General Chemistry for Engineers
CHEM-1470
Summer II 2017  Section SECTION_301  CRN-40195  4 Credits  07/06/2017 to 08/03/2017  Modified 06/30/2017

Meeting Times

Lecture
Monday, Tuesday, Wednesday, Thursday, Friday, 10:05 AM to 12:05 PM, D 219

Laboratory
Monday, Tuesday, Wednesday, Thursday, Friday, 12:10 PM to 2:10 PM, D 221

Contact Information

Professor: Mr. Thom Jose
Email: thomas.jose@blinn.edu
Office: D 112
Phone: (979) 209-7484

Office Hours
Monday, Tuesday, Wednesday, Thursday, 2:30 PM to 3:30 PM, D 112

Description

3 lecture hours and 3 lab hours per week; 96 total contact hours. Credit: 4 semester hours.

CHEM 1470 is a course designed for engineering majors which will incorporate the major concepts and principles of both CHEM 1411 and CHEM 1412. Applications of these principles will be emphasized. The major areas which will be covered are: Matter and energy relationships, structure of matter, chemical bonding, gases, liquids and solids, solutions, acids and bases, oxidation-reduction, electrochemistry, thermodynamics, kinetics, and chemical equilibrium.

Requisites
Prerequisites: Math 1314 with a grade of "C" or higher or an SAT math score of 550 or higher or an ACT math score of 22 or higher.

Core Curriculum Statement

Through the Texas Core Curriculum, students will gain a foundation of knowledge in human cultures and the physical and natural world, develop principles of personal and social responsibility for living in a diverse world, and advance intellectual and practical skills that are essential for all learning. For details relating to this core course, please see:

http://www.blinn.edu/academics/core_curriculum.html

Outcomes
1. Classify atoms, molecules and compounds
2. Describe the characteristics of matter, measurements, and calculations in chemistry.
3. Understand the atomic nature of matter: electrons and nuclei, the elements, ions.
4. Demonstrate the representation and naming ionic and molecular compounds.
5. Demonstrate the mole concept of matter, mass-mole conversions, determining chemical formulas, aqueous solutions.
6. Interpret chemical equations to determine yields of chemical reactions, percent yields, the limiting reactant, excess reactants, and reactions involving solutions.
7. Discuss the behavior of both ideal and real gases and reactions involving gases.
8. Understand the properties of electrons, quantum theory and quantum numbers, shapes of atomic orbitals, and chemical periodicity.
9. Discuss ionic and covalent bonding, electronegativity and polarity.
10. Draw Lewis structures and use VSEPR theory and Valence Bond theory to describe molecules.
11. Summarize the properties and behavior of solids and liquids.
12. Describe the energy changes of chemical reactions.
13. Illustrate how energy, entropy and free energy affect the spontaneity of chemical processes.
14. Understand the field of chemical kinetics applied to reaction mechanisms and rates of reaction.
15. Demonstrate the principles of chemical equilibrium.
16. Describe the different types of electrochemical cells.

Materials


Online Homework: *OWL v 2* (Online Web-based Learning) Cengage; www.cengagebrain.com

Calculator: simple scientific calculator (standard, without graph and memory features)

Safety Equipment: safety eyewear (OSHA approved, with side shields - REQUIRED), lab coats (REQUIRED)


Course Requirements

All sections of this course regardless of location or modality will include:

1. A minimum of three major exams
2. A minimum of 8 laboratory experiments
3. A comprehensive final exam

Reading

Lectures and readings are designed to help you develop an understanding of the material being emphasized. Sometimes I will ask you to read material before you come to class and other times after a lecture is delivered. Please pay attention to announcements in class as to where you should be with the readings.

Homework

There will be 4 assignments due during the semester worth 25 points each set (100 pts. maximum). Homework will be graded based on the following criteria: (1) Homework is turned in on time, (2) The assignment is complete and (3) The answers are correct. Homework collection and grading will be handled by the Online Web-Based Learning (OWL) System. A code must be
Lecture Quiz Credit

There is daily work due for this section of this course starting the second day of class. These assignments are set apart in OWLv2 with "Chapter" designations. Your score on these items will be determined after each testing period, scaled to a percentage and awarded a value between 0.0 and 12.5 points. Your score for these quizzes will contribute a maximum of 50 points toward your final course grade.

Exams

There will be 4 Lecture Exams worth 100 points each given on the days indicated in the attached schedule. These exams may have a combination of multiple-choice questions that will be machine-graded and non-multiple choice questions that will be hand-graded. The Final Exam is comprehensive, all multiple-choice and worth 200 points.

