



## CHEM 1211 – Principles of Chemistry I

### Course Syllabus – Summer 2019

Student learning disabilities documented through the Disability Services Coordinator (Student Center 255, (678) 466-5445, [disabilityservices@mail.clayton.edu](mailto:disabilityservices@mail.clayton.edu)) will be honored as detailed to the instructor. Please inform the instructor *within the first week of the course or as soon as possible*.

### Course Information

#### Course Description:

- **Number and Title:** CHEM 1211 (CRN 50438), Principles of Chemistry I
- **Credit Hours:** 3.0 semester credit hours (3-0-3)
- **Catalog Description:** First course in a two-semester sequence covering the fundamental principles and applications of chemistry for science majors. Topics to be covered include composition of matter, stoichiometry, periodic relations, and nomenclature.

#### Course Prerequisites and Co-requisites:

- Pre-requisites: MATH 1112A (or MATH 1113 or MATH 1501) with a minimum US grade of D (can be taken concurrently).
- Co-requisites: CHEM 1211L

*Note: Due to the co-requisite nature of CHEM 1211 and CHEM 1211L, students dropping one of the two courses must also drop the other.*

#### Instructor Information:

- **Instructor:** Dr. John Meyers
  - E-mail: [JohnMeyers@clayton.edu](mailto:JohnMeyers@clayton.edu)
  - Phone: (678) 466-4773
  - Internet: [www.clayton.edu/faculty/jmeyers2](http://www.clayton.edu/faculty/jmeyers2)
- **Office:** Lakeview Discovery and Science Center, Room 235D
- **Office hours:** MW 9:30 – 10:15 am; MW 1:00 – 1:45 pm; “open door;” and by appointment

#### Class Meetings:

- **Lecture room and times:** Monday and Wednesday, 10:30 – 12:50 pm, Lakeview Science Center 210

#### Textbook Information:

- **Text:** Tro, Nivaldo. *Chemistry: Structures and Properties* (2<sup>nd</sup> ed.); Pearson: 2017.
- **Text ISBN-13:** 978-0134293936
- **Text coverage:** Chapters E, 1 – 5, and 7 – 10

Students are encouraged to use PriceLoch.com to comparison shop for materials.

#### Additional Required Materials:

- **Note taking system:** Based on your preferences (e.g., spiral notebook). Hand-written system recommended.
- **MasteringChemistry online homework system:** Register at [www.pearsonmylabandmastering.com](http://www.pearsonmylabandmastering.com) with Course ID **meyers22313**. Purchase at bookstore or from publisher online.
- **Calculator:** A simple calculator capable of scientific notation will suffice. Graphing calculators are not required, but are permitted.

- **Access to Desire2Learn (D2L):** On-line activity will take place in Desire2Learn, the virtual classroom for the course. Posting of your work in D2L is a course requirement. Announcements and supplemental information such as course notes may also be found on D2L. Sign in through the SWAN or <https://clayton.view.usg.edu/>. If you experience any difficulties in D2L, please email or call The HUB at [TheHUB@clayton.edu](mailto:TheHUB@clayton.edu) or (678) 466-HELP. You will need to provide the date and time of the problem, your SWAN username, the name of the course that you are attempting to access, and your instructor's name.
- **Access to CSU email:** Important course announcements will be sent via email to your CSU email address. You are expected to check your CSU e-mail account regularly. Only use your CSU e-mail account to communicate academic information to your instructor.

### **Computer Requirement:**

Each CSU student is required to have ready access throughout the semester to a notebook computer that meets faculty-approved hardware and software requirements for the student's academic program. Students will sign a statement attesting to such access. For further information on CSU's Official Notebook Computer Policy, please go to <http://www.clayton.edu/hub/itpchoice/notebookcomputerpolicy>.

### **Computer Skill Prerequisites:**

Ability to use your computer's operating system (Windows or Mac OS X), Microsoft Word™ word processing, send and receive e-mail via CSU account, attach and retrieve attached files via email, and use a Web browser (Google Chrome or Mozilla Firefox recommended).

### **In-Class Use of Student Notebook Computers:**

Computers will be required to access course materials and to communicate with your instructor. Notebook computers, tablets, or smart phones may be required to access Learning Catalytics for in-class participation. Computers, smart phones, and tablets are prohibited during exams (see course policies).

