

## I. INSTRUCTORS AND CONTACT INFORMATION:

<b>Name</b>	<b>Assignment</b>	<b>e-mail</b>	<b>Office</b>	<b>Telephone</b>
Kevin Crawford	<b>Lecture</b> T/Th 1:20-2:50 HS-109 <b>Discussions</b> A1-6 Wed in HS-310	<a href="mailto:crawfork@uwosh.edu">crawfork@uwosh.edu</a>	HS-410	424-7433
Sharon Hawi	<b>Lecture</b> T/Th 9:40-11:10 <b>Discussions</b> B1-6 Mon in HS-310 <b>Labs</b> B1 Wed 8:00 B6 Thur 12:40	<a href="mailto:hawi@uwosh.edu">hawi@uwosh.edu</a>	HS-443	424-1029
Sandra Neuendorf	<b>Labs</b> A2 Mon 9:10 A3 Mon 12:40 A4 Mon 3:00	<a href="mailto:neuendor@uwosh.edu">neuendor@uwosh.edu</a>	HS-415	424-7101
Carol Willinghanz	<b>Labs</b> A5 Fri 8:00	<a href="mailto:willihnc@uwosh.edu">willihnc@uwosh.edu</a>	HS-447	424-7093
George Olsen	<b>Labs</b> A1 Tue 8:00 B7 Thur 3:00	<a href="mailto:olsengp@uwosh.edu">olsengp@uwosh.edu</a>	HS-444	424-2398
Evon Ford	<b>Labs</b> B2 Wed 10:20 B3 Wed 1:50	<a href="mailto:forde@uwosh.edu">forde@uwosh.edu</a>	HS-417	424-2039
Yijun Tang	<b>Labs</b> A6 Fri 10:20	<a href="mailto:tangy@uwosh.edu">tangy@uwosh.edu</a>	HS-442	424-7097
Jonathan Gutow	<b>Discussions</b> B7 Mon 12:40 HS-456 <b>Labs</b> B4 Tue 12:40 B5 Tue 3:00	<a href="mailto:gutow@uwosh.edu">gutow@uwosh.edu</a>	HS-412	424-1326

Administrative Assistant: Diane Kromm, [krommd@uwosh.edu](mailto:krommd@uwosh.edu), HS-432, 424-1400

**Dr. Crawford's OFFICE HOURS:** Tuesdays 8:30-10:30, Thursdays 3-4:30 and whenever my office door is open and I am not busy.

## II. MATERIALS:

- Text: General Chemistry: The Essential Concepts, 5th edition, by R. Chang, McGraw-Hill Publishing, © 2008.
- Lab notebook: Bundled with the textbook or purchased separately. It must be bound and have duplicate pages. It may NOT be spiral bound and will be used both for Chem 105 and Chem 106.
- Course/Lab manual: Chemistry 105 Course Manual, Fall 2009 Section A (Green cover)
- Goggles: Indirect vented safety goggles (must bear the number Z87.1) are required for admission to the first lab period. State law requires that goggles be worn at all times during the lab. They are available at the bookstore, and from the UW Oshkosh Chemistry Club. **No goggles? No lab!**
- Calculator: Any make with scientific notation, powers, roots, and logs. A graphing calculator is **not** necessary.
- Clicker: eInstruction response clickers will be used during lectures to award extra credit points. The class code and a registration coupon will be provided in class. With the class code, you may register at [www.einstruction.com](http://www.einstruction.com). You will need:
- Serial number of clicker: \_\_\_\_\_ (on back or on the screen when powered on)
- Class name: **Chemistry 105 F09A**
- Class Key: **L51487L751**
- Coupon code for payment of enrollment fee: \_\_\_\_\_  
(if this is not in your textbook one will be provided in class)
- Using the serial number of your clicker, create your CPS online account. You may then enroll the same clicker in any number of classes at UW Oshkosh. Each course will have a different name and key code and will require an enrollment fee (coupon). After enrolling in Chemistry 105 F09A, note your assigned pad number. It will be between 1 and 200. When using your clicker in class watch for your number to register on the screen to verify your clicker is working properly.

