

**IMPERIAL COMMUNITY COLLEGE DISTRICT
IMPERIAL VALLEY COLLEGE
COURSE OUTLINE**

DIVISION: Science, Mathematics, and Engineering

DATE: October 12, 2005

COURSE TITLE: General Inorganic Chemistry II **COURSE NO.** CHEM 202 **UNITS:** 5

LEC HRS. 3 **LAB HRS.** 6 **HRS. TBA** 0

If cross-referenced, please complete the following

COURSE NO. (s) _____ **COURSE TITLE** _____

I. COURSE/CATALOG DESCRIPTION:

II. A. PREREQUISITES, if any:

CHEM 200 with a grade of "C" or better.

B. COREQUISITES, if any:

None

C. RECOMMENDED PREPARATION, if any:

MATH 090 with a grade of "C" or better

III. GRADING CRITERIA:

 X Course must be taken on a "letter-grade" basis only

_____ Course may be taken on a "credit" basis or for a letter grade.

_____ Course must be taken on a "credit" basis only.

IV. MEASURABLE COURSE OBJECTIVES AND MINIMUM STANDARDS FOR GRADE OF "C":

Student evaluation on the basis of daily preparation of assignments as well as spot quizzes on daily assignments. Class discussion on current lessons with student explanations to the class provides an interesting method of evaluation. The use of periodic examinations during the semester with a comprehensive final examination given at the end of the course. Evaluation of the precision nature and of the determinations being performed in the laboratory.

V. CORE CONTENT TO BE COVERED IN ALL SECTIONS:

	<u>CORE CONTENT</u>	<u>APPROX % OF COURSE</u>
1.	Bonding: Atomic orbital and Molecular orbitals 1. sigma bonding 2. hybrid orbitals 3. multiply bonding 4. bonding and anti bonding 5. paramagnetism 6. metallic bonding	13%
2.	Organic Chemistry 1. Addition reactions 2. Markovnikov's Rule 3. Hybridization 4. Functional Groups 5. Elimination and substitution reactions 6. amino acids and proteins	13%
3.	Thermodynamics 1. Spontaneity and maximum useful work 2. Free energy, G 3. 1st law 4. 2nd law 5. 3rd law 6. Entropy change, S	15%
4.	Chemical Kinetics 1. Concentration Dependence 2. Determining Rate 3. Determining Rate Law 4. Arrhenius Equation 5. Dependence on temperature 6. Identify Reaction Mechanism 7. Reaction Mechanism and Rate Equation 8. Catalyst	15%
5.	Oxidation-reduction reactions 1. Balancing red-ox reactions 2. Electrolytic cells, Nernst equation 3. Spontaneity of reactions	12%
6.	Nuclear Reactions 1. Natural radioactivity 2. Artificial radioactivity 3. Rate of decay 4. Fission vs. fusion	8%
7.	Liquids, Solids, and Phase Changes 1. Intermolecular Forces 2. Phase Changes 3. Crystalline solids and unit cell calculations 4. Phase Diagrams	9%
8.	Survey of Elements 1. Main Group 2. Industrial preparation of Nitric acid using Ostwald process, chlorine 3. Ozone chemistry 4. Transition Elements 5. Occurrence 6. Industrial preparation of aluminum, sodium, iron, copper 7. Coordination chemistry 8. Ligands 9. Naming coordination compounds 10. Isomers, Optical 11. Crystal Field Theory 12. Colors	15%

VI. METHOD OF EVALUATION TO DETERMINE IF OBJECTIVES HAVE BEEN MET BY STUDENTS: (check all that apply)

Essay	<u> X </u>	Class Activity	<u> X </u>	Written Assignments	<u> X </u>
Problem Solving Exercise	<u> X </u>	Final Exam	<u> X </u>	Oral Assignments	
Skill Demonstration	<u> X </u>	Objective	<u> X </u>	Quizzes	<u> X </u>
Other					

VII. INSTRUCTIONAL METHODOLOGY: (check all that apply)

Lecture	<u> X </u>	Discussion	<u> X </u>	Demonstration	<u> X </u>
Audio Visual	<u> X </u>	Group Activity	<u> X </u>	Lab Activity	<u> X </u>
Computer Assisted Instruction	<u> X </u>	Individual Assistance	<u> X </u>	Simulation/ Case Study	

Two (2) hours of independent work done out of class per each hour of lecture or class work, or 3 hours lab, practicum, or the equivalent per unit.

VIII. TEXTBOOK(S) AND SUPPLEMENT(S):

Refer to the current textbook list and syllabi.

Kotz, John C., Treichel, Paul M. Chemistry and Chemical Reactivity. 5th edition. Brooks & Cole Publishing, 2003

McMurray, John and Robert C. Fay. Chemistry. 2nd ed. Upper Saddle River, NJ: Prentice-Hall. 1998

Wentworth, R.A.D. Experiments in General Chemistry. 5th ed. Boston: Houghton Mifflin Co. 1999.

Gammon, Steven D. et al. Interactive Chemistry Journey. Upper Saddle River, NJ: Prentice-Hall. 1998

Hein, Morris and Susan Arena. Foundations of College Chemistry. 10th ed. Pacific Grove, CA: Brooks/Cole Publishing Co. 1999.

Ebbing, Darell D. and Steven D. Gammon. General Chemistry. 6th ed. Boston: Houghton Mifflin Co. 1999.

Brown, William H. and Christopher S. Foote. Organic Chemistry. 2nd ed. Fort Worth, TX: Saunders College Publishing. 1998.

Stanitski, Conrad, ed. Chemistry in Context: Applying Chemistry to Society. 3rd ed. New York: McGraw Hill. 2000.

Balling, Robert C. The Heated Debate. San Francisco: Pacific Research Institute for Public Policy. 1992.

Baggot, Jim. The Meaning of Quantum Theory: A Guide to Students of Chemistry and Physics. Oxford, England: Oxford University Press. 1992.

Gribbin, John. In Search of Shrodinger's Cat: Quantum Physics and Reality. New York: Bantam Doubleday Dell Publishers. 1985.