COURSE INFORMATION FORM

DISCIPLINE
Chemistry

COURSE TITLE
Survey of Chemistry

CR.HR. 5 LECT HR. 4 LAB HR. 2 CLIN/INTERN HR. CLOCK HR.

CATALOG DESCRIPTION
Survey of the principles of chemistry and the role and significance of chemistry in the modern world.

PREREQUISITES
None

EXPECTED STUDENT OUTCOMES IN THE COURSE
Upon completion of this course, the student will be able to:

1. Demonstrate understanding of the scientific method, differentiating between scientific fact and theory.
2. Employ modern atomic and molecular theories to explain general physical and chemical properties of matter.
3. Demonstrate safe and proper laboratory techniques for experimental chemistry procedures.
4. Collect experimental data and make generalizations about chemical behavior.
5. Use chemical reference materials to locate information on chemical topics.
6. Analyze popular media reports on science with particular emphasis on chemistry content.
7. Evaluate and make informed appraisals of social and political issues involving chemical processes.
8. Communicate chemical information clearly.
CLASS-LEVEL ASSESSMENT MEASURES

Student accomplishment of expected student outcomes will be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

1. Quizzes, examinations, written laboratory reports
2. Worksheets, quizzes, examinations, written laboratory reports
3. Instructor evaluation of performance of laboratory work
4. Written laboratory reports, quizzes, examinations
5. Written laboratory reports, papers and oral presentations
6. Papers and presentations
7. Worksheets, quizzes, examinations, papers and oral presentations
8. Written laboratory reports, worksheets, quizzes, examinations, papers and oral presentations

PROGRAM-LEVEL OUTCOMES ADDRESSED

GENERAL EDUCATION OUTCOMES
Specify which general education outcomes, if any, are substantially addressed by the course by completing the “Course/Program Assessment Matrix” to show the relationships between course and program outcomes and assessment measures.

OCCUPATIONAL PROGRAM OUTCOMES
Specify which occupational program outcomes, if any, are substantially addressed by the course by completing the “Course/Program Assessment Matrix” to show the relationships between course and program outcomes to assessment measures.
Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An *asterisk can be used to mark an item as optional.

I. Science and technology
   A. Scientific method
   B. Scientific measurements
   C. Risks vs. benefits in science and technology

II. Matter and energy
   A. Classification of matter
   B. States of matter
   C. Density
   D. Temperature and energy
   E. Physical and chemical changes

III. Nomenclature of inorganic compounds

IV. Development of atomic theory
   A. Dalton’s atomic theory
   B. Discovery and description of subatomic particles
   C. Rutherford and the nuclear model of the atom
   D. Bohr’s model and the quantization of energy
   E. The wave mechanical model

V. The periodic table
   A. Trends in element properties
   B. Intermolecular attractions

VI. Bonding
   A. Covalent, ionic, and metallic bonds
   B. Intermolecular attractions

VII. Chemical equations and mole relationships
   A. Balancing equations
   B. Basics of stoichiometry

VIII. Solution and molarity

IX. Acids and bases
X. Applications of chemistry
   A. Nuclear chemistry*
      1. Nuclear energy
      2. Nuclear medicine
   B. Oxidation-reduction reactions*
      1. Corrosion
      2. Batteries
   C. Introduction to organic chemistry*
      1. Polymers
      2. Soaps, detergents, and cleaning
      3. Cosmetic chemistry
   D. Introduction to biological chemistry*
      1. Chemistry in health and medicine
      2. Food and agricultural chemistry
   E. Introduction to environmental chemistry*
      1. Pollution of water and air
      2. Household chemicals
   F. Energy and fuels*