Chemistry 105X - Spring 2020

General Chemistry I

Instructor: Dr. Thomas Green
Office: REIC 174
Email: tkgreen@alaska.edu
Phone: 474-1559

Lecture Period: MWF 11:45-12:45pm
Classroom: Reichardt 201
Office Hours: Tues 1-2 pm; Wed -1-2 pm
or by Appointment

Course materials

The following materials are *required* for the course and can be purchased in the UAF bookstore or elsewhere:

- *Chemistry: An Atoms-Focused Approach* , 2nd edition, Gilbert et al.
  Complete Book - ISBN 978-0-393-28421-8 (Hardcover), Soft cover also available at bookstore
- Norton Smartwork 5 access for *Chemistry: an atoms-focused approach,* 2th Ed.
- TurningPoint Technologies Response – See Blackboard for registration instructions
- Experiments in General Chemistry 105X: A Laboratory Manual
  (free! Handouts can be printed from Blackboard, updated weekly)
- A non-programmable non-graphing scientific calculator is required for each exam. The Department of Chemistry and Biochemistry does not provide calculators for exams, the student *must* provide their own. A ~$10 calculator will meet the needs of this course as long as it has standard arithmetic keys as well as 10*x*, LOG, EXP or e*x*, LN and x*y* functions.
- A University of Alaska email address is required for all communication in the class. This also provides access to the Blackboard system for individual scores and grades.

The following materials are *optional* and may assist the student in their studies:

- American Chemical Society (ACS) General Chemistry Study Guide
- *Essential Algebra for Chemistry Students* 2nd Ed. by Ball

Important Dates

Monday, Jan 20	Alaska Civil Rights Day (No Class)
Friday, Jan 24	Last day for student and faculty initiated drops (100% refund of tuition and fees)
Monday, Feb 10	Exam 1
Monday, Mar 23	Exam 2
Monday, Mar 27	Last day for student and faculty initiated withdrawals (W grade on transcript)
Wednesday, Apr 22	Exam 3
Wednesday, Apr 29, 10:15 am - 12:15 pm	Final Exam

Who should take this course?

The course is intended for students who are interested in enriching their lives with chemistry. The study of chemical science is valuable from an academic standpoint, fulfilling UAF's core science credits, as well as introducing students to proper laboratory techniques. Chemistry 105X is the first semester of a two-semester series in general chemistry, emphasizing the quantitative and mathematical identification of chemical phenomena.
Prerequisites: Placement in WRTG F111X; placement in MATH F151X; or a B- or better in CHEM F103X.
Corequisite: CHEM F105L.

Course expectations and outcomes

Students are expected to attend class; attendance will be monitored from in class responses. Each day *before* class the student should read and digest the portion of the textbook appropriate as per the class schedule, including example questions. *Active learning* involves the student using their sensory motor cortex (sight, smell, sound, taste and touch) in addition to their intelligence, to solidify through practice a concept the student has just read or heard about. Supplementing the course catalog, the course goals are to continue build the student's skills solving chemical problems, reading critically, formulating questions, completing laboratory experiments and communicating information assimilated throughout the course by completing exams. Class conduct should be professional as well as respectful of the rights other students to constructive learning experience.

Grading

Grades will be posted to blackboard, which can be accessed from the UAF homepage. Class grades may be adjusted (curved) from the following schedule only in the students' favor.

	Points	Grade Range	Letter Grade	Points
Examination 1	100	100 - 90%	A	1000-900
Examination 2	100	89 - 80%	B	899-800
Examination 3	100	79 - 70%	C	799-700
Final Examination	150	69 - 60%	D	699-600
Lab and Groupwork	250	59% or less	F	< 600
Quizzes	100			
Homework	150			
Participation and Clicker	50			
Total	1000			

The instructor reserves the right to drop any student from class if that student has missed an exam without an excused absence, has missed more than two labs, appears to be failing as of Friday, January 24, 2020, or has many zeros for class participation grades. Students will be notified once via email before the drop; if the student corrects the deficiency, the student may remain in this class. Progress reports for freshman students are due to the Registrars Office by Monday, February 24, 2020. The grade reported at that time will include the student's scores on the first exam, homework and the in-class participation grade. The last day for instructor initiated withdrawal is Friday, March 27, 2020 (W grade appears on academic record). An incomplete grade will only be assigned if a student misses the final exam for an outstanding reason, such as a medical problem, a death in the family, etc.