### III. GRADING SYSTEM:

#### A. Attendance:

Regular attendance in all parts of the course is essential to achieve the course objectives. An **unexcused** absence during a scheduled quiz or examination in any part of the course will result in a zero point score for that quiz or exam. There are **no makeup quizzes or exams**.

The reason for any **excused** absence from an exam, quiz, or laboratory session must be presented to your instructor (in advance if possible) and substantiated **in writing** with the student's signature. Emailed excuses are **not** enough. Assignments and tests missed for a valid reason will not be counted against you, but you will be responsible for material covered in your absence. Advance notice of a pending absence will often make it possible to arrange for an alternate time for a quiz, exam or attendance in another lab section. **If you miss more than one exam for any reason, you will receive an incomplete or a failing grade depending on the circumstances.**

#### B. Point Distribution:

	Points
Exams (4 x 100 pts.) .....	400
Discussion (100=4 quizzes, 50=homework).....	150
Laboratory .....	<u>150</u>
Total	700

#### C. Grading Scale:

Your final grade in the course will be determined by the total number of points you have accumulated, according to the following scale:

Minimum percentage	Minimum total points	Letter grade
0 %	0	F
50 %	350	D-
54%	378	D
58%	406	D+
62%	434	C-
65%	455	C
69%	483	C+
73%	511	B-
77%	539	B
83%	581	B+
89%	623	A-
91%	637	A

Grades will be posted on D2L as they become available, so you may check your current course grade at any time during the semester.

D. **Laboratory Grade:**

The 150 laboratory points are divided among pre-lab assignments, in-lab performance, post-lab data analysis, and lab quizzes. Pre-lab assignments help you prepare for lab, and must be turned in when you arrive in lab. In-lab performance includes being present at the beginning of lab, contributing to your team, working safely, wearing goggles at all times, and properly recording data and observations in your lab notebook. Post-lab data analysis includes interpretation of lab results, such as graphs and written summaries in your lab notebook. The two lab quizzes will be based on your lab notebook record-keeping.

**Attendance in laboratory is mandatory. Two unexcused absences from lab or unsuccessful completion of the laboratory component (<75 lab points) will result in a failing grade for this course, regardless of exam scores.** If you miss a lab, you may attend another lab during the same week, if space allows. Please contact the instructor ahead of time. Do not expect laboratory experiences to directly correlate with lecture, since some of the experiments require several weeks to complete.

E. **Discussion Grade:**

Discussion sections provide an opportunity to reinforce lecture material in a smaller group setting. Class time will be spent working in small groups on worksheets provided by the instructor, or participating in group activities. Occasionally, new material will be presented, which will not be covered in lecture, but will be on the exams.

Quizzes will also be conducted in discussion sections. These quizzes will be based on the previous material. A maximum of 100 quiz points may be accumulated throughout the semester. Make-up quizzes will not be offered. If you know you are going to miss a discussion, please contact your instructor. You may be able to attend another discussion section.

Online homework assignments will also be provided throughout the semester. The total possible points for these assignments is 50 which will be included in your discussion points. **It is your responsibility to gain access to the homework site and to complete the assignments before the due date.** There will be 13 weekly assignments due on Mondays at 6pm. Your best 10 assignments will count toward your 50 points. For example, if your top 10 assignments average to 90% of the possible points, you will receive 45 points (90% of 50). The first assignment is due Sep. 21.

#### F. Exam Schedule:

Four 90-minute exams will be given. You must take the exam at the testing center anytime between 8am and 5:30pm. Bring your own calculator for the test.

Dates for the four 90-minute exams are given below:

Exam	Dates
1	Tuesday, September 29
2	Tuesday, October 27
3	Tuesday, November 17
4	Tuesday, December 15

#### IV. COURSE POLICIES:

Misgraded quizzes or exams must be returned to your instructor for possible regrading no later than one week following their return. You must save all tests, quizzes, and lab reports so that you will have them available for review, and so that any chance of clerical error may be avoided.

