

# CHEM 23/25: OUTLINE OF GENERAL CHEMISTRY

Fall 2015

LECTURE A: CHEM 23 (90062) & CHEM 25 (90989), M,W,F 8:30AM-9:20AM, Marsh Life Sci 235

LECTURE B: CHEM 23 (91257) & CHEM 25 (90990), T,Th 8:30AM-9:45AM, Marsh Life Sci 235

**GENERAL INFORMATION:** (see also the CHEM23 BlackBoard page)

**Instructor:** Steve Flemer

**Email:** 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

**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> (M,W,F; 8:30-9:20 AM)	<b>Lecture B</b> (T,Th; 8:30-9:45 AM)
Exam 1	Wed, Sept. 23; 105 Votey	Wed, Sept. 23; 301 Williams
Exam 2	Wed, Oct. 21; 105 Votey	Wed, Oct. 21; 301 Williams
Exam 3	Wed, Nov. 18; 105 Votey	Wed, Nov. 18; 301 Williams
Final Exam	Tue, Dec. 15; 7:30-10:15AM; 235 ML Sci 235	Mon, Dec. 14; 7:30-10:15AM; 235 ML Sci 235

**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 normally have an Exam Review Session on the Monday afternoon previous to impending exams. Weekly SI sessions will also be starting shortly after the beginning of classes.

**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 CHEM23 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:** "Introductory Chemistry" 5<sup>th</sup> edition, by Nivaldo J. Tro sold at the UVM bookstore.

**Scientific Calculator:** A standard scientific calculator is a requirement for the exams.

**Note: Graphing calculators are not allowed.**

**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 25 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 time as you want in order to maximize this score, as it will also count as your first lab quiz grade.

**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 (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.



# LABORATORY SCHEDULE

<u>Date</u>	<u>Experiment Description</u>
14 – 17 SEP	<u>CHECK-IN</u> & Densities of Common Substances
21 - 24 SEP	Determination of Heat Capacity Using Calorimetry
28 SEPT - 1 OCT	Qualitative Analysis
5 - 8 OCT	Synthesis of Ionic Compound Alum from Aluminum Metal
12 - 15 OCT	Determination of a Compound's Empirical Formula
19 - 22 OCT	Reaction Stoichiometry & Equation Balancing
26 - 29 OCT	Determination of Limiting Reactant
2 - 5 NOV	Determination of Acid Content in Pickle Juice using Titration
9 - 12 NOV	Determination of Limestone Content in Soil using the Ideal Gas Law
16 - 19 NOV	Acid-Base Equilibria and Buffers & <u>CHECKOUT</u>

# TENTATIVE LECTURE SCHEDULE

## CHAPTER

## SUGGESTED PROBLEMS

<b>2</b> (Measurement & Problem Solving)	5,27,29,31,35,39,43,47,55,59,67,73,79,83,91,93,103,107,115
<b>3</b> (Matter & Energy)	11,13,15,21,31,33,35,39,47,59,63,71,75,77,81,89,93,103
<b>4</b> (Atoms & Elements)	35,43,45,47,49,51,53,59,61,77,79,89,93,97,107
<b>9</b> (Electrons in Atoms & the Periodic Table) (9.4, 9.6-9.9)	25,27,51,53,55,57,59,71,75,77,81,85,91,93,95,99

### **23 SEPT.**

### **EXAM 1**

<b>10</b> (Chemical Bonding) (no 10.6)	27,29,33,35,39,43,47,50 <sup>bcd</sup> ,61,63,67,69 <sup>cd</sup> ,73,79,83,85,87 <sup>bcd</sup> ,91,99
<b>5</b> (Molecules & Compounds: 5.1-5.8, 5.10)	25,33,35,53,55,57,59,61,65,69,71,75,81 <sup>ab</sup> ,82 <sup>a</sup> ,93,95
<b>6</b> (Chemical Composition)	7,13,19,25,27,29,30,37,45,49,59,65,73,79,81,85,89,95,97,99,115
<b>7</b> (Chemical Reactions: 7.1-7.4, 7.10)	47,49,50,51,52,53,54,55,91,92,101,102
<b>8</b> (Quantities in Chemical Reactions)	7,9,11,17,23,25,31,33,35,41,43,45,55,57,61,63,65,73,75

### **21 OCT.**

### **EXAM 2**

<b>13</b> (Solutions)	4,7,19,29,41,45,61,65,69,73,79,85,87,91,95,97,99,101
<b>11</b> (Gases)	27,33,37,39,43,45,53,59,61,65,69,71,77,83,89,91,93,97,101,105
<b>12</b> (Liquids, Solids, & Intermolecular Forces)	9,17,19,23,24,25,29,31,33,41,43,47,49,57,59,63,65,69,71,73,75,79,81,83,85,91,95,96

### **18 NOV.**

### **EXAM 3**

<b>14</b> (Acids & Bases)	11,17,19,23,31,32,39,59 <sup>a</sup> ,61,63,65,67,69,71,73,75,79,81,83,85
<b>15</b> (Chemical Equilibrium: 15.1-15.10, 15.12)	5,7,13,19,21,43,45,47,49,51,53,57,59,61,63,65,71,75

### **FINAL EXAM (Cumulative)**