

Course Syllabus

**offered by Department of Chemistry
with effect from Semester A 2020/21**

This form is for the completion by the *Course Leader*. The information provided on this form is the official record of the course. It will be used for the City University's database, various City University publications (including websites) and documentation for students and others as required.

Please refer to the Explanatory Notes on the various items of information required.

Prepared / Last Updated by:

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**City University of Hong Kong
Course Syllabus**

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Part I Course Overview

Course Title:	Forensics and Modern Society
Course Code:	CHEM2808
Course Duration:	1 semester
Credit Units:	3 credits
Level:	B2
Proposed Area: <i>(for GE courses only)</i>	<input type="checkbox"/> Arts and Humanities <input type="checkbox"/> Study of Societies, Social and Business Organisations <input type="checkbox"/> Science and Technology
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: <i>(Course Code and Title)</i>	Nil
Precursors: <i>(Course Code and Title)</i>	Nil
Equivalent Courses: <i>(Course Code and Title)</i>	BCH2808 Forensics and Modern Society
Exclusive Courses: <i>(Course Code and Title)</i>	GE2334 Science Versus Crime CHEM2809/BCH2809 Science Versus Crime

Part II Course Details

1. Abstract

(A 150-word description about the course)

The course is collaboratively taught by four instructors from four departments of the College of Science and Engineering:

Department	Discipline covered
Chemistry	Crime scene investigation techniques, Criminalistics, Controlled drugs, explosives & bombs
Computer Science	Digital forensics
Physics & Materials Science	Forensic engineering, machinery failure, expert witness and cross-examination in court

All the instructors involved are experienced in their own disciplines of Forensic Sciences.

Teaching is mainly done via formal lectures (2 hr every week). This is supplemented by invited guest lectures (e.g. on computer forensics) and interactive tutorials (e.g. on crime scene walkthrough & investigation and blood alcohol & breathalyzer test). These tutorials are arranged to allow students to learn, and discover by themselves, specific skills in forensics caseworks, and to put them in practical uses. For example, in the crime scene walkthrough tutorials, mock break-in, burglary and/or vandalism crime scenes are set up so that students can learn about all the important tactics and skills in CSIs.

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs [#]	Weighting* (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	A2	A3
1.	Evaluate basic crime scene techniques. Explain the importance of logical thinking and ability to apply this to different forensic scenarios. Apply forensics and crime scene techniques in crime scene investigations.	45%	✓	✓	✓
2.	Describe how the use and misuse of computers has led to the need for more professionals who can detect and combat computer crime.	24%	✓		
3.	Explain the importance of timely and accurate forensic engineering investigation on incidents such as the collapse of tower cranes.	12%	✓		
4.	Describe the role of the forensic engineer in engineering litigation involving financial loss or criminal prosecutions.	11%	✓		
5.	Describe the role of forensic expert witness in Court.	8%	✓		
		100%			

* If weighting is assigned to CILOs, they should add up to 100%.

[#] Please specify the alignment of CILOs to the Gateway Education Programme Intended Learning outcomes (PILOs) in Section A of Annex.

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 self-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.

3. Teaching and Learning Activities (TLAs)

(TLAs designed to facilitate students' achievement of the CILOs.)

TLA	Brief Description	CILO No.					Hours/week (if applicable)
		1	2	3	4	5	
Lectures	Formal lectures (including guest lectures from experts in specific fields of forensic investigations)	✓	✓	✓	✓	✓	26 hrs
Mock crime scene investigation and CSI report writing	Mock crime scene investigation and CSI report writing	✓					6 hrs
Tutorials	Tutorials on drug and alcoholic abuse	✓					1 hr
Case studies	Case studies on relevant major forensic cases	✓	✓	✓	✓		2 hrs
Multimedia teaching and learning	Multimedia teaching and learning (using materials from TV programmes, newspaper and the internet) of relevant topics in criminalistics, digital forensics and forensic engineering	✓	✓	✓	✓		2 hrs
Multimedia teaching and learning	Multimedia teaching and learning (using materials from TV programmes, newspaper and the internet) of roles of forensic expert witness and cross-examination skills and tactics in Court					✓	2 hrs

4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No.					Weighting*	Remarks
	1	2	3	4	5		
Continuous Assessment: <u>100%</u>							
Crime scene investigation report	✓					38%	
Essay writing on topics about drug abuse	✓					8%	
Application of pharmacokinetic model to estimate alcohol contents in blood and breathe	✓					8%	
Short quiz and report writing on digital forensics topics		✓				23%	
Essay and report writing on forensic engineering topics and cases			✓	✓		23%	
Examination: <u>0%</u> (duration: --)							
* The weightings should add up to 100%.						100%	

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.”

