

**CAMB 709 Quantitative Imaging and Analysis for Biologists (QIAB)
Fall 2022**

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Required materials: A laptop with the free software Fiji (<https://fiji.sc/#download>) installed

Class meeting times: Tuesdays & Thursdays, 10:15 – 11:45 am in room 302 CRB

Class format: Most class sessions will be a mixture of formal lecture and hands-on workshop time. September 8 and 15 will be small-group learning sessions at two microscopes in the CDB Microscopy Core.

Final Presentations: During class sessions 11/29/22, 12/01/22, and if necessary, 12/06/22

Grading for the course: Your final grade will be based on the following:

Participation (50%): participation during class, especially the interactive hands-on components

Final presentations (50%): The last three class sessions are set aside for student presentations: each student must give a very short (no more than 10 minutes) presentation that is either (a) an explanation of an **original** image analysis protocol that makes use of one or more methods discussed in this class; or (b) a tutorial on a Fiji plugin or other open-source software package that could be useful to others in the class.

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Sept 6	Light microscopy fundamentals
Sept 8	Microscopy Practical Sessions
Sept 13	Image data: signals, noise, sampling
Sept 15	Microscopy Practical Sessions
Sept 20 & 22	Image data and Introduction to Fiji
Sept 27	Fluorescent probes & sample optimization
Sep 29	TBD
Oct 4 & 6	Processing and simple measurements
Oct 11 & 13	Macros
Oct 18 & 20	Intro to segmentation and object labels
Oct 25 & 27	Working with 3D and 4D data
Nov 2 & 4	Machine learning tools in Fiji and elsewhere
Nov 8 & 10	Quantifying dynamic processes
Nov 15 & 17	Quantitative Colocalization
Nov 22 & 24	THANKSGIVING WEEK – NO CLASS
Nov 29 & Dec 1	Student presentations I and II
Dec 6	Student presentations III*

*In the past, two class sessions has not been enough time for all student presentations, so this year we are allotting three sessions