CHEM 1411, Introductory Chemistry I (4 credit hours). This is a Core Curriculum course selected by the colleges of DCCCD. It satisfies 4 credit hours of Foundational Component Area 030: Life and Physical Science. CHEM 1411 is a Texas Common Course Number.

Prerequisites
Math 1314 or equivalent academic preparation is required for this course. Chemistry 1405 or high school chemistry with a grade of “C” or better is strongly recommended. The language requirement can be met with DREA 0093, ESOL 0044, or the Texas Success Initiative (TSI) Reading standard.

Catalog Description:
General Chemistry I
This is a Texas Common Course Number. This is a Core Curriculum course selected by the colleges of DCCCD.
Prerequisite Required: MATH 1314 or equivalent academic preparation. College level ready in Reading.
Course Description: Fundamental principles of chemistry for majors in the sciences, health sciences, and engineering; topics include measurements, fundamental properties of matter, states of matter, chemical reactions, chemical stoichiometry, periodicity of elemental properties, atomic structure, chemical bonding, molecular structure, solutions, properties of gases, and an introduction to thermodynamics and descriptive chemistry. Basic
Coordinating Board Academic Approval Number 4005015403

**The textbook is:** Chemistry, Openstax

*ISBN: 9781938168390*

*Publisher: OpenStax College*

It is available free online at: [http://cnx.org/](http://cnx.org/)

Hard copies are available in the Brookhaven College Bookstore

Also required:

- **Student Lab Manual**
- **Hayden-McNeil Pub.**

*ISBN 978-1-930882843*

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**REQUIRED SUPPLIES:**

- **Safety Goggles.** ENCON GOGGLE MODEL 256 (#50346) 72/CS or equivalent chemical splash goggles. Safety impact glasses or dust goggles ARE NOT acceptable.

- Non-programmable, Non-graphing Scientific Calculator – programmable calculators containing alpha keys & graphing calculators will not be allowed on tests.

(No Cell Phones, PDA, other devices able to store text for Calculators!)

**ALWAYS BRING YOUR TEXT & CALCULATOR TO CLASS !!!**
**CHECK THE E-CAMPUS LAB NOTES FOR EVERY LAB**

*Lecture notes are available for each chapter.*

**THE E-CAMPUS LAB NOTES INCLUDE CHANGES YOU NEED TO MAKE TO YOUR PROCEDURE & OR DATA PAGES.**

LAB NOTES ALSO MAY CONTAIN HELPFUL TIPS AND SAFETY WARNINGS.

**LABS and LAB NOTES on eCAMPUS**

All experiments are on e-Campus. There are Lab Notes associated with each laboratory experiment. This will require you to use eCampus to obtain those notes. You CANNOT wait until the last minute to access eCampus since the Lab Notes are necessary in completing your written Procedure.

In some cases, your lab schedule indicates that the experiment itself must be Downloaded from eCampus. **ACCESS THE SITE EARLY so that you are not rushed to completion. Again, DO NOT wait until the last minute to access eCampus!!!**

You can access eCampus from home with Internet access or from “Pay for Print” computers on campus (J-Building) which are very economical.

**HOW TO LOG INTO eCAMPUS**

1. Go the DCCCD Webpage (www.dcccd.edu)
2. From the Toolbar, select “eCampus”.
3. In the Login box, enter your BHC ID number and your password. (If this is your first entry into eCampus, your initial password is your ID number. There are notes and a contact if you are unsuccessful logging in.)
4. Under “My Course Number”, click on your Course and Section Number.
5. On the left side of the screen, click “Course Documents”
6. Click on “Lab Experiments and Student Notes”
7. Click on the Lab you need. These are all WORD documents which should be downloaded. Printing is at your option since printouts will not be allowed in the lab. **You must work from your notebook!**
8. Don’t forget to logout.
NOTE: There are other items of interest loaded on eCampus: for example, Lab Schedule (in case you lose yours), Operating procedures for some lab equipment, and specific course information from your Instructor. Tutorials are available here:
http://www.brookhavencollege.edu/programs/mathscience/science/chemistry/Pages/default.aspx

EVALUATION & GRADE:

Lecture.......................................................80 %
Labs...........................................................20 %

The lecture portion of the course may be comprised of homework, quizzes, surveys, 3 tests and a comprehensive final exam. Final grade percentage is calculated as shown below:

Letter grades are assigned as shown below:

A = 89.5+ %
B = 79.5 - 89.4 %
C = 69.5 - 79.4 %
D = 59.5 - 69.4 %
F = < 59.5 %

Exams: Tests will cover new material presented since the previous exam. These exams will be closed note/closed book exams and will contain a variety of question styles including multiple choice, show your work, short answer, explain, etc. The Final is cumulative and will contain questions applicable to all material covered in the course. This will be entirely multiple choice and will be drawn from the American Chemical Society general chemistry exam. Notify me as soon as possible if you know in advance that you are going to miss an exam or if you miss an exam due to illness.

Tests will be in the TESTING CENTER Thursday through Saturday. The Final Exam will be given in class at the college-designated time.

- Programmable & graphing calculators are not allowed on tests.
- Cell phone calculators are not allowed on tests.
- Dictionaries, translators etc. are not allowed on tests.

Chapter Homework: Students should work all of the problems at the end of the chapter in order to be prepared for exams. Homework to be graded and used as part of the course grade will be
given on e-Campus under the Homework Assignments tab. Assigned homework is due at the beginning of class; turn in all of the problems below for the current chapter. A grade of zero will be given for a missed homework assignment. Homework for a chapter will be due after we have finished discussing the chapter.

**Extra Credit:** There are opportunities for extra credit for this course. Turn in copies of the filled out first page of 3 scholarship applications to earn an extra 2.3% on your final grade. For online scholarships, it may be more appropriate to print out a copy of the submission confirmation page instead of the application page. Either is acceptable. To receive credit, these must be turned in by Nov. 21. (See below for more information on scholarships.)

*There will be no make up tests, no late tests, no retakes, nor drop the lowest grade option.*

**Scholarships:** Paying for college is frequently a challenge. Most people are unaware of the amount of free money available to college students. Many scholarships are available through organizations, churches, etc., and they are not always tied to grades. There are a larger number of free and subscription search engines that will help you locate scholarship sources (type “college scholarship search” into the search bar in your internet browser) to turn up lots of options. One free search site that I have found valuable: [http://apps.collegeboard.com/cbsearch_ss/welcome.jsp](http://apps.collegeboard.com/cbsearch_ss/welcome.jsp) (note the underscore in cbsearch_ss).

**Attendance Policy**

There are no make up labs. *If you miss three labs, you must withdraw from the class or your course grade will be an “F”.*

Lecture attendance will be recorded but is not a fixed part of your grade.

**Note:** The instructor reserves the right to change the schedule and or test dates as necessary.

**GENERAL CHEMISTRY 1411 FALL 2016 LAB SCHEDULE** will be posted in the EXPERIMENTS folder on e-Campus Lab Community.

**Labs:** Labs are an important part of the chemistry experience; they help you connect theory discussed in lecture with real-world observations. Lab attendance is mandatory.

**Chemistry Laboratory Policies and Information**

**Pre-lab Activity**

Brookhaven chemistry experiments require a pre-lab activity. ALL WORK IN THE LABORATORY IS TO BE RECORDED IN YOUR STUDENT LABORATORY NOTEBOOK. The purpose of the pre-lab is to ensure that you understand the experiment and all related safety procedures. The required pre-lab activities for most CHEM 1411 labs are:

1. Open the folder for the experiment in the e-campus Lab Community.
2. View any required lab videos.
3. Download the experiment and print if desired. Printouts will not be allowed in the lab.
4. Read the experiment and outline the procedure in your notebook.
5. Record any required physical constants.
6. Examine the provided data tables. Complete the provided tables or create ones if needed. Think about how you are going to acquire the information necessary to fill them out.

7. Answer all pre-lab questions.

Be sure you know how to do all the calculations required in the experiment prior to coming to lab. If you can’t do the calculations, then seek help before lab.

If you have not completed the pre-lab correctly, and in full, you will not be permitted to attend lab.

