

COURSE SYLLABUS
CHEMISTRY
CHEM 110 Spring 2014
Section 2

Credit Hours: 3

Course Location: Faraday Hall 143 14:00-15:15 Tu, Th

INSTRUCTOR: Dr. Petr Vanýsek; Office, La Tourette Hall 418

Course web site:

http://www.vanysek.com/electrochemistry/110_material/chem_110_s14.htm

OFFICE HOURS: Tuesdays and Thursdays 9:30-11:00. Other times by appointment only. I will help you with your problems, but come to see me with questions and problems already at least partially prepared. Bring your class notes along. Do not expect the instructor to give you your own private make-up class. When coming to the office hours, be prepared to share the office or the time with other students.

Course Description

Development of the fundamental principles and concepts of chemistry by lecture-demonstration, as well as the development of an appreciation of the nature of chemistry as a science. An (sic) historical development of the most important concepts and ideas. Methods and limitations of chemistry, its evolution and discussions of the problems currently being solved and created.

Intended learning outcome

Students will demonstrate

Use of science process and thinking skills.

Science interests and attitudes.

Understanding of fundamental and important chemistry concepts and principles.

Demonstrate awareness of the social and historical aspects of chemistry.

Effective communicative skills, including interpersonal communication (oral and written).

Ability to read and understand news about chemistry related events and engage in meaningful conversation with lay counterparts.

Assessment

Exams will be used to assess student learning. Exams will include multiple-choice questions. Answering the questions will require the students to use both

higher order thinking skills and lower order thinking skills. There will be five possible answers; only one will be correct. Only one answer per question can be marked. Only the correct choice will count towards the test score. Because of this simplicity in scoring, there is no grading rubric for this course.

EXAMS AND GRADING: In class 75-minute tests (4) worth each 100 points. The test with the lowest score will be dropped. Therefore the total possible score from tests is 300 points. Note that dropping one test takes care of one absence. There will be no other forms of remedy for absence during the test. Only one test will be dropped. There will be no make-up for tests for any reason.

Tests: 60% (300 points, *i.e.*, 3 tests are counted)
Comprehensive final test 40% (200 points) NOTE THAT TAKING THE FINAL TEST IS REQUIRED and its score cannot be dropped.

[TOTAL 100% = 500 points]

To satisfy the granularity of the plus/minus grading, the cumulative number of questions asked in the course will be a multiple of 25.

Your class percentage performance will be calculated as the sum of all the points earned (with the lowest in-class test score dropped), divided by 5. The grades will be as follows (verbal meaning as per the NIU catalog):

- A (Outstanding Competence) 92 % and more
- A- (Outstanding Competence) 88 – 92 %
- B+ (Above satisfactory competence) 84 – 88 %
- B (Above satisfactory competence) 80 – 84 %
- B- (Above satisfactory competence) 76 – 80 %
- C+ (Satisfactory level of competence) 72 – 76 %
- C (Satisfactory level of competence) 68 – 72 %
- D (Marginally satisfactory competence) 56% to 68%
- F (Unsatisfactory level of competence) < 56%

The following observations may be of value:

1. High schools award higher grades than universities. In high schools 81% of students receive As and Bs. In CHEM110 this can be (last semester) close to 11%. You need to develop resilience and grit. There will be ups and there will be downs during your tenure at the university. Be positive.
2. Your scores on the tests may be lower than what you are used. Treat it as a challenge; you will need to study more efficiently than in the high school. Keep also in mind that at the end of the semester the grades are somewhat adjusted to meet the departmental GPA requirement. You may end up with a better final grade than you expected.
3. If you settle for only average grade in a large class, where the GPA is adjusted, the same effort will earn you in upper level courses much lower score.

Americans with Disabilities Statement:
Accessibility Statement

Northern Illinois University is committed to providing an accessible educational environment in collaboration with the Disability Resource Center (DRC). Any student requiring an academic accommodation due to a disability should let his or her faculty member know as soon as possible. Students who need academic accommodations based on the impact of a disability will be encouraged to contact the DRC if they have not done so already. The DRC is located on the 4th floor of the Health Services Building, and can be reached at 815-753-1303 (V) or drc@niu.edu.

