**Syllabus**

**BioE 163L/BioE263L**

**SPRING 2019**

**Molecular and Cellular *Biophotonics – The Lab***

**Instructor Prof. Gerard Marriott**

**Week Date**

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| 1 | **Jan. 23rd** | **Lecture: Introduction to the course (No Practical)** |
| 2 | Jan 28/30th | **Absorption and Fluorescence**  **Instrumentation: Demonstrations** |
|  |  | Effect of solvent on BIS-ANS fluorescenceExperiment 1.1 and 1.2: Absorption and Fluorescence emission spectra of BIS-ANS in water, ethanol and BSA **Prep for next lab** |
| 3 | Feb. 4th /6th. | Experiment 1.3Emission of BIS-ANS bound to BSA.Determination of binding stoichiometry |
|  |  | **Lab write-up (Experiments 1.1, 1.2 &1.3.)**  **Prep for next lab** |
| 4 | Feb. 11th /13th. | **Experiment 2**  **2.1 Specific labeling of proteins with fluorescence probes**  **2.2 Spectroscopic characterization of fluorescent conjugates.** |
|  |  | **Lab write-up (Experiment 2.1 & 2.2)**  **Prep for next lab** |
| 5 | Feb 20th. | Experiment 33.1 Preparation and characterization of Prodan-actin **3.2: Calculation of the labeling ratio (Prodan:actin)**  **3.3 Kinetic analysis of actin polymerization**  **3.4 A Drug binding assay using Prodan-Actin** |
|  |  | **Lab write-up (Experiment 3.1, 3.2 & 3.3)**  **Prep for next lab** |
| 6 | Feb. 25/27th | **Continue Lab 3**  **Preparation for the mid-term and research project:**  **Writing proposals for independent research** |
| 7 | Mar. 4th /6th | **Experiment 4: Demonstrations of Confocal Fluorescence Microscopy** |
|  |  | **Demonstrations of Confocal Fluorescence Microscopy** |
| 8 | Mar 11th /13th. | **Lecture: Immunoassays**  **LAB: Immunoassays adapted for Molecular diagnostics** |
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| 9 | Mar. 18th /20th | **No LAB: Discuss and plan research project** |
| 10 | Mar 25th /27th | **Spring Break** |
|  | **Apr 1st/3th** | **Independent research project** |
| 11 | **Apr 8th / 10th** | **Independent research project** |
| 12 | **Apr 15th /17th** | **Independent research project**  **Discussion of group presentations (Final Exam)** |
| 13 | **Apr 22th/24th** | **Independent research project** |
| 14 | **Apr 29th** | **Final project poster presentation** |

**Grading**

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| **Lab reports** | 10% |
| **Take-home midterm** | 40% |
| **Final project presentation** | 40% |
| **Attendance & class participation** | 10% |