

SYLLABUS, SCHEDULE AND GENERAL INFORMATION

Instructors: Dr. Catherine Neto Office: Group II, Rm. 301A Office hours: TBA
Phone: 910-6928 email: cneto@umassd.edu
Prelab (II-305): Tuesdays, 8:00 - 8:50 AM -- Attendance is mandatory
Lab L1 (II-315): Tuesdays, 9:00 AM – 12:00 noon

Dr. Siva Rasapalli Office: Violette 216 Office hours: TBA
Phone: 999-8276 email: srasapalli@umassd.edu
Lab L2 (II-315): Tuesdays, 1:00 PM – 4:00 PM

Required books and supplies:

- Williamson, K. L. Macroscale and Microscale Organic Experiments, D. C. Heath & Co. Custom edition available in campus store or fifth edition (2007) available used
- Organic Lab II Manual--Spring 2010, UMD--available from the instructor
- Quadrille ruled research notebook (with carbon pages)--you may use your CHM265 notebook
- Safety glasses are required by state law!

Pre-requisites: You must have passed both semesters of general chemistry lecture & lab, CHM251, and CHM265 (or CHM263 if you have recently switched to chem major/minor) with a C or better.

Co-requisite: You must be either currently enrolled in CHM252, or have already passed Organic II or its equivalent. Anyone not meeting these requirements cannot remain enrolled.

About this course: Organic Chemistry Lab II builds upon the organic lab techniques learned first semester, so you'll be expected to remember the basics! This semester we will focus on synthesis and also on the tools used to identify the molecular structure of organic compounds. We will learn to use nuclear magnetic resonance (NMR) spectroscopy, IR, and GC-MS for product identification and structure elucidation of unknown organic compounds. These are powerful tools routinely used by the modern organic chemist. Classification tests which utilize diagnostic chemical reactions for functional group and compound identification will also be introduced. The first half of the semester, we will focus on some important synthetic reactions of carbonyl compounds and on projects using instrumentation for product evaluation and identification. The second half of the semester features organic qualitative analysis, bringing together chemical and instrumental methods in a student-led investigation of the structural identification of organic compounds. In general, you'll be encouraged to work more independently using the techniques of synthesis, separation, purification and analysis that you've learned since the beginning of CHM265.

Logistics:

- ☞ Prelab lectures begin at 8:00 AM. **Attendance at prelab is required** for participation in the laboratory session that day; if you miss prelab you will not be allowed to do the experiment.
- ☞ There are no scheduled make-up sessions. If you know you must miss lab, make prior arrangements to make up the work. If you miss lab due to illness/unforeseen circumstances, notify us by email or phone within 24 hours to discuss how the work will be made up, or you will receive no credit for the experiment.
- ☞ To complete all scheduled experiments within the available time, it is critical that you **come to lab each week prepared**. Read the assigned lab manual or textbook sections beforehand. Experience has shown that the second-semester labs often require more time than the three hours per week allotted "on paper" (end times are very approximate!) Students are always welcome to come during the other lab period to work on unfinished tasks. In case you need extra time, you are strongly advised to avoid overscheduling classes on Tuesdays.
- ☞ The attached schedule of experiments shows all lab report due dates. Students are responsible for knowing deadlines and quiz dates. Plan your time accordingly. Turning in the reports on time will give you the best chance of earning a good grade.
- ☞ You are expected to bring your lab notebook and safety glasses each week and will be held responsible for abiding by the safety guidelines outlined on the attached pages and proper waste disposal and cleanup of your work areas.

