# CHEM 26/28: OUTLINE OF ORGANIC AND BIOCHEMISTRY

Spring 2013

**Lecture A:** CHEM 26 (10121) & CHEM 28 (10122), M,W,F 8:30AM-9:20AM, Angell B-106

**Lecture B**: CHEM 26 (11176) & CHEM 28 (11230), T,Th 8:30AM-9:45AM, Angell B-106

## GENERAL INFORMATION:

**Instructor**: Steve Flemer sflemer@uvm.edu

**Office**: A-335 Cook **Office Hours**: M W F 9:30 AM - 10:30 AM
T Th 10:00 AM – 11:00 AM

**Class Website:** Please see the Course link on your UVM Blackboard page.

**Lab Videos:** http://www.uvm.edu/~sflemer/CHEM26_videos.htm

**Lecture**: The lecture will primarily be used to cover new material. Included in this syllabus is a tentative schedule covering the text material and the corresponding problems to be worked from the text.

**Exams**: Four exams are given on the following Wednesday nights from 6:15-8:15 PM.

| | **Lecture A** (MWF; 8:30-9:20 AM) | **Lecture B** (TTh; 8:30-9:45 AM) |
|---|---|---|
| Exam 1 | Wed, Feb. 6; 105 Votey | Wed, Feb. 6; 207 Lafayette |
| Exam 2 | Wed, Mar. 13; 105 Votey | Wed, Mar. 13; 207 Lafayette |
| Exam 3 | Wed, Apr. 3; 105 Votey | Wed, Apr. 3; 207 Lafayette |
| Exam 4 | Wed, Apr 24; 105 Votey | Wed, Apr 24; 207 Lafayette |
| Final Exam | Tues, May 7; 10:30AM-1:15PM; B106 Angell | Fri, May 3; 1:30-4:15PM; B106 Angell |

**Absences from exams**: Students with legitimate excuses (ie: a UVM-related conflict) will be permitted to take an exam sometime during the day that it is given to the rest of the class that evening. This must be cleared with the instructor first, however. **Makeup exams will not be administered after the scheduled exam time**.

**Review Sessions**: I will normally have an Exam Review Session on the Sunday afternoon previous to impending exams. Voluntary weekly SI sessions will also be starting shortly after the beginning of classes. These will be held on Wednesday evenings.

**Problems**: Solutions to most of the problems are in the back of the text. While it is strongly suggested that you do as many problems as possible, they are not collected and do not count towards your grade. To encourage students to do these problems, questions which appear on exams will be very similar to the structure of these recommended problems.

## REQUIRED TEXTBOOKS:

**Text**: "General, Organic, and Biochemistry" 7th edition, by Denniston, Topping, & Caret is sold at the UVM bookstore.

**Lab Manuals**: "Chemistry 26, Experiments" is sold at the first floor stockroom, A-143 Cook, for $10.00. **This is not required for CHEM 28 students.**

## LABORATORY:

**Time and Room**: See your class schedule for your specific Lab time and room.

**TA**: Will be announced at your first lab session.

**Attendance**: Students must attend the lab section they are assigned to. Official documentation of sickness or family crisis is required if a lab is missed. **If more than 2 labs are missed, this results in a failure for the course.** In order to take a lab at a time other than your assigned time one must obtain the permission of the TA and instructor.

**Breakage Card**: A breakage card ($40.00) must be purchased from the first floor stockroom, A-143 Cook, prior to your first lab. The $40.00 is refundable, and if you are careful you should get most of it back. Remember, you must have it with you to be admitted into lab.

**Safety Eyewear**: OSHA approved safety glasses or goggles must be worn by everyone once any experimentation has started in any area of a lab room. Safety eye wear can be purchased at the UVM bookstore.

**Foot Wear:** Only shoes that cover the toes are permitted in the lab. Sandals and open toed shoes are not permitted.

**Lab Notebook**: A bound notebook is required for recording lab data.

## ACADEMIC INTEGRITY:

Offenses against the Code of Academic Integrity (ie: Cheating) are deemed serious and insult the integrity of the entire academic community. Any suspected violations of the code are taken very seriously and will be forwarded to the Center for Student Ethics & Standards for further investigation.

## COURSE GRADE FOR CHEM 26 STUDENTS:

1. Points needed to obtain a specific grade

| | | | | | |
|---|---|---|---|---|---|
| 920 = A | 870 = B+ | 790 = B- | 680 = C | 620 = D+ | 570 = D- |
| 900 = A- | 820 = B | 760 = C+ | 650 = C- | 590 = D | less than 570 = F |

2. How to calculate your points:

a) **Class = 800pts** 4 hr Exams = 4 grades
1 Final = 2 grades
6 grades - 1 grade = 5 grades x 1.6 = class pts

I will drop your lowest exam grade. If the final is your lowest grade it will only count once. If one of the hour exams is your lowest grade then one of the grades for the final will replace that low exam grade. The 1.6 factor is because each test was only worth 100 pts, and therefore the maximum number of points obtainable from the tests are 500. In order to raise this to 800 pts you must multiply the 500 x 1.6 = 800.

