

Biology 378/478 Microscope Techniques Fall 2020
4:00-4:50 - Thursday
Dr. H. Hoops

Outcome Goals for this Course (NOT in order of importance).

This is a lecture/demonstration course and not a laboratory course. However, it is primarily designed as a practical course. When you have successfully completed this course, you will:

- 1) Be able to understand and use basic forms of light microscopy.
- 2) Be able to choose between different techniques or equipment to accomplish defined goals, and to recognize the images produced by different kinds of microscopy.
- 3) Be able to understand advanced microscope techniques such as electron microscopy.
- 4) Be ready to take the hands-on course in electron microscopy (Biol 390:EM).

Schedule:

Sept.	03	Introduction; light and optics
Sept.	10	The brightfield microscope
Sept.	17	The brightfield microscope (quiz #1)
Sept.	24	Demonstrations and Kohler set up
Oct.	01	Important optical characteristics of the light microscope
Oct.	08	Practical consideration; Contrast methods I: darkfield, polarization microscopy (quiz #2)
Oct.	15	Contrast methods II: phase, DIC, fluorescence microscopy.
Oct.	22	Specimen preparation for light microscopy (quiz #3)
Oct.	29	Introduction to EM
Oct.	5	The transmission electron microscope (TEM) (quiz #4 -- special quiz on all forms of light microscopy)
Nov.	12	TEM, Specimen preparation I (quiz #5)
Nov.	19	TEM, Specimen preparation II
Nov.	21	Thanksgiving break – no classes
Nov.	03	SEM, SEM preparation.
Dec.	10	Confocal Microscopy, new forms of light microscopy (quiz #6)
Dec.	17	(see below) Final exam.

Final exam: The final exam is tentatively planned for 4:00-5:00 on Dev 17. It will take about an hour, but you will be given extra time if required. With our class size, I am open to moving it to another time that works for everyone but I would like the whole class to take it at the same time.

Grading:

Quizzes	50%
Final	40%
Kohler, etc	10%

Note 1: Quiz number 4 is a special quiz in that it is really a short comprehensive midterm. Therefore, I will replace your single lowest quiz score with a duplicate score from quiz 4. (Of course, if your lowest score is on quiz 4 itself, this will have no effect.)

Note 2: The final is cumulative. Thus, I reserve the right to overweight the final in those cases where a student does *significantly* better on the final than they have on the quizzes. I expect this adjustment to be rare (so don't count on it).

Office Hours:

Monday 8:30-9:30

Tuesday 3:00-4:00

Wednesday 4:00-5:00

Thursday 9:30-10:30

Friday 8:30-9:30

Or by appointment. (Subject to change after fall 2020 faculty obligations are announced) I can often meet students before classes start (at 8:00 or even 7:30) by appointment.

Posted Materials will be available under Canvas. Here you will find:

- Lecture notes.
- Color slides to go with the lecture note to be viewed on your computer.
- Black and white slides to go with the lecture notes greyscale, 6 per page to print out.
- Quizzes and final from the last semester plus associated slides showing images to identify as part of the quiz/exam.

SUNY Geneseo will make reasonable accommodations for persons with documented physical, emotional, or cognitive disabilities. Accommodations will also be made for medical conditions related to pregnancy or parenting. Students should contact the Office of Disability Services (https://www.geneseo.edu/dean_office/disability_services) and their instructors to discuss needed accommodations as early as possible in the semester