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[I. Fundamentals of General, Organic, and Biological Chemistry , 8th Ed., McMurry, ISBN 9780134465715. Hardcopy or Ebook is acceptable 3](#_Toc61288880)

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# (CHE 109-751 General, Organic, & Biochemistry) CRN 10803

**COURSE INFORMATION**

**Course Title:** **General, Organic, & Biochemistry**

**Credits:** 4.0

**Course Description (from CCNS):**  [Common Course Numbering System](https://internal.cccs.edu/academic-affairs/common-course-numbering-system/)

Focuses on fundamentals of inorganic, organic and biochemistry primarily for students in health science, non-science majors and/or students in the occupational and health related career areas. Includes the study of measurement, atomic theory, chemical bonding, nomenclature, stoichiometry, solutions, acid and base chemistry, gas laws, condensed states of matter and nuclear chemistry, nomenclature of organic compounds, properties of different functional groups, nomenclature of various biological compounds, their properties and biological pathways.

**Semester & Year:** Summer 2021

**Meeting Location, Times & Days:** **ONLINE**

**Start Date:** 06/01/2021

**End Date:** 08/09/2021

**Last date to drop with a refund:** 06/11/2021

**Last date to withdraw:** 07/26/2021

# **INSTRUCTOR INFORMATION**

**Name:** Shamim Ahsan, Ph.D.

**E-mail and Phone:** [Shamim.ahsan@ccd.edu](mailto:Shamim.ahsan@ccd.edu) (I will respond within 48 hours, does not include weekends). **I PREFER STUDENTS SEND MAIL THROUGH D2L FOR ANY CLASS RELATED ISSUES. I ALSO RESPOND MAIL THROUGH OUTLOOK.**

**Office Hours & Location:** Science Building, SI 2027

by appointment

**WebEx link:** <https://cccs-meetings.webex.com/meet/shamim.ahsan>

# **REQUIRED TEXT/COURSE MATERIALS/TECHNOLOGY**

# **Textbook (required):** Fundamentals of General, Organic & Biological chemistry, John McMurry, 8th Edition, PEARSONS, ISBN 9780134465715, HARDCOPY, LOSE COPY OR EBOOK IS ACCEPTABLE

1. **Scientific/Graphing Calculator (required).** Scientific Calculator with logarithm, exponential (scientific) notation, and square root capabilities

COURSE CALENDER

* The instructor has the right to adjust the content in the table below if deemed necessary.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Date** | **Topic** | **Readings** | **Assignments** |
| **1** | 6-01 to 6-06 | **Topic 1**  **Topic 2** | **Reading: Chapter 1 and**  **Reading: Chapter 2** | **HW# 1:(Chap. 1 & 2), Quiz # 1(Chap 1 & 2)** |
| **2** | 6-07 to 6-13 | **Topic 3**  **Topic 4** | **Reading: Chap.3 (3.2, 3.3, 3.5, 3.6, 3.9) and**  **Reading: Chapt. 4 (4.1-4.3, 4.7-4.9, & 4.11)** | **HW #2:(Chap. 3 & 4)**  **Quiz # 2 (Ch 3 & 4)**  **Discussion #1** |
| **3** | 6-14 to 6-20 | **Topic 5** | **Reading: Chap. 5 (5.2, 5.4- 5.5) and**  **Reading: Chap. 6 (6.1-6.2)** | **PHW #1 (5 & 6),**  **Quiz 3(Chap.5 & 6) Discussion #2** |
| 4 | 6-21 to 6-2**7** | **Topic 6**  **Topic 7** | **Reading: Chap. 9 (9.1-9.2, 9.4-10) and**  **Reading: Chap. 10 (10.1-2, 10.5, 10.8, 10.10)** | **HW# 3:(Chap. 9 & 10)**  **Exam 1: Topic 1-5; (Ch. 1, 2, 3, 4, 5, 6)** |
| 5 | 6-28 to 7-04 | **Topic 8**  **Topic 9** | **Reading: Chap: 8 (8.3-8.4, 8.5, 8,9, 8.11) and**  **Chap 8 (8.2, 8.12)** | **HW # 4 (Chap 8)**  **Quiz 4 (Ch. 9 & 10)**  **Discussion #3** |
| **6** | 7-05 to 7-11 | **Topic 10**  **Topic 11** | **7/5 Holiday**  **Reading: Chap. 12 (12.1-12.2**)  **Reading: Chap.12 (12.5, 12.8)**  **Reading: Chap. 13 (13.1-4, 13.6, & 13.8)** | **HW #5 (12 and 13)**  **Quiz 5(12 & 13)** |
| **7** | 7-12 to 7-18 | **Topic 12**  **Topic 13** | **Reading: Chap. 14: (14.1-14.4, 14.9, & 14.10)**  **Reading: Chap. 16 (16.1-16.5)** | **PHW #2 (Ch 14 & 16)**  **Exam 2: Topic 6-11**  **(Ch. 8, 9,10, 12,13)** |
| **8** | 7-19 to 7-25 | **Topic 14**  **Topic 15** | **Reading: Chap. 20 (20.1-20.4)**  **Reading: Chap. 23 (23.1-23.7)** | **HW #6 (Ch 20 & 23) Quiz #6 (Chap. 20 & 23)** |
| **9** | 7-26 to 8-01 | **Topic 16**  **Topic 17** | **Reading: Chap. 18 (18.2 18.10)**  **And Chap. 25 (25.6)**  **Reading: Chap. 19 (19.1, 19.3, 19.5, & 19.9)** | **PHW #3(Ch. 18 & 19)**  **Quiz #7(Chap. 18 & 25)**  **Discussion #4** |
| **10** | 8-02 to 8-09 | **Topic 18**  **And Final Exam** | **Reading: Chap. 26 (26.2-26.5)** | **Final Exam**  **Comprehensive.** |