### **Program Learning Outcomes:**

- **General education outcomes:** The Clayton State University Core Curriculum outcomes (See area D) are located in the Graduation Requirements section of the Academic Catalog and Student Handbook:  
<http://www.clayton.edu/catalog-handbook>
- **Biology outcomes:** CHEM 1211 is a required course in the B.S. degree program in Biology. CHEM 1211 supports outcomes 3 and 5 of the biology major.  
<http://www.clayton.edu/biology/Outcomes>
- **Chemistry outcomes:** CHEM 1211 is a required course in the B.S. degree program in Chemistry. CHEM 1211 supports outcomes 1, 4, 5, and 6 of the chemistry major.  
[http://www.clayton.edu/chemistry-physics/program\\_outcomes](http://www.clayton.edu/chemistry-physics/program_outcomes)

### **Course Learning Outcomes:**

- Perform conversions between units.
- Differentiate between molecules, ions, molecular compounds, and ionic compounds.
- Interpret simple chemical nomenclature.
- Perform stoichiometric calculations and identify types of reactions.
- Analyze atomic and molecular structures.

## **Assignments and Evaluations**

### **Evaluation:**

A student's grade will be determined by his or her performance on the following types of assignments. This class will not be graded on a curve.

Type	Percentage
Assignments – Problem sets	25 %
Assignments – Quizzes	5 %
In-class exams	45 %
Comprehensive final exam	25 %

**Grading Scale:**

Letter grades will be assigned based on your final percentage as follows:

Letter Grade	Percentage
A	90 – 100
B	80 – 89
C	70 – 79
D	60 – 69
F	< 60

**Grading Philosophy:**

A.....The student demonstrates an ability to understand the course material, to apply the material to new problems and situations, and to communicate learned knowledge. *The student exhibits overall excellence without major weaknesses.*

B.....The student demonstrates an ability to understand the course material. The student is able to apply the material to new problems and situations as well as communicate learned knowledge to a limited extent. *The student exhibits more strengths than weaknesses.*

C.....The student demonstrates an ability to understand facts relative to the course material. *The student exhibits an almost equal amount strengths and weaknesses.*

D.....The student demonstrates a partial ability to understand facts relative to the course material. *The student exhibits more weaknesses than strengths.*

F .....Submitted work is unacceptable such that *the student exhibits a lack of understanding and/or effort.*

**Exams:**

There are three in-class exams during the course of the semester and a comprehensive final exam during finals week. Per department policy, the final exam is a standardized, multiple choice exam. All exams take place in the assigned room for our class (see “Class Meetings” above).

Exam #1: Wednesday, June 5, 10:30 – 11:30 am

Exam #2: Wednesday, June 19, 10:30 – 11:30 am

Exam #3: Wednesday, July 10, 10:30 – 11:30 am

Comprehensive final exam: Monday, July 22, 10:30 – 12:50 pm

**Assignments:**

1) *Problem Sets*: Online homework will be assigned through the MasteringChemistry system and is to be completed outside of class. All problem sets can be accessed through D2L. There will be approximately one problem set for each chapter and due dates will be listed on the MasteringChemistry system. Each problem set consists of two parts: (1) ungraded practice problems where the answer is posted in the book, and (2) graded problems for which each student is accountable. The graded problems will be used to determine the score of the problem set.

***The homework is designed to be a learning experience.*** Take every problem seriously, work on all of the assigned problems well before the deadline, and make sure that you can work through a problem under ‘exam conditions’ when you are done with the homework. *MasteringChemistry comes with a built-in “Study Area,” which can prove useful when studying for exams* – this area can be found on D2L.

2) *Quizzes*: Chapter quizzes will be given on D2L to reinforce important and relevant topics from each chapter. Quizzes will be used to gauge your exam readiness and will be graded on a completion basis.

**Mid-term Progress Report:**

The mid-term grade in this course, which will be issued on or around June 20, reflects approximately 30% of the entire course grade. Based on this grade, students may choose to withdraw from the course and receive a grade of "W." Students pursuing this option must fill out an official withdrawal form, available in the Office of the Registrar, or withdraw on-line using the SWAN by mid-term, which occurs on June 21. Instructions for withdrawing are provided at <http://www.clayton.edu/registrar/withdrawal>.

**The last day to withdraw without academic accountability is Friday, June 21, 2019**

**Course Policies****General Policy:**

Students must abide by policies in the Clayton State University Student Handbook, and the [Basic Undergraduate Student Responsibilities](#). The Student Handbook is part of the [Academic Catalog and Student Handbook](#).

**University Attendance Policy:**

Students are expected to attend and participate in every class meeting. Instructors establish specific policies relating to absences in their courses and communicate these policies to the students through the course syllabi. Individual instructors, based upon the nature of the course, determine what effect excused and unexcused absences have in determining grades and upon students' ability to remain enrolled in their courses. The university reserves the right to determine that excessive absences, whether justified or not, are sufficient cause for institutional withdrawals or failing grades.

