

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

**Course Coordinators:** Andrea Stout, Ph.D: [astout@pennmedicine.upenn.edu](mailto:astout@pennmedicine.upenn.edu)  
Melike Lakadamyali, Ph.D: [melikel@pennmedicine.upenn.edu](mailto:melikel@pennmedicine.upenn.edu)

**Teaching Assistant:** Julia Riley, [juriley@pennmedicine.upenn.edu](mailto:juriley@pennmedicine.upenn.edu)

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

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