It is YOUR responsibility to check D2L for the exam scores, quiz scores, lab scores and discussion points to determine that your scores were entered properly. Any error must be reported within a week of the posting date in order for it to be considered.

No radios, MP3 players, headsets or other recording or transmitting devices may be used during exams. Caps with bills must have bills turned to back of head. A student ID card is required when handing in exams.

Early exams will be offered for students who cannot attend the exam during the scheduled day. Students who need to take an early exam must sign up with the instructor the week before the exam. Students taking an exam at times or places different than the regularly scheduled exam will not be allowed to use a graphing calculator. You must either bring a simple calculator of your own, or use one provided by the chemistry department.

Lecture examinations will be computer scored and the answer sheet will not be returned to you, but retained by the lecturer for a permanent record. Answer keys will be posted on D2L and on the bulletin board outside HS-403.

*A WORD TO THE WISE:* The most common reason for a poor grade in this course is the failure to keep up with the work on a daily or weekly basis. In general, if you attend all parts of the course, read the text, complete and *understand* the problem assignments and lab experiments, you will pass the course (grade of C). If you study in addition to that, you should do better. If you experience difficulty with any part of the course, seek help

immediately. If you let it slide, it becomes more difficult to catch up because the subject matter tends to be cumulative.

**WORKSHOP:** A two-hour once-a-week workshop is offered on Mondays from 5:30-7:30. This is a group problem-solving session during which you will work with other students to solve typical chemistry homework problems. Student assistants will be available to answer questions. This is not a tutoring session. You must be willing to work with other students to solve the problems. Room information will be posted on D2L. The only charge is for a workbook that must be purchased at the bookstore.

NOTE: The last date to drop this course without a Late Add/Drop Request Form is **October 23**. Students dropping the course must check out of lab before the drop is considered complete.

HOMEWORK ACCESS:

### Off Campus Student Enrollment

- Obtain the unique number of your course from your instructor: **105KC**
- If you have not already done so, obtain a UT EID from <http://www.utexas.edu/eid>. If you give the EID system bogus information, you may not be able to retrieve your EID nor the password in the future. If your email address changes, you need to return to this URL and correct it.  
**NEVER obtain a second EID.**
- Log into <http://quest.cns.utexas.edu/student>  
You will be sent to the EID system for your EID and password, then redirected back to us. If the redirection doesn't work, type in the URL again:  
<http://quest.cns.utexas.edu/student>
- Click the arrow beside "Get Started"
- Make sure that the "Hello" in the upper right-hand corner has your name.
- Under the MY COURSES tab, choose "ENROLL IN NEW COURSE"
- Supply the unique number in the box and choose "LOOKUP COURSE INFO"
- Select the appropriate course (if more than one option) and choose "REQUEST ENROLLMENT"
- Your instructor has to approve your request before you can proceed in the course.

## V. COURSE OBJECTIVES

This course is intended to introduce the student to the language and the elementary theories of chemistry, to provide training and practice in analytical reasoning and problem solving, and to serve as the basis for further studies in chemistry. The lab portion is designed to provide training in the experimental techniques of chemistry, and to reinforce lecture material with concrete experience.

Specific areas in which the student is expected to achieve minimal competency by the end of the semester are the following:

FUNDAMENTALS - scientific notation, significant figures, SI or metric system, dimensional analysis, names and symbols of common elements and compounds, basic definitions of important chemical and physical terms.

STOICHIOMETRY - writing and balancing chemical equations, recognizing redox reactions, use of mole concept to perform calculations based on formulae and balanced equations.

ATOMIC STRUCTURE - composition of the atom, electron configuration and quantum numbers, Aufbau procedure, periodic variation in chemical and physical properties, nature of nuclear reactions.

MOLECULAR STRUCTURE - molecular geometry prediction by VSEPR, valence bond theory, hybridization, resonance, correlation of molecular structure and properties.

SOLUTIONS - concentration units, solution stoichiometry.