**Course Attendance Policy:**

Students are expected to attend all classes and required to take all examinations. You are responsible for any material covered should you miss a lecture. Notify me of any conflicts as early as possible.

**Missed/Late Work Policy:**

A grade of zero will be recorded for any missed assignment worth points (e.g., an exam or in-class assignment) that stems from an unexcused absence. Excused absences, for which documentation is required upon request, are considered to be illness, dire circumstance, death in the family, or pre-approved absences (e.g., a university-sponsored event).

There will be no make-up opportunities for quizzes or late submissions of problem sets. Make-up exams cannot be arranged without a valid excused absence as described above and will not be administered after graded exams have been returned to the class (Exception: The final exam must be taken when specified by the Registrar's Office). In the event that a make-up exam cannot be arranged, the missed exam will not count in the course grade calculation such that other exams of the same type will bear a greater weight or the final exam grade will be substituted in for the missing exam grade at the instructor's discretion. Please notify me in advance if you think you may miss an exam.

**Academic Dishonesty:**

Absolute academic integrity is expected. Any type of activity that is considered dishonest by reasonable standards may constitute academic misconduct. Plagiarism, data fabrication, or other types of cheating will be dealt with severely. All instances of academic dishonesty will, at a minimum, result in a grade of zero for the work involved and can result in expulsion from the institution. Two violations in a semester will result in a failing grade in the course. According to university policy, all instances of academic dishonesty will be reported to the [Office of Community Standards](#). Judicial procedures are described in the section of the [Academic Catalog and Student Handbook](#) titled, Procedures for Adjudicating Alleged Academic Conduct Infractions.

**Disruption of the Learning Environment:**

Behavior that disrupts the teaching-learning process during class activities will not be tolerated. While a variety of behaviors can be disruptive in a classroom setting, more serious examples include belligerent, abusive, profane, and/or threatening behavior. A student who fails to respond to reasonable faculty direction regarding classroom behavior and/or behavior while participating in classroom activities may be dismissed from class. A student who is dismissed is entitled to due process and will be afforded such rights as soon as possible following dismissal. If found in violation, a student may be administratively withdrawn and may receive a grade of WF. More detailed descriptions of examples of disruptive behavior are provided in the Code of Conduct and Disciplinary Procedures section of the Clayton State University [Academic Catalog and Student Handbook](#).

### **Weapons on Campus:**

Clayton State University is committed to providing a safe environment for our students, faculty, staff, and visitors. Information on laws and policies regulating weapons on campus are available at <http://www.clayton.edu/public-safety/Safety-Security/Weapons>.

### **Other Policies and Additional Information:**

- **Questions/Extra Help:** If you have questions concerning course content, I encourage you to ask questions in or after lecture, send questions via email, make an appointment to meet with me outside of class, or stop by my office. The Center for Academic Success (located in Edgewater Hall, Suite 257) can also offer studying space as well as and tutoring services, which can be viewed at <http://www.clayton.edu/cas/Tutoring>.
- **Office Hours:** I will maintain an open door policy in addition to my posted office hours. This means that I am available for help when needed. If I am unavailable when you stop by, I will make an appointment to speak with you at a later time.
- **Contacting Me:** In general, the best way to contact me is via email. Keep in mind that an e-mail is a professional communication so be sure to use full sentences with proper spelling and grammar. Please include the course number and a relevant topic in the subject line. If you haven't heard back from me within 24 hours, please email me again.
- **Classroom Etiquette:** Consider the classroom to be a professional setting. Although much of the learning in college occurs outside of the classroom, the time we spend together in class plays a major part in your understanding of the course material. Cell phones and other electronic devices capable of being a distraction to anyone are not to be seen or heard in the classroom. Questions are encouraged at any point.
- **Technology Policy:** We will be using several online technologies this semester, including online submission of assignments. Technology mishaps are not an emergency, but a regular part of using online systems and computers. You are responsible for submitting your work in sufficient time to accommodate potential network outages or computer mishaps. Crashed computers, downed networks, and virus attacks are not a valid excuse for late assignments. Save often, back up your work, and be prepared (The University recommends Microsoft OneDrive). Assignments cannot be submitted by email.
- **Exam-Related Policies:**
  - Scientific calculators can be used for solving mathematical operations on exams, but are not to be used to store formulas, text, and/or other materials that would constitute cheating.
  - Only a writing utensil(s) and calculator are permitted at examinations, which are closed book. Any other needed items will be provided by the instructor. Use of a cheat sheet, smart phone, tablet, laptop, etc. is considered cheating and subject to academic dishonesty punishments described above.
  - Re-grades of exams must be requested within one week of the date that the graded exams are returned to students. Note that the entire exam is subject to re-grade and may actually result in a lower overall exam grade.
  - A disruption of the quiet exam environment via the sounding of a cell phone (e.g., alarm, received text message, and/or receiving a call) will result in a 3 % reduction of your exam grade.
  - A study guide for the comprehensive final exam is available on reserve in the library, but can be purchased at the following link.
    - <http://shopping.na1.netsuite.com/s.nl/c.3773982/it.A/id.1717/.f?sc=11&category=190>
    - Please note that this study guide works for the final exam for both Chem 1211 (this course) and Chem 1212 (the next course after 1211). Also, this guide is organized by topic, not by our book chapter. Make sure you look at the correct topics.

