CHM 101 Introductory Chemistry (4 credit hours)

Instructor: name and e-mail will be provided at the beginning of the term

CHM 101 Introductory Chemistry fulfills the requirement for a Foundational Area of SCIENTIFIC PERSPECTIVES. Any course that fulfills that requirement will assure that students gain a greater understanding of scientific discoveries in today’s world and interconnections of various scientific disciplines. Students will address complex questions about foundations of chemistry and new discoveries in chemistry and biochemistry fields in order to understand multiple perspectives they face in daily life. Students will work to:

1. Understand the philosophy of chemistry as a daily life science.
2. Interpret experiences from the perspectives of chemical impact on every individual.
3. Outline the impact of chemistry on human society and the world.

CHM 101 will seek to accomplish all of these outcomes, with the greatest emphasis on Learning Outcome # 1. The instructor will present the ‘scientific background’ for each of the covered topics and will expect all students, the community of active learners, to get involved in discussing the topics. The instructor expects and greatly values critical thinking and discussion. Various movies dealing with current chemistry topics will be shown and discussed.


Model ChemLab - An interactive Lab Simulation for Windows® and the Mac® OS X
http://www.modelsience.com/products.html?ref=home&link=nav

COURSE DESCRIPTION:

This course introduces students to chemistry in the context of the environment and everyday life. Upon successful completion of the course, students will demonstrate an understanding of the chemistry of acid rain, ozone layer depletion, nuclear reactions of power plants, molecules of life like DNA, proteins, important pharmaceuticals, etc. In contrast to general chemistry, this course stresses the conceptual perspectives of chemistry rather than focusing on quantitative reasoning. This course is designed for non-science majors and is not required for a science related major. Lecture and laboratory.

In addition to FAK learning outcomes, learning outcomes specific to this course:

- Students will learn how to apply scientific knowledge into daily decisions of using various chemical products.
- Students will become aware of the new discoveries and advances in various disciplines of chemistry.
- Students will understand how industrial chemistry has been changing society.
- Students will know the most important events in the field of chemistry of the 20th century.

Topics for lecture, discussion, video and readings

- Overview of Chemistry as the interconnecting scientific discipline.
- Chemistry in our lives; the pros and cons.
• Atoms, elements, compounds and their bonds. Chemical reactions.
• Solutions. Chemical equilibrium. Acids and bases.
• Introduction to organic chemistry. Basic organic compounds.
• Introduction to biochemistry. Applying biochemistry principles into your health.
• Carbohydrates, lipids, proteins, enzymes and vitamins. Metabolic pathways.

**Student Projects:** (presentations will be made at the end of the term). Your presentations will include your own research of various biological topics. We will discuss how the research will be accomplished during the first class.

**Areas for research and presentations**

1. Chemistry and society:
2. Impact of various chemical products on human health.
3. Chemical industry and human society.
4. New advances and discoveries in chemical research and experiments.
5. Chemical pollutants and environment.

**ASSESSMENT**

**ATTENDANCE & PARTICIPATION:**
Each class will include lecture, class discussion, question-answer interaction, hands on experience (computer simulations) and watching movies. Each movie and computer simulations will be followed by a student generated and led discussion. Because of the importance of student interaction, no class can be successfully replicated. You are strongly encouraged to attend each class. Your active class participation will account for your grade.

**CLASS PRESENTATIONS:**
You will give one 5-minute presentations to the class that reflects your own research of a selected topic. Your class presentations will account for your grade.

**RESEARCH PAPER:**
You are given a choice concerning your research papers as follows:

1. You will write two 4-5 page papers on two different topics.
2. You will write a single, 8 -10 page, in-depth paper on one topic.
GRADING SCALE:

100 – 95 = A
94 – 90 = A-
89 – 87 = B+
86 – 84 = B
83 – 80 = B-
79 – 77 = C+
76 – 74 = C
73 – 70 = C-
69 – 67 = D+
66 – 64 = D
63 – 60 = D-
59 & below = F

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.

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.