



## **SEMESTER**

### **Life and Natural Sciences Department School of Science, Technology, Engineering, and Mathematics**

**Program Name:** Chemistry  
**Course Name:** General Chemistry 1 – Lecture  
**Course Number:** CHM121      **Section:** XXX  
**Meeting Day(s) & Time(s):**  
**Credits:** 5 credit hours combined (Lecture and Laboratory)  
**Contact Hours:** 4  
**Text:** *General Chemistry with OWL Access*, 11<sup>th</sup> Edition, Ebbing, Darrell D. and Gammon, Steven D., Cengage Learning, 2017.  
**Instructor Name:**  
**Office Location:**  
**Office Hours:**  
**Virtual Office Hours:**  
**Owens CC Phone:**  
**Owens CC Email\*\*:**  
**Additional Contact Information:**  
\*\*Please use only Owens email for course communications.

### **CATALOG DESCRIPTION**

The first semester of a two-semester sequence, the course gives students a solid foundation in general chemistry. Topics include measurement, structures of atoms, molecules and ions, inorganic chemical nomenclature, chemical reactions and stoichiometry, acid-base, and oxidation-reduction reactions, gases and the kinetic-molecular theory, thermochemistry, electronic structure, periodicity, chemical bonding and molecular geometry. Lab work reinforces basic principles and emphasizes analytical techniques. (Fulfills Science Elective requirement in Art and Sciences program). Students retaking this course must repeat both the lab and lecture.

**PREREQUISITE:** MTH070 or MTH096 or equivalent and CHM095 or CHM111 or equivalent

**COREQUISITE:** None

## TEXTBOOKS and MATERIALS

- *General Chemistry with OWL Access, 11<sup>th</sup> Edition*, Ebbing, Darrell D. and Gammon, Steven D., Cengage Learning, 2017.
- Scientific calculator
- *Signature Laboratory Series: CHM 121 Laboratory Manual*, Cengage Learning, 2009..

*Your print book, e-book, or access code required for class can be accessed through the Owens Community College e-Campus Bookstore by accessing the online link, called "Find Books" on the course schedule for each course section.*

## GENERAL COURSE INFORMATION

### Course Objectives

To provide the student with a background in general chemistry which would support careers in science, medicine, and engineering.

### Institutional General Education Competencies:

As a student at Owens Community College, you will take General Education courses as part of your degree program. While specific to the General Education courses, will be reinforced in many of your degree program major courses and may be measured in your capstone course(s) and others as identified.

| Competency                                     | Assessed                                       |
|------------------------------------------------|------------------------------------------------|
| Think analytically, critically, and creatively | Homework Assignments/Question Sets/Lab Reports |
| Communicate effectively                        | Exams/Quizzes/Lab Reports                      |

### Lecture Student Learning Outcome

1. Conversion among metric units (including temperature) and calculate densities.
2. Determine atomic weights.
3. Predict formulas and name inorganic compounds.
4. Classify chemical reactions and write balanced equations.
5. Calculate percentage composition, empirical formula, and molecular formula.
6. Solve stoichiometry and molarity problems.
7. Write thermochemical equations and determine the enthalpy change from calorimetric data.
8. Know quantum numbers and their relation to atomic orbitals and determine the wavelength of light emitted for an electron transition.
9. Determine electron configurations and explain periodicity among the elements.
10. Distinguish between ionic and covalent bonding and write Lewis electron-dot structures for atoms and molecules.
11. Predict molecular geometries using VSEPR theory and valence bond theory (hybridization of orbitals).
12. Use molecular orbital theory to describe the bonding in a diatomic molecule of the second-period elements.

13. Use the empirical gas laws and the ideal gas law; also solve gas stoichiometric problems.

### **Laboratory Student Learning Outcomes**

A laboratory is associated with the lecture portion of CHM121. Students should be able to demonstrate comprehension of: the metric system, calculate density, predict formulas and name inorganic compounds, balance equations, calculate percent composition, empirical formula, and molecular formula, solve stoichiometry and molarity problems, predict molecular geometries using VSEPR theory and more.

