CHM 242 LABORATORY **Winter 2003**

Laboratory Coordinator: Professor Winchester
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Office Hours:

	Monday	3:00-4:00
	Tuesday	1:00-2:00
	Thursday	10:00-11:00

If you cannot make these times, please contact me to arrange a time.

The Chemistry 242 Laboratory is in Padnos Room 372. **Your lab will meet every week**.

Section #	Day	Time	Section #	Day	Time
01	M	9:00 AM - 11:50 AM	05	T	12:00 PM - 2:50 PM
02	M	12:00 PM - 2:50 PM	06	T	3:00 PM - 5:50 PM
03	M	3:00 PM - 5:50 PM	07	W	9:00 AM - 11:50 AM
04	T	9:00 AM - 11:50 AM			

Text: Kenneth Williamson, Microscale and Macroscale Organic Experiments, 3rd ed.

Notebook: You will need to purchase a laboratory notebook - the notebook for this course is spiral bound, has numbered pages and is designed to make carbon-less copies of your notes. Always record your lab entries in pen.

Safety Goggles: Safety goggles are required and must be worn during the entire course of the experiment. If you do not have acceptable goggles, they will be provided.

Prelab Preparation: Prepare for the lab before the day of the lab, including doing the assigned reading and writing your experimental procedure before lab begins. This prelab section will be reviewed and initialed by your lab instructor before the lab begins. You will want to consider the techniques used in each experiment as well as the chemicals that are being used. Be familiar with the relative quantities, in grams and moles, of chemicals used. Each step in an experiment has a purpose, if you are unsure *why* you are performing an action, you are missing a significant portion of **YOUR** learning experience.

Lab Reports
A typed/word processed lab report will be expected for each completed experiment and will be due at the beginning of the next lab session. Late reports will be accepted only under special circumstances and no reports will be accepted after the final.

Upon completing each experiment (some will take two weeks) you will be expected to hand in a completed report form and the original lab notes from your lab book. The form will be available as a RTF document on the course Black board and you should hand in a typed report. This report form will contain an abstract, results in tabular format, conclusions and answers to any questions specific to the experiment. Correct spelling and grammar will be expected in your reports.

Abstract The abstract is a brief description of an experiment. The abstract is kept brief, so that the reader can easily and quickly understand the 1) objective, 2) major results (data) and 3) major conclusions of a completed experiment. The reader of an abstract should NOT be burdened with: excessive length, details, speculation, or comments concerning the way in the experiment was conducted (procedure) except to the extent it is necessary to understand the outcome of the experiment.

Plagiarism: Your lab report must be in your own words. Simple paraphrasing or substitution of minor words does not constitute the preparation of an original report and 50% of the points for the lab will be deducted for the submission of copied work.

Grading: One week labs will be worth 10 points and two week labs will be worth 20 points for a semester total of 130 points for the lab portion of your course grade. Scores on the lab will be reported as a percent of perfect score. Your lowest lab grade will be dropped and your score scaled to 120pts.

Example: The first lab has 60 total points and lasts two weeks . If your score is 50 points you will earn an 83%. This will count for 16.6 points out of 20 when totaling the final 120 points for your lab grade.

Missed Labs Missed labs can be made up during the week, providing Professor Winchester deems it excused and there is room in another section that is still doing the same experiment. Report circumstances that result in missing a lab to both your lab instructor and the course instructor.

Laboratory Notebooks: It is expected that you will keep a record of the experiments in your laboratory notebook. Set aside 3 pages in the front for a Table of Contents, be sure to maintain this table as the semester progresses. The record for each experiment should follow the description on pages 17-24 in Williamson. Each experiment will have the following information:

1. **Page number and Date**
2. **Title** Use the title from your lab text.
3. **Purpose** State clearly what you expect to perform in lab (synthesize, isolate, etc.), the purpose is not a statement of what techniques you will be learning.
4. **Equation** If you will be conducting a reaction you should include the equation for the reaction.
5. **Table of quantities and physical constants** (see Williamson, page 20) Include either a name or a structure for each compound used as well as molecular weight, grams and moles used, mole ratio and then any pertinent physical properties, eg. if it is a liquid include the density or if you will be measuring a melting point include the reported melting point value. A lot of this information is available in your lab book, but if you cannot find the data, check the Handbook of Chemistry and Physics. Include in this table both the theoretical and actual yield if these are applicable.
6. **Procedure** Your procedure should detail the experiment as you expect to perform it in lab. Once the experiment is complete there should be enough detail that another person reading your labbook (eg your instructor!) could reproduce the experiment without referencing the lab book.
7. **Notes, data and observations, calculations.** Be sure to record any changes that you make to the procedure as well as any observations that will assist someone attempting to repeat the experiment.
8. **Hazards** Note any chemical or laboratory hazards
9. **Mechanism of the reaction**: include a mechanism for each reaction in the experiment. If the mechanism is not in your lab text, look it up in the lecture text.
10. **Signature** and **Date of completion**

Sections (1) - (6) constitute the Pre-lab portion of your lab book.

These must be completed and initialed by your instructor before lab begins. Sections (7) – (10) are recorded during and after the lab period. Often a lab book will have conclusions included, but these will be reported in your lab report and are not necessary here.

CHM 242 LAB SCHEDULE Winter 2003:

Exp.	Dates	Lab Experiment	Reading Assignment
1	Jan 6	Check In Hydrogenation of Olive Oil A small research project , Exp 1 (p. 331) and analysis of product (p. 333).	Handout (Black Board) and Chapter 25
2	Jan 13	Separation and purification of the components of an analgesic tablet: Aspirin, caffeine and acetaminophen (p. 512).	Chapter 44
3	Jan 20	Nitration of Methyl Benzoate Exp 1 (p. 356) Iron (III) chloride catalyzed reaction of *m*-xylene Exp. 5 (p. 370)	Chapters 28 and 29
4	Jan 27	Cyclohexanone from cyclohexanol by hypochlorite oxidation Exp 3. (p. 307)	Chapter 22
5	Feb 3	Grignard Synthesis of triphenylmethanol Exp 1 (p. 451) and Exp. 2 (p. 454)	Chapter 38
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6	Feb 17	Hydrobenzoin from Benzil (p. 624) Synthesis of 2,2-dimethyl-1,5-dioxolane	Chapter 56 and 57
7	Feb 24	Aldol condensation Exp. 1 (p. 442) and Ultraviolet spectroscopy (p. 234)	Chapter 37, Chapter 14
	March 3	**Spring Break**	
8	March 10	Acetyl Salicylic Acid, Exp. 1 (p. 488) and Esterification Exp. 1 (p. 476)	Chapter 40 and 41
9	March 17	Preparation Sulfanilamide from acetanilide Exp. 5(p. 537)	Chapter 46
10	March 24	Qualitative Organic Analysis	Handout
11	March 31	Dyes and Dying Exp. 1 (p. 546), Exp. 4 (p. 549), Exp. 1 (p. 553, methyl orange), Exp. 3 (p. 554, tannic acid, malachite green) and Exp. 5 (p. 557, Indigo).	Chapter 47
12	April 7	Chemiluminescence: Synthesis of Luminol Exp. 1 (p662) and Exp. 4 (p. 663)	Chapter 62