ORGANIC CHEMISTRY LAB II
(CH 324L)
COURSE OUTLINE
SPRING SEMESTER 2000

Biilent Terem

LAB MANUAL:
Pavia, Lampman, and Kniz, "Introduction to Organic Laboratory Techniques," Third Edition (1988)
Reading must be done PRIOR to coming to lab.

OTHER LITERATURE SOURCES:
Lab hand-outs;
Silverstein, Bassler, and Morrill, "Spectrometric Identification of Organic Compounds"

SOFTWARE:
"Introduction to Spectroscopy" interactive software for IR, NMR, MS -available at computer lab. excellent method to review organic spectroscopy and to be prepared for unknown analyses; student are expected to be able to use this software competently.
"NMR instrumental simulation" -available at computer lab.
"Proton NMR Spectrum Simulator" calculates and plots spectra of organic molecules constructed; for Macintosh computers -available in organic chemistry lab; student are expected to be able to use this software competently.

SAFETY REQUIREMENTS:
It is not only common sense to be safety conscious in the lab, but we are legally required to do so. Our labs are equipped with extensive safety features. However, lab safety starts with the individual: Eye protection (safety glasses or goggles) and adequate footwear must be worn at all times in the lab. Long hair must be tied at the back. Under no circumstances should an experiment be left unattended. Each student should buy a pair of rubber gloves and a roll of paper towels.

GRADING:
Students must provide a bound, hard cover laboratory note-book with numbered pages and have this book with them in the lab at all times. The following tasks will constitute the basis of the lab grade. All these tasks must be attempted in order to pass the lab course. No make-up labs will be given with the exception of extraordinary circumstances, such as verified medical excuses.

Results of classification tests for functional groups:	**10%**
Identification of Unknown 1	**10%**
Identification of Unknown 2	**10%**
Identification of Unknown 3	**10%**
Lab note-book	**15%**
Lab quizzes	**20%**
Spectroscopic Analysis Reports	**15%**
Experimental competence and results	**10%**

GENERAL COMMENTS:

During the first semester of the organic lab the emphasis was on acquiring experimental skills and learning experimental techniques. In the second semester, it is expected that these skills are utilized. Consequently, the experiments scheduled will require more competence, and at times, an ability to adapt procedures.

During the classification tests for organic functional groups qualitative analysis strategies as well as procedures will be introduced. Meanwhile, students will be expected to review and apply their spectroscopic skills using software developed for this purpose.

The last six weeks of the semester is scheduled for identification of three unknowns for the preparation of a derivative for one of them. Each student is expected to work independently during this period at his/her own pace. In addition to keeping in the lab note-book a complete journal of all the experiments carried out, an spectroscopic analyses utilized to identify each of these unknowns will be written as a scientific report and submitted along with the correct identification of the unknown, thus giving an opportunity to familiarize oneself with well accepted styles of scientific chemical literature (further details on the format of this report is supplied).

Clearly, the students are expected to play a larger part, and at the same time learn more, in the second semester's well-structured, but fairly autonomous lab course. The first semester's well established and followed lab *etiquette will* **be valid for this semester also. Maximum and efficient use of time spent in the lab will be especially relevant while working independently. It is hoped that the spring semester in the lab will be fun, and the skills accomplished at the end will give a sense of fulfillment.**

LABSCHEDULE

Wk	Dates	Experiment	Reading Assignment
1	1/18; 1/20	Introduction; Orientation; Check-in;	Hand-out
2	1/25; 1/27	Infra-red Spectroscopy	Spectroscopy Lecture Hand-out
3	2/1; 2/3	Physical Properties of Organic Compounds: Solubility Determination; Microscale Boiling Point Determination	PLK Experiment 56 Procedure 56A, pp.427 Technique 6.2, pp.552 Hand-outs
4	2/8; 2/10	Nitration of Methylbenzoate	PLK Experiment 31 .233-236
5	2/15; 2/17	NMR Spectroscopy: Spectral and Instrumental Simulations	Hand-out
6	2/22; 2/24	Grignard Reaction: Preparation of triphenylmethanol from phenyl bromide and benzo henone	PLK Experiment 30 pp.223-232 Procedures .227-9
7	2/29; 3/2	Classification Tests for Organic Functional Groups: Lab 1	PLK Experiment 56 Procedures C-1 pp.438-468 Hand-out
8	3/7; 3/9	Classification Tests for Organic Functional Groups: Lab 2 Determination of an Unknown Functional Group	PLK Experiment 56 Procedures C-I pp.438-468 Hand-out
9	3/14; 3/16	Chemistry of Carbonyl Compounds: Aldol Condensation: Preparation of benzalacetone from anisaldehyde and acetone Preparation of Dilantin	PLK Experiment 48 pp.353-357 Hand-out
10	3/21; 3/23	Quantitative Analysis of Unknown 1: Lab 1	PLK Experiment 56 (plus)
11		SPRING BREAK	
12	4/4; 4/6	Quantitative Analysis of Unknown 1: Lab 2	PLK Experiment 56 (plus)
13	4/11; 4/13	Quantitative Analysis of Unknown 2: Lab 1	PLK Experiment 56 lus
14	4/18; 4/20	Quantitative Analysis of Unknown 2: Lab 2	PLK Experiment 56 (plus)
15	4/25; 4/27	Quantitative Analysis of Unknown 3: Lab 1	PLK Experiment 56 (plus)
16	5/2; 514	uantitative Anal sis of Unknown 3: Lab 2	PLK Ex eriment 56 lus