Academic Integrity Statement:

ACADEMIC DISHONESTY: In general, cheating means presenting or using work that was not done entirely by you and, in the case of in-class examination, it includes also presenting or using your work that was written outside the classroom. You may not talk or pass notes to each other on any subject. Having other materials than those allowed for the work with you within reach during test or sharing calculators is cheating as well. During tests you must put away any devices that would allow you to communicate with others or access databases. You are allowed to use only the specified calculator. Any other type has to be put away. The phones have to be put away, and in no circumstance you can use a calculator on the cell phone. Violation of this rule will result in zero on your work.

Proposed Course Schedule

DATE dd.mm.yy	TOPIC	CHAPTER
14.1.14	Introduction to the course. Methods	1
16.1.14	Methods and measurement	1
21.1.14	The structure of the atom, periodic table	2
23.1.14	The structure of the atom, periodic table	2
28.1.14	The structure of the atom, periodic table	2
30.1.14	Ionic and covalent compounds	3
4.2.14	Test I	1-2
6.2.14	Ionic and covalent compounds	3
11.2.14	Ionic and covalent compounds	3
13.2.14	Ionic and covalent compounds	3
18.2.14	Calculations and the chemical equation	4
20.2.14	Calculations and the chemical equation	4
25.2.14	Calculations and the chemical equation	4
27.2.14	States of matter: Gases	5

DATE dd.mm.yy	TOPIC	CHAPTER
4.3.14	Test II	3-4
6.3.14	States of matter	5
11.3.14	Spring break	
13.3.14	Spring break	
18.3.14	States of matter	5
20.3.14	Solutions	6
25.3.14	Solutions	6
27.3.14	Solutions	6
1.4.14	Test III	5-6
3.4.14	Energy, Rate, and Equilibrium	7
8.4.14	Energy, Rate, and Equilibrium	7
10.4.14	Energy, Rate, and Equilibrium	7
15.4.14	Acids and bases and oxidation and reduction	8
17.4.14	Test IV	6-8(some)
22.4.14	Acids and bases and oxidation and reduction	8
24.4.14	Acids and bases and oxidation and reduction	8
29.4.14	The nucleus, radioactivity and nuclear medicine	9
1.5.14	The nucleus, radioactivity and nuclear medicine Course review	9
6.5.14	Final	1-9

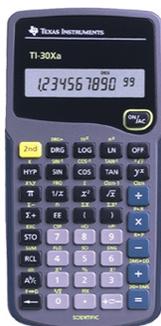
(You may be taking concurrently CHEM 111, the laboratory to accompany CHEM 110. This is a course separate from CHEM 110 and the laboratory (111) and class (110) grading is independent of each other. The instructor responsible for CHEM 111 is Dr. D. Ballantine, Jr., La Tourette 424.)

Schedule of tests (all in Faraday Hall 143):

February 4	Test I
March 4	Test II
April 1	Test III
April 17	Test IV
May 6	Final (14:00-15:50)

For the tests there will be a seating chart, with a seat number assigned to each student.

TEXTBOOK: General, Organic and Biochemistry (sorry about the poor grammar of the title) Chapters 1-9, by K. Denniston, J. Topping, K. Woodrum and R. Caret, 8th Edition, Mc-Graw Hill 2014. You can also use the full version of the text (ISBN 0-07-340276-5) although we will talk only about the first 9 chapters. It might be cheaper to buy a used one from an outside vendor. If you use any of the previous editions, be aware that the page numbers and problems numbers will likely not agree with the official text and the text may be somewhat different as well.



