BCMB 489 (PROTEOMICS)
COURSE OUTLINE - Spring 2014

Instructors:	Derek Smith, Andrew Ross, Terry Pearson, Morteza Razavi, Jason Serpa, Caroline Cameron, Leigh-Anne Swayne
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Textbook:	none required A recommended text is "Principles of Proteomics" Second Edition by Richard M. Twyman, Garland Science, 2014. (for reference use only)

Part I INTRODUCTION TO MASS SPECTROMETRY (22 hours)
(Derek Smith, Christoph Borchers, Andrew Ross)

Introduction to mass spectrometry for biological applications.
Topics will include system architecture and analytical strategies for the detection, characterization, and quantitation of proteins and the identification and localization of protein post-translational modifications.

Midterm Exam **Friday February 21**

Part II IMMUNOPROTEOMICS (6 Hours)
(Terry Pearson and Morteza Razavi)

Use of antibodies coupled with mass spectrometry to measure proteins in complex biological systems (6 hours)
Antibodies and other protein/peptide binders for sample enrichment. Top-down and bottom-up immuno-MS methods. SISCAPA methods applied to biomarker validation and clinical assay development

Part III APPLICATION OF PROTEOMICS METHODS TO BIOLOGICAL PROBLEMS (8 hours)
(Jason Serpa, Caroline Cameron and Leigh-Anne Swayne)

-Studying protein-protein interactions using biochemical-mass spec strategies.
-**Using proteomic methodologies to investigate bacterial pathogenesis**
Sample preparation, two-dimensional gels, iTRAQ; detection of post-translational methylations, group projects to analyze iTRAQ and methylation data.
Using proteomic methodologies to study ion channel signalling networks and dynamic biological systems. Tools for analysis of protein-protein

interactions, comparison of 1D gel, 2D gel or gel-free methods for ID of novel protein interactors by MS; Gene ontology tools, interaction validation, functional studies; sample prep for membrane proteins in neuronal differentiation, iTRAQ review and discussions of questions that can be addressed using iTRAQ.

GRADING SCHEME

Assessment of Student Performance

Marking of short answer and longer answer exam questions on material presented in the course and assignment of a numerical mark to each question.

Evaluation of the Exams and Weighting

Pre-Midterm Quiz		10%
Midterm exam	(**Friday Feb 21)**	30%
Final exam	(2 hours; covers entire course)	60%

Passing Grades	Grade Point Value	Percentage for Instructor Use Only *	Description
A+ A A-	9 8 7	90 – 100 85 – 89 80 – 84	**Exceptional**, **outstanding** and **excellent** performance. Normally achieved by a minority of students. These grades indicate a student who is self-initiating, exceeds expectation and has an insightful grasp of the subject matter.
B+ B B-	6 5 4	77 – 79 73 – 76 70 – 72	**Very good**, **good** and **solid** performance. Normally achieved by the largest number of students. These grades indicate a good grasp of the subject matter or excellent grasp in one area balanced with satisfactory grasp in the other area.
C+ C	3 2	65 – 69 60 – 64	**Satisfactory**, or **minimally satisfactory**. These grades indicate a satisfactory performance and knowledge of the subject matter.
D	1	50 – 59	**Marginal** Performance. A student receiving this grade demonstrated a superficial grasp of the subject matter.

F	0	0-49	**Unsatisfactory** performance. Wrote final examination and completed course requirements; no supplemental.
N	0	0-49	Did not write examination or complete course requirements by the end of term or session; no supplemental. Failure to complete one or more components of student evaluation will result in a grade of "N" regardless of the cumulative percentage on other elements of the course. An N is a failing grade, and it factors into a student's GPA as O. The maximum percentage that can accompany an N on a student's transcript is 49

DEPARTMENT INFORMATION AND POLICIES

1. The Department of Biochemistry and Microbiology upholds and enforces the University's policies on plagiarism and cheating. These policies are described in the current University Calendar. All students are advised to read this section.

2. Cell phones, computers, and other electronic devices must be turned off at all times unless being used for a purpose relevant to the class. Students having a cell phone, tablet, or computer on their person during an exam will be assumed to have it for the purpose of cheating.

3. Any recordings of lectures may only be performed with written permission of the instructor, and are for personal use only. The instructor retains copyright to such recordings and all lecture materials provided for the class (electronic and otherwise); these materials must not be shared or reposted on the Internet.

4. Students are expected to be present for the midterm and final exams. Instructors may grant deferrals for midterm examinations for illness, accident, or family affliction, and students must provide appropriate documentation 48 hours after the midterm exam. The Department of Biochemistry and Microbiology considers it a breach of academic integrity for a student taking a deferred examination to discuss the exam with classmates. Similarly, students who reveal the contents of an examination to students taking a deferred examination are considered to be in violation of the University of Victoria policy on academic integrity (see current University Calendar).

Deferral of a final exam must be requested with an Academic Concession form and submitted directly to Undergraduate Records. Deferred final exams for fall term courses will be arranged by the instructor. Deferred final exams for spring term courses will be arranged through Undergraduate Records and must be written before the end of the summer term as stipulated in the University Calendar.

5. Scan sheets for multiple choice exams (bubble sheets) will not be made available for review. Therefore, in addition to filling in answers on the scan sheet, students should also circle their answers in ink on their exam.

6. Professors may refuse to review/remark exams not written in ink. In addition, requests for review/remark of a midterm exam must be made within one week of the exam being returned. Students are expected to promptly pick up midterm exams after marking has been completed, either in class or from the instructor.

7. Examination papers that have pages removed, or are mutilated will not be marked.