

MCB 3895/5896
Fundamentals of Light Microscopy
Lecture: Tu/Th 11:00-12:15

Instructor:

Dr. Aoife Heaslip, TLS 406, x6-5733, aoife.heaslip@uconn.edu

Teaching Assistant: 0

Capacity: 20

Credits: 3

Office Hours: By arrangement- contact instructor as outlined above.

Textbook: None

Course Description and Rationale.

This course is designed to give students a comprehensive introduction to light microscopy and digital imaging. The course will consist of interrelated lectures, discussion of primary literature research articles and tutorials for image processing and data presentation.

Learning Objectives:

We will cover the following topics:

1. Basic concepts of light and fluorescence microscopy
2. Principles behind various fluorescence microscopy techniques including epifluorescence, confocal, total internal reflectance microscopy (TIRF), 2-photon, light-sheet.
3. Immunocytochemistry: Fluorescent probes and proteins; fixation protocols and the advantages and disadvantages of each.
4. Digital Imaging and image processing.
5. Principles of super-resolution techniques including localization microscopy (STORM/PALM), structured illumination (SIM) and stimulated emission depletion microscopy (STED).
6. Exploration of primary literature research articles with a strong microscopy component

Grading: Grades will be based on the following

Weekly take-home quizzes	40%
Final exam	30%
Student presentations	20%
Class participation	10%

HuskyCT: A variety of materials will be made available on the course website at HuskyCT (<https://learn.uconn.edu>). Students should make extensive use of this

resource. The website will host lecture notes, scientific articles pertinent to the course and take-home quizzes.

Academic Misconduct: I encourage discussion of course material both inside and outside class time. The more you talk about a topic the better you will understand it. However, all written assignments, lab reports, quizzes and microscopy images submitted for grading **MUST BE YOUR OWN**. Academic misconduct in any form is in violation of the UConn Student Conduct Code and will not be tolerated. This includes, but is not limited to: copying or sharing answers on assignments, plagiarism, lying about a conflict with the time scheduled for an exam, etc. Depending on the act, a student could receive an F grade on the test, F grade for the course, or could be suspended or expelled.