Marshall University Department of Chemistry

Chemistry 361 (203) Spring 2012, Dr. R. Morgan

Credit: 3 hours, Prerequisite or Co-requisite: CHM 356
Hours: (S-486): M-R 11-12, 1-2 or by apponintment (drop me an email)
Tel: 304-696-3159; morganr@marshall.edu
Required Text: Lampman, Kirz and Engel, *Introduction to Organic Laboratory Techniques: A Microscale Approach* (4nd ed.)
Other required items: ACS academic safety guide:
http://portal.acs.org/portal/PublicWebSite/about/governance/committees/chemicalsafety/publications/WPCP_012294
eye protection, bound laboratory notebook, paper towels. **Recommended**: Laboratory coat or apron.

Attendance: Completion of all experiments and exams is required. Attendance is required.

Information on Excused Absences Only "Excused Absences", as defined on page 79 of the MU Undergraduate catalog, can be made up. The proper procedure is to notify me (by e-mail, phone, or in person) as soon as possible; any documentation (such as doctor's notes) have to be submitted directly to the Dean of Student Affairs (Dr. Stephen W. Hensley; MSC 2W38) who will then notify me (for details see p. 80 of the MU Undergraduate catalog). Note this only applies in Semesters in which there are sections of CHM 361

Academic Dishonesty: see pages 66 - 68 of the 2010 - 2011 General Undergraduate Catalog
Note: Dry 'labing' (Handing in a laboratory report in which you did not attend the laboratory) is considered Academic Dishonesty. If you submit a lab report that is very similar to another student's lab report, you will both receive **a grade of zero** for the lab report. End of subject. If you lend your lab report to someone, you are taking a chance that someone will plagiarize your lab report. You could end up with a zero.

Disabilities: Marshall University is committed to equal opportunity in education for all students, including those with physical, learning and psychological disabilities. University policy states that it is the responsibility of students with disabilities to contact the Office of Disabled Student Services (DSS) in Prichard Hall 117, phone 304 696-2271 to provide documentation of their disability. Following this, the DSS Coordinator will send a letter to each of the student's instructors outlining the academic accommodation he/she will need to ensure equality in classroom experiences, outside assignment, testing and grading. The instructor and student will meet to discuss how the accommodation(s) requested will be provided. For more information, please visit http://www.marshall.edu/disabled or contact Disabled Student Services Office at Prichard Hall 117, phone 304-696-2271.

1) Laboratory reports: These constitute 30% of your course grade. For details on their format, content and grading please see the document untilled, "Lab report notes and grading scheme" on bb

Lab Report FAQ's
a) Q. How do I submit a lab report? A. Lab reports are to be placed in the envelope provided in the Pre-lab. After the Pre-lab the envelope will be removed, and any lab report not in the envelope will be considered late (See Late Lab reports, below).

b) Q. Is there is no other permissible way to hand in a lab report? A. NO. If they are emailed, they will be deleted. If they are placed in a mailbox, or under a door etc. they will be disposed of.

c) Q. Oh…C'mon surely if I put it in your mailbox or under your door you will accept it? A. No, I will simply dispose of it.

d) Q. What is a late lab report? A. Any lab report not contained envelope when the envelope is removed from the Pre-lab.

e) Q. Is there a penalty for a late lab report? A. Yes. An immediate deduction of 20% is made. Then if it is not handed in the next laboratory period, it will not be accepted and a grade of zero is issued. If the lab does not accompany a late lab form it will not be accepted.

f) Q. How to submit a late lab report: A. The lab report is to be handed in the next lab period, with a signed Late Laboratory Report form (Available on Blackboard). After this it will not be accepted and result in a grade of zero.

g) Q. What do I do if I miss a lab? A. Hand in a missed laboratory form, and obtain a University excuse. If both of these steps don't occur you will receive a zero for the lab.

h) Q. I forgot to have my product evaluated what do I do? A. If you, "forget" to do it because you left, you will receive no credit for the lab, and be more likey to read the schedule next time.

i) Q. How can I make up a missed experiment? A. The short answer in that there are no make-up labs. To not receive a zero on the lab report or product evaluation: You must:
A. Fill out the form for a missed laboratory AND
B. Obtain a University excuse for the day of the experiment.

j) Q. What do I include in a lab report? A. Please see the document untilled, "Lab report notes and grading scheme" on bb

2) Product Evaluations (PE): These are worth 20% of your grade. Certain labs (as indicated on the schedule) will require you to have your product of the experiment evaluated. You will hand in a product evaluation form (available online), and have your product inspected by an instructor. This is done immediately after the lab is completed, on the DAY THE EXPERIMENT IS PERFORMED. You must bring the form to the lab. There are a total of 9 so you should print out all the forms from blackboard so you have them. There will be no extra forms in the laboratory.

3) Midterm and Final exams: These constitute 50% of your course grade. The Final exam is focused on the last part of the course. By, "Focused" what I mean is that there are many techniques and procedures that are common to the entire course. These will be included both the midterm and the final. If you want credit for a missed midterm you must fill out a missed midterm form and have a University approved excuse, otherwise a grade of zero on the missed exam will be issued. You cannot receive a passing grade (D through A) in the course if you miss the final and the midterm.

4) Lab Notebook: Must be of the bound variety (not loose leaf nor spiral). All experimental data must be recorded directly into this notebook during you laboratory period. You can use either a composition notebook or the scientific notebook sold in the bookstore. Your notebook may be inspected during a Product Evaluation, and included in that grade. All data must be recorded in your lab notebook. You should bring your lab notebook to the digital balances to record initial and final weights. Data should NOT be recorded on separate pieces of paper. The format for the lab report will be discussed shortly.