Laboratory Experiments

The laboratory portion of this course counts for 25% of the total course grade. For each worksheet/experiment you will receive a total score between 0 and 10. The Lab Report must reflect information obtained by you while in the laboratory and recorded in your lab notebook. A Data Sheet from your lab notebook must be turned in before you leave; alternatively, a Lab Attendance Sheet must be signed. Lab Reports will not be accepted unless one of these has been completed for the experiment. Lab Reports must be turned in individually (i.e. each student must turn in an assignment). The Prelab Questions should be done prior to starting the experiment. Prelab Questions/Report Forms/Postlab Questions are due the day of the next lab quiz. Neatness and completeness of your data sheets, pre-labs, and reports may be considered when points are assigned. Points can be deducted for materials not submitted on the date due. There will be 16 labs performed during the semester, of which 13 will be counted toward the final course grade (130 pts. maximum).

Laboratory Quizzes

In addition, 4 Lab Quizzes based on laboratory material will be given during the lab period on the days indicated in the attached schedule. These laboratory quizzes are worth 30 points each.

Evaluation

The following are required components of a student’s final grade.

1. Three or four major exams covering the lecture material.
2. Laboratory work, which may include quizzes or a laboratory final, represents 25% of the total grade for the class.
3. Minor exams, quizzes and or homework assigned at the discretion of the instructor.
4. Additional reports or projects assigned at the discretion of the instructor.
5. A comprehensive final exam worth no less than 20% of the total grade for the class.
6. Participation in both class and laboratory activities will constitute a minimum of 10% of the course grade.

Breakdown

Lecture Points Possible:

- Exams (4 exams @ 100 pts. ea.) 400 pts.
- Comprehensive Final 200 pts.
- Homework (4 @ 25 pts. ea.) 100 pts.
- Quiz Credit (4 @ 12.5 pts. ea.) 50 pts.
- Total Lecture Points 750 pts.
Laboratory Points Possible:

Experiments (13 reports @ 10 pts. ea.) 130 pts.

Laboratory Quizzes (4 quizzes @ 30 pts. ea.) 120 pts.

Total Laboratory Points 250 pts.

Criteria

The grading system of Blinn College recognizes the following grade values:

- A = 90 – 100% mastery of material
- B = 80 - 89%
- C = 70 - 79%
- D = 60 - 69%
- F = < 60%

Blinn College Policies

All policies, guidelines, and procedures in the Blinn College Catalog (http://www.blinn.edu/catalogPDF/Admissions-Records-Financial-Aid.pdf), Blinn College Board Policies (http://pol.tasb.org/Home/Index/1204), and the Blinn College Administrative Procedures Manual (http://www.blinn.edu/admnpolicy/intro.htm) are applicable to this course.

Notice of any action taken under these protocols and procedures, by Blinn College or its employees, may be delivered by hand, through the U.S. Postal Service, or electronically to the student’s BlinnBuc e-mail account. Notice shall be deemed received upon actual receipt, on deposit in the U.S. Mail, or upon entering the information processing system used by Blinn College for BlinnBuc e-mail accounts, whichever first occurs.

Civility Statement

Blinn College holds all members of the college community, which includes students, faculty, and staff accountable for their actions and words. Therefore, all members should commit themselves to behave in a manner that respects and demonstrates concern for the dignity, rights, and freedoms of others, including respect for the physical and intellectual property of all members of the college community.

Civility Notification Statement. If a student is asked to leave the classroom because of uncivil behavior, the student may not return to that class until he or she arranges a conference with the instructor; it is the student’s responsibility to arrange for this conference within two school days of being notified of the suspension from class. This statement reflects step one of three possible steps in the incivility process. The Incivility Protocol is detailed in the Blinn College Catalog (http://www.blinn.edu/catalogPDF/Admissions-Records-Financial-Aid.pdf) and in Blinn College Board Policy FLB (LOCAL) (http://pol.tasb.org/Policy/Download/1204?filename=FLB(LOCAL).pdf).

Attendance Policy

Class attendance is essential for student success; therefore, students are required to promptly and regularly attend all classes. A record of attendance is maintained from the first day of classes and/or the first day the student’s name appears on the roster through final examinations. Students who accrue one week’s worth of absences during the semester will be sent an e-mail through their Buc account requiring them to contact their instructor and immediately schedule a conference to discuss their attendance issues. Students who accumulate two weeks’ worth of unexcused absences, may be administratively withdrawn from class. There are four forms of excused absences recognized by the institution:

1. Observance of religious holy days - Students should notify their instructor(s) no later than the 15th day of the semester concerning the specific date(s) for absences for any religious holy day(s);
2. Representing the College District at an official institutional function;
3. Dual credit students representing the high school or independent school district at an official institutional function; and
4. Military service.

