

BIOCHEMISTRY 409: Proteomics COURSE OUTLINE – SPRING 2016

Proteomics

The objective of this course is to examine in detail the use of proteomics in advanced biological applications.

Instructors: John Burke, Christoph Borchers, Derek Smith

Coordinator: Dr. John Burke

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Office Hours: Tuesday and Wednesday 12:30 PM – 1:30 PM or by appointment.

Schedule: Tuesday, Wednesday, and Friday 11:30 am – 12:30 pm, ECS 108

Readings: Readings will be posted on the course web site.

Textbook: none required

A recommended text is “Principles of Proteomics” Second Edition by Richard M. Twyman, Garland Science, 2014.
(for reference use only)

Topics (with approximate dates)

| Dates | Topic | Instructor |
|--|--|---|
| Jan 5 th , 6 th , 8 th , | Introduction to proteomics | Burke (Jan 5 th), Borchers/Smith |
| Jan 12 th , 13 th , 15 th | Introduction to mass spectrometry for biological applications | Borchers/Smith |
| Jan 19 th , 20 th , 22 nd | Mass spec system architecture (19 th) Quiz (Jan 20 th), Protein identification/protein interaction networks | Borchers/Smith Burke (Jan 20 th) |
| Jan 26 th , 27 th , 29 th | Protein identification/protein interaction networks (cont) | Burke |
| Feb 2 nd , 3 rd , 5 th | Protein quantification / stable isotope labeling | Burke |
| Feb 9th, 10th, 12th | Reading break | Burke |
| Feb 16 th , 17 th , 19 th , | Post translational modifications | Burke |
| Feb 23rd, 24th, 26th | Midterm (23 rd), Clinical Proteomics | Burke |
| Mar 1 st , 2 nd , 4 th | Immunoproteomics, structural proteomics (HDX) | Burke |
| Mar 8 th , 9 th , 10 th | Structural proteomics (HDX and chemical cross-linking) | Burke |
| Mar 15 th , 16 th , 18 th | Structural proteomics (Chemical cross-linking, surface modification, ion mobility) | Burke |
| Mar 22 nd , 23 rd , 25th | Easter Structural proteomics (ion mobility) | Burke |
| Mar 29th , 30 th , Apr 1 st | Easter (TBD) | Burke |

Student Evaluation:

| | |
|-------------------------------------|-----|
| Quiz (Jan 20 th) | 10% |
| Midterm Exam (Feb 23rd): | 25% |
| Final Exam (comprehensive): | 50% |
| Assignments: 1 and 2 : | 15% |

There is no assigned text for the course; topics will be drawn from primary and review literature, assigned in class, and posted on the course website. Students are expected to complete the reading assignments and the material will be included in the midterm and final exams. There will be several 1-page, research or reading assignments made throughout the course. We expect students to attend all the lectures, take notes, and participate in classroom discussions. Students are expected to attend all midterm exams and quizzes on the specified dates. Late assignments will not be marked and given a grade of 0. The slides used for lectures will be provided on the website before class, however these should not be considered complete and students are responsible for all material presented in class.

Grading Scheme:

| | | | | | | | |
|----------------------|----------|----------------------|---------|----------------------|---------|-------------|------|
| A⁺ | 90 - 100 | B⁺ | 77 - 79 | C⁺ | 65 - 69 | F | < 50 |
| A | 85 - 89 | B | 73 - 76 | C | 60 - 64 | N ** | < 50 |
| A⁻ | 80 - 84 | B⁻ | 70 - 72 | D | 50 - 59 | | |

**** N grades**

Students who have completed the following elements will be considered to have completed the course and will be assigned a final grade:

- *(list all components to be considered, e.g. assignments, midterms, final exam, etc.)*

Failure to complete one or more of these elements 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 0. 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 academic integrity. 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. Course materials, such as notes, problem sheets, quizzes, examinations, example sheets, or review sheets, may not be redistributed without the explicit written permission of the instructor.

5. 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.
6. Multiple choice scan sheets for machine scoring (bubble sheets) are considered the authentic exam answer paper and will be retained by the department for 1 year.
7. Professors may refuse to review/remark exams not written in indelible 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.
8. Examination papers that have pages removed, or are mutilated will not be marked.
9. I reserve the right to use plagiarism detection software or other platforms to assess the integrity of student work."

Course Experience Survey (CES)

I value your feedback on this course. Towards the end of term, as in all other courses at UVic, you will have the opportunity to complete a confidential survey regarding your learning experience (CES). The survey is vital to providing feedback to me regarding the course and my teaching, as well as to help the department improve the overall program for students in the future. When it is time for you to complete the survey you will receive an email inviting you to do so. Please ensure that your current email address is listed in MyPage (<http://uvic.ca/mypage>). If you do not receive an email invitation, you can go directly to <http://ces.uvic.ca>. You will need to use your UVic netlink ID to access the survey, which can be done on your laptop, tablet, or mobile device. I will remind you and provide you with more detailed information nearer the time but please be thinking about this important activity during the course.

Learning and teaching centre information

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, approach the Resource Centre for Students with a Disability (RCSD) as soon as possible (<http://rcsd.uvic.ca/>.) in order to assess your specific needs.