

CHE 350L-011: Instrumental Analysis Laboratory Spring 2005

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Text: Principles of Instrumental Analysis; Skoog, Holler, and Nieman, 5th Edition

Blackboard: Blackboard will be used in this course to post lab activity summaries and updates, necessary protocol downloads, and other information.

Class Times: 2:00-4:30 pm MW, SC 427

Prerequisite: CHE 340-340L

Co requisite: CHE 350

Office Hours: I have an open door policy. Please stop by if you ever have questions, or contact me if you want to set up an appointment. My formal office hours are: M, W: 9-10 am and T: 9-10 am

Goals:

- Obtain *hands on* experience on a variety of instrumental methods for chemical analysis.
- Work effectively in groups: All experiments will be conducted in groups. Learning to work as a team is very important in industrial and academic setting.
- Coming to lab well prepared for a given task
- Critical evaluation of results: You will prepare *written reports* documenting your work. These reports will teach you how to organize your data into concise manner and to critically evaluate your results.

Attendance: Attendance is expected and tardiness is not tolerated. You will be working in groups on each lab experiment, and it is important you do NOT let down your partner(s) by showing up late. If you miss a lab period (*unless excused by instructor*) you will automatically receive a **zero** for that experiment.

Experiments: This semester is divided into different rounds of experiments. This rotation will allow groups to gain exposure to a variety of different instrumentation over the course of the semester.

Quizzes: You will be evaluated on your preparation for different experiments with pre-lab evaluations. Quizzes may be written or based on interviews given during the lab period.

Performance: Part of your lab grade will be based on participation and performance. You are working on experiments as a team. Cooperation and contribution from everyone in the group is expected.

Lab Reports: There will be 2 types of lab reports in this course: (1) *formal reports* and (2) *lab summaries*. Late lab reports will not be accepted (unless excused by instructor) and will result in a grade of *zero*. For guidelines on lab reports refer to attached guide.

Notebook: You are expected to keep an accurate record of your laboratory activities. You should use a small black marble “Composition Tablet” for collection of all data and procedure steps. This notebook should have a table of contents and numbered pages. After each lab period your notebook must be signed and dated by the primary investigator (you) and one witness (lab partner or professor). Your notebook should reflect your ability to document what you do **IN** lab, not reflect on what you did **AFTER** lab. A notebook is not always the “prettiest” document, but one should be able to repeat an experiment by following your notebook. Your notebook will be turned in and graded periodically throughout the semester. Activities such as: writing on scrap pieces of paper, in an alternative notebook, or in pencil will **NOT** be allowed. You will receive a score of **zero** for your lab notebook for each occurrence, and your participation grade will also be affected.

Grading Scheme:

Lab Summaries	= 45%
Formal Reports	= 35%
Pre-lab Quizzes	= 10%
Lab Performance	= 5%
Notebook	= 5%

Grading Scale: The letter grade for the course will be based on the final percentage scale

<u>Course Grade</u>	<u>Percentage</u>
A	90-100
B	80-89
C	70-79
D	60-69
F	0-59

Honor Code: The NKU Honor Code is in effect for this course. Failure to comply will result in a zero grade. <http://www.nku.edu/~deanstudents/HonorCode.htm>

Note: The syllabus is subject to change. Students are responsible for understanding all items on this syllabus. Any items not understood must be brought to the attention of the instructor within the first two weeks of class.

LAB REPORT GUIDELINES

I. Formal Reports

Contain:

- 1) Title Page: The title page should include [experiment title, name, lab partners, dates of experimental work, course title, unknown sample name/number, and date submitted]
- 2) Abstract: This is not an introduction, but a brief (short paragraph) outline of what was accomplished and the results.
- 3) Introduction: Here you should provide the overall objective and background of the experiment. The theory of a particular instrumental technique and experiment should be described. You **must** write this description in your own words, and use appropriate references/figures when necessary.
- 4) Experimental: This is a description of the particular instrument and procedure used for an experiment. Explain how data was collected.
- 5) Results and Discussion: These two sections are often found in chemistry journals combined together. In this section a narration presenting the results obtained (ie. graphs, charts, tables) during the experiment and discussing what the data means (data interpretation) should be presented. You also would include comments on the performance of the instrument or analysis and the limitations and advantages of the technique.
- 6) Conclusion: Paragraph summarizing results and presenting a final conclusion.
- 7) Literature References: You must correctly list all references used throughout the report. The literature references should be presented in standard ACS format.

II. Lab Summaries

Contain:

- 1) Title Page
- 2) **Brief** statement of Principles of Experiment
- 3) Experimental: (**Only** include any changes to original experiment)
- 4) Results and Discussion
- 5) Conclusion
- 6) Literature References

Formal Reports and Lab Summaries Should:

- Be typed
- Contain clearly labeled sections
- Contain calculations in the results section
- Include: tables, graphs, charts integrated within the report. (Graphs and data table should be clearly labeled with numbers and titles.)
- Contain proper grammar: (i.e. write in 3rd person, have agreement in tense, agreement between subject and verb etc.)

Note: The independent project (time permitting) will culminate in students presenting their work in a poster form, which will count as a formal lab report.

TENTATIVE LAB SCHEDULE