Chemistry 105X - Spring 2019

Instructor:	Dr. Tom Trainor	Lecture Period:	MWF 11:45am-12:45pm
Office:	REIC 176	Classroom:	Reichardt 201
Email:	tptrainor@alaska.edu	Office Hours:	MW 1-2pm
Phone:	474-5628		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. (ISBN 978-0-393-28421-8)
- Norton Smartwork 5 access for *Chemistry: an atoms-focused approach,* 2th Ed.
  (Free for this year)
- TurningPoint Technologies Response – See Blackboard for registration instructions
- Experiments in General Chemistry 105X: A Laboratory Manual
  (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

Jan 25	Last day for student and faculty initiated drops (100% refund of tuition and fees)
March 11-15	Spring Break
March 29	Last day for student and faculty initiated withdrawals (W grade on transcript)
April 29	Last day of classes
May 1	Final Exam (10:15am – 12:15pm)

Course description

Chemistry 105X is the first semester of a two-semester series in general chemistry, emphasizing the quantitative and mathematical characterization of chemical phenomena. Topics include: measurement, energy and matter, periodic trends, chemical composition, chemical reactions, solutions, bond theory, gases, thermodynamics and problem-solving. CHEM F105X-F106X, together with their laboratory components, constitute the standard one year engineering and science major general chemistry course. Students must be enrolled in both CHEM F105X and CHEM F105L to receive full credit.
Corequisites: ENGL 111X and MATH 107X

Course expectations and outcomes

Students are expected to attend class (attendance will be monitored from in class responses) and come prepared by reviewing the portion of the textbook appropriate as per the class schedule, including example questions. Class conduct should be professional and respectful of the rights other students to constructive learning experience. The primary outcome of the course is to develop the student's skills in solving quantitative chemical problems.

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
Exam 1	100
Exam 2	100
Exam 3	100
Final Exam	150
Lab	250
Quizzes	100
Homework	200
Total	1000

Course Grade

Points	Grade Range	Grade
1000-900	100 - 90%	A
899-800	89 - 80%	B
799-700	79 - 70%	C
699-600	69 - 60%	D
< 600	59% or less	F

The instructor reserves the right to drop any student from class if that student appears to be failing as of January 25, or withdraw a student who appears to be failing as of March 29. Students will be notified once via email before the drop; if the student corrects the deficiency, the student may remain in this class. An incomplete grade will only be assigned if a student misses the final exam due to unforeseeable emergency.

Homework

Homework problems will be assigned using the Smartwork 5 system. Students should expect about 15 questions to be assigned each week with additional adaptive learning objectives. Homework assignments will be due according to the course schedule below no later than 11:30am. It is recommended that students register and log into Smartwork5 (from blackboard) as soon as possible.

Quizzes/Worksheets

Each student must obtain a clicker (or download the Turning Technologies app) for in-class responses (see information on blackboard site). Clicker numbers *must* be registered on-line in the Blackboard system to receive grades. Any student found using any clicker other than their own will be in violation of the UAF honor code (see below).

Quiz questions will be similar to assigned homework problems. Students should come to class with any materials needed for the quizzes (book, notes, calculator). Quizzes will typically occur in the last lecture period for each chapter. A total of 10 quizzes will be given throughout the semester. If a student misses more than one in-class clicker quiz and is concerned about losing points, then that student should see instructor about making up the quiz (ASAP). Class participation points will be added to your total quiz score.

Laboratory

The purpose of the lab is to provide hands-on demonstration of chemical principles and theories. Students will gain skills in scientific reasoning, experimental design, and the use of chemicals and 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 the 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. The use of a cell phone, pda, or graphing calculator will not be allowed during exams. 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 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 instructor *before* the exam. If the absence is unexpected (illness, family or personal emergency), contact the instructor 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 resources

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 Chemistry and Biochemistry Department has established the Chemistry Learning Center (CLC) 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 14 Jan 16 Jan 18	1 1 1	1.1-1.6 1.7-1.8 1.8-1.9		*Matter and Energy: An atomic perspective*	No Lab
2	Jan 21 Jan 23 Jan 25	- 2 2	- No class - 2.1-2.3 (Quiz) 2.3-2.5	**HW1 Due**	*Atoms, Ions, and Molecules: The Building Blocks of Matter*	Math Review
3	Jan 28 Jan 30 Feb 1	2 3 3	2.5-2.6 3.1-3.4 (Quiz) 3.4-3.6	**HW2 Due**	Atomic Structure	1: Safety Lab
4	Feb 4 Feb 6 Feb 8	3 3 -	3.6-3.9 3.9-3.12 Review (Quiz)	**HW3 Due**	Explaining the Properties of Elements	2: Intro to Glassware and Excel
5	Feb 11 Feb 13 Feb 15	 4 4	**Exam 1** 4.1-4.3 4.4-4.6		*Chemical Bonding*	3: ID of Solid Unknowns
6	Feb 18 Feb 20 Feb 22	4 5 5	4.7-4.9 5.1-5.3 (Quiz) 5.3-5.5	**HW4 Due**	*Bonding Theories*	4: Intro to Spectroscopy
7	Feb 25 Feb 27 Mar1	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 4 Mar 6 Mar 8	6 7 7	6.4-6.5 7.1-7.3 (Quiz) 7.3-7.5	**HW6 Due**	*Stoichiometry*	6: Intermolecular forces
9	Mar 11-15		Spring Break			
10	Mar 18 Mar 20 Mar 22	7 7 -	7.5-7.6 7.6-7.7 Review (Quiz)	**HW7 Due**	*Mass relationships and Chemical Reactions*	7: Stoichiometry
11	Mar 25 Mar 27 Mar 29	- 8 8	**Exam 2** 8.1-8.3 8.3-8.6		Aqueous Solutions	8: Sugar Content
12	Apr 1 Apr 3 Apr 5	9 9 9	8.7-8.8 9.1-9.3 (Quiz) 9.3-9.5	**HW8 Due**	*Thermochemistry*	9: Double Replacement
13	Apr 8 Apr 10 Apr 12	9 9 10	9.5-9.7 9.7-9.9 10.1-10.3 (Quiz)	**HW9 Due**	*Energy changes in Chemical Reactions*	10: Cu Cycle
14	Apr 15 Apr 17 Apr 19	10 10 10	10.3-10.5 10.5-10.7 10.7-10.10		*Properties of Gases*	11: Gas Laws
15	Apr 22 Apr 24 Apr 26	10 10 -	Review (Quiz) **Exam 3** Example Problems	**HW10 Due**	*Properties of Gases*	12: Review for Final
16	Apr 29 May 1	- - -	Review for Final **Final Exam**			