

# CHEM 26/28: OUTLINE OF ORGANIC AND BIOCHEMISTRY

## Spring 2018

**Lecture A:** CHEM 26 (10106) & CHEM 28 (10107), M,W,F 8:30AM-9:20AM, Votey 105

**Lecture B:** CHEM 26 (10683) & CHEM 28 (10712), T,Th 8:30AM-9:45AM, Votey 105

**GENERAL INFORMATION:** (see also the CHEM26 BlackBoard page)

**Instructor:** Steve Flemer

**Email:** sflemer@uvm.edu

**Office:** 110 Hills

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

**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 each chapter.

**Exams:** Three 2-hour exams are given on Wednesday nights from 6:40-8:40 PM.

	<b>Lecture A</b> (MWF; 8:30-9:20 AM)	<b>Lecture B</b> (TTh; 8:30-9:45 AM)
Exam 1	Wed, Feb. 21; 105 Votey	Wed, Feb. 21; 301 Williams
Exam 2	Wed, Mar. 21; 105 Votey	Wed, Mar. 21; 301 Williams
Exam 3	Wed, Apr. 18; 105 Votey	Wed, Apr. 18; 301 Williams
Final Exam	Monday, May 7; 10:30AM-1:15PM; 105 Votey	Thursday, May 10; 1:30-4:15PM; 105 Votey

**Absences from exams:** Students with legitimate excuses (ie: a UVM-related conflict) may 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 only be administered after the scheduled exam time if a medical or family emergency precludes taking the exam at the scheduled time.**

**Review Sessions:** I will have an Exam Review Session on the Monday evening just previous to impending exams (7:00-8:30PM in 235 Marsh).

**Problems:** Exam questions will be modeled very closely to the type of problems you will encounter on class exams and quizzes. Solutions to most of these problems are in the back of the text. While it is strongly suggested that you do as many problems as possible, the problems are not collected and do not count towards your grade

**Weekly Blackboard Quizzes:** Each week, you will be responsible for taking a short online BlackBoard quiz covering the class material from the current week. Just click on the "Weekly Quiz" link on the left-hand side of the CHEM26 BlackBoard page and follow the instructions. These quizzes are open-book, but must be completed independently. Weekly quizzes will be available to take until 5:00PM of the Sunday prior to a new week of classes. A skipped or a missed quiz is given a zero.

## **REQUIRED TEXTBOOKS:**

**Text:** "General, Organic, and Biochemistry" 9<sup>th</sup> edition, by Denniston; ISBN # 9780078021541

- Can be purchased directly from the publisher using the following URL:

<http://shop.mheducation.com/mhshop/productDetails?isbn=1260476316>

**Lab Manual:** Available for download from the class' BlackBoard site.

**Bound Laboratory Notebook:** Available at the UVM Bookstore. Required for recording data.

(Note: the last two items are not required for CHEM 28 students)

## **LABORATORY:**

(labs start 2 weeks after classes begin)

**Time and Room:** See your class course schedule as to your assignments.

**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.

**Online Lab Safety Quiz:** Prior to the lab sessions beginning, students must read through Lab Safety documentation and take a one-time online quiz before being allowed into their lab session. Just click the "Lab Safety" link on the left hand side of the CHEM23 BlackBoard page and follow the instructions. Students must score an 80 or better on the quiz to be admitted to lab. If you choose, you may take the Lab Safety quiz as many times as you want in order to maximize this score, as it will also count as your first lab quiz grade.

**Safety Eyewear:** OSHA approved safety glasses or goggles (available from the first floor stockroom or at the UVM Bookstore) must be worn by everyone once any experimentation has started in any area of a lab room.

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

## **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**

$$\begin{array}{r} 3 \text{ Exams/1 quiz grade} = 4 \text{ grades} \\ 1 \text{ Final} = \underline{2 \text{ grades}} \\ \hline 6 \text{ grades} - 1 \text{ grade} = 5 \text{ grades} \times 1.6 = \text{class pts} \end{array}$$

I will drop your lowest score. If the final exam is your lowest grade it will only count once. If your quiz average is your lowest grade, this score will be your drop. 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  $500 \times 1.6 = 800$ .