*The Experiment*

There will be a short safety and technique discussion and demonstration at the beginning of each lab period. If you come to lab late, you will not be admitted to the lab class. Data collection and observations will be completed in lab. **You are expected to wear appropriate clothing and protective eyewear (fully-enclosed goggles) at all times. No flip-flops or open-toed shoes are permitted in the chemistry laboratory.**

*Post Lab*

At the end of lab you will write your lab report. You may discuss your results with other students but your report is an individual effort. Be careful not to plagiarize. Lab reports are usually due at the beginning of the lab period following completion of the experiment. Late reports will not be accepted. **The quality of calculations and reasoning will have as much impact on your grade as your experimental results.**

*Lab Attendance Policy*

- All registered students must attend a **mandatory** safety lab during the first scheduled lab period.
- Successful completion of the mandatory safety lab is required to continue in the course.
- If you arrive late for any chemistry lab, you will not be permitted to stay, and you will receive “0” for that lab.
- If you have not completed the pre-lab correctly, and in full, you will not be permitted to attend lab.
- There are no make-up chemistry labs.
- You didn’t check the schedule & prepared for the wrong lab
- You didn’t check the online student lab notes and make the changes in your lab book and written procedure
- You are wearing open toe shoes or Sandals.
- If you miss three chemistry labs, you must withdraw from the class or your course grade will be an “F”.
- If you miss lab, partial credit is not given for the advance study assignment & procedure.

**NO LAB PARTNERS. YOU WILL WORK INDIVIDUALLY IN LAB unless specifically stated otherwise.**

**NO FOOD or DRINKS IN LAB.** Any found will be thrown away.

**NO SANDALS OR OPEN TOE SHOES IN LAB.**
• Book bags, backpacks, coats, etc. will be kept in provided cubbies, not on the lab benches.

• **CLEAN UP. Points will be deducted for failure to clean up.**

**BHC SAFETY GOGGLES POLICY**
**NO GOGGLES NO LAB**

• You must wear Safety Goggles in the Chemistry Lab K-108 at all times
• You must purchase your own goggles and bring them to lab.
• Goggles must be **all enclosed**, the frame_touching your face all around the edges of the goggles…not safety glasses with side shields.

• **NO CONTACT LENSES WORN IN CHEMISTRY LAB!!!**

• If you wear glasses your safety goggles need to fit over your glasses.
• Bring your goggles to the first lab. You will label your goggles with your name & label a plastic bag to store your goggles in.
• We will provide a tray for each lab section to store labeled student goggles in so there should be no excuse for not having your goggles.
• All unclaimed goggles will be discarded at the end of the semester.

1) **ALL LABS** (EXCEPT SAFETY) including the handouts require a completed **ADVANCE STUDY ASSIGNMENT** and a **ONE PAGE SUMMARY** of the experimental procedure **DUE AT THE BEGINNING OF LAB.**
2) **Experiment Notes** MUST BE ACCESSED on **eCampus** for each experiment– these notes include changes to the procedure and warnings.
3) Every lab will be completed and handed in at the end of the lab period.
4) **ALL ENCLOSED GOGGLES ARE REQUIRED IN LAB !**
5) No sandals or open toed shoes.
6) Show ALL your work! **ALL CALCULATIONS MUST BE SHOWN** to receive credit for your answers on the Advance Study Assignment and Lab Report Data pages.

NOTE: **e CAMPUS LABS MUST BE PRINTED OUT FROM e CAMPUS PRIOR TO LAB**
STUDENT NOTES MUST BE ACCESSED ON e CAMPUS FOR EACH EXPERIMENT - THESE NOTES INCLUDE CHANGES TO THE PROCEDURE

SAFETY LAB The first lab is the Safety Lab. You must complete the Safety Lab & the MSDS handouts with a score of 70+, see the ACS Starting With Safety video, and sign the safety training roster BEFORE being permitted to participate in remaining labs. No exceptions.
You must do the Safety Lab even if you have already done it in a previous semester.
You must do the Chemistry Department Safety Lab even if you just did a safety lab in a different course or campus.
If you are taking two chemistry courses concurrently, “yes” you must do the safety lab for each as different chemistry courses/instructors may have different assignments.

