



Course Documentation Outline

School of Business, Biosciences and Justice Studies

SECTION I

1. Program (s): _____ CHEMICAL _____
2. Course Name: _____ Inorganic Chemistry _____
3. Course Code: _____ CHEM 3001 _____ 4. Credit Value: _____ 4 _____
4. Course Hours: 4 hours per week

Class	Lab	Field	Other	Total
4	0	0	0	4

5. Prerequisites/Corequisites/Equivalent Courses

PR/CO/EQ	Course Code	Title
Analytical II	CHEM2005	Analytical Chemistry
Organic II	CHEM1002	Organic Chemistry

6. Faculty: Don Todd Date: July 2010 Effective Date: Sept 2010
7. Dean/Chair Approval: *Jim Whiteway* Date: September 2009
9. Revision Number: Date: Effective Date:
10. Notes

Section II

11. Calendar Description:

This is an introduction to atoms and ions and how they bond in 3D to form compounds and molecules and coordination complexes -includes the concepts of orbitals, hybrid orbitals, physical properties of compounds (including coordination complexes and their names) as well as the Ligand Field and other related theories.

12. Provincial Context:

This course meets the following Ministry of Education and Training requirements:

a). Prior Learning Assessment (PLA)

Students may apply to receive credit by demonstrating achievement of the course learning outcomes through previous life and work experiences.

This course is eligible for challenge through the following method(s) indicated by *

Challenge Exam	Portfolio	Interview	Other	Not Eligible
*				

PLAR Contact:

13. Employability Skills emphasized in this course

	communication - written		communication - visual		communication - oral
*	analytical	*	creative thinking	*	decision making
*	interpersonal	*	numeracy	*	organizational
*	problem solving	*	technological		other (specify)

Loyalist College has a **Violence Prevention** policy:

- All College members have a responsibility to foster a climate of respect and safety, free from violent behaviour and harassment.
- Violence (e.g. physical violence, threatening actions or harassment) is not, in any way, acceptable behaviour.
- Weapons or replicas of weapons are not permitted on Loyalist College property.
- Unacceptable behaviour will result in disciplinary action or appropriate sanctions. More information can be found in the "Student Manual and Guide - Rights & Responsibilities".

14. **Required Texts, Materials, Resources or Technical Materials Required:**

A formal textbook and/or a set of course notes (produced by the instructor - to be purchased), will be used to facilitate the learning of the concepts. In addition, some results of lab experiments will be used as examples in the presentation of the practical and theoretical concepts for this course. Some texts on Inorganic chemistry and structures and bonding are available in the Resource Centre and from the instructor.

15. **Evaluation Plan**

Students will demonstrate learning in the following ways:

Assignment Description	Evaluation Methodology	Due Date
Review of 60 atom names of 110	Hand-in Assignment	Week 2 Sept
Gases, liquids & solids & elemental states	"	Week 3 Sept
Calculating Atomic Weights from isotopes	"	Week 4 Sept
Hund's Rule & Pauli Exclusion	"	Week 2 Oct
Drawing and labeling f orbitals	"	Week 3 Oct
Naming Binary and larger compounds	"	Week 4 Oct
Hybrid Orbitals in 2-propenal	"	Week 2 Nov
Naming coordination complexes	"	Week 3 Nov
Summary of some Crystal/ Ligand Field Theories - Gouy Balance, Spinels, Jahn-Teller, Double-humped Curves, etc.	In Class Assignment as review	Week 2 Dec

16. **Other**

Atoms, orbitals, isotopes, atomic weights	Test #1	Week1 Oct
Polarity, electron distributions, orbitals, hybrid orbitals, energies, and bonding.	Test #2	Week 2 Nov
Inorganic names, names & structures of coordination complexes, Introduction to Crystal Field and Ligand Field Theories.	Test #3	Week 4 Nov

Final **Exam** (3 hours) Review of all topics, main emphasis on those topics not tested on. Week 3 Dec.

Overall Mark based on:

Tests- 30% Assignments - 25% Final Exam - 35% Personal Assessment- 10%

The course passing grade is 60%.**Section III**

17. Curriculum Delivery, Learning Plan and Learning Outcomes:

Course Components/Content	Related Learning Outcomes	Learning Activities/Resources
1. The Atom and Its Nucleus some history, general review and isotopes, some quantum theory concepts	atomic makeup - its electrons and nucleus	show electron distribution in atoms and ions
2. Putting Ions and/or Atoms Together types of bonds, orbitals, electronegativities	to compare bond types polarity nature of bonds	predicting the nature of a bond
3. Hybrid Orbitals formation, 3D shapes & bond angles, combination of atomic orbitals (sigma & pi)	to understand and predict why molecules have certain 3D shapes	predict molecule structures
4. Coordination Complexes formulas, names, structures, chelates, ...	compare to organic and inorganic compounds	be able to name & draw structures of these complexes,
5. Acids, Bases and Salts review Arrhenius, B-L, & Lewis concepts and some new (Usanovich and Soft & Hard A & B)	compare the various theories and apply	apply concepts of the first three e.g. predict strengths
6. Ligand Field Theory introduce some of the basic concepts	look at d-orbital splitting, spectrochemical series, J-T distortion, spinels....	apply concepts to coordination complexes

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