### Tentative Lecture Schedule

Exam dates are established; minor changes in topic coverage are possible at the discretion of the instructor. Chapters and sections are keyed to the textbook listed at the beginning of this syllabus.

Week	Day	Date	Topic	Chapter/Section
1	1	M 5/20	Course introduction; Matter; Properties; Brief history of chemistry; Atomic theory; Atomic structure; Subatomic particles	1.1 – 1.7
	2	W 5/22	Elements, isotopes, and ions; Atomic mass; Accuracy & precision; Measurements (units and numbers); Sci. notation & prefix multipliers; Significant figures	1.8 – 1.9, 2.1 – 2.4, E.1 – E.8
2		<b>M 5/27</b>	<b>No Class – Memorial Day</b>	
	3	W 5/29	Unit conversions and problem solving; The mole; Molar mass; Quantum mechanical model; Electromagnetic radiation (as wave & particle); Emission from atom; Bohr model	E.9, 1.10, 2.1 – 2.2
3	4	M 6/3	Emission from atom and Bohr model, con't.; Rydberg equation	2.2 – 2.4
	5	W 6/5	<b>**EXAM 1 (See study guide for details)**</b> Quantum mechanics history; Quantum numbers & atomic orbitals; Orbital shapes	2.5 – 2.6
4	6	M 6/10	Electron configurations and orbital diagrams; Core vs valence electrons; Electron configurations of ions	3.1 – 3.5,
	7	W 6/12	Periodic table; Periodic trends; Chemical bonds; Formulas and models; Writing chemical formulas	3.6 – 3.8, 4.1 – 4.3
5	8	M 6/17	Nomenclature (ionic); Covalent bonds and structures; Nomenclature (molecular); Molar mass; Composition of compounds; Mass percent; Determining a formula	4.4 – 4.10
	9	W 6/19	<b>**EXAM 2 (See study guide for details)**</b> Bond polarity & electronegativity;	5.1 – 5.2
		<b>F 6/21</b>	<b>Semester Midpoint: Last day to drop without academic accountability</b>	
6	10	M 6/24	Drawing Lewis structures; Formal charge; Bond energies and lengths; Resonance structures; Octet rule exceptions; Molecular geometry (VSEPR)	5.3 – 5.7
	11	W 6/26	Molecular geometry (VSEPR), con't.; Molecular polarity; Chemical and physical changes; Balancing equations	5.7 – 5.10, 7.1 – 7.3
7	12	M 7/1	Stoichiometry; Limiting reactant; Theoretical & percent yield; Solution, solute, and solvent; Solution concentration	7.4 – 7.6 8.1 – 8.2
		W 7/3	Dilution; Solution stoichiometry; Solubility; Electrolytes; Aqueous reactions (precipitation, acid-base, redox); Complete & net ionic equations; Oxidation state	8.3 – 8.7, 8.9
8	13	M 7/8	Thermochemistry; 1 <sup>st</sup> Law of Thermodynamics; System vs surroundings; Internal energy; State function; Exo/endothermic and signs	9.1 – 9.3
	14	W 7/10	<b>**EXAM 3 (See study guide for details)**</b> Heat capacity; Specific heat; Calorimetry; Work; Enthalpy and $\Delta H_{\text{rxn}}$	9.4 – 9.8

Week	Day	Date	Topic	Chapter/Section
9	15	M 7/15	Thermochemical stoichiometry; Relationships with $\Delta H_{\text{rxn}}$ ; Hess's Law; Bond energy; Standard enthalpy; Standard enthalpy of formation, $\Delta H^\circ_f$ ; Born-Haber cycle; States of matter, review; Molecular speed (mass, energy); Cohesive vs disruptive; Pressure;	9.8 – 9.11, 10.1 – 10.2
	16	W 7/17	Gas laws; Ideal gas law; Combined gas law; Standard temperature and pressure; Density and molar mass of gas; Partial pressure; Kinetic molecular theory; Diffusion; Effusion	10.3 – 10.9
10	17	M 7/22	<b>Final Exam (In-class; See study guide for details)</b>	

**Last updated:** May 19, 2019