HPLC, Biol 287

Summer Quarter 2011 (2 credits)

Shoreline Community College

Meetings: Rm 2930  Mon / Wed  6:00pm–9:00pm

Instructor: Adhanom Legesse,
            David Paul

Office: Foss building, Rm. 5375

Office hours: Tue / Thurs, 4:30 to 5:30 pm

Email: alegesse@shoreline.edu

Syllabus: Subject to change depending on events of class

Required materials:

Laboratory notebook (small bound notebook)

Computer with internet access: Class materials will be posted on online blackboard. You are required to read / work on the materials before class.

Inexpensive scientific calculator

Lab goggles

Course Objectives

This course is designed to be a combination of both lecture and lab work. All students are encouraged to actively participate in class discussions by asking and answering questions and by offering ideas and suggestions. Asking questions not only ensures that you get the information you need, it can also help create a more dynamic and interesting lecture. It is important you READ and THINK ABOUT the assigned material prior to each class. It is expected that you read through the lab activities and any assigned reading to the lab. This will enable you to get the most out of the lab (and possibly finish sooner).

Lectures:
This laboratory will present the theory of High Performance Liquid Chromatography as well as practical experience using the instrumentation. Students will receive hands on training setting up and trouble shooting an HPLC, preparing samples for analysis, data collection and analysis of results.
**Laboratory:**

Lab sessions are mandatory. There are no make-up sessions.

A **bound laboratory notebook is required.** Before each lab session, carefully review the lab experiment and write a pre-lab (Title, Purpose, a brief Summary of the experiment, and Data Tables, if necessary) in your laboratory notebook. The pre-lab, standard curve and unknown calculations need to be completed in your lab notebook when you come to class. All experimental observations and results will be recorded in the notebook as they occur. You need to write out any relevant equations and draw up data tables ready to insert measurements. Lab notebooks will be collected and graded.

You must submit your own lab report. If your lab report is copied from someone else, both will be penalized accordingly. All labs must be completed to receive a passing grade for the course.

This laboratory will present the theory of High Performance Liquid Chromatography as well as practical experience using the instrumentation. Students will receive hands on training in

- setting up, operating and trouble shooting an HPLC
- preparing samples for analysis
- data collection and analysis of results.

**Note:** Eating, drinking, and smoking within the lab room is strictly prohibited. No visitors in the lab.

**Grading:**

Extra credit(s) will be available on one or more than one assignment and / or quiz(s) depending on how the class performs. The points for the extra credit(s) will also depend on the performance of the class.

**Total points = 300 points (100%)**

- Homework and Prelab Assignments: 75pts (25%)
- Quizzes: 90pts (30%)
- Notebook: 120pts (40%)
- Lab citizenship points: 15pts (5%)

An average numeric score of 80 will be approximately equal to a grade point score of 3.0, a score of 90 will be a 3.5 and average scores of 95 and above will be 4.0.

**HOMEWORK AND PRELAB ASSIGNMENTS:** These assignments will be either handed to you or made available through the class Blackboard, which can be accessed by going to this website: [http://shoreline.blackboard.com](http://shoreline.blackboard.com). The due dates for each assignment will be announced in class and/or on Blackboard.
Any assignment not turned in on time is a Late Assignment. Late assignments will be docked 5% of its total possible points per day, holidays and weekends excluded.

**Quizzes**: There will be two quizzes during the quarter and each quiz will be designed to review lecture materials, home work and/or techniques performed in the lab. The questions in each quiz will focus on topics covered since the previous quiz. Topics that are not addressed in lecture, lab, and assigned readings and exercises will not appear on the quizzes.

**Make-up Quizzes**: If there is an emergency situation that may prevent you from taking a quiz, then you must notify the instructor before class starts. Besides, written evidence must be provided to take a make-up quiz without penalty. For any other non-emergency situation, a make-up quiz could be taken at a later time but the maximum points you could earn will be 70% of the points assigned for the quiz.

**Notebook**: The lab notebook is a basic tool for any experimental work. It is primarily for the experimenter's own use, but another person with similar technical background MUST be able to understand and duplicate any experiment, data, and conclusion, or to prepare a report by following only the lab notebook details. It should be a neat, organized, and complete lab record.

Lab notebooks are maintained in the lab so that they may be used as a reference for everyone in that lab. Your lab notebook will be collected and evaluated two times this quarter. Guidelines on how to format and organize a lab notebook are as discussed in class in BIOL265, Fall-2010.

**LAB CITIZENSHIP POINTS**: At the start of the quarter, every student will automatically be awarded 15 lab citizenship points. Points may be deducted from this total during the quarter for each instance that a student violates a lab rule/responsibility or when a student doesn’t practice proper lab etiquette. Examples of activities that would result in point deductions include, but are not limited to the following: failing to wear goggles/gloves/lab coats during appropriate times, not following safety guidelines, failing to clean up at the end of lab, improperly disposing of wastes, failing to maintain your drawer and glassware, and returning materials back to their proper place within the lab.

**Statement on Cheating and Plagiarism**:

Anyone observed plagiarizing their work will face consequences at the discretion of the instructor, ranging from receiving a zero on the lab to a failing grade in the course. It is your responsibility to conduct yourself in an honorable manner.

I expect that you will conduct yourselves appropriately by doing your own work in and out of class. Cheating and plagiarism will not be tolerated. This does not mean that study groups or working together is unacceptable, but any work you turn in must be a product of your own effort and in your own words. Word-for-word copying of other students’ answers will result in a zero grade for that assignment.
### HPLC Summer, 2011 Schedule

*(Subject to change depending on events of class)*

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<thead>
<tr>
<th>Class</th>
<th>Date</th>
<th>Lecture</th>
<th>Lab</th>
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| 1     | Mon. June 20 | ● Syllabus  
● Introduction to Chromatography | ● Safety                             |
| 2     | Wed. June 22 | ● HPLC process and operation               | ● Lab #2: TBD                        |
| 3     | Mon. June 27 | ● Types of HPLC  
● Data analysis           | ● Chromatography software - analysis of data |
| 4     | Wed. June 29 | ● Troubleshooting HPLC Problems            | ● Lab #3: TBD                        |
| 5     | Mon. July 4  | ● Holiday                                   | ● Holiday                            |
| 6     | Wed. July 6  | ● Mass Spectrometry  
● Quiz #1                               | ● Lab #4: TBD                        |
| 7     | Mon. July 11 | ● Protein – Isolation and Detection Methods | ● Lab #5: TBD                        |
| 8     | Wed. July 13 | ● TBD                                      | ● Lab #5: Albumin (part II)  
● Analysis of Albumin Chromatograms |
| 9     | Mon. July 18 | ● TBD                                      | ● Lab #6: TBD                        |
| 10    | Wed. July 20 | ● Final quiz                               | No Lab                              |