Chemistry and Society II Spring 2017
CHEM 106A

Instructor:	Dr. Kenneth J. McGrath		
Office:	Jepson 301	654-1448	kmcgrath@umw.edu
Office Hours:	2:30 – 3:30 pm T, R and by appointment		
Lecture	3:30 - 4:45 pm T, R, Jepson 219		
Laboratory	5:00 – 7:00 pm R, Jepson 109 (CHEM 106A)		

Course Materials/ Requirements

Chemistry in Context – Applying Chemistry to Society. Middlecamp, C.H., Mury, M.T., Anderson, K.L., Bentley, A.K., Cann, M.C., Ellis, J.P., Purvis-Roberts, K.L. 8th Edition, McGraw Hill, 2015.

Chemistry in Context Laboratory Manual, Tripp, J. A, McKenzie, L., 8th Edition, McGraw-Hill, 2015. **Used lab manuals are not acceptable**

Calculator with scientific notation and logarithmic/exponential functions;
Cellular phones are not permitted on exam days

Approved ***safety goggles and lab coat*** for use in the laboratory

Course Description

This yearlong course is designed for **non-science majors** to illustrate the fundamental principles of chemistry and how they apply to modern society. After completing the course, a student should

- understand the role of chemistry in the everyday world
- be able to assess risks and benefits
- learn how to become a better critical thinker
- become scientifically literate

General Education and Course-Specific Learning Objectives:

This course in part satisfies the Natural Science General Education requirement. After completing the course sequence, a student should

- Be able to describe the scientific methods that lead to scientific knowledge
- Be able to report and display data collected, interpret experimental observations and construct explanatory scientific hypotheses
- Be able to use theories and models as unifying principles that help us understand the natural world
- Be able to identify current issues in which scientific progress may challenge traditional social ideas or present moral or ethical dilemmas

Grading

The grade in the course will be based on the number of points accrued throughout the semester. Each assignment is worth a specific percentage of the final grade, shown below. The dates for the assignments will be announced in class or are listed on the tentative schedule.

Grade Component	**Total %**
Hour examinations (3)	45 % (15% each)
Quizzes	10 %
Laboratory	25 %
Cumulative Final Examination	20 %
Total	100 %

The intent of the **quizzes** is to help keep you up to date with the material, prepare you for the examinations, and help the instructor identify if the class understands the concepts presented in the lecture. Quizzes will be announced at least one lecture class before they are given.

The dates for the exams are as follows:

Exam 1	Chapters 7-8	**Tuesday February 14**
Exam 2	Chapters 9-10	**Thursday March 23**
Exam 3	Chapters 11-12	**Thursday April 20**
Final Exam	**Cumulative**	**Thursday May 4 (3:30 – 6:00pm)**

No cellular phones, PDAs, or other personal devices will be permitted during an examination. If a calculator is required for the exam, no formulas or information may be stored in the memory of the device.

The hour examinations will be given in class on the date indicated. **You may begin the examinations at 3:30 pm and the exams are due at 4:45 pm**. If you arrive late for an examination, you will have less time to complete the exam.

Select problems found in the text will be assigned as **recommended homework problems**. Homework will not be collected or graded. As a result you may choose not to do the homework. ***This is not advisable***. These problems are assigned to give the student practice in preparation for the quizzes and examinations. If you have questions concerning a homework problem, you should feel free to come by my office for help, or ask me at the beginning of a class period and we can work the problem in class if time permits.

The final course grade will be based on the following point scale:

Total Percentage	**Letter grade**	**Total Percentage**	**Letter grade**
≥ 93%	A	76.9 - 73.0 %	C
92.9 - 90.0 %	A-	72.9 - 70.0 %	C-
89.9 - 87.0 %	B+	69.9 - 67.0 %	D+
86.9 - 83.0 %	B	66.9 - 60.0 %	D
82.9 - 80.0 %	B-	≤ 59.9 %	F
79.9 - 77.0 %	C+		

A mid-semester report of unsatisfactory (U) will be reported if you have a C-, D+, D or F in the course thus far.

Canvas

You must have access to Canvas (https://canvas.umw.edu). Frequently, pertinent articles will be handed out in class or posted on Canvas and the contents thereof will be included in the required information for quizzes and exams. Assignments, announcements and other information will also be posted on Canvas for reference.

Honor System

Any assignment for which you will receive a grade must be completed and pledged as your own work. The honor pledge must be written in full: I *hereby declare upon my word of honor that I have neither given nor received unauthorized help on this work. (Signature).* I will not grade an assignment without a signed pledge.

Class Attendance

Class attendance is strongly encouraged. Lateness to the lecture is distracting to others and students should attempt to be on time. You are responsible for all materials covered in class during your absence.

