

# Schedule

## Week 1 (September 30–October 4)

**Lecture 1:** Introduction to the course, lab safety, lab notebooks, the goals of lab, scientific manuscripts.

### Lab

- Mon/Tues: No lab.
- Wed/Thurs: (0) Notebooks and lab safety orientation with TAs.

### Assignments/Due Dates:

- Bring lab coats to Lab 0.
- Complete [Lab Safety Fundamentals Training](#), and upload screenshot of worksafe transcript showing completion, before Lab 1.
- Fill out feedback form by Friday at noon.

## Week 2 (October 7–11)

**Lecture 2:** Reading, writing, and the goal of the scientific manuscript. Review Ten Simple Rules articles ([1](#), [2](#), [3](#)).

### Lab

- Mon/Tues: (1) Introduction to lab, measuring and microscopy.
- Wed/Thurs: (2) Replica molding and laser cutting demo, fluorescence microscopy.

### Assignments/Due Dates:

- Answer questions on Ten Simple Rules articles ([1](#), [2](#), [3](#)) before lecture.

## Week 3 (October 14–18)

**Lecture 3:** Bioconjugation. Review [Agarwal & Bertozzi](#).

### Lab

- Mon/Tues: (3) Bioconjugation.
- Wed/Thurs: (4) Microcontact printing, fluorescent microscopy of patterned proteins, and contact angle measurements.

### Assignments/Due Dates:

- Answer questions on [Agarwal & Bertozzi](#) before lecture.

## Week 4 (October 21–25)

**Lecture 4:** Data analysis and statistics fundamentals. Review [Shaffer et al.](#)

## Lab

- Mon/Tues: (5) Cell culture—Passaging and counting cells, introduction to sterile technique.
- Wed/Thurs: (6) Cell culture—Growth kinetics, cell counting (hemocytometer), observing cell density and gauging confluence.

## Assignments/Due Dates:

- Answer questions on [Shaffer et al](#) before lecture.
- Reports for Labs 1–4 due on Thursday at noon.

## Week 5 (October 28–November 1)

**Lecture 5:** Experimental design, guidelines for independent labs. Review [Hafner et al](#).

## Lab

- Mon/Tues: (7) Growth kinetics, cell counting, lysis, protein content (BCA assay).
- Wed/Thurs: (8) Growth kinetics, MTS assay.

## Assignments/Due Dates:

- Answer questions on [Hafner et al](#) before lecture.
- Review session Friday TBD.
- Discuss independent project proposal with your TA during your lab session

## Week 6 (November 4–8)

**Lecture 6: Exam 1** (first hour). Cell adhesion and migration, 3D cell culture and microenvironment. Review [Fraleigh et al](#).

## Lab

- Mon/Tues: (9) 3D encapsulation, preparing substrates for cell studies.
- Wed/Thurs: (10) Live/dead, MTS assay on encapsulated cells, sterilizing substrates.

## Assignments/Due Dates:

- Reports for Labs 5–8 due on Thursday at noon
- Final Independent Project Proposals due on Friday at noon

## Week 7 (November 11–15)

**Veteran's Day, no class.**

## Lab

- Mon/Tues: (11) Varying stiffness substrates and cell growth, seeding cells.
- Wed/Thurs: (12) Quantification and analysis of cell growth and morphology

**Assignments/Due Dates:**

- Answer questions on [Fraley et al](#) by Tuesday at noon.

**Week 8 (November 18–22)**

**Lecture 7:** Cell mechanics, mechanical microenvironment, mechanotransduction. Review [Engler et al](#).

**Lab**

- Mon/Tues: Lab Practical Exam
- Wed/Thurs: (13) Independent lab

**Assignments/Due Dates:**

- Answer questions on [Engler et al](#) before lecture.
- Reports for Labs 9-12 due on Thursday at noon.

**Week 9 (November 25–29)**

**Lecture 8:** Hydrogel structure and chemistry, hydrogel mechanics, 3D micropatterning. Review [Sun et al](#).

**Lab**

- Mon/Tues: (14) Independent lab
- Wed/Thurs: No lab (Thanksgiving); Make-up labs Wednesday if needed

**Assignments/Due Dates:**

- Answer questions on [Sun et al](#) before lecture.
- Review session Wednesday TBD.

**Week 10 (December 2–6)**

**Lecture 9: Exam 2** (first hour), finish hydrogel mechanics.

**Lab**

- Mon/Tues: (15) Independent lab.
- Wed/Thurs: (16) Lab clean-up. Instron demonstration.

**Assignments/Due Dates:**

- Course evaluations must be completed online by Friday at noon.

**Finals**

Final Lab Report due Thurs., December 12 by noon.