El Camino College Compton Center
Spring 2012
Chemistry 20: Section 9843 Instructor: Dr. James Myrtle

Lab / Lecture: Fri: 8:00am – 12:10pm M/S 231 Contact: jmyrtle@beachchemistry.com
Lecture: Sat: 8:00am – 11:10am M/S 231 Office Hours: By appointment

El Camino College Mission Statement:
El Camino College offers quality, comprehensive educational programs and services to ensure the educational success of students from our diverse community.

Course Description
Chemistry 20 is an introductory chemistry course for students pursuing careers in the health sciences and related fields. The course assumes no previous knowledge of chemistry, and uses only arithmetic and simple algebra in most calculations. Chemistry 20 presents fundamental theories and principles of chemistry applied to inorganic, organic, and biological chemistry; atomic and molecular structure, kinetic-molecular theory, chemical and physical changes, solutions and colloids. The course emphasizes chemical nomenclature, chemical equations, and problem-solving calculations. Chemistry 20 is intended as a prerequisite for Physiology 31 or Microbiology 33.

Prerequisites
Math 40 or 43 with a minimum grade of C, or qualification by testing (El Camino College Mathematics Placement Test) and assessment. Recommended: eligibility for English 84

Required Materials
• Lab manual: Essential Laboratory Manual, 9th Edition (accompanying Timberlake above)
• Simple, non-programmable Scientific Calculator capable of doing exponential calculations, e.g. logarithms. Note: cell phone calculators and programmable calculators are not allowed.

Recommended:
- Study Guide for Timberlake’s Chemistry: An Introduction to General, Organic, and Biochemistry, 11th edition. A Selected Solutions Manual is also helpful
- Internet access with a PC for access to the class web site: www.beachchemistry.com
- 3 ring binder, 2” size with pockets (flat-sided rings highly recommended), set up with dividers labeled as follows: Class Notes; Handouts; Homework; Quizzes; Tests, Labs

Assessment Activities
Exams (4 @ 100 points) ................................................................. 400
Quizzes ......................................................................................... 100
Laboratory/Exercises................................................................. 150
Homework .................................................................................. 150
Comprehensive Final Exam ..................................................... 200

Course Total .................................................................................. 1000

Grading Scale
Course letter grades will be based on the following percentage of total points possible.
A = 88 – 100 %  B = 78 – 87 %  C = 65 – 77 %  D = 55 – 64 %  F = below 55 %
Note: Because chemistry is a laboratory science
• Passing work (55% or more of possible points) in the laboratory portion of the course is required in order to earn an overall grade of “C” or higher, regardless of test and quiz scores.
• A minimum of 65% in the lecture portion of the course (quizzes, tests, final exam) is required in order to earn an overall grade of “C” or higher, regardless of lab scores.

Quizzes and Exams:
• Be present and on time for all exams and quizzes. Late arrivals will not be given extra time.
• There are no make-up exams, quizzes, or laboratories. Missed quizzes/exams will result in a zero, except in rare circumstances. Only valid, provable emergencies with notification via e-mail prior to a lab will be considered. See the instructor immediately on returning.
• Exams will be announced in advance; unannounced “pop” quizzes are possible. It is your responsibility to always come prepared with pencils, an eraser and a calculator. Calculators may not be shared during exams and quizzes. Note that cell phone calculators and programmable calculators, e.g. TI 83/84 are not allowed during exams.

Homework:
• Textbook Problems: Within-chapter (“Study Checks”, SC) and (“Additional Problems”, AP) and end-of-chapter (“Additional Questions and Problems”, AQP) homework problems are routinely assigned according to the schedule below. Working them is essential to gaining understanding and preparing for tests. Answers are provided at the end of each chapter. These will usually not be collected. They are necessary as a key component of your personal investment in your own success.
• Classwork exercises: Each chapter includes exercises handed out in class. These must be completed and turned in for grading as the instructor directs. Late work is penalized.

