Syllabus for Chemistry 214 Quantitative Analysis Laboratory (Spring 2010)

Quantitative Analysis Laboratory 1 (1 credit hour)
Prerequisite: Chem 106/102 and 112; Chem 222/224 and 226 as well as completion of lecture Chem 212.
Instructor: Dr. Conrad Naleway
Flanner Hall Rooms 103 (office and voice-mail: 773 508-3115)
Loyola Chemistry Office: 773 508-3100 FAX: (773) 508-3086;
email: cnalewa@luc.edu
Class/Lecture Hours: Flanner Hall 313
Office Hours: Tuesday & Wednesday 1:30-2:30 pm and by appointment on MTh.

Other Materials:
You will need one bound (NO SPIRAL) laboratory notebook such as a national-brand composition book; available in any bookstore.   You also need an inexpensive calculator having logarithm (base 10 and e), exponential, and trig functions. Both must be brought to every lab session.

Objectives:

1) To acquaint students with some of the classical and modern techniques in analytical chemistry

2) To teach wet chemical lab skills, efficiency and planning of experiments

3) To teach critical evaluation of experimental results

4) To become familiar with conventional data collection in commercial and academic laboratories.

Laboratory Procedures:

The instructor will explain the procedures and goals for each assignment prior to its execution. You will be given handouts that are pertinent to each lab assignment beforehand. The instructors will explain during the first lab period of the semester how the notebook is to be written. The notebook must contain all data and calculations assembled during each experiment. It should be organized but not necessarily perfect and thus can contain strikeouts and must be done in PEN. Students must come prepared to lab to optimize their efficiency in the lab. This will require that each student introduce in their notebook a summary of the lab procedure basically helping them get started. This section of the notebook must be initialed by the TA BEFORE they begin the lab. You CAN NOT START until you have completed this rough self-defined outline of needed procedure. At the end of the lab, the notebooks must be again signed by the student and then initialed for completion by the TA's or instructors. Failure to follow this procedure in the notebook may result in a penalty.

In most cases, you will be assigned a standard unknown sample whose composition is known to at least FOUR significant figures. You will determine the concentration of your unknown sample and be graded on how accurately your determinations reflect its true composition.

For each assignment, you will report the values of your individual determinations, the mean concentration (or percent composition) and the standard deviation associated with the overall determination. You will be permitted to repeat each lab if time permits in order to get a better grade. However, you will need to analyze a

new unknown sample and it must be undertaken in the subsequent experiment period. In order to accomplish this, you will need to turn in your first results and calculations on a large index card to your instructor as soon as completed. Suggested timeframe is shown on class schedule. You will then be graded on accuracy of results and can thus decide if you want to repeat the experiment. Graded accuracy will result in determining 52% of your overall grade (see breakdown below).

Laboratory reports are to be computer generated and must follow the suggested format handed out during the first class period. All (both if a redo was performed) datasets must be included in your final laboratory report. The lab report will thus contain the data from the first attempt and second if repeated. Final accuracy will be determined by the better of the two reported findings. Overall completion of lab report will determine 28% of your overall grade (see breakdown below).

There also will be two exams (10 % each) which cover materials in each of the immediately preceding experiments. Midterm exam will include Experiments 1-3 and the Final Exam will include Experiments 4-8. The questions will cover the theory as well as related calculations.

Grading Policy   Chemistry 214 (Quantitative Analysis)

Analytical Findings	(6 Individual expts x **70** pts)	420 pts
	(2 Paired GCMS expts x **50** pts)	100 pts
Detailed Laboratory Reports	(8 expts x **35** pts)	280 pts
Midterm exam		100 pts
Final exam		100 pts

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Total	1000 pts

Grade Assignment:

Points	
900- 1000	A
800- 899	B
700- 799	C
600- 699	D
Below 600	F