CALCULATOR:

There is a required calculator for this course, the Texas Instruments TI-30Xa. Walmart has it for \$8.94. Buy one. This is the specific model. Do not get, for example, the TI-30xIIS (solar, which has different functions). When we perform calculations in class or during practice, all will be explained using this calculator. Have a calculator and a paper pad for calculations ready for each class period. The lecture will be often interspersed with your active participation. For tests and quizzes it is assumed that everybody has the specified calculator, a pencil, a student ID, and adequate knowledge to answer correctly the questions.

The course relies on active knowledge of mathematical calculations and the ability to setup algebraic equations. Helpful for those insecure in mathematics are the following books: C. D. Miller, M. L. Lial, D. I. Schneider; Fundamentals of college algebra (MATH 110 book, or similar); Dorothy M. Goldish: Beginning mathematics for beginning chemistry, 4th Ed., Macmillan, New York, 1990. Walter J. Gleason: "Is your math ready for chemistry?" W. C. Brown Publishers, Dubuque 1993.

Class curve: Department of Chemistry and Biochemistry mandates certain class average to assure consistent grading across multiple sections, therefore your scores may be adjusted by moving the boundaries between individual grades. The mandated course average for CHEM110 is 1.85 ± 0.15 GPA. Historically, some students received a higher grade than earned from the straight score. Lowering the grade is conceivable but only if everybody performs unusually well.

Using the Scantron forms: Fill in the ovals using a pencil, either No. 2 or the equivalent HB hardness. Be sure that you fill in your last name (and fill in the corresponding ovals) and include your initials. If you have just one initial, leave the second field blank. If you change your name during the semester it may be more practical to keep using the old name/initials.

The block for the ID NUMBER has 9 spaces, which was originally intended for the social security number. The university may no longer use the social security

number for identification. Instead you will use the "Z" number, issued to you as a computer logon and a general (e.g., library) identification number. It starts with the letter Z and is followed (usually) by 7 numbers, e.g., Z1032673. Omit in the SCANTRON the letter Z and write the seven numbers as your student ID starting at the leftmost column. It will leave two empty spaces at the end. If your number begins with zero, include it. It is important to use the number as the computer grading system tracks you by the number first and by the name only second. In rare situations there is more than one person in the class with the same last name and identical initials. The number, though, is unique. To obtain the "Z" number you can call 752-7738. If there is a "form" for the test/quiz (A, B, C, D, E) indicated on the top of your problem sheet, it means that different forms are used in the class. Fill it on the Scantron form. Solve and answer the problems in correspondingly numbered lines.

Sign the form: On the back of the form is a place for you to sign your name. Please, sign after finishing the test, not before. By signing, you are affirming that you have neither received nor given an unauthorized assistance in completion of this work and that you are the person whose ID is shown on the front page. For tests there will be a seating chart, with a seat number assigned to each student.

Instructions: Using a softlead pencil, completely blacken only one oval per question. Do not use ink or colored pencil. Cleanly erase any unintended marks.