Study Materials: Chem 20 Website (www.beachchemistry.com)
• Lecture Notes pages: Check the Chem 20 web page (http://beachchemistry.com/?page_id=3) for all the Class Notes used in class by the instructor for each chapter. Note that many supplemental materials and/or links to helpful animations are also listed on the web page for each chapter. Frequently, worksheets are also linked, many including the answers. Lecture notes are password protected. You must obtain the password from the instructor.
• Current Comments page: Check for updates or changes to current assignments for each chapter. Exam grades may also be posted on a “Grades” page. This page is password-protected, and results are listed by student ID number.

Laboratory
• Read the lab before entering the laboratory in order to understand the lesson, and to finish the lab and work efficiently. Bring the lab manual for every lab
• Safety requires that you be present in class for the pre-lab discussion. If you come late to a laboratory class you must first report directly to the instructor; do not start lab work until given instructor approval.
• You are expected to be familiar with all given safety rules and to follow them at all times while working in the laboratory. Failure to do so may result in dismissal from the lab and a zero on that lab report.
• If you make a mistake during an experiment, check with the instructor before doing anything else. Do not start over without instructor approval. Do not attempt to use another person’s data.
• Record all appropriate qualitative and quantitative data directly onto the lab report form at the time the data are observed. Do not write data on scratch paper or any place other than your lab report. Make corrections by drawing a single line (no erasures, no white out, no
scribble outs) through the incorrect data and writing the new data next to it. Calculations or results of other work may be corrected by erasing.

- Work with partners in lab only when directed to. Complete laboratory reports independently. **Note:** copying another person’s work is considered plagiarism by both parties. I look for and easily find copying. The penalty for plagiarism is harsh.
- Keep your lab report reasonably neat; it must be easily readable.
- Unless announced otherwise, lab reports are due **before** the beginning of the next class after the lab. Pages must be **stapled** in numerical sequence. Late lab reports will be penalized. Being tardy or absent is **not** an excuse for late lab reports.
- You will sometimes be required to wear approved safety goggles in the laboratory while certain experiments are in progress. You may bring your own or goggles may be supplied. Shoes must be stable (no heels) and securely fastened to your feet. No open toed shoes.

**Dropping the course:** Failure to drop the course by the last date to drop with a “W” will result in a grade of “F”. You, not the instructor, are responsible for dropping the course.

**Attendance:**
Missing a single class puts you at a serious disadvantage and your grade in jeopardy. The class is fast paced and the topics are challenging. Each chapter builds on the foundations of the previous chapters, and with 15 chapters covered in 15 weeks, some chapters will be covered in a single class session. Attendance is taken. It is part of your class record. You are responsible for information and assignments you miss when you are absent.

**Special Accommodations:** Any student who has a disability and has special needs is to alert me of this by the second week of the semester so that special accommodations can be made.

**Student Conduct:**
**Behavior:** Polite and respectful behavior is expected at all times. Cell phones must be turned off. Disruptions such as being tardy, inappropriate talking, texting, ringing of a cell phone, listening to music devices, sleeping, etc. must be avoided.
**Honesty:** Copying another person’s exercises, labs, or homework is plagiarism and a path to failure in this course. On an exam or quiz, I look for cheating and it will be dealt with harshly.

**Succeeding:**
Remember, this class is your investment in **you**, and you alone get to determine the return on investment. You must do the following if you are to succeed in this class:
- **Organize:** Create a 3-ring binder with tabs to organize your classwork, as suggested in “recommended” materials, and organize a quiet area to work.
- **Study chemistry daily:** 14 – 16 hours per week should be the norm.
- **Read ahead** in the text to gain an understanding of material coming up in the next class. The class lectures are designed to **supplement** your textbook readings. Lectures do not necessarily cover everything covered in the textbook and assigned homework.
- **Ask questions:** Use the class to solidify your understanding, to clear up the things you were uncertain about, and to help you outline what are the most important things to know. The only dumb question is the one not asked.
- **Work problems:** Solving problems both in the chapter readings and those assigned by the instructor are **fundamental** to success in this class.
- **Chem 20 website:** Go to the web site (http://www.beachchemistry.com/?page_id=453) for Dr. Myrtle’s Chem 20 class for access to all the instructor’s classroom lecture materials, and also to many addition resources, exercises, and links to supplemental animations.
- **Come prepared:** Bring pencils, paper, an eraser, a calculator, and all required class materials at all times. Be on time.
• **Organize study groups**: gather informally with classmates before or after class to study assigned problems. During class sessions, there will be many opportunities to work with other classmates in small groups while working in-class assignments. Plan to seek out others to work with when appropriate or indicated by the instructor.