Homework

Homework problems will be assigned using questions from the textbook in coordination with the Smartwork 5 program. Students should expect between 15 questions to be assigned each week with additional adaptive learning objectives. Homework assignments for the week will be due according to the course schedule below no later than 1pm (start of class). It is recommended that students promptly register and log in to Smartwork5 as homework will be assigned within the first class period.

Quizzes/Worksheets

Each student must obtain a radio frequency clicker (see above) or download the Turning Technologies app, which is used in lecture to answer questions projected on the overhead. Either option can be used but students must purchase a Cloud registration code if not obtaining a combo from the bookstore. Clicker numbers *must* be registered online in the Blackboard system to receive grades, as responses are recorded electronically by the TurningPoint receiver and software on the classroom computer. No answers on paper will be accepted unless specified; any student found using any clicker other than their own will be in violation of the UAF honor code (see below). The quiz questions are likely to be similar to assigned homework problems and are designed to help prepare for exams as well as the ACS final. Students should come prepared to class with any materials needed for the quizzes, as the quiz may be open book or open note or require a calculator. However, sharing of class materials will not be permitted. Quizzes will occur the last lecture period for each chapter and consist of 5 questions worth a total of 10 points, 3 minutes for each question. Answers will be collected through the use of clickers. A total of 10 quizzes will be given throughout the semester.

*If a student misses an in-class clicker quiz and is concerned about losing points, then that student should see Dr. Green about making up the quiz. Dr. Green will assign textbook problems similar to the quiz problems to the student and the student must solve the problem immediately on a sheet of paper and turn in the answer. The student will receive points if and only if the answers are correct.

Laboratory

The purpose of lab is to do hands-on investigation of chemical principles and theories. Students will gain skills in scientific reasoning, experimental design, and use of chemicals as well as laboratory apparatus. Laboratory procedures will be available for printing on blackboard before the start of the lab section. Small group learning assignments will also accompany laboratory and account for a portion of the lab grade. Lab reports must be turned in the following week to be graded by the laboratory assistant, attendance in lab is *mandatory* for report credit. The laboratory portion of the student's grade will be based upon the average of the student's best 10 lab reports. Students may miss one lab with no impact on their lab grade; lack of attendance or failure to complete 8 laboratories will result in a *failing* grade for the course. If the student has special scheduling problems please discuss alternative options with Emily Reiter, Laboratory Director. Late reports may be accepted with penalized scores, excluding the last report of the semester, which will not be accepted late.

Exams

The student is responsible for all information from text, lecture, homework, quizzes and assigned study questions. Any of these sources will be used to construct exam questions. No use of a cell phone, pda, graphing calculator or otherwise will be allowed during the exam. Three one-hour exams and a cumulative final exam will be given as per the course schedule. The final exam will be a curved two-hour 70 item multiple-choice exam provided by the American Chemical Society Examinations Institute. **All students are required to take this exam in order to pass the course.** The recommended review text (see above) is an excellent source of information assist students in practicing and preparing for the final exam.

Absences

Make up examinations at Testing Services will be allowed for legitimate absences only, an unexplained absence from an exam results in a zero. If the student anticipates an absence (intercollegiate sports, travel for military or university business) talk to the professor *before* the exam. If the absence is unexpected (illness,

family or personal calamity), contact the professor at the earliest possible opportunity. Please note that makeup exams require the student to have *no* knowledge of the original exam. No extensions, makeup or late work will be accepted otherwise.

Ethical considerations

The Chemistry and Biochemistry Department *Policy on Cheating* states:
Any student caught cheating will be assigned a course grade of F. The students academic advisor will be notified of this failing grade and the student will not be allowed to drop the course.

Examples of cheating include, but are not limited to:

- Copying another student's answer while taking a quiz or exam
- Using another student's clicker for any reason
- Using another student's work while writing lab reports

Students must also adhere to UAF policies, the student code of conduct as well as the University of Alaska *Honor Code,* which states:
Students will not collaborate on any quizzes, in-class exams, or take-home exams that will contribute to their grade in a course, unless permission is granted by the instructor of the course. Only those materials permitted by the instructor may be used to assist in quizzes and examinations. Students will not represent the work of others as their own. A student will attribute the source of information not original with himself or herself (direct quotes or paraphrases) in compositions, theses, and other reports. No work submitted for one course may be submitted for credit in another course with- out the explicit approval of both instructors. Violations of the Honor Code will result in a failing grade for the assignment and, ordinarily, for the course in which the violation occurred. Moreover, violation of the Honor Code may result in suspension or expulsion.