ALWAYS BRING YOUR CALCULATOR TO LAB.

Sometimes it may be helpful to bring your textbook to lab to use as a reference or to review worked out examples.

SHOW ALL OF YOUR WORK! ALL CALCULATIONS MUST BE SHOWN TO RECEIVE CREDIT FOR YOUR ANSWERS ON ADVANCE STUDY ASSIGNMENTS AND LAB REPORT DATA PAGES, and must include appropriate units & significant figures.

ALL LAB WORK WILL BE DONE IN BLUE or BLACK PEN.
NO ERASURES. NO WHITE OUT. Just draw a line through mistakes & changes.
EACH PAGE MUST BE SIGNED & DATED.

Be Neat. We must be able to read your work to grade it.

Record all data and observations and calculations on the lab report & data pages. Do not record data on extra paper. Data on loose pieces of paper will be taken up & destroyed.

EXPECTATIONS OF STUDENTS:

Attend class. Be on Time. Take notes in class. Do not get behind.
Don’t wait until 30 minutes before lab to do procedure and advanced study. Use that time to check your work.
DO NOT DEPEND ON ANOTHER STUDENT FOR YOUR WORK! They may not know as much as you do!! The best practice is to do your work then compare. You can then correct any disagreements.
Read assigned chapters before the material is presented in class.
Work all of the problems in the chapter AND all of the end of chapter problems. Use the recommended text supplements and online web pages. Homework is not assigned. It is YOUR responsibility to assure that you understand the material.

Ask questions.
If you are having trouble, ask your instructor for help.
If you need more help arrange to meet with the chemistry department’s tutors, information is attached, or the tutoring service offered.
Tutoring is not a substitute for class; you must be attending class regularly to participate in the tutoring programs.
Forming a study group with classmates is a great way to study.
Make a friend in class. If you are ever absent you need someone other than your instructor to contact to get notes and any important announcements that were given in class.
If an extended illness or an unusual situation develops let your instructor know.
But if you are sick, please don’t visit your instructor’s office… we don’t want to get sick, too! If you just stop coming to class, you need to drop or you will get an “F”

ACADEMIC DISHONESTY: STUDENTS WILL HAVE AMPLE OPPORTUNITY TO CHEAT ON BOTH LABORATORY WORK & EXAMINATIONS, IF THEY ARE OF THAT NATURE. ANY ACTIVITY THAT EVEN APPEARS AS CHEATING WILL BE INVESTIGATED.
If you are caught cheating in any chemistry class or lab you will receive a grade of “F” and a block will be placed on your records. You will be required to talk to the dean and or the vice president of instruction and the vice president of student development before the block will be removed.

Standard of Conduct
As a college student, you are considered a responsible adult. Your enrollment indicates acceptance of the Code of Student Conduct published in this catalog.
If you are unable to complete the course (or courses) for which you have registered, it is your responsibility to withdraw formally from the course (or courses). Failure to do so will result in your receiving a performance grade, usually an "F."

□ Scholastic dishonesty shall constitute a violation of these rules and regulations and is punishable as prescribed by Board policies. Scholastic dishonesty shall include, but not be limited to, cheating on a test, plagiarism, and collusion.
"Cheating on a test" shall include:
   a. Copying from another student's test paper.
   b. Using test materials not authorized by the person administering the test.
All forms of academic dishonesty, including cheating, fabrication, facilitating academic dishonesty, plagiarism, and collusion.

c. Collaborating with or seeking aid from another student during a test without permission from the test administrator.

d. Knowingly using, buying, selling, stealing, or soliciting, in whole or in part, the contents of an un-administered test.

e. The unauthorized transporting or removal, in whole or in part, of the contents of the un-administered test.

f. Substituting for another student, or permitting another student to substitute for one's self, to take a test.

g. Bribing another person to obtain an un-administered test or information about an un-administered test.

"Plagiarism" shall be defined as the appropriating, buying, receiving as a gift, or obtaining by any means another's work and the unacknowledged submission or incorporation of it in one's own written work.

"Collusion" shall be defined as the unauthorized collaboration with another person in preparing written work for fulfillment of course requirements.

