FALL 2007 SYLLABUS

CHEM 344: SYNTHESIS AND INSTRUMENTAL CHARACTERIZATION
(2 credit hours)

Prerequisite: Corequisite of CHEM 341 for 343; 341, 343 prerequisite and 342 corequisite for 344.

Senior Instructor: Dr. Syed R. Hussaini
Room 334, Chemistry Bldg
Phone: 852-7499
Email: srhuss01@louisville.edu
Office Hours: Friday 9:00-11:00 am

Text: *The Organic Lab Survival Manual*, any edition
Author: James W. Zubrick
Packets from Chem. Stockroom; LL38

This semester, the Teaching Assistants (TA's) are:

Section 01 Monday at 01:00 p.m.: Laura Haysley (pcollegechik@yahoo.com)
Section 02 Wednesday at 01:00 p.m.: Prakash Doiphode (prakash_do2000@yahoo.com)
Section 03 Thursday at 01:00 p.m.: Prakash Doiphode (prakash_do2000@yahoo.com)

The lab will be held in CHEM 216. The TA's will provide you with their office hours and other necessary information in the first lab session. They are responsible for the instruction, supervision and grading of the laboratory. Feel free to contact them in this regard. If you have a complaint about the way your lab reports are graded, please contact me. The tentative schedule of experiments is given below.

Dates	Experiment
Mon. Aug. 20, Wed. Aug. 22 & Thurs. Aug. 23	Check-in, safety, orientation and protocol
Mon. Aug. 27, Wed. Aug. 29 & Thurs. Aug. 30	Oxidation and Diastereoselective Reduction: Borneol to Camphor to Isoborneol. Microscale Procedure
Mon. Sep. 03,	Labor Day Holiday
Wed. Sep. 05, Thurs. Sep. 06 & Mon. Sep. 10	Continuation of the above experiment
Wed. Sep. 12, Thurs. Sep. 14 & Mon. Sep.17	Preparation of 2,5-Dichlorobenzene. Microscale

Wed. Sep. 19, Thurs. Sep. 20 & Mon. Sep. 24	Acid Catalyzed Alkylation of 1,4-Dimethoxybenzene: A Variation of the Friedel-Crafts Reaction. Microscale
Wed. Sep. 26, Thurs. Sep. 27 & Mon.Oct. 01	Electrophilic Aromatic Substitution: Bromination of Acetanilide. Microscale
Wed. Oct. 03, Thurs. Oct. 04 & Mon. Oct. 15	A Stereoselective Wittig Reaction. Microscale
Mon. Oct. 08, Wed. Oct. 09 & Thurs. Oct. 11	Fall break
Wed. Oct. 17, Thurs. Oct. 18 & Mon. Oct. 22	Grignard Reactions: Synthesis of Triphenylmethanol. Microscale
Wed. Oct. 24, Thurs. Oct. 25 & Mon. Oct. 29	An Aldol Condensation Reaction: The Reaction of Benzaldehyde with Acetone in Strong Base. Microscale
Wed. Oct. 31, Thurs. Nov. 1 & Mon. Nov. 05	The Two Step Synthesis of Benzocaine: *p*-Nitrobenzoic Acid to *p*-Aminobenzoic Acid (PABA) to Ethyl *p*-Aminobenzoate (Benzocaine). Miniscale
Wed. Nov. 07, Thurs. Nov. 08 & Mon. Nov. 12	Continuation of the above experiment
Wed. Nov. 14, Thurs. Nov. 15 & Mon. Nov. 19	Synthesis of Peracetylated α/β-D-Glucose. Determination of Anomeric Distribution by ^{1}H NMR Spectroscopy. Macroscale

Wed. Nov. 21 & Thurs. Nov. 22	Thanksgiving break
Mon. Nov. 26, Wed. Nov. 28 & Thurs. Nov. 29	Fischer Esterification: Making a Fruity Fragrance. Synthesis of Banana Oil. Microscale. Check-out

Safety: It is the number one priority. Lab safety glasses are mandatory. Shorts, tank-tops, sandals, etc. are not allowed. Cell phones, beepers, devices that require headphones, etc. should not be used in the lab. Long hair must be tied back. Gloves are available and sometimes will be made mandatory. Precautions about each experiment are noted at the end of experiment's write up.

Course Objective: The main objective of this course is to provide you hands-on experience with the basic techniques used by organic chemists. Afterwards, you will utilize these techniques in synthesis. Later in the semester, you will also learn important characterization/product analysis techniques.

Notebooks: Reports should be in bound form. Hand written reports should be done in ink (pencil can be used only for calculations). Typewritten lab reports are accepted. Lab reports are due during your scheduled lab time one week after the completion of the experiment. Late submission of reports will result the loss of 10 points per day. Guidelines for maintaining a lab notebook and a sample of a lab report are provided at the back of your packet.

Lab Preparation: Read the appropriate sections of Zubrick before each experiment. The actual experiments are provided in the form of a packet and are available for a minimal fee (usually $5).

When you come to the lab, turn in all the pre-lab questions. Also, write down the experiment partially with information like title, purpose, overall reaction, and general procedure. Add observations, data, and conclusion during the course of the experiment.

Grading: Single session experiments are worth 100 points, and double session experiments are worth 200 points. You are allowed to drop one lab grade worth 100 points. Grades will be computed based on a possible 1100 points. The final assignment of letter grades will be based approximately on the following schedule:

1100- 990	90%-100%	A
989-880	80%-89%	B
879-770	70%-79%	C
769-660	60%-69%	D
Below 660	below 60%	F

I reserve the right to lower these divisions. Yields are not the primary focus of the course. Your ability to work diligently and think like a good bench chemist will be more important. The quality of your lab report will contribute significantly to the overall grade. Your techniques and lab habits will be observed by myself and the TA, and will also contribute to the final grade. In case you have low yield, a low mp, or impurities in your product, please don't fudge the data. If you can offer a reasonable explanation, it will be considered more important.

Make-up exams will not be given. For unusual circumstances, please come see me. Incompletes will be assigned only for the reasons mentioned in the Student Handbook. Failure to check-out and replace missing or broken equipment will also result in an incomplete.

Miscellaneous Information: At the initial check-in you will be assigned a locking drawer. Check each item on the check-in list and get the missing or broken items replaced, free of charge, from the stockroom (B-38). After, the initial check-in, you will be responsible for replacing any missing or broken item. The micro-scale equipment will be available on a daily check-out basis. All this equipment must be returned in one piece, clean and ready to use at the end of each lab period. Again, you will be responsible for the immediate replacement of any of the broken or missing item.

I reserve the right to make changes in the syllabus when necessary in order to meet the learning objectives, to compensate for missed classes, or for other similar reasons.