UNIVERSITY COLLEGE of the FRASER VALLEY

COURSE IMPLEMENTATION DATE: 1993
COURSE REVISED IMPLEMENTATION DATE: September 2005
COURSE TO BE REVIEWED: September 2009
(Four years after implementation date) (MONTH YEAR)

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 *(As of Summer 2016: Upgrading and University Preparation)***

CHEM 083		**4**
COURSE NAME/NUMBER	FORMER COURSE NUMBER	UCFV CREDITS

Preparatory College Chemistry
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This is an introduction to chemistry for those who wish to prepare for entry into first-year courses in sciences, health sciences, or technology. Atomic structure, stoichiometry, and chemical properties of the elements are emphasized. Laboratory work is closely related to material covered in lectures.

PREREQUISITES: **SCI 071 or Science 10**
COREQUISITES:

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

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

TOTAL HOURS PER TERM: **84**
STRUCTURE OF HOURS:

Lectures:	**45**	Hrs
Seminar:		Hrs
Laboratory:	**39**	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: **at least twice a year**

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): Lesley Spier / Lillian Martin
Chairperson: Gillian Mimmack *(Curriculum Committee)*
Department Head: Arthur Last
Dean: Jackie Snodgrass
PAC Approval in Principle Date:
PAC Final Approval Date: November 26, 2004

LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:

Upon completion of the course, a successful student will have demonstrated the ability to:

- show understanding of the course material through the successful completion of problem sets, examinations, laboratory work, and other assigned tasks.

- obtain the knowledge and skills that will provide a basis for futher academic or career/vocational courses or programs for which this course is a prerequisite.

- apply the scientific method to theory and laboratory work, and process experimental data in a meaningful manner.

- communicate effectively, both orally and in writing, and use correct chemical terminology when appropriate.

- carry out course-related work, including the collection and treatment of experimental data, in an ethical manner.

- follow instructions in the laboratory, and handle equipment and chemicals effectively and in a manner which will ensure the safety of themselves and others.

METHODS:

Presentation of the course will be by interrelated theory classes, discussion periods, and laboratory sessions.

PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

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

METHODS OF OBTAINING PLAR:

Challenge exams including both theory and lab components.

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Foundations of College Chemistry 11th edition, Hein and Arena
UCFV Laboratory Manual for Chemistry 083

SUPPLIES / MATERIALS:

Laboratory materials are supplied

STUDENT EVALUATION:

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

Laboratory (reports and technique)	20%
Assignments and Tests	80%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

Unit 1: Introduction to Chemistry
Course outline, brief historical perspective of chemistry. The scientific method. Scientific mathematics - a review of basic math. Measurement of mass, volume, density and temperature. Units and significant figures. SI system and exponential notation. Conversion factor method.

Unit 2: Properties of Matter
Classification of matter. Physical and chemical changes. Homogeneous and heterogeneous mixtures. Conservation of energy.

Unit 3: Atoms and Molecules
Names and symbols of elements. Compounds, their composition, names, and formulae. Metals and non-metals. Chemical equations.

Unit 4: Stoichiometry and the Mole
The mole. Percentage composition, empirical and molecular formulae. Mole-mole, mole-mass and mass-mass calculations using stoichiometric equations. Calculations involving a limiting reagent. Molarity calculations.

Unit 5: Atomic Structure
The atom and fundamental particles. Isotopes and atomic mass. Energy levels, quantum numbers and electron configurations.

Unit 6: Chemical Families
Classification of elements in the Periodic Table and the relationship between position in the table, electron configuration, and physical and chemical properties.

Unit 7: Compounds and Bonding
Lewis electron-dot representations of atoms and molecules. Ions, oxidation numbers and simple oxidation/reduction reactions.

Unit 8: Organic Chemistry
Bonding in organic molecules. Alkanes, alkenes and alkynes. Naming and isomerism. Simple organic reactions. Polymers.

Laboratory Experiments (8 or 9 labs will typically be chosen). Examples include:

1. Measurements
2. Separating Mixtures
3. Water of Hydration
4. Recycling Copper
5. The Reaction Between Iron and Copper Sulphate
6. The Copper-Silver Nitrate Reaction
7. Acid-base Titrations: The Percentage of Acetic Acid in Vinegar
8. Periodic Trends in Properties
9. Organic Chemistry
10. Determination of the Molar Mass of an Unknown Acid
11. Determination of the Percentage Oxygen in Potassium Chlorate
12. Conservation of Mass