What is this course about?

- **Title:** Biological Chemistry Laboratory
  - More than just a lab course!
  - Biology (living organisms) → Chemistry (molecules)

- Proteins and enzymes

- Proteases: Enzymes that hydrolyze proteins

- How do we know what we know (or think we know)?
How do we know? What do we do with it?

- Information
  - Observations
  - Experiments
  - Data

- Knowledge
  - Organized information
  - Theories
  - Predictions

- Wisdom ?

- Applications

- All of this is sometimes messy!
- The data and their integrity are critical.
What else is this course about?

- Quantitative data and analysis
  - Acid base equilibria
  - Spectrophotometric measurements of concentration
  - Enzyme kinetics (reaction rates)
  - Curve fitting (matching experiment and theory)

- Molecular structure and modeling

- Separation methods
  - Electrophoresis
  - Chromatography

- The computer as a scientific tool
Lectures, Lab sessions and Staff

- Lectures:
  - Tuesday, 9:40–10:30 AM
  - Thursday, 9:40–10:30 AM

- Lab Sessions and TAs:
  - Monday - Andrew Sorensen
  - Tuesday - Emily Tippetts
  - Wednesday - Cara Drane
  - Thursday - Ashley Mowery

Lab sessions begin at 1:00 P.M. and may go until 5:00 PM.
Biology 3515/Chemistry 3515 on the Web

- Course web page: http://goldenberg.biology.utah.edu/courses/biol3515/index.shtml
- Canvas: https://utah.instructure.com
- LabArchives: https://mynotebook.labarchives.com/login
Fundamental Laboratory Approaches for Biochemistry and Biotechnology, by Ninfa, Ballou and Benore

Several copies are on reserve in the Marriott Library
Available in the bookstore (soon).
Keep it organized!

Keep it backed up!
Lab Reports: Prepared in LabArchives

- Before lab session (15% of report grade):
  - Protocol Outlines (“signed” before class)

- During lab - record of experiments (10 – 20% of report grade):
  - Measurements
  - Intermediate calculations
  - Deviations from lab manual protocols
  - Data files (uploaded to LabArchives and identified)
  - Record results of experiments that “don’t work!”
  - Signed at end of lab session
Following lab session (40 – 65% of report grade):
  - Data analysis (20 – 50% of report grade)
  - Problems (20 – 50% of report grade)
  - Molecular modeling exercises (0 – 15% of report grade)

NOT part of the report: Discussion or other literary forms.
Very Important!

- You will be working in groups of three in the laboratory, but each of you is responsible for writing your own reports.
- You may consult the instructor, the TAs or other students as you work.
- The actual work handed in (other than the primary lab data) must be your own.
  - Any data analysis files, molecular modeling files, text or other material must be clearly distinguishable from that of other students.
  - Submitting work that is not your own will be considered plagiarism.
Quizzes

- Thursday, 7 February - 25 min, 25 points
- Thursday, 21 March - 25 min, 25 points
- Tuesday, 23 April - 50 min, 50 points, cumulative

Previous quizzes are on the web site.
Grades

- **Grade components**
  - Laboratory reports: 70%
  - Quizzes: 25%
  - In class responses (clickers): 5%

- **Maximum cutoffs for determining class letter grades:**
  - A: 92–100% (including A-)
  - B: 82–91% (including B- and B+)
  - C: 70–81% (including C- and C+)
  - D: 60–69%
  - E: < 60%

These may be adjusted downwards!
Registration: via Canvas *not* via TurningPoint Cloud

Smart phone apps: not supported!

5% of course grade

Extra points for finding errors in the lab manual or lecture slides!
The use of cell phones, tablets or laptop computers will not be allowed during lectures or lab sessions.

Exceptions will be made for special accommodations.

Cell phones may be used in cases of emergency.

Please feel free to talk with me about any special problems this policy may create for you.
A Recommended Alternative to Electronic Screens

Photo courtesy of photos-public-domain.com
The Pen Is Mightier Than the Keyboard: Advantages of Longhand Over Laptop Note Taking

Pam A. Mueller\textsuperscript{1} and Daniel M. Oppenheimer\textsuperscript{2}  
\textsuperscript{1}Princeton University and \textsuperscript{2}University of California, Los Angeles

http://dx.doi.org/10.1177/0956797614524581
From a student last spring:

“For lack of a better word or phrase Dr. Goldenberg is a know it all. If you think by the time you reached upper division course you could choose how you are able to take notes in a class, think again. Apparently, Dr. Goldenberg knows you would take better notes on paper than you would using a computer, ipad or tablet despite him never meeting you.”

It’s not all about you!
The policy is meant to improve everyone’s experience. Electronic devices are distracting to those around you! (including the instructor)
How to Succeed in this Class

- Come to lectures *prepared to participate*.
  - Review the slides from the previous lecture.
  - Bring questions about what you don’t understand.

- Participate in class.

- Come to lab sessions *prepared to work efficiently*.
  - Carefully read protocols ahead of time.
  - Thoughtfully write the protocol outlines.

- Make the most of the early labs and computer sessions.
  - First few weeks are designed to build skills.
  - Subsequent labs and lab reports will be much more challenging!
  - Mastering skills early will pay off!
How to Succeed in this Class

- Do the lab reports to learn.
  - Start early.
  - Work with a group.
  - Work with a group the smart way: Don’t rely on the “smart” person!

- Use the quizzes from previous years to learn.
  - Answers will not be provided.
  - Work on your own to solve the problems.
  - Ask classmates, TAs and instructor for help.

- If you have concerns come talk to me!