**Note: Typically, each week start on Monday through Sunday [except week 10]. Assignments for each week will be posted in the Content Area folder “Weekly Announcement” with the Topic outline. Announcement will open at 8 AM on Monday. Students should very carefully read the assigned tasks for the week and must complete those within the stipulated time.**

**COURSE SPECIFIC POLICIES AND INFORMATION**

Lecture notes

Power point slides will be posted on D2L from each chapter. First assignment is to review and read lecture notes. To understand the concept with text readings relevant topic videos will be added in the weekly announcements. It is the student’s responsibility to review lecture notes, and videos attached in the weekly announcements during the week. Reach out to instructor, if needed.

Homework

Homework will be assigned from textbook chapters. Students must submit homework in word or pdf format (typed). Only clear handwritten work will be accepted in word or pdf format. Other image formats (e.g., Jpeg,) are not allowed for HW submission. All of the work shown in homework must be clear and understandable. It is important that students must show each step in the chemistry homework clearly showing all units. Submission of only answers without showing required steps will be graded as zero. For some chapters Practice homework (PHW) will be assigned. For putting efforts and completion of PHW, 5% grade points will be awarded. Feedback will be provided, if necessary.

All homework must be turned in by the deadline posted in the weekly schedule. Grades for the homework with feedback will be posted within 7 days of submission, unless otherwise delayed due to technical or work conflict issues. Feedback on problems wrongly solved may be provided. If the students have questions on the feedback, must communicate with instructor within 48 hours.

Quizzes and Exams

**A total of 7 quizzes and 2 exams will be given throughout the semester, to complete in D2L**. A department **final exam** will be completed at the end of the semester. (See Assignment Weight for break down). EXAM attendance is required.

Each quiz has 20 multiple choices, True and False or matching questions with 25 minutes to complete. Exams may have 50 multiple choices, True and False or matching questions with 65 minutes to complete. Final exam is 120 minutes comprising around 75 multiple choices, True and False or matching questions. The number of questions may vary in different quizzes and exams, if the instructor deemed it necessary. All quizzes and exams will remain open during the assigned week. Students must follow the weekly announcement.

**Quiz Drop:** **Two lowest quizzes may be dropped at the end of the semester, assuming you were present for all quizzes during the semester**. **Missed quizzes will count as a 0 and may not be dropped.** Due to time constraints in the semester, it is difficult for instructor to review each quizzes and exam. After the class is done with quiz/exam instructor will open the correct answers and it is the student’s responsibility to review their own exam or quiz during their own time and report any discrepancy to instructor for correction.

As a general rule, make-ups to exams will **NOT** be granted unless severe and uncontrollable circumstances arise (e.g., sickness, hospitalization or death in the immediate family). **Documentation is required** showing severe and uncontrollable circumstances and is contingent upon instructor to grant a make-up exam. Should a make-up exam be issued, it must be completed within window specified by instructor. Failure to do so results in a zero. **Scheduling a trip during an exam date is an example of an unacceptable excuse**. If a student fails to show up on exam week with no notification or supporting documentation on why, it will be classified as unexcused absence and no make-up is allowed.

**Only one retake** **exam** (not quiz) will be granted per semester (**no retake issued for final exam**), with the better grade used to replace an original score. For excused absences, the retake exam will serve as an original grade. **You may not retake an exam for an unexcused absence in an exam**. If a retake exam substituted in place for an excused exam, the student is still allowed one retake for other exams. Retake exams must be completed within 1 week of completion of the exam’s original due date. **Again, excused exams must be supported with documentation and/or notify instructor prior to exam date**.