### **Course Rules**

#### **Attendance**

Since the class discussion is an important and often effective way of learning course concepts, attendance at classes will be expected. Excessive absences could cause one to have difficulty in mastering the required course content. Attendance will be taken and recorded.

#### **Class Participation**

This is a 4-credit hour course, so you should expect to spend a minimum of 8 hours per week outside class reviewing the material for the course and completing the homework assignments. Doing the homework is essential to understanding the course material and being successful in this course.

#### **Laboratory**

Laboratory work will be conducted in conjunction with the lecture. A separate syllabus will be issued for the laboratory portion of the course. The syllabus will detail the policies and evaluation procedures for the laboratory. The score in the laboratory will be used to compute the final grade for the course. The laboratory score represents 25% of the total score for the course.

#### **Devices**

Phones and other electronic communication devices must be in silent mode during class.

Unauthorized use of a phone, e-watch or tablet is not permitted during an exam. Use of these devices could result in forfeiture of exam points. Phones cannot be substituted for calculators.

## **GRADING PROCEDURE**

### **EVALUATIONS**

Student evaluation will be based on how well the objectives are met as shown by performance on examinations, laboratory reports, course projects, and the comprehensive final exam.

1. **Exams** Four one-hour exams and a comprehensive final exam will be given. There will be no make-up exams. If an exam is missed due to an excused absence, such as illness, the score will be taken from the score of the final exam. If two or more exams are

missed, the score for one exam will be assigned from the final, and the score for other exams will be zero. **EVERY STUDENT MUST TAKE THE FINAL EXAM.**

**All exams are administered by the instructor in the classroom.**

**Tentative Exam Schedule**

|                                          |      |
|------------------------------------------|------|
| Exam 1 (Chapters 1 & 2)                  | date |
| Exam 2 (Chapters 3 & 4)                  | date |
| Exam 3 (Chapters 6 & 7)                  | date |
| Exam 4 (Chapters 8 & 9)                  | date |
| Comprehensive Final Exam (Entire Course) | date |

**There are NO open book or open note exams.**

**During exams, unauthorized use of a phone, tablet, e-watch or any other electronic device is prohibited. Use of these devices during an exam, could result in forfeiture of exam points.**

For any technical issues contact the Owens IT help desk at [helpdesk@owens.edu](mailto:helpdesk@owens.edu)

**2. Laboratory Grade:** See laboratory syllabus for this information.

**3. Homework Assignments:** Homework assignments will be assigned, with varying point values, utilizing Cengage's homework system or other instructor-specified activities.

**4. Quizzes:** Throughout the semester, quizzes will be announced and the quiz average will be incorporated in the final grade.

**5. Library Report:** An assigned chemical or a scientific article will be the basis of a written report. You will receive additional instructions concerning the report later in the semester. The due date for the report is \_\_\_\_\_.

## **GRADING**

**There is no provision for extra credit.**

|                    |              |
|--------------------|--------------|
| Exam 1             | 10.0%        |
| Exam 2             | 10.0%        |
| Exam 3             | 10.0%        |
| Exam 4             | 10.0%        |
| Homework           | 5.0%         |
| Quizzes            | 5.0%         |
| Library Report     | 5.0%         |
| Laboratory Reports | 25.0%        |
| <u>Final Exam</u>  | <u>20.0%</u> |
| TOTAL              | 100%         |

**Example of calculations of a weighted total:**

|                                         |                 |               |
|-----------------------------------------|-----------------|---------------|
| Add all partial exams scores            | x 0.10 =        | points        |
| Homework average                        | x 0.05 =        | points        |
| Quiz average                            | x 0.05 =        | points        |
| Library report (points up to 5 pts max) |                 | 5 points      |
| Final exam score                        | x 0.25 =        | points        |
| <u>Lab score</u>                        | <u>x 0.25 =</u> | <u>points</u> |

