

# Biochemistry

This section presents the requirements for programs in:

- **M.Sc. Biology with Collaborative Specialization in Biochemistry**
- **M.Sc. Chemistry with Collaborative Specialization in Biochemistry**
- **Ph.D. Biology with Collaborative Specialization in Biochemistry**
- **Ph.D. Chemistry with Collaborative Specialization in Biochemistry**

## M.Sc. Biology with Collaborative Specialization in Biochemistry (5.0 credits)

### Requirements:

<b>1. 1.0 credits in:</b>	<b>1.0</b>
BIOL 5002 [0.5]	Seminar in Biochemistry
BIOL 5004 [0.5]	Advances in Applied Biochemistry
<b>4. 4.0 credits in:</b>	<b>4.0</b>
BIOL 5909 [3.5]	M.Sc. Thesis (in the specialization, including successful oral defence)
<b>Total Credits</b>	<b>5.0</b>

## M.Sc. Chemistry with Collaborative Specialization in Biochemistry (4.5 credits)

### Requirements:

<b>1. 1.0 credit in:</b>	<b>1.0</b>
BIOC 5800 [0.5]	Seminar in Biochemistry
BIOC 5806 [0.5]	Advances in Applied Biochemistry
<b>2. 0.5 credit in:</b>	<b>0.5</b>
CHEM 5804 [0.5]	Modern Scientific Communication
<b>3. 3.0 credits in:</b>	<b>3.0</b>
CHEM 5909 [3.0]	M.Sc. Thesis (in the Specialization)
<b>Total Credits</b>	<b>4.5</b>

## Ph.D. Biology with Collaborative Specialization in Biochemistry (1.0 credit)

### Requirements:

<b>1. 1.0 credit in:</b>	<b>1.0</b>
BIOL 5002 [0.5]	Seminar in Biochemistry
BIOL 5004 [0.5]	Advances in Applied Biochemistry
<b>or, for students who have already completed BIOL 5002 and/or BIOL 5004, select from the following:</b>	
BIOL 5105 [0.5]	Methods in Molecular Genetics
BIOL 5106 [0.5]	Laboratory Techniques in Molecular Genetics
BIOL 5502 [0.5]	Selected Topics in Biology
<b>3. 0.0 credits in:</b>	<b>0.0</b>
BIOL 6909 [0.0]	Ph.D. Thesis (in the specialization, including successful oral defence)
<b>Total Credits</b>	<b>1.0</b>

## Ph.D. Chemistry with Collaborative Specialization in Biochemistry (2.5 credits)

### Requirements:

<b>1. 0.5 credit in:</b>	<b>0.5</b>
BIOC 5800 [0.5]	Seminar in Biochemistry
<b>2. 0.5 credit in:</b>	<b>0.5</b>
BIOC 5806 [0.5]	Advances in Applied Biochemistry
<b>or, only for students who have already completed BIOC 5806, 0.5 credit from the following:</b>	
CHEM 5001 [0.25]	Analytical Mass Spectrometry
CHEM 5109 [0.5]	Advanced Applications in Mass Spectrometry
CHEM 5111 [0.25]	Advanced Topics in Biomolecular Sciences
CHEM 5900 [0.5]	Directed Special Studies
<b>3. 0.5 credit in:</b>	<b>0.5</b>
CHEM 5804 [0.5]	Modern Scientific Communication
<b>4. 1.0 credits in CHEM at the graduate level, which may include up to 0.5 credit in another discipline, with permission of the department.</b>	<b>1.0</b>
<b>5. Comprehensive examination (see Note below)</b>	<b>0.0</b>
<b>6. Research Proposal (see Note below)</b>	
<b>7. Public lecture, to precede the oral defence</b>	
<b>8. 0.0 credits in:</b>	
CHEM 6909 [0.0]	Ph.D. Thesis (in the specialization)
<b>Total Credits</b>	<b>2.5</b>

### Note

The Comprehensive Examination examines the depth and breadth of knowledge in the student's own research area.

The Comprehensive Exam needs to be taken at 8 months in the MSc for someone fast-tracking from MSc to PhD, or within the first 8 months of somebody joining the PhD with an MSc.

The Research Proposal involves submission that is both novel and of a sound scientific basis that may be loosely related to the thesis research of the student but not a topic that the student has investigated in any manner. The Research Proposal will be submitted to a committee for oral defense and is normally completed in the ninth term of registration.

Failure to pass either of the Comprehensive Examination or the Research Proposal will result in deregistration from the graduate program.

Students are required to participate in Thesis Advisory Committee (TAC) meetings in terms 2, 5, 8, and 11. If students are unable to defend their dissertation by term 12, further TAC meetings with a plan for completion must occur in term 14 and, if required term 17. All program requirements must be completed within 18 terms (6 years).

### Regulations

See the General Regulations section of this Calendar, and the regulations pertaining to the participating units offering this specialization.

## **Admission**

Admission to the collaborative program in Biochemistry is available to students who are admitted in one of the participating programs. To apply to one of the participating programs, please visit the Graduate Studies Admissions page.

## **Biochemistry (BIOC) Courses**

### **BIOC 5010 [0.5 credit]**

#### **Data Applications in Biochemistry**

A project-based workshop at the intersection of data and biochemistry. Students will develop skills for autonomous learning and proficiency in database selection, computational tool integration, data management, introductory programming, statistical analysis, data visualization, and effective communication of biochemically-relevant information.

Prerequisite(s): BIOC 3101 and BIOC 3102, or permission of the Institute.

Also offered at the undergraduate level, with different requirements, as BIOC 4010, for which additional credit is precluded.

Workshop three hours a week.

### **BIOC 5800 [0.5 credit]**

#### **Seminar in Biochemistry**

A graduate seminar on current topics in the field of Biochemistry. This course introduces the seminar format and involves student, faculty and invited seminar speakers. The student will present a seminar and submit a report on a current topic in Biochemistry.

Includes: Experiential Learning Activity

Also listed as BIOL 5002, CHEM 5800.

Precludes additional credit for CHEM 6800 (no longer offered).

### **BIOC 5806 [0.5 credit]**

#### **Advances in Applied Biochemistry**

A practical hands-on course in the field of Biochemistry. This course is run in a laboratory and will train students in highly specialized technique(s) in Biochemistry. The students will run experiments, gather data, assess and analyze the results and present the findings as a seminar.

Includes: Experiential Learning Activity

Also listed as BIOL 5004, CHEM 5806.