

**UNIVERSITY COLLEGE OF THE FRASER VALLEY**

**COURSE INFORMATION**

**DISCIPLINE/DEPARTMENT:** Chemistry **IMPLEMENTATION DATE:** June 1994

**Revised:** \_\_\_\_\_

<u>Chemistry 100</u>	<u>Everyday Chemistry</u>	<u>4</u>
<b>SUBJECT/NUMBER OF COURSE</b>	<b>DESCRIPTIVE TITLE</b>	<b>UCFV CREDITS</b>

**CALENDAR DESCRIPTION:** This is a laboratory-oriented course aimed particularly at non-science students. It will satisfy part of the science requirements for a BA degree. The course is specifically concerned with the relationship between chemistry and everyday life. Fundamental lab techniques are taught as well as topics such as air pollution, water pollution, energy, acids and bases, organic chemistry, cosmetics, polymers and plastics, drugs, dyes, alcoholic beverages and biochemistry. The course may not be used for credit by science or engineering majors.

**RATIONALE:**

**COURSE PREREQUISITES:** None

**COURSE COREQUISITES:** None

<b>HOURS PER TERM FOR EACH STUDENT</b>	<b>Lecture</b>	<b>25</b>	<b>hrs</b>	<b>Student Directed</b>	
	<b>Laboratory</b>	<b>60</b>	<b>hrs</b>	<b>Learning</b>	<b>20 hrs</b>
	<b>Seminar</b>		<b>hrs</b>	<b>Other - specify:</b>	
	<b>Field Experience</b>		<b>hrs</b>	_____	<b>hrs</b>
				<b>TOTAL</b>	<b>105 HRS</b>

**MAXIMUM ENROLMENT:** 35

**Is transfer credit requested?**    **:**    Yes    **9**    No

**AUTHORIZATION SIGNATURES:**

**Course Designer(s):** A. Davis, P. Slade, G. Von Hollen    **Chairperson:** T. Cooper  
**Curriculum Committee**

**Department Head:** E. Kroeker    **Dean:** K. Wayne Welsh

**PAC: Approval in Principle** \_\_\_\_\_    **PAC: Final Approval:** \_\_\_\_\_  
**(Date)**    **(Date)**

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**SYNONYMOUS COURSES:**

(a) replaces     N/A      
                  (course #)

(b) cannot take     N/A     for further credit  
                  (course #)

**SUPPLIES/MATERIALS:**

**TEXTBOOKS, REFERENCES, MATERIALS (List reading resources elsewhere)**

**TEXTS:**

Chemistry for Changing Times, 4th edition, John W. Hill (Burgess).  
Laboratory procedures and supplementary material supplied by instructors

**REFERENCES:**

Chemistry and Our Changing World, Alan and Sharon J. Sherman (Prentice-Hall)  
Chemistry, Man, and Society, 4th edition, Jones, Johnston, Netterville, Wood (Saunders College Publishing)

**OBJECTIVES:**

The general objective is to allow students who have little background in chemistry, but a desire to learn more about its impact on their lives, to understand and experience at first hand in the laboratory the chemical bases of many common and topical phenomena in everyday life and in the environment about us. Since a considerable part of the course is given in the laboratory, students will acquire some competence in chemical and lab techniques.

**METHODS:**

The course is divided between class work, where informal lectures and seminars will take place giving background and perspective to the other area of study, the laboratory.

Suitable films concerned with the course material will be used where pertinent in order to initiate discussion.

Students will choose, carry out, and report on a project which entails both laboratory and literature investigation.

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**STUDENT EVALUATION PROCEDURE:**

Laboratory work (plus some minor assignments)	40%
Project and Report	40%
Oral Presentation of Project	10%
Classroom Participation	10%

**COURSE CONTENT**

Introduction: Format of the course. An overview of the range of influence of chemistry on everyday life.

The Language of Chemistry: Atoms, ions, and molecules. Nomenclature and symbols.

- Labs: a) Colourful Solids  
b) Chemical Analysis of an Unknown

**Classification and Physical Separation of Matter**

- Labs: a) Identifying an Unknown Using Physical Properties  
b) Separation of Inks Using Paper Chromatography

Acids and Bases: What are acids and bases, and how are they measured? The pH scale.

- Labs: a) Acid-Base Titrations - Acidity of Fruit Juices and Vinegar and Analysis of Antacid Tablets.  
b) pH Measurements on Everyday Products

Colorimetry: Basic theory - the electromagnetic spectrum. What is color?

- Lab: Analysis of an Unknown solution of Iron Using Colorimetry

Energy: Chemical energy, nuclear energy, alternative sources.

- Lab: Chemistry and Electricity - Producing and Using Electricity by Chemical Compounds

Air Pollution: Pollutants - effects on the atmosphere and on the metabolism.

- Labs: a) Determination of the Propellants in Aerosol Cans  
b) Determination of Particulates and Nitrogen Dioxide in the Air

Water Pollution: Effect of pollutants on water quality - special reference to the Fraser River system.

- Lab: Determination of Various Pollutants in Water Samples

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**COURSE CONTENT** (contd.)

Industrial Chemistry: Importance of carbon. Polymerization, man-made fibres, and plastics. Dyes and dyeing.

- Labs: a) Synthesis of Nylon and Bakelite  
b) Synthesis of Dyes and Fabric Dyeing

Chemistry and the Consumer: Effectiveness and/or harmfulness of some consumer products.

- Labs: a) Preparation of a Face Cream  
b) Analysis for Nitrites in Meat

Biochemistry and Food Chemistry: Basic biochemicals, their structure and function. Food additives.

- Lab: Biochemical Tests on Food Substances

Chemistry of Drugs: The pharmaceutical industry. Common drugs - their use and abuse. The chemical basis of cancer.

- Labs: a) Synthesis of Aspirin  
b) Determination of Alcohol in Various Consumer Products

Soil Chemistry and Mining in BC: The importance of N, K, and P, and other elements in the soil. The mining industry - an overview.

- Labs: a) Determination of P in a Soil Sample  
b) Analysis of an Ore Sample for Copper