

CHEM 110 Fall 2011  
Section 4  
TENTATIVE LECTURE SCHEDULE

Meeting place: Faraday 143  
18:00-19:15 Tu, Th

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

OFFICE HOURS: Tuesdays and Thursdays after the lecture until about 20:00. 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.

TEXTBOOK: General, Organic and Biochemistry (sorry about the poor grammar of the title) Chapters 1-9, by K. Denniston, J. Topping and R. Caret, 7<sup>th</sup> Edition, McGraw Hill 2008. You can also use the full version of the text (ISBN 0-07-340262-1) 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 not agree with the official text and the text may be different as well.

| DATE<br>dd.mm.yy | TOPIC                                     | CHAPTER |
|------------------|---|---------|
| 23.8.11          | Introduction to the course. Methods       | 1       |
| 25.8.11          | Methods and measurement                   | 1       |
| 30.8.11          | The structure of the atom, periodic table | 2       |
| 1.9.11           | The structure of the atom, periodic table | 2       |
| 6.9.11           | The structure of the atom, periodic table | 2       |
| 8.9.11           | Ionic and covalent compounds              | 3       |
| 13.9.11          | Test I                                    | 1-2     |
| 15.9.11          | Ionic and covalent compounds              | 3       |
| 20.9.11          | Ionic and covalent compounds              | 3       |
| 22.9.11          | Ionic and covalent compounds              | 3       |
| 27.9.11          | Calculations and the chemical equation    | 4       |
| 29.9.11          | Calculations and the chemical equation    | 4       |
| 4.10.11          | Calculations and the chemical equation    | 4       |
| 6.10.11          | States of matter: Gases                   | 5       |
| 11.10.11         | Test II (emphasizing 3-4)                 | 1-4     |

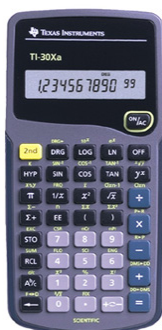
|          |   |     |
|----------|---|-----|
| 13.10.11 | States of matter  | 5   |
| 18.10.11 | States of matter  | 6   |
| 20.10.11 | Solutions   | 6   |
| 25.10.11 | Solutions   | 6   |
| 27.10.11 | Solutions   | 6   |
| 1.11.11  | Energy, Rate, and Equilibrium                                 | 7   |
| 3.11.11  | Energy, Rate, and Equilibrium                                 | 7   |
| 8.11.11  | Energy, Rate, and Equilibrium                                 | 7   |
| 10.11.11 | Test III  | 5-7 |
| 15.11.11 | Acids and bases and oxidation and reduction                   | 8   |
| 17.11.11 | Acids and bases and oxidation and reduction                   | 8   |
| 22.11.11 | Acids and bases and oxidation and reduction                   | 8   |
| 24.11.11 | THANKSGIVING Break  |     |
| 29.11.11 | The nucleus, radioactivity and nuclear medicine               | 9   |
| 1.12.11  | The nucleus, radioactivity and nuclear medicine Course review | 9   |
| 6.12.11  | 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:**

|              |          |
|--------------|----------|
| September 13 | Test I   |
| October 11   | Test II  |
| November 10  | Test III |
| December 6   | Final    |

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



## CALCULATOR:

There is a required calculator for this course, the Texas Instruments TI-30Xa. 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: Miller, Lial, 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.

**EXAMS AND GRADING:** Hour tests (3) worth each 100 points. The score of the worst test will be dropped and replaced by the average of the other two tests. Note that the rule of dropping the score of the worst test is your insurance against missing a test. Missed test = 0 = worst score is dropped. 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.

[TOTAL 100% = 500 points]

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

A Outstanding competence 85% and more

B Above satisfactory competence 75% to 84.99%

C Satisfactory level of competence 65% to 74.99%

D Marginally satisfactory competence 55% to 64.99%

F Unsatisfactory level of competence < 55%

The tests will typically consist of the following groups of questions: 1/5 - straight (one equation) calculation, 1/5 - more involved mathematical concept, 2/5 - factual knowledge, based on the lecture and detailed in the textbook, 1/5 - factual knowledge based on information in the lecture.

Class curve: Department of Chemistry and Biochemistry mandates certain class average to assure consistent grading across multiple sections, therefore your scores may be adjusted. The mandated course average for CHEM110 is 1.85 GPA.

**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.

**NORTHERN ILLINOIS UNIVERSITY Testing Service**

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

Poor  Good

| LAST NAME        | INIT. | ID NUMBER      | DEPT. | COURSE | DATE           |
|------------------|-------|----------------|-------|--------|----------------|
| 0000000000000000 | 00    | 00000000000000 |       |        | MON / DAY / YR |

MISC. FORM

| A | B | C | D | E | F | SEC. | FORM |
|---|---|---|---|---|---|------|------|
| 0 | 0 | 0 | 0 | 0 | 0 | 0    | A    |

|    |   |   |   |   |   |    |   |   |   |   |   |    |   |   |   |   |   |     |   |   |   |   |   |
|----|---|---|---|---|---|----|---|---|---|---|---|----|---|---|---|---|---|-----|---|---|---|---|---|
| 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 |

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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 your 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, to do the math. If you are not comfortable with doing 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 it, 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. Copies are available from booksellers, and are on reserve in Faraday Library, Faraday Hall, Room 212.

**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, so in no circumstance you can use a calculator on the cell phone. Violation of this rule will result in zero on your work.

**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.
- 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 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.

*Chemistry tutor schedule:*

There are TAs available to help with the laboratory material, but when time permits, they will be available to help with the lecture material as well. Many will be located in Faraday Hall - Room 246. The schedule was not available at the time of this printing. Watch bulletin boards at the Chemistry hallways. The typical times are 8:30-15:30, with a break from 11:15-11:45.

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