Syllabus: CHM 101 Introductory Chemistry

Course number: 101  
Course title: Introduction to Chemistry  
Number of credits: 4  
Course instructor: Josef Kren; e-mail: josef.kren@doane.edu

Description:

CHM 101 is an introductory course in chemistry utilizing the scientific method in the study of general, inorganic and organic chemistry and biochemistry. This course focuses on concepts and qualitative understanding of the principles of chemistry. This course is designed for students requiring only one semester or one year of chemistry. Each session laboratory experience emphasizes observation and problem solving.

We will cover the extent of chemistry in a single term. This is a huge goal that is not possible if we cover everything in depth. Rather, we will examine the general problems and selected examples that can be applied to a variety of other situations, usually daily life settings.

The laboratory is an integral part of the Introductory Chemistry experience. It is designed to provide you with a series of experiments and observations to illustrate chemical principles discussed in lectures. All chemistry experiments will be simulated on computers using chemistry simulation software.

Course objectives

After completing the course you should be able to:

- Describe what chemistry is and the philosophy of chemistry as a science.
- Discuss periodic table.
- Outline the basic concepts of general, inorganic, and organic chemistry and biochemistry.
- Describe some of the methods routinely used for chemical investigations.
- Demonstrate a basic knowledge of chemistry laboratory procedures.
- Apply knowledge of chemistry to everyday situations.

I will present the 'scientific background' for each of the covered topics and will expect all of us (the community of active learners) to get involved in discussing the topics. I expect and greatly value critical thinking and discussion.

This is a chemistry course for non-science majors.
Course policies:

Textbook:


Home Assignments:

Most of home assignments will include scientific articles search by using Google Scholar, Academic Search, EBSCO, etc., their critical evaluation and use for preparation of midterm and final papers.

Additional readings:

You will receive copies of scientific and popular articles for additional reading during the term.

Attendance: Students are expected to attend every lecture/field trip during the course. Each class meeting is highly interactive and the learning is impossible to recreate in a make-up assignment. But we understand that, sometimes, life interrupts our plans. In the case of an illness, work requirement, or family emergency, you must contact the teacher or a designated college official to explain your absence. You will be required to complete an additional assignment due the week following the missed class. In the event that you are forced to miss two or more class meetings, special arrangements must be made with the teacher to determine if the requirements for the course can be met.

Grading: Your grade in this course will be based on two papers, class discussion and completion of laboratory exercises. Please note; I value DISCUSSION, and I expect everyone to get involved in discussing various topics related to any part of chemistry. A significant part of this course grade is a class discussion and completion of laboratory experiments; details will be discussed in class.

Overall performance: 100-96 % = A+
    95-93 % = A
    92-90 % = A-
    89-86 % = B+
    85-83 % = B
    82-80 % = B-
    79-76 % = C+
    75-70 % = C
Doane College Academic Integrity Policy:

The Doane College Academic Integrity Policy will be adhered to in this class. All projects and tests will represent your own work. Any use of others’ ideas and words without proper citation of sources is plagiarism and will result in penalties to be determined by the instructor and/or the dean of undergraduate studies.

Schedule of sessions:

Session 1

Introduction to chemistry
Chemistry in our lives
Atoms and elements

Required reading: Chapters 1, 2
Laboratory part: Computer simulations using ModelChemLab

Session 2

Compounds and their bonds
Chemical reactions

Required reading: Chapters 3, 4, 5
Laboratory part: Computer simulations using ModelChemLab

Session 3

Solutions
Chemical equilibrium
Acids and bases

Required reading: Chapters 6, 8
Laboratory part: Computer simulations using ModelChemLab

Session 4

Introduction to organic chemistry
Basic organic compounds

**Required reading: Chapters 10**
Laboratory part: Computer simulations using ModelChemLab

**Midterm Paper**

**Session 5**
Carbohydrates
Lipids

**Required reading: Chapters 11**
Laboratory part: Computer simulations using ModelChemLab

**Session 6**
Aminoacids and proteins
Enzymes and vitamins

**Required reading: Chapters 17, 18**
Laboratory part: Computer simulations using ModelChemLab

**Session 7**
Metabolic pathways

**Required reading: Chapter 21**
Laboratory part: Computer simulations using ModelChemLab

**Session 8**
Metabolic pathways

**Required reading: Chapter 22**
Laboratory part: Computer simulations using ModelChemLab

**Final Paper**