Discussions

Discussion is an integral part of online learning. This method facilitates interaction among students and exchange views on different topics on chemistry related issues. Active Participation in the class discussion is mandatory. There will be 4(four) discussions throughout the semester. Each topic is related to the learning and application of chemistry knowledge in personal life.

This is a student lead and instructor supervised discussion. Rather than only answering the hint questions posted with the topic, student must exchange ideas/views through this discussion format. Only single response with the hint questions will not be counted as participation. Instructor will review all posting during the discussion period and likely to make comments, if required. Student must critically analyze the topic as well as use their insightful thought process to make arguments on the reasoning presented by other fellow students. Only referring “, I like your post is not a meaningful participation”.

Rubrics for discussion grades will be posted in the D2L. Grades will be based on numbers of readings posted by other fellows, individual response posted and levels of critical analysis on the topic. Best grades can achieve by complying all desired components, not only on number of posts. If rubric is not clear to someone, make efforts to clarify from the instructor before participation in discussion board.

## Attendance

Attendance/participation in all class sessions is critical for academic success. Regular and punctual participation is expected, and instructor will keep monitoring of student participation/attendance for the entire length of each course through the login record. No physical attendance is required like face-to-face classroom. **However, students must log in the D2L frequently during the working week.** Students enrolled in online classes can also be reported by instructors as non-participants, if they fail to submit the first graded assignment online by the due date prior to the [Census Date](https://www.ccd.edu/event/academic-calendar). Non-participating students will be dropped from their course and will not be able to re-enroll.

* Please review the [College Non-Attendance Policy](https://www.ccd.edu/administration/non-academic-departments/office-registration-records/college-non-attendance-policy)

## Late work policies

Late submission will be docked **10% per** day. ***NO HW will be accepted after two days of the assigned deadline* and no credit will be issued, unless negotiated with the instructor before missing the assignment.** There are no alternative assignments to make up for late work. All due dates for upcoming assignments can be found on D2L’s weekly announcements.

**HONOR CODE:**

All students at the Community College of Denver are responsible for knowing and adhering to the academic integrity policy of this institution. See Code of Conduct and Academic Integrity in Institutional Policies in D2L content. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery and threatening behavior. All incidents of academic misconduct will be reported to the Honor Code Council.

**Incompletes**

An incomplete will be given only for work missed “due to circumstance clearly beyond student’s control” (i.e., illness, incapacitating accident, death in immediate family, etc.), and only when 75% of course has been completed with a grade of C or above (7 out of 10 labs needs to be completed). Students are responsible for supplying appropriate documentation for their absence. See Grade of Incomplete in Institutional Policies in D2L content for more info.

**STUDENT RESPONSIBILITIES:** **All due dates for homework, discussion and quiz/exam are posted each week on D2L as “WEEKLY ANNOUNCEME**NT” together with **topic outlines**. It is the student’s responsibility to check and know what assignments due quizzes/exams/discussion during the assigned week are and complete those on timely manner. Please see the requirements for HW submission under the Homework. For effective participation in the discussion, student must be active in the discussion board through out the week (according to their own convenience). Coming to the discussion board at the last minute and submit few posts is not desirable.

Your grades will be posted and accessible on D2L, so you know where you stand at all times. It is the student’s responsibility to go over their grades during their own time and communicate with the instructor for any clarification.

**some notes about conduct in the class** –Students and faculty each have a responsibility for maintaining an appropriate learning environment. Students who fail to adhere to behavioral standards may be subject to discipline. In an online class email communication is best means to keep update.

Chemistry is a fast-paced class. Unlike other science classes, it relies on both memorization and critical thinking/ problem solving to excel. Just because you were good in another science class doesn’t necessarily translate over to Chemistry. Please do not feel frustrated. If this is the case, there are many help options: office hours, private tutoring, and the excel zone (Confluence and Boulder Creek). Take your time to lot of self-work reviewing those posted videos and practice to succeed. Plan on doing at minimum 2-3 hours of practice work per day. I am always available via WebX set office hours or email, I’m happy to try and set up alternate times to meet. Please do not wait until the middle of the semester to cry for help, do it early, get in good habits and succeed!

# **GRADE SCALE**

A 90-100% Superior mastery or achievement.

B 80-89% Better than average mastery or achievement.

C 70-79% Acceptable mastery or achievement.

D 60-69% Less than acceptable mastery or achievement.

F Below 60% Fails to demonstrate achievement of course objectives.

# **WEIGHT DISTRIBUTION**

**Assignment Weight:**

* Outcomes will be assessed by quizzes, exams, writing assignment, homework and discussions: Grading will be based as follows:

(Exams: 40%) %

* Exam 1 10%
* Exam 2 10%
* Final Exam(comprehensive) 20%
* (Discussions, Homework’s, PHW and Quizzes: 60%)
* Quizzes (5 quizzes) (25%)
* Discussions (10%)
* HW (20%)
* Practice HW(PHW) (5%)

Total= 100%.