**Weighted total** = points or % (corresponding to letter grade)

The Grading Scale will be as follows:

|              |     |
|--------------|-----|
| 100-90%      | = A |
| 89.99-80%    | = B |
| 79.99-70%    | = C |
| 69.99-60%    | = D |
| Below 60.00% | = F |

**IMPORTANT: You must earn no less than 60% out of the total possible laboratory points to pass the entire course. If you do not earn at least 60% out of the total possible laboratory points, you will receive an (F) letter grade for the entire course.**

**WEB SECTIONS****Using LockDown Browser for Online Exams**

This course requires the use of LockDown Browser and video monitor for online exams. Watch the video (*link below*) to get a basic understanding of LockDown Browser and the webcam feature. To get started on your computer, watch the instructional video and then download and install LockDown Browser from the link.

- <http://www.respondus.com/products/lockdown-browser/student-movie.shtml>

To get started on your computer, download and install LockDown Browser from this link.

- <http://www.respondus.com/lockdown/download.php?id=139313370>

To take an online test, start LockDown Browser and navigate to the exam. (*You won't be able to access the exam with a standard web browser.*) For additional details on using LockDown Browser, review the quick start guides from Owens and Respondus in Course Content.

**Helpful Hints**

When taking an online exam, follow these guidelines:

- Ensure you're in a location where you won't be interrupted
- Turn off all mobile devices, phones, etc.

- Clear your desk of all external materials — books, papers, other computers, or devices
- Remain at your desk or workstation for the duration of the test
- LockDown Browser will prevent you from accessing other websites or applications; you will be unable to exit the test until all questions are completed and submitted

## CHM 121 LECTURE COURSE CALENDAR & TENTATIVE SCHEDULE

| Week    | Topic                                                                              |
|---------|------------------------------------------------------------------------------------|
| 1 DATE  | Subatomic particles. Periodic table. Electron configuration Ch.3                   |
| 2 DATE  | Ionic compounds; bonding, formulas, nomenclature Ch. 4                             |
| 3 DATE  | Covalent bonds. Lewis structures. Nomenclature Ch. 5                               |
| 4 DATE  | Mole concept. Chemical equations: balancing Ch. 6<br><b>Exam 1 DATE</b>            |
| 5 DATE  | Chemical reactions: types, redox reactions Ch. 9                                   |
| 6 DATE  | Hydrogen bonding. Solutions: % by mass, molarity Ch.7 & 8                          |
| 7 DATE  | Acids, bases, and pH Ch. 10<br><b>Exam 2 DATE</b>                                  |
| 8 DATE  | Intro to organic chemistry. Functional groups-inside back cover                    |
| 9 DATE  | Saturated hydrocarbons – alkanes Ch. 12                                            |
| 10 DATE | Unsaturated hydrocarbons – alkenes & alkynes Ch. 13                                |
| 11 DATE | Aromatic hydrocarbons Ch. 13<br><b>Exam 3 DATE</b>                                 |
| 12 DATE | Alcohol, phenols, & ethers Ch. 14                                                  |
| 13 DATE | Aldehydes& ketones: structure, nomenclature, reactions Ch.15<br><b>Exam 4 DATE</b> |
| 14 DATE | <b>TBD</b>                                                                         |
| 15 DATE | Carboxylic acids & Esters Ch. 16                                                   |
| 16 DATE | Amines Ch. 17<br><b>Final Exam (open DATE)</b>                                     |

### IMPORTANT

Under some circumstances, dropping a course may negatively affect your ability to receive financial aid in future semesters. Consult your academic advisor with questions.