Example:

| | Ex-1 | Ex-2 | Ex-3 | Ex-4 | Final x 2 |
|---|---|---|---|---|---|
| Actual Scores | 85 | 45 | 78 | 77 | 75 75 |
| Scores Counted | 85 | 75 | 78 | 77 | 75 |

Total pts = 390 x 1.6 = 624 pts from class

b) **Laboratory = 200 pts**

| | |
|---|---|
| Notebook / Prelab | 30 pts |
| Lab reports | 80 pts |
| Quizzes | 65 pts |
| Technique | 25 pts |
| | **200 pts** |

3. Determination of grade: Add up your points from the class and lab and then use the chart at the beginning to determine your course grade.

Example: 624 class pts + 160 lab pts = 784 total pts = C+

## COURSE GRADE FOR CHEM 28 STUDENTS:

Since there is no laboratory component to your grade, you will be graded on exam scores exclusively. Your 5 highest exam scores will be multiplied by 2 (rather than 1.6).

# LABORATORY SCHEDULE

| Week of: | Experiment | Description |
|---|---|---|
| 28-31 Jan | **1** | Molecular Models |
| 4-7 Feb | **2** | Fractional Distillation of Wine |
| 11-14 Feb | **3** | Isolation of Caffeine |
| 18-21 Feb | **NO LABS** | (PRESIDENT'S DAY) |
| 25-28 Feb | **4** | Dehydration of 2-methyl-2-butanol |
| 4-7 Mar | **NO LABS** | (SPRING BREAK) |
| 11-14 Mar | **5** | TLC Analysis of Analgesics |
| 18-21 Mar | **6** | Synthesis of Esters |
| 25-28 Mar | **7a**<br>**7b** | Carbonyls (Tollen's Test)<br>Carbohydrates (Benedict's Test) |
| 1-4 Apr | **8** | Polymers |
| 8-11 Apr | **9** | Isolation and Analysis of a Protein |
| 15-18 Apr | **10** | Fats, Oils, & Soaps<br>**CHECKOUT** |

# TENTATIVE LECTURE SCHEDULE

| CHAPTER | SUGGESTED PROBLEMS |
|---|---|
| **10** (Saturated Hydrocarbons) | 3,9,23,25,27,33,43,44,45,47,53,55,57,59,61,65,67,75,77,79,81,83,85,95,103,105 |
| **11** (Unsaturated Hydrocarbons: 11.1-11.6) | 1,3,5,7,9,11,13,15,17,19,21,22,27,31,41,43,47,49,65,69,71,73,79,81,89,90,95,97 |
| WED, 6 FEB | **EXAM 1 6:15 – 8:15 PM** |
| **12** (Alcohols, Phenols, Thiols, & Ethers) | 1,11,15,21,23,25,26,29,37,39,41,53,55,57,63,65,67,68,69,79,83,85,87,91 |
| **13** (Aldehydes & Ketones: 13.1-13.5, 13.8-13.9 ) | 5,7,11,13,15,23,29,31,33,36,39,43,49,61,65,68,69,71,73,77,79,81,83,89,91,92 |
| **14** (Carboxylic Acids & Derivatives: 14.1-14.2) | 5,7,15,17,19,31,33,34,35,39,43,47,51,53,54,55,65,67,73,75,77,79,83,85 |
| **15** (Amines & Amides: 15.1, 15.3) | 5,7,19,21,23,27,29,33,37,47,53,55,57,61,63,67 |
| WED, 13 MAR | **EXAM 2 6:15 – 8:15 PM** |
| **16** (Carbohydrates) | 3,5,23,25,27,29,35,46,47,53,57,59,61,65,69,71,82,87,88,89,90 |
| **17** (Lipids & their Function: All except 17.5) | 11,13,21,23,24,25,43,44,49,57,58,61,62,67,69,75,77,95,99,100,103,104 |
| **18** (Protein Structure & Function) | 1,2,3,5,6,7,23,25,33,37,38,39,43,45,48,53,54,55,56,59,63,65,73,75,77,91 |
| WED, 3 APR | **EXAM 3 6:15 – 8:15 PM** |
| **19** (Enzymes: 19.1-19.8, 19.11) | 3,5,7,10,17,19,23,25,32,39,40,57,58,59,61,95,96,97 |
| **20** (Intro to Molecular Genetics: 20.1-20.6) | 1,3,5,7,9,10,17,19,20,23,24,29,31,33,37,39,40,43,45,46,49,61,63,65,67,70 |
| **21** (Carbohydrate Metabolism: all except 21.5) | 3,5,6,11,17,21,25,37,39,41,46,53,57,64,65,69,77,81,91,92,93 |
| WED, 24 APR | **EXAM 4 6:15 – 8:15 PM** |
| **22** (Aerobic Respiration: all except 22.5) | 1,7,8,11,13,25,26,29,33,35,37,39,41,43,44,45,46,50,52,69,70,76,79,81,87,91 |
| **23** (Fatty Acid Metabolism:23.1-23.2, 23.4) | 1,5,19,23,26,33,37,39,43,61,62,64,68 |
| | **FINAL EXAM (Comprehensive)** |