

CHEM2809: SCIENCE VERSUS CRIME

Effective Term

Semester A 2024/25

Part I Course Overview

Course Title

Science Versus Crime

Subject Code

CHEM - Chemistry

Course Number

2809

Academic Unit

Chemistry (CHEM)

College/School

College of Science (SI)

Course Duration

One Semester

Credit Units

3

Level

B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

Nil

Equivalent Courses

GE2334 Science Versus Crime
BCH2809 Science Versus Crime

Exclusive Courses

CHEM2808/BCH2808 Forensics and Modern Society

Part II Course Details

Abstract

This course aims to let students to have some basic understanding in how science and technology is applied to aid fighting crimes. Besides the general scientific principles, this course will highlight (i) the importance of logical and critical thinking, (ii) how existing knowledge can be applied to new challenges, and (iii) how honesty and ethical behaviour are necessary throughout the processes of criminal investigation.

Teaching is mainly done via formal lectures (2 hr every week). This is supplemented by invited guest lectures and interactive tutorials. These tutorials are arranged to allow students to learn, and discover by themselves, specific skills in crime scene investigation caseworks, and to put them in practical uses.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Describe the concepts of the various disciplines of forensic science.	25	x		
2	Describe the various forensic techniques in terms of identification, individualization and reconstruction and recommend or advise on the most appropriate selection for an investigation.	25	x	x	
3	Describe basic techniques in crime scene investigations. Explain the importance of logical thinking and ability to apply this to different forensic scenarios.	50	x	x	x

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

LTAs	Brief Description	CILO No.	Hours/week (if applicable)	
1	Lectures	Students will develop an understanding of the various aspects of crime scene investigations	1, 2, 3	2 hrs
2	Mock crime scene investigation and CSI report writing	Students will be able to experience Mock crime scene walkthrough Students, in the form of small groups, will conduct mock crime scene investigation, and present their findings in a written CSI report	2, 3	5 hrs (throughout the course)

3	Tutorials	In tutorials, students will apply various practical techniques for crime scene investigations	2, 3	1 hr
4	Multimedia teaching and learning	Students will assess whether crime scenes shown in TV programmes, newspaper and the internet are realistic and scientifically sound	1, 2, 3	N.A.

Assessment Tasks / Activities (ATs)

ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)	
1	Crime scene investigation walkthrough and the preparation of written CSI reports	2, 3	10	CSI walkthrough will be conducted in the tutorial session.
2	Group project on the investigational CSI techniques	1, 2, 3	10	Each essay should be 3500 words.
3	Short quiz	1, 2, 3	20	Multiple choice and fill-in-the-blank quiz.

Continuous Assessment (%)

40

Examination (%)

60

Examination Duration (Hours)

2

Additional Information for ATs

Starting from Semester A, 2015-16, students must satisfy the following minimum passing requirement for courses offered by CHEM: "A minimum of 40% in both coursework and examination components."

Assessment Rubrics (AR)**Assessment Task**

Crime scene investigation walkthrough and the preparation of written CSI reports

Criterion

Capability in applying proper crime scene investigation (CSI) procedures and techniques to investigate a mock crime scene and respond to queries in a professional manner.

Excellent (A+, A, A-)

Able to demonstrate excellent understanding of the crime scene investigation techniques.

Good (B+, B, B-)

Able to describe and explain crime scene investigation techniques.

Fair (C+, C, C-)

Able to describe some key principles related to crime scene investigation techniques.

Marginal (D)

Able to briefly describe some crime scene investigation techniques.

Failure (F)

Fail to describe and explain crime scene investigation techniques.

Assessment Task

Essay writing

Criterion

Demonstration of understanding of a variety of topics in modern crime scene investigations.

Excellent (A+, A, A-)

Able to demonstrate excellent understanding of the crime scene investigation techniques and organize the knowledge in a clear, accurate and logical manner.

Good (B+, B, B-)

Able to describe and explain crime scene investigation techniques and organize the knowledge in a clear, accurate and logical manner.

Fair (C+, C, C-)

Able to describe some key principles related to crime scene investigation techniques and organize the knowledge in written manner.

Marginal (D)

Able to briefly describe some crime scene investigation techniques and organize the knowledge in written manner

Failure (F)

Fail to describe and explain crime scene investigation techniques and organize the knowledge in written manner.

Assessment Task

Short quiz

Criterion

Demonstration of understanding the principles and practice of various topics of forensic and crime scene investigations.

Excellent (A+, A, A-)

Able to demonstrate excellent understanding of the crime scene investigation techniques.

Good (B+, B, B-)

Able to describe and explain crime scene investigation techniques.

Fair (C+, C, C-)

Able to describe some key principles related to crime scene investigation techniques.

Marginal (D)

Able to briefly describe some crime scene investigation techniques.

Failure (F)

Fail to describe and explain crime scene investigation techniques.

Assessment Task

Examination

Criterion

Demonstration of understanding the principles and practice of various topics of forensic and crime scene investigations.

Excellent (A+, A, A-)

Able to demonstrate excellent understanding of the crime scene investigation techniques.

Good (B+, B, B-)

Able to describe and explain crime scene investigation techniques.

Fair (C+, C, C-)

Able to describe some key principles related to crime scene investigation techniques.

Marginal (D)

Able to briefly describe some crime scene investigation techniques.

Failure (F)

Fail to describe and explain crime scene investigation techniques.

Part III Other Information**Keyword Syllabus**

Forensics; Crime scene; CSI, Chain-of-custody; Contamination; Pollution; Environment; Explosives; Counter-terrorism; Firearms; Fingerprint; Counterfeit; Narcotics; Dangerous Drugs; Documents; Accuracy; Ethics; Honesty; Dishonesty; Criminal; Identification; Identity; Individualization; Analysis; DNA; Presumptive tests; Matching.

Reading List**Compulsory Readings**

Title	
1	Forensic Science – An Introduction to Scientific and Investigative Techniques: Stuart H. James and Jon J. Norby (2014 – 4th edition), Taylor and Francis.

Additional Readings

Title	
1	Criminalistics – An Introduction to Forensic Science: Richard Saferstein (2017 – 12th edition), Pearson.
2	FORENSICnetBase: ~150 entire books covering many different forensic sub-fields, available online. City University is the only university in Hong Kong with this excellent facility that is continually updated as new books are added to the scheme.