Make-up exams will only be arranged for exceedingly unavoidable circumstances that are documented (death in family, hospitalization, etc.). Convenient travel arrangements *do not qualify*. **You need to notify me *before the exam class* of such an emergency**. ***Make-up exams can not be given after corrected exams are handed back to the rest of the class.***

What is the best way to succeed in this course?

1) Attend the lectures - attendance is extremely important.

2) Review the lecture notes and read the textbook outside of class - Read the textbook before the lectures and review laboratory materials before and after the lecture in order to familiarize yourself with the important concepts of this course.

3) Read the textbook, lecture, and laboratory materials before coming to lab.

4) Spend at least an hour a day outside of class reviewing notes, reading the book, and completing problems.

5) Do not be afraid to ask questions. I will try to be available as much as possible to answer all of your questions. If quiz scores indicate that the class seems unclear about a lecture topic, we will spend more time on that topic.

6) Consult your peers. First, they may have a different perspective or a different way of explaining the topic. Second, scientists and many other professionals typically work together as members of a team. It is important that you learn to work with others.

Family Educational Rights and Privacy Act (FERPA)

FERPA is a Federal law that protects student educational records. It is a violation of this law to put a stack of graded papers at the front of the classroom for students to retrieve. There is a chance that another student could see a grade on the assignment. To retain confidentiality, the grade on assignments will be placed on a back page. If you would like to retrieve your paper from the classroom, please sign and date the waiver form on the last page of the syllabus. If you do not feel comfortable having your papers placed on a table at the front of the classroom, you can either select a secret code that you will use as your identifier on every assignment or you can pick your papers up in person at my office. Please indicate on the waiver, your choice of manner to obtain assignments.

Important Registrar Dates:

The last day to add a class is January 23, and the last day to drop without a grade of W is February 3.

Office of Disability Services

The Office of Disability Services has been designated by the University as the primary office to guide, counsel, and assist students with disabilities. If you receive services through that office and require accommodations for this class, please make an appointment with me as soon as possible to discuss your approved accommodation needs. Bring your accommodation letter with you to the appointment. I will hold any information you share with me in the strictest confidence unless you give me permission to do otherwise. If you need accommodations, (note taking assistance, extended time for tests, etc.), I would be happy to refer you to the Office of Disability Services. They will require appropriate documentation of a disability. Their phone number is 540-654-1266.

LABORATORY

The laboratory portion of this course is designed so that each student gains experience in practical applications of chemistry. The schedule for lab experiments is designed to help understand the lecture concepts and to experience to a certain degree, scientific investigation.

Laboratory Grade

The laboratory grade, which constitutes 25% of the final grade in Chem 106A, will consist of a group project and a variety of laboratory assignments. At the end of the semester, the laboratory points to date will be adjusted to the 25% allotted for laboratory grade in the final course grade.

Attendance

Attendance in the laboratory is mandatory. **Unexcused absences from laboratory cannot be made up and will count as a zero lab grade**. Excused absences may be made-up, if possible, at the discretion of the instructor. **If you have to miss a laboratory due to an emergency or if you expect to be absent due to an intercollegiate athletic event, etc., you must inform the instructor *in advance of the laboratory class***. You will then be given an alternate assignment to complete in lieu of the missed laboratory.

It is also imperative that you be on time for the laboratory. The pre-lab lectures cover important safety and procedural information. If an individual is repeatedly tardy, a **grade deduction** will occur for each instance or the student will not be permitted to perform the experiment.

It is absolutely critical that you respect the dangers inherent in laboratory space**. If I feel your behavior is seriously unsafe to either you or your classmates, you will be asked to leave immediately and will receive a zero for that day's effort.**

Be sure to bring the laboratory manual, calculator, laboratory coat, and goggles to each experiment. Failure to bring the appropriate materials to the laboratory may result in a penalty to your grade.

No eating or drinking in the lab. **Laboratory exercises must be read prior to class.**

You should complete as much of the work as possible during the assigned laboratory time. No unauthorized access to the laboratory is permitted. All experiments must be completed when the instructor is present.

Laboratory Safety

This course involves laboratory work and has potential risks, such as exposure to hazardous chemicals and minor injuries, such as cuts and burns. Each student will be trained in basic laboratory safety and given information about the requirements for personal protection. Students will be provided information about accessing material safety data sheets, which provide information about specific chemical hazards. During the first laboratory period of this semester, the safety rules will be presented and reviewed. In order to participate in this course, each student must sign a statement in which he or she acknowledges the risks associated with the course and agrees to follow all safety rules and to assume responsibility for his or her actions in the laboratory.

