's study that can be designed to emphasize one of three areas of broad specialty: Biochemistry and Structural Biology (BSB), Cell Biology and Genetics (CBG) or Cancer Biology (CB). The requirements for the Employee Master's Degree in Biochemistry and Molecular Biology conform to the general requirements of the MCGSBS.

Biochemistry and Molecular Biology Specialties:

- Biochemistry and Structural Biology
- Cell Biology and Genetics
- Cancer Biology

Application

Candidates must complete an Employee Master's Degree Application form. This form is available on the MCGSBS Master's Programs intranet site. Supporting documents include transcripts from previous colleges and three letters of recommendation - one preferred from your direct supervisor/manager.

Eligibility

Applicants must have a current Mayo Clinic appointment. Although more common for allied health staff, it is open to all employees. Enrollment is restricted to permanent Mayo employees and is available at all three sites: Arizona, Florida, and Rochester. Temporary roles are not eligible if you were hired with an appointment end date, e.g. visiting clinicians and research trainees are not eligible.

Applicants must have received a bachelor's degree from an accredited college or university, must have taken appropriate undergraduate science courses to adequately prepare for the Master's program, must have a minimum undergraduate grade point average that demonstrates a record of academic excellence. The employee's supervisor must endorse in writing the application of the employee and commit to allowing time to attend scheduled coursework.

Time Requirement

Time to completion can vary by student, but all requirements for the Master's degree must be completed within five years. The five-year period begins on the start date of the term the student is appointed to. Permanent Mayo employees whose Mayo employment terminates are required to notify MCGSBS; their MCGSBS appointments will also end.

Registration Requirement

At least 75% of the coursework for the Master's degree must be completed in MCGSBS.

Minimum Credit Requirements

Students must complete a minimum of 45 credits, including MGS 6000 Responsible Conduct of Research. Six of the credits in the track must be didactic credits. The selection of the courses to be used to meet these requirements will be determined by the student and the track program director.

Transfer Credits

A total of 9 didactic credits may be transferred into the Employee Master's Program. For more details, see the Credit Transfer Policy on the MCGSBS Policies and Procedures intranet site.

Course Requirements

A total of **45 credits** with maintenance of at least a 3.0 GPA are required for graduation.

Code	Title	Hours
MGS Courses		
MGS 6000	Responsible Conduct of Research	1
BMB 5100	Chemical Principles of Biopolymer Systems (Advanced Chemical Principles of Biological Syst)	2
BMB 5150	(Advanced Molecular Cell Biology)	2
MGS 6400	Master's Scholarly Review Article (Final Project)	6
Journal Clubs		
BMB 6500	Biochemistry and Molecular Biology Journal Club (1 cr./yr) ¹	1
Advanced Coursework		
Any course approved for graduate credit regardless of the "track" it is offered by.		33
Total Hours		45

¹ Two credits maximum. Students must attend all years after completing the written qualifying exam and present at least once. The second journal club credit may be obtained by taking and participating in any other JC offered by the graduate school should a different JC be more aligned with the student's area of interest.

Program milestones are included in the Academic Progress and Graduation Requirements for Masters Programs Policy. See below for BMB-specific program highlights and instruction.

Written Qualifying Exam

The Master's candidate must pass the BMB Written Qualifying Exam to complete the degree requirements. Students take the written qualifying exam once they have completed the core courses and have considered whether to take the other courses featured in the exam (see below). The exam is a one-day exam held at the beginning of July and consists of demonstrating critical evaluation and understanding of two published primary research papers relevant to the broad field of Biochemistry and Molecular Biology as covered in the core courses BMB 5100 and BMB 5150. Three sets of papers reflecting the three areas of emphasis of the track: BSB, CBG and CB, will be made available to the students three days before the exam. On the day of the exam, students are required to

answer a series of specific questions associated with any two of the six papers. The questions will cover foundation of knowledge in addition to synthesis of concepts. The exam is prepared and graded by the faculty and an overall grade of 70% is required for successful completion of the exam.

Employee Master's Advisory Committee

Each student must have an advisory committee consisting of four members of the graduate faculty. This committee will be responsible for evaluating the scope and content of the Master's scholarly review article (final project). Selection of members of this committee should be discussed with the mentor and the program director and arranged prior to beginning the Master's scholarly review article (final project). The committee will be chaired by the mentor and meet with the student before starting the Master's scholarly review article (final project) and composition will be subject to the rules and regulations of the graduate school.

Master's Project Review

As a part of the BMB Employee Master's, the candidate must write a critical literature review of a selected topic in biochemistry and molecular biology and associated with your area of emphasis: Biochemistry and Structural Biology; Cell Biology and Genetics or Cancer Biology. The topic for review should be selected by the candidate in consultation with a faculty member who will act as an advisor for the scholarly review article (final project). The review article (final project) should be written and formatted as a standard review article published in a relevant scientific journal of your choosing. This review article is required to be submitted for publication to the selected journal, however final acceptance of the review is not required, but is encouraged, for successful completion of the Master's degree.

The review article should be appropriately referenced and include illustrations/figures/tables as necessary. This document must be written in close consultation with the advisor and must be submitted to the Employee Master's Advisory Committee for review and approval.

Scholarly Review Article (Final Project)

A defense meeting consisting of 4 committee members and the student must be scheduled within 30 days of completing the review article. During this meeting, the committee will provide final feedback and overall assessment of the student's performance. Any final suggested edits to the document will be made. Three of four committee members must vote to pass the student and a form signed by all committee members must be submitted to MCGSBS immediately upon completion of the defense. Following successful completion of these requirements, the review article must be submitted to the scientific journal of choice.

Final Project Corrections

Significant deficits in the scholarly review article will require the student to revise and resubmit the document to the committee within 30 days of the presentation date. Following successful completion of these requirements, the review article must be submitted to the scientific journal of choice.