

CHEMISTRY 211

Principles of Chemistry I

Section 201, Spring 2014

Class Information

Time: Mon, Weds, Fri, 9:00am – 9:50am

Location: 473 Science Building

Instructor Information

Instructor: John Rakus, Ph.D. **Email:** rakus@marshall.edu **Phone:** 304-696-6627

Office: 478 Science Building **Office Hours:** Monday through Thursday, 3pm to 4pm; Tuesday and Thursday 9am to 11am; by appointment and walk in.

Website: <http://science.marshall.edu/rakus/CHM%20211.html>

Required Items

Text: Gilbert *et al.* Chemistry, 3rd Ed. W.W. Norton & Company.

Additional: Scientific calculator, Turning Technologies clicker. SmartWork account.

Catalog Listing

A study of the properties of materials and their interactions with each other. Development of theories and applications of the principles of energetics, dynamics and structure. Intended primarily for science majors and pre-professional students.

Course Description

The purpose of this course is to provide a foundational understanding of chemical principles that will allow students to better understand such topics as atomic structure, energetics and bonding in the broader context of how our world works. This understanding can be applied in other chemistry and science courses. Though prior knowledge of chemistry is not a requirement, this course has a strong algebra component and proficiency in algebra must be demonstrated.

Prerequisites: 1.) 23 or higher on Math ACT or 2.) CHM 111 (C or above) or 3.) passed placement exam.

Learning Objectives

- Development of analytical skills.
- Application of analytical skills in problem-solving presented in a chemistry context.
- Understanding of fundamental chemical theories on atomic structure, bonding and reaction stoichiometry.

Student Conduct

I hold my students to the same expectations about conduct and behavior while in class that I have for myself. It is my responsibility to you to provide the best learning environment of which I am capable and, in return, I believe everyone in this classroom deserves the right to be treated with dignity and respect. I encourage questions, interaction and curiosity but I also implore you to consider your classmates' interests in class. I will not demand your unwavering attention if you

do not wish to provide it, but I simply ask that you do not disrupt the learning environment in which I am trying to provide.

Technology Policy

Cell phones, iPads and other digital devices are allowed during lecture time provided that they are kept silent and are not used in a disruptive manner. Should I feel that someone is using a device disruptively, I reserve the right to confiscate the device for the remainder of class and/or ask the student to leave. Devices are expressly forbidden during examinations and will be considered a violation of the Academic Integrity Policy.

Attendance Policy

Attendance is strongly encouraged. I will not keep attendance (beyond registration requirements) and attendance is not graded.

University Policies

By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to www.marshall.edu/academic-affairs and clicking on “Marshall University Policies.” Or, you can access the policies directly by going to http://www.marshall.edu/academic-affairs/?page_id=802

Academic Dishonesty/ Excused Absence Policy for Undergraduates/ Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment

Grade Policy

You will have four in-class hour-long exams on **January 31, February 26, March 28, and April 30**, which will cover the material until two lectures before the exam (example: material from the January 29 lecture will be on the February 26 exam). You will have a comprehensive final examination. In addition, you will be required to complete 10 online quizzes through SmartWork. The lowest quiz grade will be dropped. You are also required to participate in class through clicker response questions that will be presented during lecture. Clickers are graded based on percent of responses throughout the semester. Answering 90% or more of the questions will result in full credit. Answering between 80 and 89% of the questions will result between 90 and 99% credit. 70-79% of responses will result in between 80-89% credit. *Etc.*

Letter Grade Assignments

90-100 A
80-89 B
70-79 C
60-69 D
00-59 F

Grade Breakdown

Clicker Responses **10%**
Exam 1 (Jan 31) **10%**
Exam 2 (Feb 26) **15%**
Exam 3 (Mar 28) **15%**
Exam 4 (Apr 30) **15%**
SmartWork Quizzes **15%**
Final (May 3) **20%**

Loose Schedule of Course Topics

January 13 – January 17

Introduction to course and course policies. Chapter 1 (Matter, Energy and the Origins of the Universe).

January 20 – January 24

Chapter 2 (Atoms, Ions and Compounds).

NO CLASS – January 20, Martin Luther King, Jr. Day

QUIZ 1 – January 24

“W” PERIOD BEGINS – January 21

January 27 – January 31

Chapter 2, continued. Begin Chapter 3 (Chemical Reactions and Earth’s Composition).

QUIZ 2 – January 29

EXAM 1 – January 31

February 3 – February 7

Chapter 3, continued.

QUIZ 2 – February 3

February 10 – February 14

Chapter 4 (Solution Chemistry and the Hydrosphere).

QUIZ 3 – February 10

February 17 – February 21

Chapter 4, continued.

February 24 – February 28

Chapter 5 (Thermochemistry).

QUIZ 4 – February 24

EXAM 2 – February 26

March 3 – March 7

Chapter 5, continued. Begin Chapter 6 (Properties of Gases: The Air We Breathe).

QUIZ 5 – March 5

March 10 – March 14

Chapter 6, continued. Begin Chapter 7 (Electrons in Atoms and Period Properties).

QUIZ 6 – March 12

March 17 – March 21

NO CLASS – Spring Break

March 24 – March 28

Chapter 7, continued. Begin Chapter 8 (Chemical Bonding and Climate Change).

QUIZ 7 – March 26
EXAM 3 – March 28
“W” PERIOD ENDS – March 28

March 31 – April 4

Chapter 8, continued.

April 7 – April 11

Chapter 9 (Molecular Geometry and Bonding Theories)

QUIZ 8 – April 9

April 14 – April 18

Chapter 9, continued. Begin Chapter 10 (Forces Between Ions and Molecules).

QUIZ 9 – April 18

April 21 – April 25

Chapter 10 continued.

April 28 – May 2

Chapter 10, continued.

QUIZ 10 – April 28

EXAM 4 – April 30

REVIEW – May 2

May 3

FINAL EXAMINATION: 10:00am – 12:00pm