

## Welcome to Chem 6300: Recent Advances in Analytical Biochemistry

**Introduction:** This is a survey course. Its purpose is to provide an overview of all of the shiny new tools available for the study of biological macromolecules and systems. We'll start with a quick review of exactly what it is we're analyzing. There'll be a heavy focus on proteins (towards which I am incredibly biased), but we will also touch briefly on nucleic acids. If you have a deep and abiding interest in lipids and/or carbohydrates that does not involve how they interact with proteins, believe me, this is *not* the course for you. The core of the course is an introduction to the predominant analytical tools of modern biochemistry. We'll go over these one by one; in the part of the lecture I'll talk at you about a particular technique until my voice gets hoarse (probably around the two-hour mark). In the second half of the lecture we'll discuss a paper, or set of papers, in which the technique in question played a major role.

**Lectures:** M/W/F 1pm/2pm/2pm. **My office:** LSB331C, no defined office hours, just get in touch

### Content – organized roughly by week.

1. Introduction: What we're studying and why we're studying it
2. Introduction: Proteins in detail
3. Optical Methods: UV/visible and CD
4. Optical Methods: Fluorescence
5. Cellular Level Methods: Yeast 2 Hybrid, Complementation, Histology
6. Analytical Separations: Chromatographic, Electrophoretic, Ultracentrifugation
7. Mass Spectrometry I: Introduction
8. Mass Spectrometry II: Applications
9. Nuclear Magnetic Resonance I: Introduction
10. Nuclear Magnetic Resonance II: Applications
11. Project Presentations I
12. Project Presentations II

### **Assessment:**

1. Participation (**20%**): Yes, you **have** to read the assigned papers. I'll be peppering you with questions about the papers we're reading, so be afraid. Be very afraid...
2. Assignment (**30%**): Review of a paper (or two linked ones) on a workflow or particular use of an analytical technique.
3. Big huge project (**50%**): A review on an analytical technique or set of analytical techniques of your choice. You'll write a 7 page (single spaced w/figures) review and give a 15 minute talk. Yes, attending other people's talks is mandatory (and good form).

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