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Crime scene investigation report	Capability in: (a) applying proper crime scene investigation (CIS) procedures and techniques to investigate a mock crime scene, (b) proper identification of trace evidences, and (c) presentation of investigation results in an orderly fashion.	Able to provide a comprehensive analysis of the trace evidences at the mock crime scene, with clear explanations, logical and advanced justifications. Able to show evidence in arguments or applications of the use of a range of sources of information outside taught material, properly referenced, with effective written communication.	Able to provide detail and critical analysis of the trace evidences at the mock crime scene, with accurate and clear explanations. Able to show an ability to integrate concepts, analytical techniques and applications via clear written communication.	Able to provide some simple analysis of the trace evidences at the mock crime scene. Able to show evidence of the clear use of written communication.	Only able to demonstrates limited ability in analysis and justification of the trace evidences at the mock crime scene, with a lack of an integrated understanding of applications in forensic procedures as a whole. Able to communicate simple ideas accurately in writing.	Cannot provide appropriate analysis and satisfactory justifications to the trace evidences at the mock crime scene. May show evidence of plagiarism or inability to communicate ideas, or a bare minimum of effort.
2. Essay writing on topics about drug abuse	Demonstration of understanding of: (a) the scientific and social definitions of drug abuse, (b) the controversies in the social and cultural acceptance of the use and abuse of certain drugs, (c) physiological and psychiatric impact of dangerous drugs and substances, and (d) update information of emerging drugs of abuse.	Able to provide a comprehensive analysis on the various aspects of drug abuse, with clear explanations, logical and advanced justifications. Able to show evidence in arguments or applications of the use of a range of sources of information outside taught material, properly referenced, with effective written communication.	Able to provide detail and critical analysis on the various aspects of drug abuse, with accurate and clear explanations. Able to show an ability to integrate concepts, analytical techniques and applications via clear written communication.	Able to provide some simple analysis on selected aspects of drug abuse. Able to show evidence of the clear use of written communication.	Only able to demonstrates limited ability in analysis on some selected aspects of drug abuse, without strong evidence of an integrated understanding on the topic. Able to communicate simple ideas accurately in writing.	Cannot provide appropriate analysis on any aspects of drug abuse. May show evidence of plagiarism or inability to communicate ideas, or a bare minimum of effort.
3. Application of pharmacokinetic model to estimate alcohol contents in blood and breathe	Capability in applying simple pharmacokinetic models to estimate blood alcohol content after alcohol consumption.	Able to demonstrate clear understanding of the pharmacokinetic models and how they can be applied in various situations and scenarios.	Able to apply the pharmacokinetic models under various situations and scenarios.	Able to apply the pharmacokinetic models under some simple situations and scenarios.	Only able to use the pharmacokinetic models under supervision.	Cannot demonstrate any understanding of the basic concepts of the pharmacokinetic models. May show evidence of plagiarism.
4. Short quiz and report writing on digital forensics topics	Demonstration of: (a) understanding the basic principles in selected digital forensic topics, and (b) capability to apply techniques used in digital forensic analysis.	Able to demonstrate excellent understanding of the digital forensic topics.	Able to describe and explain forensic principles of the digital forensic topics.	Able to describe and explain some key forensic principles, applications, processes and methodologies related to the digital forensic topics.	Able to briefly describe isolated principles, applications, methodologies, problems and limitations related to the digital forensic topics.	Fail to accurately describe and explain relevant principles, applications, processes, methodologies, problems and limitations related to the digital forensic topics.

