UNIVERSITY COLLEGE of the FRASER VALLEY

COURSE IMPLEMENTATION DATE:	May 1994
COURSE REVISED IMPLEMENTATION DATE:	Sept 2005
COURSE TO BE REVIEWED:	Sept 2009
(Four years after implementation date)	(MONTH YEAR format)

OFFICIAL COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.

Shaded headings are subject to change at the discretion of the department and the material will vary - see course syllabus available from instructor

FACULTY/DEPARTMENT: **Chemistry**

CHEM 321		**4**
COURSE NAME/NUMBER	FORMER COURSE NUMBER	UCFV CREDITS

Intermediate Inorganic Chemistry
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course concentrates on the coordination chemistry of the transition metals. Topics covered include isomerism, group theory, molecular orbital theory, uv-visible spectroscopy, and the kinetics and mechanisms of ligand substitution and redox reactions.

PREREQUISITES: **CHEM 221 or equivalent**
COREQUISITES:

SYNONYMOUS COURSE(S)
(a) Replaces: _____ *(Course #)*
(b) Cannot take: _____ *(Course #)* for further credit.

SERVICE COURSE TO:
_____ *(Department/Program)*
_____ *(Department/Program)*

TOTAL HOURS PER TERM: **81**

STRUCTURE OF HOURS:

Lectures:	**45**	Hrs
Seminar:		Hrs
Laboratory:	**36**	Hrs
Field Experience:		Hrs
Student Directed Learning:		Hrs
Other (Specify):		Hrs

TRAINING DAY-BASED INSTRUCTION
LENGTH OF COURSE: _____
HOURS PER DAY: _____

MAXIMUM ENROLLMENT: **24**
EXPECTED FREQUENCY OF COURSE OFFERINGS: **Yearly**

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☒ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

AUTHORIZATION SIGNATURES:

Course Designer(s): Lillian Martin
Chairperson: Gillian Mimmack *(Curriculum Committee)*
Department Head: Art Last
Dean: Jackie Snodgrass
PAC Approval in Principle Date:
PAC Final Approval Date: October 1, 2004

LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:

This course is designed to enable students to:
1. Relate theories of bonding and structure to the properties of inorganic materials.
2. Perform laboratory work safely and with care and precision.
3. Interpret laboratory results in terms of theoretical material covered in the course, and understand the relationship between experimental and theoretical science.

METHODS:

Presentation of the course will be by inter-related theory classes and laboratory sessions. Audio-visual aids will be used where appropriate and students will be given instruction in the use of instrumental techniques and in the use of an academic library.

PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

Credit can be awarded for this course through PLAR (Please check :) ☒ Yes ☐ No

METHODS OF OBTAINING PLAR:

Challenge exam.

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]
'Inorganic Chemistry," G.L. Miessler and D. A. Tarr, current edition,
UCFV Laboratory Manual for Chemistry 321

SUPPLIES / MATERIALS:

All necessary laboratory supplies will be provided.

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

In-Term Test	35%	Final Examination	35%
Laboratory (reports and technique)	25%	Problem Sets	5%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]
Introduction
Some history of coordination chemistry, coordination numbers, geometry, isomerism and types of ligands, nomenclature, electron configurations of transition metals
Symmetry
Symmetry operations and group theory, applications of group theory to infrared spectroscopy
The Metal-Ligand Bond
Applications of various bonding theories to coordination chemistry with emphasis on Molecular Orbital Theory, electron configurations of coordination complexes in various geometries such as octahedral, tetrahedral and square planar, the spectrochemical series, magnetic moments, Jahn-Teller distortion
UV-Visble Spectra of Coordination Compounds
Quantum numbers of multi-electron atoms, ground and excited state terms, interpretation of UV-visible spectra
Complex Stability
Stability constants, factors that influence stability
Kinetics
Inert and labile compounds, mechanisms of ligand substitution reactions and redox reactions
Laboratory Experiments
8 or 9 laboratory experiments could be chosen which would be illustrative of such concepts as structure determination, isomerisation , interpretation of infrared and UV-visible spectra, magnetic moments and kinetics as applied to transition metal coordination compounds.