The grading scale used is: A= 82% and above, B = 70%, C= 60%, D = 50%, F less than 50%

Schedule for Experiments.
(May subject to change, those changes if any will be announced)

Date	Experiment	Notes	Report Due date
Jan 10	Introduction, Safety, Calculations, Notebook, Check-In.	Read pp 542-580.	No Report
Jan 12	Exp 1: Introduction to Microscale Laboratory. Exp 3A Crystallization	Safety Quiz. Techniques, Instrumentation. Lab Exercises 1A, 2. T **8**-**11**.	Report #1: Jan 19
Jan 19	Exp 14A Oil of Cloves (part 1).	T **5-7**, **12**, **18**, **25** Read pp 108-116.	
Jan 24	Exp 14A (part 2) /IR spectroscopy.		Report #2: Jan 31
Jan 26	Experiment 4A Caffeine from Tea (Part I)		

Jan 31	4A (Part II)		Jan 31: Product Evaluation (PE) #1
Feb 2	Exp 45 Benzocaine (part I)	T 8-11. Read pp 367-373.	
Feb 7	Exp 45 Benzocaine (part I)		Report #3: Feb 14
Feb 9	Exp 28 Nitration of Methyl Benzoate.	T 11.	Report #4: Feb 16
Feb 14	Exp 25A 4-Methylcyclohexene (Part I)	T 5, 6, 12, **13**, **14**, 25.	
Feb 16	Exp 25A 4-Methylcyclohexene (Part II)	T 12, 25.	PE #2 Due 2/16
Feb 21	Exp 66 An Oxidation Puzzle (part I).		
Feb 23	Exp 66 An Oxidation Puzzle (part II). Prepare equipment for Exp 38A.		Report #5:2/23
Feb 28	Exp 38A Triphenylmethanol (part 1).	T 4, 5, 7.	
March 1	Exp 38A Triphenylmethanol (part 2)		PE #3 Due 3/1
March 6	Begin Multi-step synthesis 36A, 36B and 37. Midterm Exam (through 36A)	T 6-9, 11, 12.	After each step is complete, a PE is due (three total #4-6)
March 8	Continue Multi-step synthesis		
March 13,15	Continue Multi-step synthesis		PE #4-6 due 3/15
March 27	Exp 44C 1,4-Diphenyl-1,3-butadiene.	T 8.	Report #7: April 2
March 29	Exp 10B Acetaminophen (part 1)		
April 3	Exp 10B (part 2)		PE #7 Due 4/3
April 5	Solvolysis of Triphenyl methylbromide to Triphenyl methanol	Hand out	Report #7: April 12
April 10	Exp 49B Nylon		PE #8 Due 4/10
April 12	Reduction of Benzophenone	Hand out	PE #9 Due 4/12
April 17	Experiment (54D): Aldehydes and Ketones		
April 19	Finish 54D		Report #8:4/26

April 24	Final Exam		

The purpose of this course is to:

(1) Introduce you to basic laboratory skills and provide you with experience in interpreting experimental data.

(2) Provide laboratory experience that emphasizes and reinforces the principles and concepts of chemistry in CHM 355 and 356.

Safety Precautions

NO Shorts or Sandals! Keep your safety glasses in your drawer so you don't forget them at home!

PASS THE SAFETY QUIZ ON WEB CT BEFORE LAB (when its available)

1. Anyone who has not signed the statement acknowledging one's full understanding of the required safety measures will not be permitted to work in the laboratory.

2. Use care in following the directions of your instructor and laboratory text. Do not alter the experimental procedures without being instructed to do so by the instructor or the TA's.

3. Protective eye goggles must be worn in the laboratory at all times. Failure to do so will constitute sufficient grounds for dismissal from the laboratory. You are responsible for obtaining a pair of safety goggles. **We strongly urge you not to wear contact lenses.**

4. Clothing: Slacks or dresses cut below the knee must be worn. Shoes covering the bridge of the foot and toes must be worn. You will not be allowed to work while violating either of these rules. You cannot wear shorts to lab!

5. Know the locations of all safety equipment in the laboratory. You will be tested on this.

6. All injuries, no matter how trivial, must be reported to the instructor immediately.

Materials Needed

1. Laboratory textbook.
2. A bound laboratory notebook. All experimental data must be recorded directly in this notebook during you laboratory period. You can use either a composition notebook or the scientific notebook sold in the bookstore.
3. Safety goggles; an apron is optional, but desirable.
4. Bring a roll of paper towels to use in lab. MU does NOT provide paper towels (sorry) and you will definitely need some!

Format of the Course

1. Attendance is required in this course.
2. The first half-hour of the pre-lab will be spent in a discussion by the instructor on the experiment to be done in that period.
3. The bound notebook is for the immediate recording of all experimental operations and observations made during the laboratory period. Use only pen to write in the lab books and do not use white-out. If you make a mistake, just draw a line through the mistake and continue writing.

4. Lab reports are due two class periods after the completion date. They should be word processed, with any organic reactions/structures prepared with chemical drawing software. I.e. ISIS draw. They should be stapled and turned in at the beginning of the period.

   During exams, talking and sharing of calculators is forbidden. Students will sit in alternate rows while taking the exam.

   YOU NEED TO BUY A CALCULATOR THAT DOES ONLY SIMPLE MATH (addition, subtraction, multiplication and division). Calculators that can be programmed or have graphing capabilities are **not** permitted for quizzes. Usually you can purchase one of these cheap solar calculators for $1-$2 at a dollar store.

   Copying lab reports: I want to be very clear on this. If you submit a lab report that is very similar to another student's lab report, you will both receive **a grade of zero** for the lab report. End of subject. If you lend your lab report to someone, you are taking a chance that someone will plagiarize your lab report. You could end up with a zero. Several students submitted virtually identical lab reports last semester in CHM 217 and I do NOT want this to happen this semester.