INTERMOLECULAR FORCES-types of forces, relate to physical properties, solution formation

PRINCIPLES OF CHEMICAL REACTIVITY I - enthalpy, entropy, calorimetry, Gibbs free energy.

PRINCIPLES OF CHEMICAL REACTIVITY II - kinetics of 1st and 2nd order reactions, rate laws (not integrated), collision theory, energy diagrams, catalysts

PRINCIPLES OF CHEMICAL REACTIVITY III- equilibrium systems,  $K_{eq}$ , LeChatelier's principle, acid/base chemistry, pK versus acid/base strength, strong acid/strong base titrations, buffers

**COURSE SCHEDULE: Assigned Textbook readings are in boldface**

Week Beginning	Lecture Tues	Discussion Wed	Lecture Thur	Lab
September 8	----	<b>Radon, syllabus</b>	Atomic Structure <b>2.1, 2.2, 2.3</b>	No lab
September 14	Nuclear Chem <b>21.1, 21.3, 21.4, 21.7, 21.8</b>	<b>21.5 (Nuclear Power)</b>	Atomic mass, Molar mass Dimensional Analysis <b>3.1, 3.2, 3.4, 1.7</b>	No lab
September 21 HW#1 Due	EM radiation, Emission spectra <b>7.1-7.5</b>	<u>Quiz 1</u> Atomic Emission and arsenic/water	Atomic Orbitals, Electron configurations <b>7.6-7.9</b>	Check in, Safety
September 28 HW#2 Due	<u>Test #1</u> At testing center.	<b>2.4, 8.1, 8.2</b> (Resources)	Periodic Table <b>8.3-8.5</b>	Measuring & Significant Digits
October 5 HW#3 Due	Ions, Ionic bonds, Covalent bonds <b>2.5, 2.6, 9.1, 9.2, 9.4</b>	<b>2.7 (Phosphate)</b>	Covalent bonding, Lewis structures <b>9.5-9.9</b>	Spectrophotometry 1
October 12 HW#4 Due	Molecular geometry <b>10.1, 10.2</b>	<b>Polarity (Perc)</b>	Hybrid orbital theory <b>10.3-10.5</b>	Spectrophotometry 2
October 19 (Oct 23 is the last day to drop a class) HW#5 Due	Intermolecular forces, Solution process <b>12.1, 12.2, 13.1, 13.2</b>	<u>Quiz 2</u> Naming – Perchlorate in lettuce	Compounds, Reactions <b>3.3, 3.5, 3.7, 3.8</b>	Spectrophotometry 3
October 26 HW#6 Due	<u>Test #2</u> At testing center	Limiting reagents Reaction yield <b>3.9, 3.10</b>	Aqueous solutions <b>4.1, 4.5</b>	Periodic Properties
November 2 HW#7 Due	Energy <b>6.1-6.4</b>	Fuel Comparisons	Calorimetry <b>6.5</b>	Periodic Properties cont.
November 9 HW#8 Due	Enthalpy of formation Entropy <b>6.6, 18.1-18.3</b>	<u>Quiz 3</u> Entropy and Recycling	Entropy Gibbs free energy <b>18.4, 18.5</b>	Thermochemistry 1
November 16 HW#9 Due	<u>Test #3</u> At testing center	Kinetics (Degradation)	Kinetics <b>14.1-14.4</b>	Thermochemistry 2
November 23 (Nov 25-29 is Thanksgiving Recess) HW#10	Catalysts, <b>14.6</b>	---	---	---
November 30 HW#11 Due	Equilibrium, Le Châtelier's Principle <b>15.1-15.4</b>	Ammonia Synthesis	Acids & Bases, pH <b>4.3, 16.1-16.4</b>	Thermochemistry 3
December 7 HW#12 Due	Acids & Bases, pH <b>4.3, 16.1-16.4</b>	<u>Quiz 4</u> Buffering and acid rain	Weak Acids, buffers <b>16.5, 17.2, 17.3</b>	Check out, Lab Quiz
December 14 HW#13 Due	<u>Test #4</u> at testing center	No discussion	No class meeting	No lab