DISCIPLINE Any student violating this policy shall be subject to disciplinary sanctions including suspension, in accordance with FM. A "violation" means an act or omission which is contrary to a published college regulation or policy. Sanctions for violations of prohibited conduct for (1) through (6) may result in expulsion; for (7) through (13) may result in suspension; for (14) through (20) may result in sanctions other than expulsion or suspension. Repeated or aggravated violations of any provision of this code may also result in expulsion or suspension or in the imposition of such lesser penalties as are appropriate. "Aggravated violation" means a violation which resulted or foreseeable could have resulted in significant damage to persons or property or which otherwise posed a substantial threat to the stability and continuance of normal college or college-sponsored activities.
Chemistry Syllabus Addendum

Institutional Policies can be found at:
https://www.brookhavencollege.edu/syllabusaddendum

These policies cover the following topics:

DROP/WITHDRAWAL POLICY:
STOP BEFORE YOU DROP:
FINANCIAL AID STATEMENT:
INTERNATIONAL STUDENTS:
RELIGIOUS HOLIDAYS:
ADA STATEMENT:
Brookhaven
Student Code Of Conduct
GRADE REPORTS:
FERPA:The Family Educational Rights and Privacy Act (FERPA)
INSTITUTIONAL EQUITY:
INSTRUCTOR’S RIGHT TO MODIFY:

Chem 1411: General Chemistry I
This is a Texas Common Course Number

This course satisfies 4 hours of the science requirement in Dallas County Community College District's Core Curriculum. As such, this course will transfer to any Texas State university as part of the Core, regardless of whether it is taught at that school.

As part of the core, this course contributes to the development of reading, listening, writing, speaking, and critical thinking skills at the college level. This course meets the Exemplary Educational Objectives for a natural science core course:
1. To recognize instances of quantification in the life/physical sciences;
2. To recognize scientific and quantitative methods and the differences between these approaches and other methods of inquiry;
3. To carry out quantitative procedures in a laboratory situation;
4. To identify and recognize the differences among competing scientific models of the universe;
5. To demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics and values; and
6. To demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture.
Core Objectives
CHEM 1411 is part of the Life and Physical Sciences Foundational Component Area 030. i. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. ii. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences. iii. The following four Core Objectives must be addressed in each course approved to fulfill this category requirement:
   (A) Critical Thinking Skills: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information;
   (B) Communication Skills: to include effective development, interpretation and expression of ideas through written, oral and visual communication;
   (C) Empirical and Quantitative Skills: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions;
   (D) Teamwork: to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

Basic Skills
Chemistry 1411 is a chemistry course for science, pre-professional and engineering students and therefore requires certain reading, writing, reasoning, problem solving, and computational skills beyond those usually acquired from a normal public school program. This is the reason that prerequisites for Chemistry 1411 include high school courses not specifically required of all students. Specifically, the student should be able to:

1. Read with comprehension and understanding a variety of abstract ideas and understand the reasoning behind any conclusions drawn.
2. Understand complicated and exact definitions of terms used in a scientific context when couched in either words or mathematical statements
3. Discuss orally or in writing both (1) and (2) above in a clear and concise manner using proper grammar, punctuation and spelling
4. Understand orally communicated information as well as written
5. Use mathematics at least at the level that a student should be able to at the end of the second year of high school algebra. This skill should be extensive enough that the student is able to do necessary computation, algebraic manipulation, and stated problem solution
6. Use a scientific calculator and understand the meaning of the various functions accessible from the keyboard

Efforts applied by the student in Chemistry 1411 will result in increased ability to:
   1. read and interpret at a college level
   2. listen, analyze, and interpret spoken communication at a college level
   3. think critically
Course Objectives

Upon successful completion of this general chemistry course for science majors, students will:

1. Convert units of measure and demonstrate dimensional analysis skills.
2. Define the fundamental properties of matter. Classify matter, compounds, and chemical reactions.
3. Determine the basic nuclear and electronic structure of atoms.
4. Identify trends in chemical and physical properties of the elements using the Periodic Table.
5. Describe the bonding in and the shape of simple molecules and ions.
7. Write chemical formulas.
8. Write and balance equations.
9. Use the rules of nomenclature to name chemical compounds.
10. Define the types and characteristics of chemical reactions.
11. Define energy, distinguish types of energy, and describe the nature of energy changes that accompany chemical and physical changes
12. Distinguish the related properties of heat, thermal energy, and temperature
13. Define and distinguish specific heat and heat capacity, and describe the physical implications of both
14. Perform calculations involving heat, specific heat, and temperature change
15. Use the gas laws and basics of the Kinetic Molecular Theory to solve gas problems.
16. Determine the role of energy in physical changes and chemical reactions.

Upon successful completion of this laboratory portion of this course, students will:

1. Demonstrate safe and proper handling of laboratory equipment and chemicals.
2. Use basic apparatus and apply experimental methodologies used in the chemistry laboratory.
3. Conduct basic laboratory experiments with proper laboratory techniques.
4. Make careful and accurate experimental observations.
5. Relate physical observations and measurements to theoretical principles.
6. Interpret laboratory results and experimental data, and reach logical conclusions.
7. Record experimental work completely and accurately in laboratory notebooks and communicate experimental results clearly in written reports.
8. Design fundamental experiments involving principles of chemistry.
9. Identify appropriate sources of information for conducting laboratory experiments involving principles of chemistry.
Additionally, the student will have developed skills enabling him or her to:

1. Understand and apply method and appropriate technology to the study of chemistry.
2. Recognize scientific and quantitative methods and the differences between these approaches and other methods of inquiry, and to communicate findings, analyses, and interpretation both orally and in writing.
3. Identify and recognize the differences among competing scientific theories.
4. Demonstrate knowledge of some of the major issues and problems facing modern science, including issues which touch upon ethics, values, and public policies.
5. Demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture.

**Topical Outline**

1.1 Chemistry in Context  
1.2 Phases and Classification of Matter  
1.3 Physical and Chemical Properties  
1.4 Measurements, Uncertainty, Accuracy, and Precision  
1.6 Mathematical Treatment of Measurement Results  
2.1 Early Ideas in Atomic Theory & Evolution of Atomic Theory  
2.3 Atomic Structure and Symbolism  
2.4 Chemical Formulas  
2.5 The Periodic Table  
2.6 Molecular and Ionic Compounds  
2.7 Chemical Nomenclature  
3.1 Formula Mass and the Mole Concept  
3.2 Determining Empirical and Molecular Formulas  
3.3 Molarity & Other Units for Solution Concentrations  
4.1 Writing and Balancing Chemical Equations  
4.2 Classifying Chemical Reactions  
4.3 Reaction Stoichiometry  
4.4 Reaction Yields  
4.5 Quantitative Chemical Analysis  
5.1 Energy Basics  
5.2 Calorimetry  
5.3 Enthalpy  
6.1 Electromagnetic Energy  
6.2 The Bohr Model  
6.3 Development of Quantum Theory  
6.4 Electronic Structure of Atoms (Electron Configurations)  
6.5 Periodic Variations in Element Properties  
7.1 Ionic Bonding  
7.2 Covalent Bonding
7.3 Lewis Symbols and Structures
7.4 Formal Charges and Resonance
7.5 Strengths of Ionic and Covalent Bonds
7.6 Molecular Structure and Polarity
8.1 Valence Bond Theory
8.2 Hybrid Atomic Orbitals
8.3 Multiple Bonds
8.4 Molecular Orbital Theory
9.1 Gas Pressure
9.2 Relating Pressure, Volume, Amount, and Temperature: The Ideal Gas Law
9.3 Stoichiometry of Gaseous Substances, Mixtures, and Reactions
9.4 Effusion and Diffusion of Gases
9.5 The Kinetic-Molecular Theory
9.6 Non-Ideal Gas Behavior

**NOTE:** THE INSTRUCTOR HAS THE RIGHT TO ADD TO, DELETE, OR REVISE SEGMENTS OF THE COURSE OR SYLLABUS.

The guidelines and class schedule in this syllabus may be changed, deleted, or amended at any time verbally in class.