# 

# **INSTITUATIONAL OUTCOMES**

Graduates of the Community College of Denver are prepared to be successful on a personal, professional, and global level. For a full description of these [institutional outcomes](https://www.ccd.edu/about-ccd/vision-mission-strategic-plan) please see Institutional Policies module on this courses D2L shell. In this class we will focus on……..

Quantitative Literacy: Students will interpret, represent and analyze mathematical information accurately and perform calculations to solve problems.

Effective Communication: Students will communicate a central guiding idea to a defined audience, for a concrete purpose, employing effective conventions in the service of meaning.

Critical Thinking: Students will analyze information and ideas from multiple perspectives and articulate an argument or opinion or a conclusion based on that analysis

Intercultural Literacy: Students will apply a set of cognitive, affective, and behavioral skills to effectively interact in a variety of cultural contexts.

# **STUDENT RESOURCES**

CCD has several resources for students. See the list below and/or reach out to the instructor with any needs.

* **Online Tutoring:** Schedule posted in D2l
* **Advising:** Schedule a virtual appointment with academic advisors by emailing [Advising@ccd.edu](mailto:Advising@ccd.edu)
* **COVID-19 Updates and Student Support Resources:** [COVID-19 Updates and Student Resources](https://www.ccd.edu/academics/helpful-links/covid-19-updates/covid-19-student-resources)
* **IT Help Desk**: Email [HelpDesk@ccd.edu](mailto:HelpDesk@ccd.edu) or call (303) 352-3030
* **Accessibility Center**: Please reach out to your Specialist first and/or [ccd.access@ccd.edu](mailto:ccd.access@ccd.edu)
* **Teaching & Learning Center**: [D2L Introduction Videos for Students](https://ccd.yuja.com/Library/a97421c4-5504-4167-acd1-bc8dc00d79d6)

# **STANDARD COMPETENCIES**

# I. Recognize terminology, specific facts, laws, experimental methodology, chemical formulas and equations.

# II. Identify the general concepts related to stoichiometry, atomic theory, Periodic Table, chemical bonding, states of matter, solutions, acid and base and apply these concepts to interpret new situations.

# III. Apply the concepts learned in lecture to the laboratory environment.

# IV. Apply dimensional analysis, mathematical equations, inductive and deductive reasoning, and the scientific method in correctly solving word problems related to the topics indicated in course outline.

# V. Apply chemical nomenclature to inorganic compound.

# VI. Recognize terminology, specific facts, and type of compound according to functional groups.

# VII. Recognize and identify the biological important compounds by their structures and some of their biological functions.

# VIII. Predict the possible reaction pathway according to the functional group.

# IX. Apply chemical nomenclature to inorganic compounds.

# **TOPICAL OUTLINE**

I. Introduction to General Chemistry

A. Terminology

B. Classification of Matter

C. Changes of Matters

D. Measurements

E. Introduction to Dimensional Analysis

II. Atomic Theories and Periodic Table

A. Atomic Theories

B. Structure of the Atom

C. Electronic Configuration

D. Periodic Table and Periodicity

E. Classification of the Elements and the Periodic Table

F. Property Trends and Periodic Table

III. Chemical Bonding’s and Molecules

A. Types of Chemical Bonding’s

B. Factors Determining Types of Chemical Bondings

C. Lewis Dot Configuration

D. Polarity

IV. Nomenclature and Formulas of Compounds

A. Oxidation Number

B. Ionic Compound

C. Covalent Compound

V. Stoichiometry

A. Chemical Reaction Equation

B. Mole Concept

VI. Solutions

A. Terminology

B. Concentration Units

C. Colligative Properties

VII. Acid and Base

A. Concepts

B. pH and Buffers

VIII. Gases

A. Introduction to Gaseous State

B. Gas Laws

C. Calculations Using Gas Laws

IX. Condensed States

A. Inter-Molecular Interactions

B. Liquid State

C. Solid State

X Introduction to Organic/Biochemistry

A. Atomic Orbitals

B. Isomerism

XI. Hydrocarbons and Halides

A. Nomenclature

B. Properties

XII. Oxygen Containing Compounds

A. Nomenclature

B. Properties

XIII. Nitrogen Containing Compounds

A. Nomenclature

B. Properties

XIV. Carbohydrates

A. Nomenclature

B. Properties

C. Metabolism

XV. Lipids

A. Nomenclature

B. Properties

XVI. Amino Acids and Proteins

A. Nomenclature

B. Properties

C. Biosynthesis and Metabolism of Proteins

XVII. Enzymes

A. Properties

XVIII. Nucleic Acids

A. Properties