## Academic Calendar

|      |                     |
|------|---------------------|
| DATE | Semester begins     |
| DATE | Last day of classes |
| DATE | Exam week           |
| DATE | Commencement        |

## Academic Support

**Disability Services Resource Center:** If you have a disability or acquire one, you may be entitled to receive reasonable accommodations intended to assure you an equal opportunity to participate in and benefit from the program. To receive more information or to register for accommodations, please contact the Disability Resource Center at 567-661-7007, email [disability@owens.edu](mailto:disability@owens.edu), visit <https://www.owens.edu/disability/>, or stop by College Hall 124.

**Tutoring Services:** Owens Community College offers academic tutoring and assistance in a variety of subjects including: accounting, computing, economics, mathematics, science, and writing. For more information go to: <https://www.owens.edu/successcenters/>.

**Counseling Services:** Counseling Services provides assistance to students experiencing personal, educational, interpersonal/relationship, family, social, or psychological difficulties. If you feel you may benefit from this service, please contact them at [counselingservices@owens.edu](mailto:counselingservices@owens.edu). More information is at <https://www.owens.edu/counseling/>.

**Campus and Community Connections:** The Center for Campus and Community Connections (College Hall 151) is a walk-in office created to provide retention support through resource stability initiatives and community connections. Go here for more information: <https://www.owens.edu/connection/> or contact [connections@owens.edu](mailto:connections@owens.edu)

**Owens Library:** The Owens Library offers two locations (Toledo and Findlay) as well as online resources. For more information visit <https://www.owens.edu/library/>.

\*\*\*Students can find more information on campus resources, student support, student life, and security at this [link](#).\*\*\*

## General Information

**Student Code of Conduct:** All students are expected to follow Owens Community College's [Student Code of Conduct](#), which includes academic honesty, encompassing plagiarism. See the [Board Policy](#) for more information.

**Anti-Discrimination and Harassment & Title IX/Sexual Misconduct:** All students, faculty, and staff are expected to follow Owens Community College's [Anti-Discrimination and Harassment Policy](#) and the College's [Title IX Policy](#)/Sexual Misconduct Procedures and Guidelines. The College strictly prohibits and will not tolerate harassment, discrimination, intimidation, or hostile/offensive working or learning environments.

**Religious Accommodations:** A student seeking an accommodation for an absence permitted under Ohio's Testing Your Faith Act must provide the instructor with a written email notice with the specific dates for an absence, and must do so not later than fourteen (14) days after the first day of instruction. Alternative accommodations are not retroactive, and no academic penalty will be imposed for an absence under the policy\*. The request for an alternative accommodation will be kept confidential. Students with questions about a religious accommodation under Ohio's Testing your Faith Act may contact the College's Office of Academic Affairs: [provost@owens.edu](mailto:provost@owens.edu). The policy may be found on the Owens website: [3358:11-2-63 Accommodation](#) for a Student Absence for the Observance of Religious Beliefs and Practices Policy.

**Document Collection:** Throughout the semester, your instructors may ask for a variety of assignments including tests and/or quizzes for student learning of institutional general education competencies or program assessment. Please save all your class materials until the end of the semester.

**Classroom Admittance:** OCC classes shall only be attended by the officially registered OCC students or perspective students, instructor of record, guest lecturer, or substitute. Visitors are not permitted to be in the classroom and should not be invited to attend or participate in the class. See [FERPA](#) regulations for more information.

**Use of AI Tools:** This course requires you to complete various assignments that assess your understanding and application of the course content. You are expected to do your own work and cite any sources you use properly. You are not allowed to use any artificial intelligence (AI) tools, such as chatbots, text generators, paraphrasers, summarizers, or solvers, to complete any part of your assignments. Any attempt to use these tools will be considered academic misconduct and will be dealt with according to the university's academic integrity policy. Students are expected to complete all work independently and without the assistance of AI-generated content. If you have any questions about what constitutes acceptable use of AI tools, please consult with the instructor *before* submitting your work.

*The instructor reserves the right to amend this syllabus as necessary and will communicate amendments to students in the course. It is the responsibility of the student to regularly check emails and announcements for changes.*