

September- December 2013

Chem 346 (credits 5.5)
Qualitative Organic Chemistry

Instructors for lecture: A. Wambsgans; office 409 Stratton Hall; aw@drexel.edu 215-895-1585
for lab N.Paparoidamis (nicholas.paparoidamis@drexel.edu), J. Gilbert (gil@drexel.edu), and A. Wambsgans

Textbooks: "The Systematic Identification of Organic Compounds", 8th Ed. Shriner, et al; optional solutions manual; optional "Spectroscopic Identification of Organic Compounds", Silverstein et.al..

Safety glasses and a lab coat are required and must be worn in the lab at all times. You will also be give lecture on safety rules

Check your Drexel e-mail all during the term.

Some "handouts" may be given in class it is your duty to come to class to obtain them.

Office Hours for A. Wambsgans: 1:30-2:30 PM M,W,F, also by appointment.

Prerequisites: Chem 243, Chem 244 and Chem 245

Place and time: In 105 Monday 6:00 PM and all labs in PISB 501, Monday after lecture to 9:50 PM, Saturday 9:30 AM to 3:30 PM

The **objectives** of this course is for students to learn how to identify unknown organic compounds, to study physical and chemical properties, to learn reactions of different functional groups by lab experiments, to make derivatives of compounds, to learn how to purify compounds and separate mixtures, to learn how to take FT NMR spectra and to learn some basic principles of spectroscopy and of organic chemistry involving reactions. **Description:** the course is lecture on the above and mostly "hands on experience" in lab to learn the above. More information describing the course is below.

Attendance at lab is mandatory and roll will be taken. Sometimes student take a wrong turn in their approach of an unknown and may not finish at the end of the turn. You will be given an incomplete grade only if the roll shows that you have been attending all lab from the beginning time to the end of the lab period (otherwise you grade may be a failed one if you have not been coming to labs). However if you are given an incomplete grade, you must finish the course by the 5th of the winter term without a penalty. If you do not finish by the end of this extension, when you finish after the 5th week of the winter and before the spring term, your grade will be lowered by one third letter grade from what it would have been (examples A+ and A becomes A-; B- becomes C+). Then your grade will be lower by an addition one third of a letter grade for each term in which you finish starting with the spring term. **You must finish the course by the end of the second week of the spring term.** There may be exceptions to these rules if there are special circumstances.

You will be given 3 to 4 singles unknowns and a mixture containing 2 to 3 components which you must separate prior to identification (for a total of 6 unknowns). You must identify each unknown is a systematic way including the components of the mixture. Your identification must exclude other possibilities.

You must prepare and turn in 2 pure solid derivatives for each unknown (unless you are given wavier in special cases for certain unknowns--but it is unlikely this requirement will be waived). About 30 mg or more must be submitted in a vial whose label contains your name, the name of the derivative, the unknown number, date, and the melting point.

A standard report form (given to you) must be filled out for each unknown showing your approach and logic. For the mixture you must describe also how you separated the unknown components.

You must keep a laboratory notebook during the lab period. The data and procedures which you have done for these compounds must be recorded. At the end of the lab period before you leave, your lab notebook must be signed by the instructor. The notebook may be collected at the end of the term.

You should turn in the reports and derivatives as soon as you finish them because some derivatives may decompose with time.

You must hand in at least one completed reported and derivatives by Saturday of the fifth week.

For the first unknown you may not use any spectroscopic methods for identification. This unknown must be identified using only wet and chemical reactions along with physical properties like boiling and melting points, and derivatives. For the other unknowns you will be required to have IR and proton NMR spectra. In your report you must explain the spectra (including assignment of peak, integration, splitting, and chemical shift for NMR) and assignment of peaks in the IR spectra. Chemical classification test for functional groups should be done. You must have one mass spectrum taken and must interpret it in your report (this is required). You may choose any unknown for the mass spectrum except the first unknown or except any unknown which is deemed not very suitable for an easy quick mass spectra. You must learn how to run the NMR instrument.

The assigned problems from the text book are to help you with the course:
Chapter 3 page 64 #10 and # 11a ; Chapter 11 pages 460-461 problem # 2 (note this problem has choices of compounds for you to choose from at its end) show your deductions -- also look up some of the classification tests; problem # 111 page 494

You must also take a **Final exam** whose time and place will be announced. It will cover lecture topic (wet chemistry, chemical reactions and spectroscopy) and related lab material.

Some practice problems may be given to help you study.

For your Final grade: Each unknown and its report (the report must contain interpretation of IR, NMR, all chemical and physical test, references, and all other data) is worth 100 points total. The final exam is 100 points. The lab notebook is to be a written record of your work as you do it including equations for reactions, procedures, data, references, and all other needed information. If the lab notebook is not kept there will be deductions for each unknown. Your grade will be calculated as a % of the total points of 700 with lowering of the final grade for each missed unknown. Your grade will be reduced if you leave dirty glassware and chemical at the end of the course. It also will be reduced if you do not clean your work area after each lab, do not label sample properly and have poor attendance.