Student success

There are a large number of resources to help students who would like to perform at their best. The student may make an appointment to see the instructor for help. (The instructor will attempt to reply to email questions within 24 hours during the school week.) The Chemistry and Biochemistry Department has established the Chemistry Learning Center (CLC, Reichardt 170), which offers student led instruction. Students may also see a tutor for additional assistance. Laboratory teaching assistants are available for help during posted office hours.

Disabilities

Students with a physical or learning disability are required to identify themselves to the Disability Services office, 474-7043, located in the Center for Health and Counseling. The student must provide documentation of the disability. Disability Services will then notify the instructor of special arrangements for taking tests, working homework assignments, and doing lab work.

Tentative course outline and calendar

Week	Date	Ch.	Lesson	Assignments	Topic	Laboratory
1	Jan 13 Jan 15 Jan 17	1 1 1	--- 1.1-1.6 1.7-1.8		*Matter and Energy: An atomic perspective*	No Lab
2	Jan 20 Jan 22 Jan 24	- 2 2	-No Class- 2.1-2.3 2.4-2.5 (Quiz)	**HW1 Due**	*Atoms, Ions, and Molecules: The Building Blocks of Matter*	No Lab/ Math-Graph review given
3	Jan 27 Jan29 Jan 31	2 3 3	2.5-2.6 3.1-3.4 3.5-3.6 (Quiz)	**HW2 Due**	*Atomic Structure*	1: Safety Lab
4	Feb 3 Feb 5 Feb 7	3 3 -	3.7-3.9 3.10-3.12 Review(Quiz)	**HW3 Due**	*Explaining the Properties of Elements*	2: Intro to Glassware and Excel
5	Feb 10 Feb 12 Feb 14	- 4 4	**Exam 1** 4.1-4.3 4.4-4.6		***Exam 1*** *Chemical Bonding*	3: ID of Solid Unknowns
6	Feb 17 Feb 19 Feb 21	4 5 5	4.7-4.9 5.1-5.3 (Quiz) 5.4-5.5	**HW4 Due**	*Bonding Theories*	4: Intro to Spectroscopy
7	Feb 24 Feb 26 Feb 28	5 6 6	5.6-5.7 6.1-6.2 (Quiz) 6.3-6.4	**HW5 Due**	*Intermolecular Forces*	5: Lewis structure and Molecular modeling
8	Mar 2 Mar 4 Mar 6	6 7 7	6.4-6.5 7.1-7.3 (Quiz) 7.3-7.5	**HW6 Due**	*Stoichiometry*	6: Intermolecular forces

Mar 9-13 SPRING BREAK!!!!

9	Mar 16 Mar 18 Mar 20	7 7 -	7.5-7.6 7.6-7.7 Review (Quiz)	**HW7 Due**	*Mass relationships and Chemical Reactions*	7: Stoichiometry
10	Mar 23 Mar 25 Mar 27	- 8 8	**Exam 2** 8.1-8.3 8.3-8.6		***Exam 2*** Aqueous Solutions	8: Sugar Content
11	Mar 30 Apr 1 Apr 3	9 9 9	8.7-8.8 9.1-9.3 (Quiz) 9.3-9.5	**HW8 Due**	*Thermochemistry*	9: Aqueous Reactions
12	Apr 6 Apr 8 Apr 10	9 9 10	9.5-9.7 9.7-9.9 10.1-10.3 (Quiz)	**HW9 Due**	*Energy changes in Chemical Reactions* *Properties of Gases*	10: Cu Cycle
13	Apr 13 Apr 15 Apr 17	10 10 10	10.3-10.5 10.5-10.7 10.7-10.10		*Properties of Gases*	11: Gas Laws
14	Apr 20 Apr 22 Apr 24	10 - -	Review (Quiz) **Exam 3** Example Final	**HW10 Due**	***Exam 3*** *Examples and Review*	Review
15	Apr 27 Apr 29	- -	Review for Final Final Exam	**HW Sem. Review Due** **ACS Final Exam**	***FINAL EXAM*** ***Apr 29*** ***10:15 am-12:15 pm***	No Lab