**Course Code:** MMG 1346H

**Course Title:** Advanced imaging: techniques and application in biological systems

**Course Coordinator:** Kenichi Okamoto, Mei Zhen

**Course Location:** 600 University Ave. Mount Sinai Hospital, 8th floor, Rm. 885A

**Course Time and Date:** TBD. Held April and May (Wednesdays)

**Course Overview:**

The course provides an overview and fundamental knowledge of optical microscopic techniques and their recent applications for biological research. The course consists of six different modules involving short introductions on specific imaging techniques by instructors, followed by presentations on research papers that highlight the application of these techniques by students. By the end of the course, students will present short research proposals on a research project of their interest, utilizing at least one imaging technique covered by the course.

**Course Objectives:**

* Understand recent microscopic imaging techniques
* Discuss the applications of these techniques
* Propose research projects utilizing the techniques

**Marking Scheme:**

* 50 % - Paper presentation
* 25 % - Research proposal presentation
* 25 % - Class participation and discussion

*If you anticipate missing a class, you must let the instructor know in advance, given the weight on participation and the fact that there are only six classes. Providing that you have a legitimate reason for missing the class, you will be provided with a written assignment based on the reading for that week that you can use to make up for the lost class.*

**Course topic:**

*The basic outline for what will be covered in the six weeks is below.  Assigned reading will be sent out a week in advance.*

Week 0: a short orientation, overview of the course and paper assignment.

Week 1: Ultrastructural imaging

Week 2: Functional imaging (calcium, voltage etc.)

Week 3: Super-resolution live imaging

Week 4: Imaging-based system manipulation

Week 5: Student presentations

Week 6: Student presentations