CHM/BMC 627 Methods and Technologies for Protein Characterization Spring 2015 Syllabus (updated)

Course Instructor:
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JJC Office hours: 3:00 – 5:00 PM on Mondays or by appointment

Lecture time: 11:00 AM – 11:50 AM, MW in BSB 1220A

Course overview: This course seeks to engage students interested in both chemical instrumentation and those who desire to apply proteomic technologies to current biological problems. Understanding the current proteomics landscape, the limitations of these technologies and their practical application are among the course learning objectives. Emphasis is placed on understanding the very latest cutting-edge research.

Homework: On February 25th, you will be given a peptide sequencing assignment. This assignment will be due at the beginning of class on March 9th. You may work in small groups to complete this task, if you wish; however, each person must submit their own homework.

Journal club presentation. Each student will select a topic for a journal club presentation to be given on the date scheduled in the syllabus. You will have 25 minutes to present a single paper from the selected topic. Please confirm your selection with the instructor for final approval (by March 30). The paper must be made public to the class at least one week prior to the scheduled time. Here you goal is to present the paper and to stimulate/moderate the ensuing discussion. Come prepared with questions or other mechanisms to engage the class. Grading will be based on relevance of the paper, quality of the presentation, and overall class discussion. Note 30% of this grade will be derived from a peer evaluation. (25% course grade)

Laboratory: This course can be taken for either 2 or 3 credits. For those of you signed up for 3 credits, you must complete the laboratory portion. You are expected to dedicate 3 to 4 hours per week to the laboratory project until it is complete. The timing of your laboratory work is flexible and should be scheduled with the laboratory coordinator Evgenia Shishkova (shishkova@wisc.edu). The grade for the additional credit will be computed based on your participation in the laboratory, the quality of your final journal-style project report, and your group presentation.

Grades: For the lecture component, grading will be based on the sequencing homework, the journal club presentation, and the final exam. Each component will count for 1/3 of the total overall grade. For those signed up for 3 credits, the letter grade earned for the lecture will count 2/3 toward the total grade and 1/3 will come from the laboratory grade. Academic misconduct of any kind will result in a failing course grade and other possible disciplinary actions.

Final exam: There will be a final exam. It will be on Thursday, 05/14/2015, from 05:05 PM—07:05 PM.

Tentative schedule of topics:

Lecture Date	Week	Lecture Topics
1/21/15	1	Course overview/Mass Spectrometry
1/26/15	2	Mass Analyzers
1/28/15	2	Mass Analyzers
2/02/15	3	Ionization
2/04/15	3	Ionization
2/9/15	4	Chromatography (LC-MS)
2/11/15	4	Chromatography (LC-MS)
2/16/15	5	Tandem MS – peptides
2/18/15	5	Automated Spectral Sequencing
2/23/15	6	Automated Spectral Sequencing
2/25/15	6	Mass Spectral Interpretation
3/02/15	7	Mass Spectral Interpretation
3/04/15	7	Post-translational Modifications, an overview
3/09/15	8	Top-down analyses of PTMs
3/11/15	8	Post-translational Modifications – enrichment
3/16/15	9	Post-translational Modifications – case studies
3/18/15	9	Protein Quantification -- SILAC, Chemical Labels, etc.
Week of 3/22/15	10	***SPRING BREAK***
3/30/2015	11	Protein Quantification -- Isobaric Tagging
4/01/15	11	Protein Quantification -- Label-free, Spectral Counting
4/06/15	12	Targeted Proteomics
4/08/15	12	Protein-protein Interaction Mapping
4/13/15	13	Journal Club Presentations
4/15/15	13	Journal Club Presentations
4/20/15	14	Journal Club Presentations
4/22/15	14	Journal Club Presentations
4/27/15	15	Journal Club Presentations
5/29/15	15	Journal Club Presentations
5/04/15	16	Journal Club Presentations
5/06/15	16	Journal Club Presentations
5/14/15	5:05 PM	**Final Exam**