Poor
 Good

MON. / DAY / YR

LAST NAME: _____ INIT.: _____
 ID NUMBER: _____ DEPT.: _____ COURSE: _____ DATE: _____

1 A B C D E 26 A B C D E 51 A B C D E 76 A B C D E
 2 A B C D E 27 A B C D E 52 A B C D E 77 A B C D E
 3 A B C D E 28 A B C D E 53 A B C D E 78 A B C D E
 4 A B C D E 29 A B C D E 54 A B C D E 79 A B C D E
 5 A B C D E 30 A B C D E 55 A B C D E 80 A B C D E
 6 A B C D E 31 A B C D E 56 A B C D E 81 A B C D E
 7 A B C D E 32 A B C D E 57 A B C D E 82 A B C D E
 8 A B C D E 33 A B C D E 58 A B C D E 83 A B C D E
 9 A B C D E 34 A B C D E 59 A B C D E 84 A B C D E
 10 A B C D E 35 A B C D E 60 A B C D E 85 A B C D E
 11 A B C D E 36 A B C D E 61 A B C D E 86 A B C D E
 12 A B C D E 37 A B C D E 62 A B C D E 87 A B C D E
 13 A B C D E 38 A B C D E 63 A B C D E 88 A B C D E
 14 A B C D E 39 A B C D E 64 A B C D E 89 A B C D E
 15 A B C D E 40 A B C D E 65 A B C D E 90 A B C D E
 16 A B C D E 41 A B C D E 66 A B C D E 91 A B C D E
 17 A B C D E 42 A B C D E 67 A B C D E 92 A B C D E
 18 A B C D E 43 A B C D E 68 A B C D E 93 A B C D E
 19 A B C D E 44 A B C D E 69 A B C D E 94 A B C D E
 20 A B C D E 45 A B C D E 70 A B C D E 95 A B C D E
 21 A B C D E 46 A B C D E 71 A B C D E 96 A B C D E
 22 A B C D E 47 A B C D E 72 A B C D E 97 A B C D E
 23 A B C D E 48 A B C D E 73 A B C D E 98 A B C D E
 24 A B C D E 49 A B C D E 74 A B C D E 99 A B C D E
 25 A B C D E 50 A B C D E 75 A B C D E 100 A B C D E

MISC. SEC. FORM
 A B C D E F

NORTHERN ILLINOIS UNIVERSITY Testing Service

Printed in U.S.A. Mark Review by NCS MP85752: 6 A2804

Getting back the test results: The results of the tests will be available on Blackboard. There is no practical provision available which would provide you with the specific right/wrong answers. I will post the correct answers on-line. Once you are finished with answering on the Scantron, circle you answers on the questions sheet. You will keep it. You can compare your answers with the posted answers.

Note on mathematical background:

This course of introductory chemistry is replete with mathematical problems, known as "word problems." In those, one has to figure out first what needs to be calculated and then do the actual calculation, usually not hard with a calculator. However, setting up the problems may be challenging for some.

Take as an example the following problem: Seven lemons sell for three dollars. How much will it cost to buy twelve lemons? This is a simple ratio calculation and the answer should be \$ 5.14. You should try, right now, and do the math. If you are not comfortable solving this problem, whether with a calculator or on a piece of paper, and do not know immediately how to set up the numbers to get the answer, then, you will have a major problem in this class. Do not take chemistry; enroll instead in a math skills refresher course.

Recommended for students with marginal math backgrounds is: D. M. Goldish, "Basic Mathematics for Beginning Chemistry, 4th Edition", MacMillan, New York, 1990.

Other issues:

- No smoking in the building, no food or drink in the class.
- TAPING/RECORDING OF THE LECTURE: You are encouraged to take good notes, reflecting your interpretation and understanding of the lecture. However, you are not permitted to make verbatim recording or transcription of the lecture and you are not allowed to take video recordings of any length.
- ATTENDANCE: Attendance at the lectures is not monitored but it is in your best interest to be there. Consider the following: (1) The tests are based on the textbook material covered in the class as well as the class material, which is not in the textbook, (2) Office hour cannot be used to catch up on material missed by a class absence. (3) One fifth of the questions on the test is based on information given in the class but not in the book. LATE ARRIVAL TO CLASS is discouraged. It disrupts the other students and the instructor and if repeated, may be basis for barring from the class. If you absolutely must arrive late, enter quietly from the back and sit in the back. Only the persons enrolled in that class and that section can attend the lecture.
- CELL PHONES AND THE LIKE: Cell phones are great technology and it is great to have one with you for emergency. (Campus police: 815-753-1212). However, please, turn off your phones and other noise-making devices as a courtesy to others, and do not distract yourself by reading and sending text messages. Cell phones, etc., are not permitted within your reach during exams. Only the approved calculator is allowed during the tests.

Chemistry tutor schedule:

There will be TAs available to help with the laboratory (CHEM111) material, but when time permits, they may be available to help with the lecture material as well. Many will be located in Faraday Hall - Room 247. The schedule was not available at the time of this printing. Watch bulletin boards at the Chemistry hallways. The typical times are 8:00-16:00, with shorter hours on Fridays.