CH 4212
Laboratory Syllabus
Fall Semester, 2005

Teaching Assistants

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Format: This semester I continue to try a radical departure from the lab format that you and I are both familiar with. We are going to follow the role-playing model for analytical laboratories that has been so successful at St. Olaf College in Minnesota (1 – 3). I encourage you to read these references to get a feeling for how this process works. I am going to modify it somewhat to fit our department facilities and your previous coursework.

This pedagogical model is designed to foster teamwork and independence. Basically, each group becomes an independent company specializing in chemical analysis. Three roles will be assigned as follows:

Manager is responsible for the organization and outcome of the experiment. It is the managers’ responsibility to ensure that the product (lab report) is delivered on time.

Chemist is responsible for the preparation, blending, and delivery, in the right place and time and in the right chemical form, of all the reagents and analytical standards needed to implement Manager’s plan of execution.

Software/Instrumentation is responsible for the assembly and operation of the instrumentation needed to implement Manager’s plan of execution.

These roles will rotate each time a new project is initiated. Thus, everyone will get to function as Manager, Chemist, etc. during the course of the semester.

Grading: Each group will submit a report for each experiment. Each report is worth 100 points and everyone in the group will receive the same number of points.

Experiments
• Quantitative Evaluation of a Mineral Supplement by Flame Atomic Absorption Spectroscopy
• Monitoring the Course of an Esterification Reaction by FTIR
• Quantitative Analysis of Caffeine and Benzoate in Soda Pop by RP-HPLC
• Production of an Isosbestic Point by UV-VIS Absorption Spectrophotometry
• Electrical Measurements
• Separation of Phenols by Gas Chromatography
• GC/MS Analysis of a Complex Mixture

There is no particular order in which the experiments are to be performed. You may do any experiment provided that it is not currently occupied by another group in your section.

You will have four lab periods (two weeks) to complete each experiment. Reports are due one week after the experiment is completed. Ten points will be deducted for every day the report is late.

Miscellanea

This is a senior level laboratory. You will be expected to use the knowledge and skills obtained in previous courses and laboratories in order to successfully complete the experiments. The experimental write-ups for the most part are not complete step-by-step procedures; you will need to utilize the various resources available to you (library, internet etc.) to formulate a successful ‘plan of attack’.

All laboratory safety rules apply; proper clothing, no food or drink in the lab. Safety glasses must be worn at all times in the lab. Points will be deducted for non-compliance and without warning.

The keeping of a laboratory notebook is highly encouraged.

Attendance will not be taken. It is the sole responsibility of the acting manager to coordinate the groups’ activities to ensure the product is delivered on time.

Lab Report

Lab report should be written according to lab format.

References