

College of San Mateo
Course Outline

- New Course
 Update/No change
 Course Revision (Minor)
 Course Revision (Major)

Date: 11/10/11

Department: CHEMISTRY

Number: 192

Course Title: Elementary Chemistry

Units: 4

Total Semester Hours **Lecture: 48** **Lab: 48** **Homework: 80** **By Arrangement: 16**

Length of Course

- Semester-long
 Short course (Number of weeks _____)
 Open entry/Open exit

Grading

- Letter
 Pass/No Pass
 Grade Option (letter or Pass/No Pass)

Faculty Load Credit (To be completed by Division Office; show calculations.):

48 lecture hours X 1 FLC / 16 hours Lecture = 3.0 FLC

48 lab hours X 0.8 FLC / 16 hours Lab = 2.4 FLC

5.4 FLC Per Semester

1. Prerequisite (Attach Enrollment Limitation Validation Form.)

MATH 110 or equivalent with a grade of C or higher, or appropriate score on the College Placement test.

2. Corequisite (Attach Enrollment Limitation Validation Form.)

NONE

3. Recommended Preparation (Attach Enrollment Validation Form.)

Eligibility for ENGL 838/848.

4. Catalog Description (Include prerequisites/corequisites/recommended preparation. For format, please see model course outline.)

CHEM 192 Elementary Chemistry (4) Minimum of 48 lecture hours and 48 lab hours plus 16 hours by arrangement per term. Prerequisite: MATH 110 or equivalent with a grade of C or higher or appropriate score on the College Placement test. Recommended Preparation: eligibility for ENGL 838/848. Chemical nomenclature and formula writing, and mathematical review, including logarithms and exercises in calculation relating to chemistry. (Provides preparation for students who do not have adequate preparation for CHEM 210) Extra supplies may be required. A materials fee as shown in the Schedule of Classes is payable upon registration. (AA: Area E5a, CSU, UC*)

5. **Class Schedule Description** (Include prerequisites/corequisites/recommended preparation. For format, please see model course outline.)

Same as above.

6. **Student Learning Outcomes** (Identify 1-6 expected learner outcomes using active verbs.)

Upon successful completion of the course, the student will be able to:

1. At the introductory level, students will become familiar with the nanoscale particle nature of matter including atoms, molecules and ions and the various states they exist in.
2. Represent the chemical elements and simple chemical compounds, and they will begin the process of depicting a variety of chemical reactions involving elements, compounds and ions.
3. Solve elementary quantitative problems involving concentrations, behavior and reactions of various chemical substances.

7. **Course Objectives** (Identify specific teaching objectives detailing course content and activities. For some courses, the course objectives will be the same as the student learning outcomes. In this case, "Same as Student Learning Outcomes" is appropriate here.)

SAME AS STUDENT LEARNING OUTCOMES

8. **Course Content** (Brief but complete topical outline of the course that includes major subject areas [1-2 pages]. Should reflect all course objectives listed above. In addition, a sample course syllabus with timeline may be attached.)

(Please see attached syllabus for course timeline)

- Introduction to scientific methodology, scientific notation, metric units, errors, significant figures and dimensional analysis.
- Presentation of basic chemical concepts, properties, chemical and physical changes, pure substances and mixtures.
- Concepts of heat, temperature and energy.
- Introduction to atomic theory. The student will understand modern atomic theory with regard to the major subatomic particles. Basic properties of atoms, ions, and isotopes will be presented.
- Chemical bonding and resulting chemical structures will be studied. Types of bonds with their properties will be discussed.
- Gas laws and calculations using these laws will be understood.
- Solution chemistry will be presented.

9. **Representative Instructional Methods** (Describe instructor-initiated teaching strategies that will assist students in meeting course objectives. Describe out-of-class assignments, required reading and writing assignments, and methods for teaching critical thinking skills. **If hours by arrangement are required, please indicate the additional instructional activity which will be provided during these hours, where the activity will take place, and how the activity will be supervised.**)

Some but not necessarily all of the following methods are employed when teaching this course to assist students in achieving the course objectives.

- Students will be required to have an appropriate textbook and approved laboratory manual for this course.
- Lecture style presentation of materials
- Computer and video programs.
- In class exams and a comprehensive final
- Group work on problems in lecture and experimental procedures in lab.
- The use of assigned homework.
- In class presentation of a topic that fits in the domain of modern science.
- Instructional materials that will be integrated in this class will include a textbook, outside electronic media (such as videos of chemistry related movies), three dimensional computer simulations of chemical compounds, and physical model kits.
- To be arranged hours will be required. Students are expected to work on the practice and use of modern chemistry as it relates to everyday life. These activities are above and beyond normal classroom/laboratory instruction and are in excess of prescribed homework activities. A list of approved TBA will be provided to students at the start of the semester.

10. Representative Methods of Evaluation (Describe measurement of student progress toward course objectives. Courses with required writing component and/or problem-solving emphasis must reflect critical thinking component. If skills class, then applied skills.)

Some but not necessarily all of the following methods are employed when teaching this course to assist the students in achieving the course objectives.

Exams, quizzes, laboratory work, written and oral reports, and assigned exercises will be used to learn and evaluate in an on-going manner students' knowledge acquisition. Furthermore, students may be required to give a class presentation of a modern topic in the sciences.

11. Representative Text Materials (With few exceptions, texts need to be current. Include publication dates.)

Karen Timberlake, *Basic Chemistry 3rd ed.* 2010. (ISBN: 0321663101)

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Submission Date: _____