Other circumstances may be considered an excused absence at the discretion of the faculty member with appropriate documentation. College District-mandated attendance policy applies to all coursework; including coursework in developmental/non-credit courses. Failure to attend developmental classes will also result in removal from the course as defined by the College District.

It is the student’s responsibility to officially drop a class he or she is no longer attending. Students interested in dropping a course or withdrawing from school may do so by logging into myBlinn and clicking on the "My Records" tab, clicking on “add or drop classes” under registration tools, and then selecting the current registration term and “webdrop” from the action drop down menu. The final step is scrolling to the bottom of the page and clicking submit. Students should contact Enrollment Services at 979-830-4800 for assistance with webdrop or to drop due to: severe illness, care for a sick, injured, or needy person, death of a close relative/relation, military duty, military duty of a close relative/relation, or change in work schedule. The last day to drop a class with a Q is set according to the Academic Calendar (https://schedule.blinn.edu/Astra/Calendars/ActivityCalendar.aspx?calendarid=fcbee170-67bb-11e5-828c-4f3bd2cb6abf#filter=%7B).

Scholastic Integrity

The Scholastic Integrity Policy is located in the Blinn College Catalog (http://www.blinn.edu/catalogPDF/Admissions-Records-Financial-Aid.pdf), in Blinn College Board Policy FLD(B) (LOCAL) (http://pol.tasb.org/Policy/Download/1204?filename=FLDB(LOCAL).pdf), and the Blinn College Administrative Procedures Manual (http://www.blinn.edu/admnpolicy/Scholastic-Integrity.pdf). A student accused of scholastic dishonesty is entitled to due process as outlined in these documents.

It is the responsibility of students and faculty members to maintain scholastic integrity at the College District by refusing to tolerate any form of scholastic dishonesty, including cheating, plagiarism, or any other act of dishonesty. If there is compelling evidence that a student is involved in cheating or plagiarism, the instructor will address the infraction.

Students with Disabilities

Non-Discrimination Statement

Blinn College does not discriminate against qualified individuals with disabilities in the recruitment and admission of students, the recruitment and employment of faculty and staff, or the operation of any of its programs and activities, as specified by applicable federal laws and regulations. The designated coordinator for Blinn College’s compliance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990 (ADA), and the Americans with Disabilities Act Amendment Act (ADAAA) is Patricia E. Moran, M.Ed., 902 College Avenue, Brenham, TX 77833, (979) 830-4157. Students should make arrangements for disability service directly with each campus on which they attend classes. Students enrolled on the Brenham, Schulenburg, and Sealy campuses should contact (979) 830-4157 for more information. Students on the Bryan Campus should contact (979) 209-7264.

Services for Students with Documented Disabilities

Students with documented disabilities must self-identify and provide current, appropriate documentation of the disability to the Office of Disability Services (ODS) prior to receiving services. Students are encouraged to contact this office as early as possible to initiate services. Direct services to students with disabilities are provided in the following areas:

- Assessment of needs and appropriate services
- Provision of classroom and testing accommodations
- Assistance in orientation and registration procedures
- Counseling on disability related issues

Information, education, referrals, and consultation about specific disabilities are available to interested parties on request. For answers to specific questions or to request an information packet, contact the Office of Disability Services (http://www.blinn.edu/Disability/index.html) on the specific campus you will be attending.

Bryan Campus: (979) 209-7251; Brenham, Sealy, Schulenburg Campuses: (979) 830-4157

Final Grade Appeal

Course Policies

Attendance Policy Reminder

Missing lecture, lab or both will count as one absence. Two (2) absences count as one week’s absence. Students accumulating two week’s worth of absences will be dropped.

Safety Equipment Usage

Students are responsible for purchasing and correctly wearing appropriate eye protection during the lab period. Students must wear approved eye protection, a lab coat, pants and closed toed shoes any time chemicals or equipment are being moved by anyone in the laboratory. Failure to wear eye protection or appropriate footwear will result in expulsion from the laboratory for the experiment involved (this action constitutes an absence and the student will receive no points for that experiment).

Problem Resolution

If you have a complaint about this class, you should first request a face-to-face meeting with me to try and resolve the problems or issues. If these problems or issues cannot be resolved at the instructor level, you should request a conference with the Assistant Dean, Mr. Grady Hendricks, ghendricks@blinn.edu. If these problems or issues persist, you may request a conference with the Dean, Dr. Elmer Godney, elmer.godeny@blinn.edu.