TENTATIVE SCHEDULE OF EXPERIMENTS, REPORT DUE DATES & QUIZZES

Date	Unit	Laboratory activities	Due dates for assignments
Jan. 26 th	1	Prelab: Safety video, discussion of Unit 1 Lab: Check in and begin Unit 1: Oxidation of Alcohols: Camphor from Borneol	
February 2 nd	1-2	Grignard Reaction Part I: Synthesis and Purification of Triphenylmethanol Finish Unit 1 – Oxidation - IR analysis	
February 9 th	2	Grignard Reaction Part II: Analyses of Grignard Product	Unit 1 report due today
February 16 th		<i>No lab, Monday schedule</i>	
February 23 rd	3	Natural Products Investigation Part I: Isolation of Essential Oils from Spices Quiz #1 (during lab)	Unit 2 report due today
March 2 nd	3	Natural Products Investigation Part II: Spectroscopic Analysis	
March 9 th	4	Esters Part 1: Synthesis and Purification	Rough draft of Unit 3 report due today
March 16 th		<i>Spring Break</i>	
March 23 rd	4	Quiz #2 Esters Part II: Spectroscopic Analysis & GCMS	
March 30 th	5	Organic qualitative analysis: Week 1 Separation, solubility & physical properties	
April 6 th	5	Organic qualitative analysis: Week 2 Introduction to chemical classification tests & derivatives of organic compounds	Unit 4 report due today
April 13 th	5	Organic qualitative analysis: Week 3 Using spectroscopy to help solve unknowns	Final draft of Unit 3 report due today
April 20 th	5	Organic qualitative analysis: Week 4 Quiz #3	
April 27 th	5	Organic qualitative analysis: Week 5 Mock group-meeting: Class discussion of problems, exchange of ideas	Progress report & preliminary ID of unknowns due
May 4 th	5	Organic qualitative analysis: Week 6	Unknown #1 short report due today
May 11 th	5	Check-out, Final quiz Finish Organic Qual Unit	Unknowns 2 & 3 short reports due

GRADING POLICY

Lab Reports (60%)

Each student must submit a formal lab report for Units 1 – 4. A general progress report and short-form lab reports for each of the unknowns must be submitted for Unit 5. Lab reports should be **individual efforts**, even for units where you work with a partner – only the data should be shared. Reports should be clear and concise and follow the format provided in the lab manual, page 1. Specific details for each report are found at the end of each unit in the manual. Formal reports should be prepared in MS Word and submitted by hardcopy where possible. If you have access to ChemDraw or similar program, use it! If not, you may hand-write in the chemical structures and equations. The Unit 5 short form will be made available to you as a MS Word file; reports may then be submitted either electronically or by hard copy. Due dates for all reports are listed in the schedule on the previous page. You are expected to meet the due dates; penalties will be deducted as follows:

Up to 1 week late = 5 points off

1-2 weeks late = 10 points off

Over 2 weeks late = report will not be accepted

If you anticipate a problem getting a report in on time, you must explain the situation to your instructor first or points will automatically be deducted. Simply not turning in the report will get you a zero.

Some **revisions/corrections** to a first draft will be allowed at the instructor's discretion, but **only** if the report is turned in on time.

Reports will be evaluated on:

- 1) **Accuracy** and **quality** of results: yield and purity of product for preparative labs; completeness of data and technique for non-preparative labs
- 2) Whether you understand the **purpose** of the experiment
- 3) Accurate **description of the procedures used**, especially any changes made. The experimental section should be written in the objective tense (no "I" or "we") and not "recipe style".
- 4) **Organization** of data and observations
- 5) **Calculations** (sample calculations must be shown)
- 6) Correct **chemical equations** and **structures** for all reactions performed or compounds tested, mechanisms should be given when discussed in prelab lecture
- 7) A discussion which demonstrates your **understanding** of the lab and **thoughtful** conclusions about what your results tell you.
- 8) Answers to any **questions** assigned. These also demonstrate your comprehension of the chemistry behind each experiment.

Quizzes (30%)

There will be **four quizzes** over the semester. **The best two of the first three quiz grades plus the final quiz grade will count toward your final course grade.** There are no make-up quizzes but if you miss a quiz for a valid reason it will count as your dropped quiz grade. Quizzes will cover material from the textbook, handouts and prelab lectures.

Lab Notebook + General Performance (10%)

You must keep a **detailed account of what you do** in the laboratory in your lab notebook; this is particularly important since you will be working independently on most units. All data must be recorded directly in your notebook. Consult the lab manual for the proper way to keep a lab notebook. Read the background and procedure for each unit before coming to lab. Only the title and chemical equations (no procedure) should be written in your notebook before starting. Carbon pages must be passed in to the T.A. at the end of the lab. Completeness and organization of notebook entries will be evaluated. "General Performance" will include a subjective evaluation including such aspects as your attendance /tardiness for prelab sessions, preparedness for the experiment, promptness in turning in lab reports, ability to work efficiently and independently, clean-up of work area afterward, ability to read a procedure & perform it correctly, ability to learn from past experiences and apply what you've learned.

Incompletes: A grade of incomplete will only be given to students who have completed at least 75% of the work required for this course. Students who have **more than two outstanding lab reports** at the end of the semester will NOT be eligible for an incomplete, and will receive the calculated grade.

Plagiarism and cheating will not be tolerated. See the University policy on academic dishonesty at: <http://www.umassd.edu/studenthandbook/academicregs/ethicalstandards.cfm>