Laboratory Reports

Laboratory data and observations are recorded in ink. Record data in ink directly onto the report sheet. Calculations and explanations may be written in pencil.

Alteration of data or copying data from another individual is an honor offense. You may discuss how to do the calculations with other students or get help from the instructor, but your final report must be your own work.

1. All lab reports must be **typed** and should include: (1) Your Name / Lab Partner Name / Title of Lab / Date of Lab, (2) Abstract, (3) Discussion Section, (4) Answers to Assigned Questions; (5) Data Sheets (***ATTACHED AT END***). ***Lab reports will NOT be accepted unless all pages are STAPLED together.***

2. An **ABSTRACT** is a brief statement of the purpose of the lab (one or two sentences explaining why the experiment was conducted) and a brief summary of specific results.

3. **DISCUSSION SECTION** – in this section you will discuss your results and your interpretation of the data. You will also explain anything that happened in the lab that may help explain why your data is different than expected (ex. your sample was contaminated or you accidentally spilled half of your unknown, etc).

4. You must hand in the original data sheets (stapled to the end of the lab report), even if it is quite messy. If it is difficult to read the data sheet, you should construct a table, etc. using your computer.

5. All assigned questions at the end of the lab must be answered. You and your partner will share data concerning the experiment, but **the questions are to be answered independently of your partner.**

6. A hardcopy of your lab report must be completed and handed in at the **beginning** of the following lab period. Ten percent will be deducted for each day late. Labs ***more than two days*** late will earn a ***zero***.

7. Your lab report will usually consist of two parts:

    1) Cover sheet with your name, your lab partner's name, title / date of experiment, abstract, discussion section, and answers to assigned questions
    2) Data sheets (handed out at the beginning of each lab experiment)

    Both the cover sheet and data sheets must be stapled together

Group Project

In addition, there will be two laboratory periods devoted to a project related to the material presented in the course. You will work in groups to research and develop a presentation about an innovative product or service. More details on the project will follow in the early part of the semester. Your grade (worth 2 lab grades) will be based on your final report/presentation.

Tentative Schedule Spring 2017

LECTURE SCHEDULE		LABORATORY SCHEDULE
1/17 Intro/Chap 8	*1/19* Chapter 8	*1/19* Safety / Check-In / The Busy Electron (VT)
1/24 Chapter 8	*1/26* Chapter 8	*1/26* Review Oxidation/Reduction Concepts. A Study of Redox Reactions
1/31 Chapter 7	*2/2* Chapter 7	*2/2* Exp. 24. Chemical Reactions and Electricity
2/7 Chapter 7	*2/9* Chapter 7	*2/9* Group Project Introduction
2/14 **EXAM 1**	*2/16* Chapter 9	*2/16* Exp. 26 Classification and Identification of Common Plastics
2/21 Chapter 9	*2/23* Chapter 9	*2/23* The Ubiquitous Styrofoam Cup
2/28 Chapter 9	*3/2* Chapter 10	*3/2* The Ubiquitous Styrofoam Cup/ Exp. 25 Polmer Synthesis and Properties
3/7 ***Spring Break***	*3/9* ***Spring Break***	*3/9* ***Spring Break***
3/14 Chapter 10	*3/16* Chapter 10	*3/16* Exp. 27 Identification of Analgesic Drugs by TLC
3/21 Chapter 10	*3/23* **EXAM 2**	*3/23* Nutrition (VT) / Quiz
3/28 Chapter 11	*3/30* Chapter 11	*3/30* Exp. 30 Fat in Potato Chips
4/4 Chapter 11	*4/6* Chapter 11	*4/6* Exp. 31 Sugar in Soft Drinks
4/11 Chapter 12	*4/13* Chapter 12	*4/13* Exp. 33 Vitamin C Content in Fruit Juices
4/18 Chapter 12	*4/20* **EXAM 3**	*4/20* Exp. 34 Isolation of DNA
4/25 Chapter 12	*4/27* Chapter 12/ Rev	*4/27* Group Project Presentations/ Lab Checkout
	5/4 **FINAL EXAM** Thursday May 4 3:30 – 6:00pm	

I have read and am accountable for all information in Chemistry 106A Syllabus. I am also accountable for all information, both written and verbal, communicated in the class and laboratory setting. I am accountable for information transmitted to me via electronic mail (e-mail) and posted on Canvas.

Signed:_____

Date:_____

FERPA Waiver

Name : _____

I give permission for graded assignments bearing my name and grade to be placed in the front of a classroom for retrieval.

Signature: _____

I do not wish to have my graded assignments placed in front of a classroom and will retrieve my papers in Dr. McGrath's office.

Signature: _____