Tentative grading scheme: A+ = above 96, A = 93 to 96, A- = 89 to 93, B+ = 86 to 89, B = 83 to 86, B- = 80 to 83, C+ = 77 to 80, C = 74 to 77, C- = 71 to 74 . D+ = 68 to 71, D = 65 to 68. F = below 65. See above how lack of attendance may result in a lower grade than calculated here or even a F. If you do not meet all requirements you will not pass the course. You must complete all unknowns, reports, notebook and final exam in order to pass.

The last day to withdraw from this course is Friday November 8, 2013 with the help of an advisor.

Cheating on unknowns, derivatives, reports or final exam may result in a zero for the unknown or final or even a failure for the entire course. Plagiarism could also result in failure. These can be reported to the head of the chemistry department and the Office of Student Conduct and Community Standards.

Reference all literature procedures and literature spectra used.

All of the above is subject to change for (any changes will be given in lecture or lab)

Snow closing for Drexel: phone 215-895-melt, or see Drexel Web page or KYW Radio 1060 AM the Evening College snow number is 2103 and the Day is 103

Additional Information

The last day to drop from this course with an advisor help is **Oct. 4** Friday of the second week of classes before the offices close and if you do not need your advisor's permission by using Drexel One on-line Sunday Oct. 6 before 11:00 PM this term. (see below)

The last day to withdraw from this course with an advisor's help is **Nov. 8** Friday of the sixth week of classes before the offices closes usually by 5:00 PM. (see below)

Before you drop or withdraw from a course you should check with your Advisor as there may be consequences. Dropping or withdrawing from a course may affect your academic standing or your financial situation. It may have serious effect on billing at Drexel, financial aid, VA benefits, NCAA athletic eligibility, immigration status for foreign students, and other possible consequences. As a student you are responsible for transactions against your academic record.

If you register for a course, the student's responsibility is to complete the course, drop it, or withdraw from the course. If you register for a course and do complete it, drop or withdraw from the course, eventually an NGR grade will turn to a failing grade F.

Different policies apply to dropping a course and withdrawing from a course (Dropping a course result in the course being removed from your transcript. Withdrawing from a course results in a grade of W on your transcript for that course). Student should consult their Advisors (both academic and financial Aid Advisors) and in some cases the instructor before dropping or withdrawing from the course.

In order to drop or withdraw from a course, a student must have the "Add/Drop/Withdraw" form signed by the course instructor and the student's Academic Advisor. Dropping or withdrawing from the course may affect your billing and academic record (follow procedures and consults Advisors). Forms are available in many Department offices, in the lobby of Goodwin College and at <http://www.drexel.edu/drexelcentral/courses/adjustments/course-withdraw/>
http://www.drexel.edu/provost/policies/course_drop.asp

Incomplete grade "I" or No grade reported or No-Credit. Student must take responsibility to meet the University's policies and deadlines for requesting an incomplete grade and completing a course before the deadline passes. If a student stops attending a course, the student is not automatically removed from the course. The student's responsibility is to complete the course, drop it, or withdraw from the course. If you register for a course and do complete it, drop or withdraw, eventually an NGR (no grade reported) grade will turn to a failing grade F. An **Incomplete grade "I"** will turn to an F (failure) grade if the student does not complete the course.

If a student has an Incomplete grade or a No Grade Reported, the student should see the instructor for the course and the student's Academic Advisor **immediately,**

If the student's financial obligations to Drexel University are not met, the student is not entitled to a grade from the University and from the instructor.

Please read the "Academic Honesty Policy in the student Handbook at

<http://www.drexel.edu/studentlife/SLhandbook.htm>. Students are expected to follow these policies. The handbook also explains policies for dealing with cheating and other forms of academic dishonesty.

http://www.drexel.edu/provost/policies/academic_dishonesty.asp

http://www.drexel.edu/studentaffairs/community_standards/studentHandbook

http://www.drexel.edu/studentaffairs/community_standards/studenthandbookgeneral_information/code_of_conduct

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For the "Americans with Disabilities Act" Drexel University has the "Office of Disability Services at 3201 Arch Street, Suit 210 and see on line <http://www.drexel.edu/oed/disabilityResources/Overview>. This office is to be contacted by the student if special course accommodations, emergency medical information or building evacuations are need. This office will also verify any special needs and give a form to the student to give to the instructor. The student should make the arrangements with this office and inform the instructor within the first two weeks of the term or when a new situation occurs.
<http://www.drexel.edu/oed/disabilityResources/students>