Eating and Drinking

Eating and drinking are not allowed in classrooms or laboratories.

Schedule

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<thead>
<tr>
<th>When</th>
<th>Topic</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Thursday</td>
<td>Chapter 1 Introduction to Chemistry; Safety Video / Quiz</td>
<td>245 minutes; 4.65 contact hours</td>
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<tr>
<td>July 6</td>
<td>Chapter 2 Atoms &amp; Molecules; Exp. 1 Density (shoes &amp; goggles)</td>
<td>245 minutes; 4.65 contact hours</td>
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<tr>
<td>Friday</td>
<td>Chapter 3 Moles &amp; Equations; Nomenclature Worksheet</td>
<td>245 minutes; 4.65 contact hours</td>
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<tr>
<td>Monday</td>
<td>Chapter 4 Stoichiometry; Exp. 3 Epsom Salt (shoes &amp; goggles)</td>
<td>245 minutes; 4.65 contact hours</td>
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<tr>
<td>Tuesday</td>
<td>Exam 1; Exp. 4 Percent Copper (shoes &amp; goggles)</td>
<td>245 minutes; 4.65 contact hours</td>
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<tr>
<td>Wednesday</td>
<td>Chapter 5 Gases; Lab Quiz 1</td>
<td>245 minutes; 4.65 contact hours</td>
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<tr>
<td>Thursday</td>
<td>Chapter 6 Atomic Structure; Exp. 5 Titration (shoes &amp; goggles)</td>
<td>245 minutes; 4.65 contact hours</td>
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<tr>
<td>Friday</td>
<td>Chapter 6/7; Exp. 6 Gas Laws (shoes &amp; goggles)</td>
<td>245 minutes; 4.65 contact hours</td>
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<td>When</td>
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<tr>
<td>Tuesday</td>
<td>Chapter 7 Molecular Structure; Electron Configuration Worksheet, Exp. 9 Lewis Structures</td>
<td>245 minutes; 4.65 contact hours</td>
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<td>July 18</td>
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<tr>
<td>Wednesday</td>
<td>Exam 2; Exp. 7 Alum (shoes &amp; goggles)</td>
<td>245 minutes; 4.65 contact hours</td>
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<td>July 19</td>
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<tr>
<td>Thursday</td>
<td>Chapter 8 Molecules &amp; Materials; Lab Quiz 2</td>
<td>245 minutes; 4.65 contact hours</td>
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<td>July 20</td>
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<tr>
<td>Friday</td>
<td>Chapter 8/9; Exp. 8 Periodic Behavior (shoes &amp; goggles)</td>
<td>245 minutes; 4.65 contact hours</td>
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<td>July 21</td>
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<tr>
<td>Monday</td>
<td>Chapter 9 The First Law of Thermodynamics; Exp. 10 Calorimetry (shoes &amp; goggles)</td>
<td>245 minutes; 4.65 contact hours</td>
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<td>July 24</td>
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<tr>
<td>Tuesday</td>
<td>Chapter 10 The Second Law of Thermodynamics; Exp. 11 Rate of Reaction (shoes &amp; goggles)</td>
<td>245 minutes; 4.65 contact hours</td>
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<td>July 25</td>
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<tr>
<td>Wednesday</td>
<td>Exam 3; Lab Quiz 3</td>
<td>245 minutes; 4.65 contact hours</td>
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<td>July 26</td>
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<tr>
<td>Thursday</td>
<td>Chapter 11 Chemical Kinetics; Exp. 12 Rate Law (shoes &amp; goggles)</td>
<td>245 minutes; 4.65 contact hours</td>
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<td>July 27</td>
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<tr>
<td>Friday</td>
<td>Chapter 11/12; Extent of a Reaction</td>
<td>245 minutes; 4.65 contact hours</td>
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<td>July 28</td>
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<tr>
<td>Monday</td>
<td>Chapter 12 Chemical Equilibrium; Exp. 13 Equilibrium Constant (shoes &amp; goggles)</td>
<td>245 minutes; 4.65 contact hours</td>
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<td>July 31</td>
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<tr>
<td>Tuesday</td>
<td>Chapter 13 Electrochemistry; Experiment 14 Electrolytic Cell (shoes &amp; goggles)</td>
<td>245 minutes; 4.65 contact hours</td>
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<td>August 1</td>
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<tr>
<td>Wednesday</td>
<td>Exam 4; Lab Quiz 4</td>
<td>245 minutes; 4.65 contact hours</td>
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<td>August 2</td>
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<tr>
<td>Thursday</td>
<td>Final Exam</td>
<td>135 minutes; 3.0 contact hours</td>
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<td>August 3</td>
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