**Syllabus**

**BioE 163L/BioE263L**

**SPRING 2019**

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

**Instructor Prof. Gerard Marriott**

**Week Date**

|  |  |  |
| --- | --- | --- |
| 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 1.3 Emission 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** |
|  |  | **LAB: Immunoassays adapted for Molecular diagnostics** |
| 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**

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