Chemistry I : 4 credit hours Revised for Summer I 2013
2013 SI CHEM 1411 Section 85001

INSTRUCTOR’S INFORMATION
(Instructor reserves the right to amend this
information as necessary.)
Semester and Year: Summer I 2013

Class time and days: MTWRF Wednesday  June 5 – Wednesday July 3

<table>
<thead>
<tr>
<th>Section</th>
<th>Lecture: Rm TH220</th>
<th>Lab: Rm S231</th>
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<tr>
<td>85001</td>
<td>MTWRF</td>
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<td>7:30 am – 9:30 am</td>
<td>9:40 am – 11:40 am</td>
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Instructor: Dr. Dwight Randle | Contact Info: Email: dwightrandle@dcccd.edu or Phone: 972-238-3795 | Office SH277

Drop Date: June 26, 2013

Final Exam: July 3, 2013. Evaluation Procedures: Your final course grade will be determined by the total number of points accumulated from all assignments. Total possible points = 1000.

A = 900 -1000 points
B = 800 – 899 points
C = 700 - 799 points
D = 600 - 699 points
F = 599 points and below

Points may be obtained from the following:
4 exams @ 100 = 400
1 final exam @ 200 = 200
13 labs @ 20 = 260
Homework 110
In-class quiz or participation 30
**Exams:** Exam questions are carefully chosen from a multiple-choice question test bank. No partial credit will be given for multiple-choice questions. Short answer questions (which require that you show your work) may make up 10-30% of the exam. Please note the following exam rules:

- **You must be on time for all exams.** No student will be allowed to start an exam more than 10 minutes after the scheduled start time for an exam.
- **There is no make up for exams or for the final exam.** If you score higher on the final exam than your lowest exam, your lowest exam score will be replaced by the percentage score earned on the Final Exam.
- **No device capable of connecting to the Internet is allowed during the exam.** Calculators cannot be shared between students during exams. Calculators on phones are not allowed during exams.

**Digital Device Policy:** The in-class use of digital devices must be approved by instructor prior to its use. The use of digital devices must be limited to class-related tasks. Please excuse yourself from classroom if you need to take or place a phone call.

**Communication to students is done via eCampus:** Communication between student and the professor is done in class and/or by email via eCampus. It is the students responsibility to check eCampus regularly for class related communications.

**In-class behavior:** All students will treat each other with respect and dignity in accordance with Richland College Code of Conduct, which can be found at www.rlc.dcccd.edu/conduct/. Sleeping in class is not allowed at anytime. Any student sleeping in class will be asked to leave the classroom.

**Online Homework:** You have homework assignments at the Mastering Chemistry website (Course ID: RANDLE141185001) which consists of problems from the end of the chapters in our textbook.

**Class Participation:** During lecture I will ask you to work with a partner to solve a problem, discuss a topic or answer a question pertinent to the day’s lecture topic. These activities will tell me if everyone understands, or if I need to spend additional time on the topic. Additionally, a sign in sheet will be circulated during random class meetings. You must sign in to receive the points for any activity that occurred in that class.
Lab: Answers to pre lab and post lab question will be collected online and hardcopy on the day of the lab. No late pre or post labs will be accepted. You must attend and fully participate in labs to receive credit. Students will work with a partner or small group in lab. Each student must turn in an individual lab report (online and hardcopy) to be graded. The pre-lab from your lab manual must be completed before lab time and is usually worth 8 of the 20 points possible for each lab report. If the pre-lab assignment asks for a "checklist", you must write out directions for the lab experiment that are sufficient in detail for you to do the experiment without your lab book. Complete sentences are not necessary; you may use an outline or pictures or lists, etc. Xeroxed pages from the lab book will not be graded! You must buy safety goggles and bring them to the lab each week, or leave them in the drawer assigned to your lab section. Safety goggles must be worn in the lab to receive points for that lab. Students who do not comply with the professor instructions and laboratory safety and cleaning policies will not earn points for the lab.

If you are absent from a lab you cannot receive points for that lab. You may make up a missed lab by attending another 1411 lab section doing that same lab experiment. A schedule of 1411 labs is posted in the lab room. That lab instructor will initial and date your pre-lab and lab papers and turn in those papers to me by leaving them in my box in the lab prep area. Do not abuse this privilege. Go to your assigned lab section if at all possible. You will be asked to document the reason for your absence.

Attendance Policy: Activities in class can lead to quiz or participation points, so it is to the student's advantage to come to each class meeting. Additionally, an attendance sign in sheet will be available at several randomly chosen class meetings. Class participation points can be given to those who sign in.


Mastering Chemistry (Course ID: RANDLE141185001) need only if purchase a used book, McMurry, ISBN 0136156665, Prentice Hall

Splash-resistant safety goggles for lab work.
Units of Instruction/Class Calendar (Instructor reserves the right to alter this schedule, as needed):

- **Exam 1 over chapters 1, 2, 3,**
  - Matter and Measurement
  - Structure and Stability of Atoms
  - Periodicity and the Electronic Structure of Atoms

- **Exam 2 over chapters 4, 5, 6,**
  - Ionic Bonds and Some Main-Group Chemistry
  - Covalent Bonds and Molecular Structure
  - Mass Relationships in Chemical Reactions

- **Exam 3 over chapters 7, 8, 9**
  - Reactions in Aqueous Solution
  - Thermochemistry: Chemical Energy
  - Gases: Their Properties and Behavior

- **Final Exam over chapters 1 – 9**

Instructor Policies and Suggestions for Student Success:

How to Succeed in this Course:

1. **Study:** Plan to study two hours outside class for each hour in class, or about 8-10 hours per week. Your study time should be at a regular planned time and spread throughout the week, not all day Sunday.

