

## OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

<b>Course Code and Number:</b> CHEM 350		<b>Number of Credits:</b> 3 <a href="#">Course credit policy (105)</a>																	
<b>Course Full Title:</b> Introductory Biochemistry Laboratory																			
<b>Course Short Title (if title exceeds 30 characters):</b>																			
<b>Faculty:</b> Faculty of Science		<b>Department (or program if no department):</b> Chemistry																	
<b>Calendar Description:</b>																			
Introduction to biochemical laboratory techniques; lectures provide theoretical background. Topics include spectrophotometry, chromatography, enzyme kinetics, protein and lipid assays, protein characterization, model membrane systems, and lipid-based systems for biomedical applications.																			
Note: This course is offered as CHEM 350 and BIOC 350. Students may take only one of these for credit.																			
<b>Prerequisites (or NONE):</b>		CHEM 214 or BIO 320/BIOC 320.																	
<b>Corequisites (if applicable, or NONE):</b>																			
<b>Pre/corequisites (if applicable, or NONE):</b>																			
<b>Equivalent Courses (cannot be taken for additional credit)</b>		<b>Transfer Credit</b>																	
Former course code/number: N/A		Transfer credit already exists: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																	
Cross-listed with: <b>BIOC 350</b>		Transfer credit requested (OReg to submit to BCCAT):																	
Equivalent course(s):		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (if yes, fill in transfer credit form)																	
<i>Note: Equivalent course(s) should be included in the calendar description by way of a note that students with credit for the equivalent course(s) cannot take this course for further credit.</i>		Resubmit revised outline for articulation: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																	
		To find out how this course transfers, see <a href="http://bctransferguide.ca">bctransferguide.ca</a> .																	
<b>Total Hours:</b> 67.5		<b>Special Topics</b>																	
<b>Typical structure of instructional hours:</b>		Will the course be offered with different topics?																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Lecture hours</td> <td style="text-align: right;">22.5</td> </tr> <tr> <td>Seminars/tutorials/workshops</td> <td></td> </tr> <tr> <td>Laboratory hours</td> <td style="text-align: right;">45</td> </tr> <tr> <td>Field experience hours</td> <td></td> </tr> <tr> <td>Experiential (practicum, internship, etc.)</td> <td></td> </tr> <tr> <td>Online learning activities</td> <td></td> </tr> <tr> <td>Other contact hours:</td> <td></td> </tr> <tr> <td style="text-align: right;"><b>Total</b></td> <td style="text-align: right;"><b>67.5</b></td> </tr> </table>		Lecture hours	22.5	Seminars/tutorials/workshops		Laboratory hours	45	Field experience hours		Experiential (practicum, internship, etc.)		Online learning activities		Other contact hours:		<b>Total</b>	<b>67.5</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
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		If yes, different lettered courses may be taken for credit:																	
		<input type="checkbox"/> No <input type="checkbox"/> Yes, repeat(s) <input type="checkbox"/> Yes, no limit																	
		<i>Note: The specific topic will be recorded when offered.</i>																	
		<b>Maximum enrolment (for information only): 24</b>																	
		<b>Expected frequency of course offerings (every semester, annually, every other year, etc.):</b> Every year																	
<b>Department / Program Head or Director:</b> David Fenske		<b>Date approved:</b> Oct. 14, 2015																	
<b>Campus-Wide Consultation (CWC)</b>		<b>Date of posting:</b> December 11, 2015																	
<b>Faculty Council approval</b>		<b>Date approved:</b> November 6, 2015																	
<b>Dean/Associate VP:</b> Lucy Lee		<b>Date approved:</b> November 6, 2015																	
<b>Undergraduate Education Committee (UEC) approval</b>		<b>Date of meeting:</b> December 18, 2015																	

**Learning Outcomes**

Upon successful completion of this course, students will be able to:

1. Explain the theoretical concepts that underlie modern biochemical laboratory techniques.
2. Apply knowledge of molecular structure and function in the context of laboratory experiments and data analysis.
3. Apply the scientific method to laboratory experiments and data analysis.
4. Explain the strengths and limitations of modern biochemical instrumentation.
5. Perform basic laboratory techniques used in modern biochemistry and molecular biology such as spectrophotometry, chromatography, gel electrophoresis, protein and lipid analysis.
6. Communicate newly acquired data and knowledge through written laboratory reports.
7. Demonstrate technical acumen as it relates to computers, appropriate software, and the organization and analysis of data.
8. Cooperate with a team of other students to complete selected laboratory experiment.

**Prior Learning Assessment and Recognition (PLAR)**

Yes       No, PLAR cannot be awarded for this course because

**Typical Instructional Methods (guest lecturers, presentations, online instruction, field trips, etc.; may vary at department's discretion)**

Lectures, lab experiments, lab reports

**NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.**

**Typical Text(s) and Resource Materials (if more space is required, download Supplemental Texts and Resource Materials form)**

Author (surname, initials)	Title (article, book, journal, etc.)	Current ed.	Publisher	Year
1. Stryer	Biochemistry, 8 <sup>th</sup> edition	<input type="checkbox"/>		
2.	and laboratory handout (this may change).	<input type="checkbox"/>		
3.		<input type="checkbox"/>		
4.		<input type="checkbox"/>		
5.		<input type="checkbox"/>		

**Required Additional Supplies and Materials (software, hardware, tools, specialized clothing, etc.)**

Use this section for supplies and materials for all sections of this course.

**Typical Evaluation Methods and Weighting**

Final exam:	25%	Assignments:	%	Midterm exam:	15%	Practicum:	%
Quizzes/tests:	%	Lab work:	5%	Field experience:	%	Shop work:	%
Formal Report:	10%	Results Reports:	40%	Other: Presentation	5%	Total:	100%

**Details (if necessary):** Teamwork is evaluated as part of the lab work grade and is based upon peer evaluation, team workload plan, and the quality of the final report. Communication is evaluated through formal and results reports.

**Grading system:** Letter Grades:  Credit/No Credit:  Labs to be scheduled independent of lecture hours: Yes  No

**Typical Course Content and Topics**

An appropriate number of experiments will be selected from the following list. Topics may change from year to year depending on availability of instrumentation and feedback from previous years.

The course will consist of weekly lectures in which the biochemical basis theoretical concepts, instrumentation strengths and limitations, and data analysis techniques relevant to of the week's experiment will be summarized and discussed. These lectures will include discussions of the structure and function of biomolecules, and key metabolic pathways, and relevant experimental techniques. The labs will constitute the main part of the course, and will follow directly from the lectures. Students will hand in one two formal reports, and smaller results reports for the experiments which do not require formal reports. There will also be a written midterm and final exams.

Check-in, pipetting exercises, lab notebook and report expectations, use of computer programs to organize and analyze quantitative data.

Spectrophotometry

Gel filtration chromatography

Proteolytic enzymes

Enzyme kinetics

Sequencing of a dipeptide

Basic liposomology

Other possible experiments may include:

- Purification of a protein or enzyme
- Determination of fatty acid profiles of natural & commercial fats (saturated, unsaturated, and trans fatty acids).
- Carbohydrates and polarimetry
- Characterization of a protein by SDS-PAGE