**Course Objectives:**
During the course, students will:
1. Use scientific notation and round-off calculations based on error and significant figures.
2. Recognize metric units and common prefixes as well as using conversions factors to convert from one unit to another.
3. Recognize and write symbols for elements and use them to name and write chemical formulas.
4. Balance chemical equations and perform quantitative stoichiometric calculations involving chemical reactions.
5. Perform calculations involving gas laws which would require understanding of the concepts of direct and inverse proportions.
6. Perform calculations involving concentration of solutions, including using percent as a proportionality factors.
7. Determine solubility qualitatively from the properties of solvents and solutes.
8. Identify strong, weak, and non-electrolytes qualitatively as well as write the corresponding chemical reaction.
9. Determine pH and classify solutions as basic acidic, or neutral.
10. Identify the element oxidized or reduced in a redox reaction.
11. Distinguish between isotonic, hypertonic, and hypotonic solutions.
12. Write names and structural formulas of simple organic compounds using the IUPAC nomenclature as well as common name when required.
13. Recognize the functional group of different classes of organic compounds as well as their reactions.
14. Predict possible structural or geometric isomers given a molecular formula.
15. Classify alcohols and amines as primary, secondary, or tertiary.
16. Predict the products of either synthesis or breakdown of organic compounds.
17. Apply inorganic and organic principles to biological systems.

**Student Learning Outcome** (SLO)
On a written exercise, given the chemical formulas of reactants, students will be able to write the correct formula of products, identify the reaction type, and balance the equation.

Students will practice safe laboratory procedures by putting their goggles on at the beginning of a chemistry lab experiment involving burners or chemicals, and by keeping their goggles in place during the entire course of the experiment. Students will not remove their goggles until the students are leaving or until the instructor has said that it is safe to do so (whichever comes first).
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<th>Chapter / Lecture Topic</th>
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<td>1. Measurements</td>
<td>Ch 1</td>
<td>SC:1 - 18 all AP:79-95 odd</td>
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<td>2. 2/17</td>
<td>1. Measurements 2. Energy and Matter</td>
<td>1. Measurements and Significant Figures</td>
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<td>3. 2/24</td>
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<td>2. Conversion Factors in Calculations</td>
<td>Ch 2 SC:1 - 11 all AP:67-85 odd</td>
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<td>3. Atoms and Elements • Quiz 2 (Ch. 2)</td>
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<td>6. Compounds</td>
<td>Ch 4 SC:1 - 16 all AP:87-113 odd</td>
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<td>7. 3/30</td>
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<td>8. Moles and Chemical Formulas</td>
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<td>8. 4/6 Fri</td>
<td>Exam 2 – Chapter 3, 4, 5</td>
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<td>12. Solutions</td>
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<td>10. 4/20</td>
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<td>Ch 8 SC:1 - 9 all AP:59 - 79 odd</td>
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<td>14. 5/18</td>
<td>13. Carboxylic acids • Quiz 10 (Ch 12)</td>
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<td>Exam 4 – Chapters 10, 11, 12, 13</td>
<td>14. Carbohydrates</td>
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<td>16. 6/1</td>
<td>15. Lipids Review</td>
<td>19. Carbohydrates</td>
<td>Ch 15</td>
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<td>17. 6/8 Fri</td>
<td>--------------- Comprehensive Final Exam ---------------</td>
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*SC= Study Checks (these questions are appended to each Sample Problem in the Chapter text)  
QP= Questions and Problems (these are found following the Sample Problems in the text)  
AP= Additional Questions and Problems (these are found at the end of each chapter)  
Note: Answers to all SC, odd-numbered QP and AP problems are found at the end of each chapter.