2. **Read:** Read the sections from the text that will be covered in the lecture before you come to lecture so you will be familiar with the vocabulary and know the areas that may be difficult for you. Jot down your questions as you read. If your questions are not answered during lecture, then ask it in class or see me during an office hour or ask me during lab for clarification. You will also find knowledgeable tutors in the Science Corner across from SH278. Consult the posted schedule for times when chemistry tutors are available.

3. **Warm up before an exam:** Just as an athlete stretches and warms up before competition, warming up immediately before an exam will help engage and focus your problem-solving left brain which will help you perform better on
exams. I suggest that you work 2-3 problems from the relevant chapter(s) in the 10-15 minutes prior to taking each exam.

4. **Working problems is a great way to practice:** Following most sections in the chapter, there are problems to work and about half of these are assigned for you to work out on paper and hand in at the exam time. Answers for the problems are in the Appendix, page A – 21.

5. **Do your homework:** Work the assigned end-of-chapter problems on the Mastering Chemistry website and submit your scores on or before you take an exam on that chapter.

6. **Keep up with the lab work:** Prepare for lab by reading the procedure in advance and completing the pre-lab assignment in your manual before you come to lab.

**College Policies and Procedures:**

For Institution Policies, please refer students to the Richland website
www.richlandcollege.edu (Current Students) or to
www.richlandcollege.edu/syllabusinfo/syllabiInformation.pdf

**COURSE DESCRIPTION**

This course is for science and science-related majors. Fundamental concepts of chemistry are presented including measurement and the metric system, the history of chemistry, the mole concept, chemical reactions and stoichiometry, energy and chemical reactions, states and properties of matter, the periodic table, chemical bonding, atomic and molecular structure, gas laws, and concentrations of solutions. (3 Lec., 3 Lab.)

Coordinating Board Academic Approval Number 4005015203

**PREREQUISITES**

One of the following must be met: (1) Developmental Mathematics of 0097 or higher or the equivalent and/or one of the following: High School Chemistry, Chemistry 1405, or the equivalent; (2) Developmental Reading 0093 or English as a Second Language (ESOL) 0044 or (3) have met the Texas Success Initiative (TSI) Reading standard.

**COURSE OBJECTIVES**
1. Perform calculations related to topics included in Chemistry 1411
   a. Be able to express, interpret, and utilize relationships between variables
   b. Solve problems using complete, thorough setups with metric and SI units
   c. Utilize data, including graphs, and interpret results
2. Describe the fundamental particles of matter; relate basic laws and theories to their behavior, utilize a systematic method of naming compounds and polyatomic ions.
3. Write and balance chemical equations and perform stoichiometric calculations. Classify the different types of reactions.
4. Recognize the correlation between electronic structure and the organization of the periodic table. Be able to predict properties and account for periodic trends.
5. Determine the relationship between pressure, volume and temperature of gases and perform related calculations.
6. Define enthalpy and entropy, determine methods of measurement of enthalpy, and perform related calculations.
7. Investigate the quantum mechanical model of the atom, write and interpret quantum numbers for the electrons in an atom. Write electronic configurations and predict chemical properties.
8. Differentiate between ionic and molecular compounds, write Lewis formulas, and account for differences in properties.
9. Utilize the VSEPR theory to predict the shapes of molecules, account for the effect of lone electron pairs and multiple bonds.
10. Describe molecular orbitals using hybridization, distinguish between sigma and pi bonds, and account for properties using the molecular orbital theory.

Core Curriculum Intellectual Competencies

Reading: The ability to analyze and interpret a variety of printed materials (books, documents, and articles) above 12th grade level. Your textbook is written on a level above 12th grade and requires that you interpret graphs, charts, and figures, as well as text.

Listening: Analyze and interpret various forms of spoken communication, possess sufficient literacy skills of writing and reading above 12th grade level. The lecture format requires you to listen critically and take notes.
**Critical Thinking:** Rely on reason and use strategic approach to uncover meaning or undergird understanding. Every chemistry problem is a word problem. You will learn to extract necessary data from a problem, disregard irrelevant data, select the appropriate chemical law for its solution, and apply that relationship.

**CORE CURRICULUM STATEMENT**

*To identify and apply appropriate methods and technology to the study of chemistry:* For example, you will graph your data and determine the best straight line when it is appropriate. You will sometimes use the Lab Works Interface to collect your data, but only after the device has been properly calibrated.

*To recognize scientific and quantitative methods and the differences between these approaches and the other methods of inquiry and to communicate findings, analyses, and interpretation both orally and in writing:* Quantitative methods always require you to take measurements and record data. Some of your labs this semester will be quantitative, requiring data and calculations; but some labs will be qualitative, requiring observations and subjective descriptions. For the quantitative labs you may compare your results to values recorded in chemical reference books. Discussions with your lab partner(s) to reach a consensus on the written lab report will give you practice in communicating your results.

*To identify and recognize the differences among competing scientific theories:* For example, various interpretations of the atomic theory are used, depending on the information needed: the Bohr (solar system) model for looking at shells of electrons, the valence bond theory for determining shapes of molecules, and the molecular orbital theory for a closer examination of electron location.

*To demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies:* You are encouraged to bring in newspaper articles that raise issues related to modern science. In the past this has included: acceptable levels of arsenic in drinking water; ethanol as an alternative fuel to gasoline; ozone levels; and most recently, the use of chlorine oxides to de-contaminate the Senate building from anthrax spores.

*To demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture:* Science impacts our everyday lives in many ways,
but one example is the FDA requirement that chemical contents of all foods and drugs be listed on the label.

As you learn the chemical vocabulary, these will become more meaningful.