

PITTSBURG STATE UNIVERSITY
COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF Chemistry
Chem 105: Introductory Chemistry
Spring 2019
Course Intended for Partial Fulfillment of the Pitt
State Pathway Curriculum

Instructor: Dr. K Mijares Office: HW 112

Email: (best done through Canvas)

Lecture room: Grubbs 109 (T/Th; 9.30-10.45am)

Office Hours: Posted outside my office and on CANVAS or can be made by appointment.

PITT STATE PATHWAY

Pitt State Pathway Mission Statement:

The *Pitt State Pathway* curriculum serves as the heart of the university education by fostering interdisciplinary competencies that typify the educated person. It is designed to facilitate the development of key proficiencies including communication and information literacy. The *Pitt State Pathway* curriculum provides a transformational experience that challenges students to think creatively and critically, and to immerse themselves in the productive examination of humans in their global setting. By encouraging the development of skills that promote life-long learning, the *Pitt State Pathway* fosters a sense of personal responsibility, an appreciation of diversity, and an understanding of interconnectedness in our truly global society.

Essential Study to be covered in this course: Natural World within a Global Context

Biological, physical, and chemical systems form the context for life. Students need to understand how these systems work, how these change naturally, and how these can change as a result of human activities. The implications of these changes are essential for long-term decision-making. In this course we will:

Analyze physical and chemical systems;

Evaluate the implications of changes that result from interactions between natural and human systems.

Companion Element to be covered in this course: Scientific Inquiry

The scientific method is the systematic approach to understanding the world around us. Through experimentation and hypothesis testing, students will apply analytical skills and appropriate methods of scientific inquiry (i.e. qualitative and quantitative) to solve a variety of research questions. In this course we will:

Compose appropriate research questions and hypothesis, drawing from experts, reliable sources, or previously collected data.

Collect, synthesize, and analyze data from multiple sources;

Draw logical conclusions, assessing for gaps and weaknesses, and addressing potential consequences and implications

Communicate results using appropriate delivery methods or formats.

Course description:

This course will cover Basic Chemistry and its relationship to everyday experiences. The material covered this semester will include classification and structure of matter, basic principles of chemical reactions and their environmental and social impact, organic

chemistry, and selected topics in biochemistry. This course is designed for non-science majors, and applied health majors. Occasionally during lectures, you will be asked to work in small groups to solve given problem sets, for this reason it is important to have a good attendance and to be prepared for lectures.

Course Objectives:

Natural World within the Global Context: Level of Student Learning = Milestone I
Explains physical and chemical processes and human activities that alter them.

Scientific Inquiry: Level of Student Learning = Milestone I
Student will apply the scientific methods to a problem.

You should attain some degree of mastery in the following areas:

1. Explain the scientific method.
2. Describe the scope of the physical/biological sciences.
3. Interpret scientific data to demonstrate basic problem solving.
4. Explain everyday phenomena in terms of basic physical/chemical science concepts.
5. Explain and critique science as presented in the media

Methods of Assessment:

Students, on homework, exams, and Quizzes, will *describe and explain*, items, principles, and processes related to the student outcomes. (Milestone I)

Pitt State Pathway Pillars to Be Covered in This Course

Required Textbook and other materials:

- Web-link to lecture book supplemental: http://higher.mcgrawhill.com/sites/0073375667/student_view0/chapter1/figures_alive_.html
- Calculator (Non-programmable scientific with a LOG and “EE or E” button)

Pre-requisite/Co-requisite:

Chem 106 (Introductory Chemistry Laboratory) is a pre-requisite or co-requisite to this course. If you drop CHEM 105 at anytime during the semester, you are also required to drop the CHEM 106 lab. If you drop CHEM 106 you will also be required to drop CHEM 105.

Course Learning Objectives:

Scientific Inquiry: Level of Student Learning: Milestone I

Definition of Milestone I under Scientific Inquiry: Students will apply the scientific methods to a problem

After successful completion of the course, students will be able to:

- Explain scientific phenomena
- Understand scientific articles
- Understand molecular structure
- Explain differences between elements, compounds, and mixtures.
- Understand physical phenomena
- Understand chemical reactivity
- Explain chemical reactions
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Attendance Policy:

There are several group activities during the semester; a student attendance in class is required. An official note (a doctor's or nurses note, accident report, official programs for events or a letter from the club advisor on university letterhead stating the date and a student name) is required to excuse an absence due to any of the following:

- (i) University sponsored activity (athletic team obligations, choir or theatre practice, etc.)
- (ii) or medical or family emergency. It is a student responsibility to submit written documentation to support the absence. Absences without appropriate documentation will be considered unexcused. Attendance will be taken during lectures, it is a student responsibility to sign the roster. If the roster does not show a student signature, it will be counted as an unexcused absence. Signing the roster for another student will be considered Academic Dishonesty and may result in an "XF" and/or removal from the course.

There will be a number of in-class group activities throughout the semester, participation and attendance is expected and common courtesy to a student group members. The groups will be assigned by the instructor and is subject to change throughout the semester. These activities are designed to be done as a group and points can only be earned if a student is in class (regardless of an excused or unexcused absence).

Methods of Assessment:

Homework, Quizzes, In-Class Activities and Exams

Homework is due at the beginning of the lecture according to the syllabus, and should be formatted as shown in Canvas (Modules folder). Late Homework will not be accepted so that the key/solution can be posted as soon as possible. It is recommended that a student scan or photo-copy a student homework.

Topics:

Chapter 1-The Air We Breathe

Chapter 2-Protecting the Ozone Layer

Chapter 3-The Energy of Global Warming

Chapter 4-Energy, Chemistry, and Society

Chapter 5-The Water We Drink

Chapter 6-Neutralizing the Threat of Acid Rain

Chapter 8-Energy from Electron Transfer

Chapter 9-The World of Polymers and Plastics

Chapter 10-Manipulating Molecules and Designing Drugs

Chapter 11-Nutrition: Food for Thought

Chapter 12-Genetic Engineering and the Molecules of Life

GRADES:

- Grades will be based on 4 exams, 4 quizzes

7 sets of homework problems, 10 Group Activities and a comprehensive final exam.

- The distribution of grades are as follows:

4 Exams 50 pts each

4 Quizzes 20 pts each

10 Group Activity Worksheets 5 pts each

Picture+First post on blog/discussion 5 pts

7 Homework Sets 20 pts each

Final Exam 100 pts

Maximum Total at end of semester 535 pts

Final letter grades, before the attendance policy is taken into consideration, will be based

on the following grading scale:

A > 90 %

B > 80 %

C > 65 %

D > 55 %

F < 55 %

ACADEMIC HONESTY:

Help from other students or other third party is not allowed during quizzes and exams and will be viewed as academic dishonesty. Use of other materials, information or persons, cell-phones during a quiz or exam will be viewed as academic dishonesty (i.e. collaborative efforts to answer quiz or exam questions are not acceptable). Calculators (TI-89 or equivalent or computers) with alphabet capabilities may be restricted for quizzes and exams. Everyone should have scientific calculator capable of basic math, trig and log operations (this does not necessarily mean a TI-89 or equivalent).

All calculator memories are to be cleared at the beginning of all quizzes and exams. Academic dishonesty on any exam or quiz will result in an automatic zero for the quiz or exam and maybe removal from the course (even if it involves only one question). Further offences will result in an overall “F” grade and immediate removal from the course. Please consult the policy on Student Academic Dishonesty in the University Catalog (2007-2009).