**Biochemistry Lab – CHEM 315 – Spring 2020**

**Course Syllabus**

**Pre-Lab Discussion (Required):** Monday 4:00 – 4:50 PM **Location:** Schaap 3103

**Lab:** Thursday 8:00 – 12:50 AM **Location:** Schaap 3037

**Instructor:** Dr. Mike Pikaart (pikaart@hope.edu; Science Center room 3061)

**Required course resources**

1) Unused, ruled lab notebook, pen and permanent marker

2) Safety glasses

3) Moodle course website – used for course communication, please check this regularly

4) Access to Biochemistry Lab Google Drive folder

**Course description and objectives**

Welcome to Biochemistry Lab! In this lab, teams of 2-3 students will learn and apply biochemical lab techniques to explore the structure and function of currently uncharacterized protein. Techniques learned include protein expression, purification and analysis, kinetics, and computational methods to investigate protein structure and ligand binding.

**Student responsibilities**

**1. Attend pre-lab discussion and lab.** Your attendance at pre-lab discussion and the lab is expected and necessary for success in this course. Please arrive on time. If you are unable to attend class due to illness or other personal matters, please e-mail me as soon as possible.

**2. Lab safety.** Student safety is the highest priority. You will be made aware of any biological or chemical hazards prior to experimentation. Standard lab practices must be followed. This includes: no eating or drinking in lab, wearing safety glasses at all time in the lab, wearing gloves when performing experiments (gloves may not be worn when touching personal computers), and long pants and shoes are required. If you ever have ANY safety questions, ask!

**3. Complete required assignments on time. *Your lab partners are relying on you.***

**4. Read and complete assigned materials prior to coming to discussion and lab.**

**5. Participate and be attentive.** Students should participate by actively following discussion through note taking, speaking aloud in class, and contributing to group work. As a part of participation and being attentive, when you’re in the lab, ***use your electronic resources for lab purposes.***

**6. Check Moodle frequently.** You are responsible for the content posted to Moodle. Check it often.

**7. Complete your own best work.** All students are expected to adhere to the Code for Academic

Integrity at Hope College. While collaborative in nature, I expect that all work you produce for the course will be your own.

**My responsibilities to YOU:** You are a valued member of this class and, more importantly, a cherished child of God. As your instructor for this semester, my first goal is to treat you in a way that reflects that. I can’t promise you I’ll succeed at that goal (in fact, I can pretty much promise you I’ll mess up). But… whatever your race, faith, sexual orientation, disability, politics or economic background, I **can** promise you I’ll listen to and take seriously any concern you might run into in terms of how you’re treated in this class or on this campus. Finally, regarding disabilities, I am happy to work Hope’s wonderful staff in the Office of Disability Services and the Academic Support Center regarding any special accommodations or equipment needs necessary to complete the requirements for this course. If you are going to need such accommodation, please register documentation with those offices or by contacting the Student Development office.  **Let’s have a great lab!**

**Grading:**

|  |  |  |
| --- | --- | --- |
| **Category** |  | **Points** |
| Lab completion - technique, e-notebook | 40 points per lab | 280 |
| Prelab assignments (10) | 10 per assignment | 100 |
| Summary lab mini-reports (4) | 20 per report | 80 |
| Conc measurement |  |  |
| Expression and purification |  |  |
| SDS PAGE |  |  |
| Assay and kinetics |  |  |
| Cumulative final written report |  | 20 |
| Group presentation |  | 20 |
| **Total points:** |  | **500** |

|  |
| --- |
| A range: 90-100% |
| B range: 80-90% |
| C range: 70-80% |
| D range: 60-70% |
| <60%: Failing |

**Schedule**

This schedule only serves as an outline of the course and is subject to change. Moodle will be used to describe topics, ***additional assignments and deadlines* in detail. Please check Moodle frequently!**

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| --- | --- | --- | --- |
| week: | Monday 4-5 pm | Thursday 8 am-1 pm | Items due |
| 1 - Jan 6/9 | Pymol - protein assignments (module 1) | Measurement of protein concentration (module 8) | Pymol quest; Prot conc quest; *Conc measurement rpt* |
| 2 - Jan 13/16 | BLAST (module 2) | Hydrolysis assay - chymotrypsin (module 10) | BLAST quest; activity worksheet |
| 3 - Jan 20/23 | PFAM analysis (module 3) | Expression, purification part 1 (modules 6, 7) | PFAM quest; Expression quest |
| 4 - Jan 27/30 | DALI analysis (module 4) | Purification part 2 (module 7) | DALI quest; Purification quest; *exp and purif rpt* |
| 5 - Feb 3/6 | Docking (module 5) | Electrophoresis analysis (module 9) | Docking quest; SDS-PAGE quest; *electrophoresis rpt* |
| 6-Feb-13 | winter break | Kinetics on purified proteins (module 11) | Kinetics quest; *kinetics rpt* |
| 7 - Feb 17/20 | Docking continued (module 5) | Group presentations | *Cumulative report* |