Example:

	Ex-1	Ex-2	Ex-3	Quiz Av.	Final x 2
Actual Scores	85	45	78	77	75 75
Scores Counted	85	75	78	77	75

$$\text{Total pts} = 390 \times 1.6 = 624 \text{ pts from class}$$

b) **Laboratory = 200 pts**

Notebook / Prelab	30 pts
Lab reports	80 pts
Quizzes	65 pts
Technique	<u>25 pts</u>
	<b>200 pts</b>

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:  $624 \text{ class pts} + 160 \text{ lab pts} = 784 \text{ total pts} = \text{C+}$

## COURSE GRADE FOR CHEM 28 STUDENTS:

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

# LABORATORY SCHEDULE

<u>Week of:</u>	<u>Experiment</u>	<u>Description</u>
29 Jan - 1 Feb	1	Fractional Distillation of Wine <b>CHECK-IN</b>
5-8 Feb	2	Molecular Models
12-15 Feb	3	Isolation of Naproxen
19-22 Feb	<b>NO LABS</b>	(PRESIDENT'S DAY ON MON)
26 Feb-1 Mar	4	Dehydration of 2-methyl-2-butanol
5-8 Mar	<b>NO LABS</b>	(TOWN MEETING DAY ON TUES)
12-16 Mar	<b>NO LABS</b>	(SPRING BREAK)
19-22 Mar	5	TLC Analysis of Analgesics
26-29 Mar	6	Synthesis of Esters
2-5 Apr	7a 7b	Carbonyls (Tollen's Test) Carbohydrates (Benedict's Test)
9-12 Apr	8	Polymers
16-19 Apr	9	Isolation and Analysis of a Protein
23-26 Apr	10	Fats, Oils, & Soaps
30 Apr-3 May		<b>LAB CHECKOUT</b>

# TENTATIVE LECTURE SCHEDULE

<u>CHAPTER</u>	<u>SUGGESTED PROBLEMS</u>
<b>10</b> (Saturated Hydrocarbons)	3,4,5,7,19,21,25,29,31,33,39,41,49,51,55,57,59,61,63a,65,67,69,71,73,79,81,83,85,87,89,97,101,102,103
<b>11</b> (Unsaturated Hydrocarbons: 11.1-11.6)	1,3,5,8,9,11,13,15,17,19,21,22,27,31,41,43,47,49,63,65,66,69a,c,d,71,73,75,79,81,83,89,90,91,92,93b,c,97,99
<b>12</b> (Alcohols, Phenols, Thiols, & Ethers)	1,11,15,17,19,23,29a,c,31a,c,32,33,37,52,55,61,63,65a,c,68,69,81,82,83,84,85,86,87,89
<b>WED, 21 FEB</b>	<b>EXAM 1                      6:40 – 8:40 PM</b>
<b>13</b> (Aldehydes & Ketones:	5,7,11,13,21,23,29,30,31,33,39,41a,b,e,43b,c,d,44,49,50,57,61,62,63a,c,d,67,69,71,73,75,77,81,82,83
<b>14</b> (Carboxylic Acids & Derivatives: 14.1-14.2)	1,3,5,7,13,15,17,29,31,35,47,49,51,52,53,55a,b,59,63a,b,65,71,72,73,74,77,81,83
<b>15</b> (Amines & Amides: 15.1, 15.3)	4,5a,b,c,7a,8,19,21a,b,22a,c,d,23c,25a,26b,d,33b,d,34b,d,37,47,53,55,61
<b>WED, 21 MAR</b>	<b>EXAM 2                      6:40 – 8:40 PM</b>
<b>16</b> (Carbohydrates)	3,5,7,13,21,23,25,27,32,33,45,47,53,55,57,59,63,80,85,86,87,88
<b>17</b> (Lipids & their Function: All except 17.5)	11,13,21,23,24,41,43,44,49,57,58,61,62,67,68,69,77,81,99,100,103,104
<b>18</b> (Protein Structure & Function)	1,2,3,5,6,23,25,28,32,33,34,36,37,39,45,46,48,52,53,55,59,60,63,65
<b>19</b> (Enzymes: 19.1-19.7, 19.11)	3,5,7,8,10,17,19,20,23,25,30,39,40,46,57,59,60,61,91,95,97
<b>WED, 18 APR</b>	<b>EXAM 3                      6:40 – 8:40 PM</b>
<b>20</b> (Intro to Molecular Genetics: 20.1-20.6)	3,5,7,9,10,19,20,29,31,33,36,37,38,39,40,43,44,45,46,49,50,57,61,65,66,67,70,71
<b>21</b> (Carbohydrate Metabolism: all except 21.5)	3,5,6,8,10,19,22,25,36,37,38,39,40,45,46,55,56,67,77,89
<b>22</b> (Aerobic Respiration: 22.1-22.4, 22.6)	1,4,7,24,25,26,29,31,33,35,36,37,40,41,42,43,44,45,46,49,53,54,71,73,74,77,78,79,80
<b>23</b> (Fatty Acid Metabolism: 23.1-23.2, 23.4)	1,7,26,29,31,33,37,40,43,44,45,46
	<b>FINAL EXAM (cumulative)</b>