

COURSE IMPLEMENTATION DATE: FALL '97  
 COURSE REVISED IMPLEMENTATION DATE:  
 COURSE TO BE REVIEWED:  
 (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:	<b>CHEMISTRY</b>	
<b>CHEMISTRY 150</b>		<b>4</b>
COURSE NAME/NUMBER	FORMER COURSE NUMBER	UCFV CREDITS
<b>INTRODUCTORY FORENSIC SCIENCE</b>		
COURSE DESCRIPTIVE TITLE		

**CALENDAR DESCRIPTION:**

Chem. 150 is intended for students who are either (a) enrolled in the UCFV Criminal Justice Diploma Program, or (b) enrolled in the UCFV Bachelor of Arts (Criminal Justice) Degree Program, or (c) required as a lab science course to fulfill the requirements for other UCFV programs. It is an introductory lab course for students with little science background, and covers chemical, physical and biological aspects of forensic science. CHEM 150 will satisfy the lab science requirement for a BA degree.

PREREQUISITES: **Any Grade 11 Science Course**  
 COREQUISITES: **None**

SYNONYMOUS COURSE(S)	<b>SERVICE COURSE TO:</b>
(a) Replaces: _____ (Course #)	_____
(b) Cannot take: _____ for further credit. (Course #)	_____
	(Department/Program)

TOTAL HOURS PER TERM: <b>84</b>	TRAINING DAY-BASED INSTRUCTION
<b>STRUCTURE OF HOURS:</b>	LENGTH OF COURSE: _____
Lectures: <b>42</b> Hrs	HOURS PER DAY: _____
Seminar: _____ Hrs	
Laboratory: <b>42</b> Hrs	
Field Experience: _____ Hrs	
Student Directed Learning: _____ Hrs	
Other (Specify): _____ Hrs	

MAXIMUM ENROLLMENT: **24**

EXPECTED FREQUENCY OF COURSE OFFERINGS: \_\_\_\_\_

**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	Chairperson: _____ T. Cooper ( <i>Curriculum Committee</i> )
Department Head: _____ Art Last	Dean: _____ K. Wayne Welsh
PAC Approval in Principle Date: _____	PAC Final Approval Date: October 23, 1996

**LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:**

This course is designed to enable students to:

- (1) Carry out laboratory experiments and interpret results using scientific methodology
- (2) Understand the origins, scientific background, significance and implementation of the many forensic procedures that they will encounter in the work-place.

**METHODS:**

Presentation of the course will be by inter-related theory classes (“lectures”), discussion periods (“tutorials”) and weekly laboratory sessions. Audio-visual aids will be used where appropriate, and, if possible, guest speakers will give seminars illustrating the work-place application of forensic science.

**PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):**

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

**METHODS OF OBTAINING PLAR:**

**TEXTBOOKS, REFERENCES, MATERIALS:**

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

Criminalistics, 5<sup>th</sup> Edition, R. Saferstein  
UCFV Laboratory Manual for CHEM 150

**SUPPLIES / MATERIALS:**

All lab supplies are provided

**STUDENT EVALUATION:**

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

Evaluation will be based on the following system:

First In-Term Test	15%
Second In-Term Test	15%
Third In-Term Test	15%
Laboratory Reports	25%
Final Examination	30%

**Both the lab and theory parts of the course must be passed in order to pass the course.**

**COURSE CONTENT:**

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

The course will be based on the required text (Saferstein). Many case studies will be used to illustrate each topic, and the course will make use of reprint materials.

1. Introduction
  - definition and scope of forensic science
  - the scientific method
  - the role of the forensic scientist in criminal cases
2. The Crime Scene and Physical Evidence
  - Securing and isolating the crime scene
  - recording the scene

- 
- protection of the crime scene
  - types of evidence
  - collection of evidence
  - types of information revealed by physical evidence
3. Glass and Soil Analysis
    - physical properties – temperature, mass, density and refractive index
    - composition of glasses and soils
    - techniques for identification of glasses and soils
  4. Fiber and Hair Analysis
    - types of fibers
    - nature and structure of hair
    - collection of fiber and hair evidence
    - identification and comparison of hair and fiber evidence
  5. Identification of Paints and Plastics
    - types of paints and other coatings
    - collection of paint evidence
    - physical methods of paint and plastic identification
  6. Drugs and Toxicology
    - classification and description of drugs
    - methods of drug and poison identification
    - blood alcohol and breath alcohol analysis
  7. Serology
    - the nature of blood
    - characteristics of bloodstains
    - analysis of semen and saliva evidence
    - collection of evidence involving body fluids
  8. DNA Analysis
    - biochemistry of DNA
    - DNA typing
  9. Fingerprints
    - principles of fingerprints
    - classification of fingerprints
    - methods of detecting and preserving fingerprints
    - fingerprint identification
  10. Arson Accelerants and Explosives
    - chemistry of fires and fuels
    - fire patterns
    - collection of arson evidence
    - analysis of flammable residues
    - types of explosives
    - collection and analysis of explosives
  11. Firearms and Tool Marks
    - comparison of bullets and cartridge cases
    - tool and other marks

---

### **Laboratory Experiments:**

Nine or ten labs will be chosen from the following:

1. Handwriting and Chromatographic Separation of Inks and Dyes
2. Analysis of Hair
3. Alcohol Analysis Lab: The Breathalyzer
4. Shoeprints and Soil Analysis
5. Ballistics
6. Toxicology: Wet Chemical Analysis of Poisons
7. Fingerprinting Techniques
8. Blood Analysis
9. Analysis of Paint Samples Using Infra-Red Spectroscopy
10. Fabric Identification
11. DNA Fingerprinting
12. "Whodunit" Lab
13. Plastic Identification
14. Visit to RCMP Forensic Lab

### **Reading Resources:**

Davies, Geoffrey. Forensic Science, 2<sup>nd</sup> ed. A.C.S., 1986

De Forest, Peter R., Gaensslen R.E. and Lee Henry C. Forensic Science, 1<sup>st</sup> ed. McGraw-Hill, 1983

Broad, Geoffrey. Science and Criminal Detection, 1<sup>st</sup> ed. MacMillan, 1988

Maehly, A. and Stromberg, L. Chemical Criminalistics, 1<sup>st</sup> ed. Springer-Verlag, 1981

Thorwald, Jurgen. Crime and Science, 1<sup>st</sup> ed. Harcourt, Brace and World Inc., 1967

Gerber, Samuel M. Chemistry and Crime, 1<sup>st</sup> ed. A.C.S., 1994

Hollien, Harry. The Acoustics of Crime, 1<sup>st</sup> ed. Plenum Press, 1990

Bertsch, W., Holzer, G. and Sellers, C.S. Chemical Analysis for the Arson Investigator and Attorney, 1<sup>st</sup> ed. Huthig Buch Verlag, 1993