<p>5. Essay and report writing on forensic engineering topics and cases</p>	<p>Demonstration of: (a) understanding the basic principles in selected forensic engineering topics, and (b) capability to apply techniques used in forensic engineering investigations.</p>	<p>Able to provide a comprehensive analysis of real-life cases in forensic engineering, with clear explanations, logical and advanced justifications.</p> <p>Able to show evidence in arguments or applications of the use of a range of sources of information outside taught material, properly referenced, with effective written communication.</p>	<p>Able to provide detail and critical analysis of real-life cases in forensic engineering, with accurate and clear explanations.</p> <p>Able to show an ability to integrate concepts, analytical techniques and applications via clear written communication.</p>	<p>Able to provide some simple analysis of real-life cases in forensic engineering.</p> <p>Able to show evidence of the clear use of written communication.</p>	<p>Only able to demonstrate limited ability in analysis and justification of real-life applications in forensic engineering, with a lack of an integrated understanding of applications in forensic procedures as a whole.</p> <p>Able to communicate simple ideas accurately in writing.</p>	<p>Cannot provide appropriate analysis and satisfactory justifications to real-life cases in forensic engineering.</p> <p>May show evidence of plagiarism or inability to communicate ideas, or a bare minimum of effort.</p>
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Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword Syllabus

(An indication of the key topics of the course.)

Forensic(s); Crime scene; *CSI*, Chain-of-custody; Contamination; Pollution; Environment; Explosives; Counterterrorism; Intellectual Property; Counterfeit; Narcotics; Drugs; Fraud; Currency; Documents; Accuracy; Globalisation; Court; Engineering; Ethics; Honesty; Dishonesty; Computers: Pornography; Prosecution; Defence; Law; Lawyers; Criminal; Civil; Identification; Identity; Analysis; DNA; Odontology; Presumptive tests, Matching; Certainty.

2. Reading List

2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

1.	Nil.
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2.2 Additional Readings

(Additional references for students to learn to expand their knowledge about the subject.)

1.	<i>Forensic Science</i> : Andrew R.W. Jackson and Julie M. Jackson, (2007 – 2 nd edition) Prentice Hall.
2.	<i>Forensic Science – An Introduction to Scientific and Investigative Techniques</i> : Stuart H. James and Jon J. Norby (2005 – 2 nd edition), Taylor and Francis.
3.	<i>Computer Forensics: An Essential Guide for Accountants, Lawyers and Managers</i> : Michael Sheetz, John Wiley.
4.	<i>The Winning Line: A Forensic Engineer's Casebook</i> : Andrew Samuel, Springer-Verlag, London, 2007.
5.	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.

A. Please specify the Gateway Education Programme Intended Learning Outcomes (PILOs) that the course is aligned to and relate them to the CILOs stated in Part II, Section 2 of this form:

GE PILO	Please indicate which CILO(s) is/are related to this PILO, if any (can be more than one CILOs in each PILO)
PILO 1: Demonstrate the capacity for self-directed learning	
PILO 2: Explain the basic methodologies and techniques of inquiry of the arts and humanities, social sciences, business, and science and technology	
PILO 3: Demonstrate critical thinking skills	
PILO 4: Interpret information and numerical data	
PILO 5: Produce structured, well-organised and fluent text	
PILO 6: Demonstrate effective oral communication skills	
PILO 7: Demonstrate an ability to work effectively in a team	
PILO 8: Recognise important characteristics of their own culture(s) and at least one other culture, and their impact on global issues	
PILO 9: Value ethical and socially responsible actions	
PILO 10: Demonstrate the attitude and/or ability to accomplish discovery and/or innovation	

GE course leaders should cover the mandatory PILOs for the GE area (Area 1: Arts and Humanities; Area 2: Study of Societies, Social and Business Organisations; Area 3: Science and Technology) for which they have classified their course; for quality assurance purposes, they are advised to carefully consider if it is beneficial to claim any coverage of additional PILOs. General advice would be to restrict PILOs to only the essential ones. (Please refer to the curricular mapping of GE programme: http://www.cityu.edu.hk/edge/ge/faculty/curricular_mapping.htm.)

B. Please select an assessment task for collecting evidence of student achievement for quality assurance purposes. Please retain at least one sample of student achievement across a period of three years.

Selected Assessment Task