



UNIVERSITI TEKNOLOGI MARA

FRS431: FORENSIC SCIENCE I

Course Name (English)	FORENSIC SCIENCE I APPROVED
Course Code	FRS431
MQF Credit	4
Course Description	This course gives an introduction to the operation and philosophy of a forensic scientist, the methods of working and requirements of scientific investigation in relation to crime scene, forensic laboratory and courtroom. The course covers an in-depth examination of a selection of subjects in forensic science such as arson accelerant and explosives, drug analysis, alcohol analysis, forensic serology, and DNA technology.
Transferable Skills	Excellent attention to detail High level of patience and concentration Analytical and investigative skills Logical, unbiased and methodical approach to solving problems Inquisitive and open-minded Work well on a team and independently Strong verbal and presentation skills Ability to summarize findings and write technical reports Present complex scientific information in clear manner that others can understand Computer/technical skills Problem solving abilities Skilled at putting pieces of a puzzle together
Teaching Methodologies	Lectures, Lab Work, Discussion
CLO	CLO1 Understand the theories and principles in different area of forensic science CLO2 Demonstrate the techniques of collection and preservation of forensic samples from a crime scene CLO3 Apply scientific principles and methods in the analysis of forensic samples and evidence CLO4 Justify the gathered information from investigations and subsequently summarize forensic cases
Pre-Requisite Courses	No course recommendations
Topics	
1. 1. Introduction to Forensic Science 1.1) 1.1 Forensic science : History and development 1.2) 1.2 Present scope of forensic science 1.3) 1.3 Application of forensic science at crime scene and court of law	
2. 2. The Crime Scene 2.1) 2.1 Processing the crime scene 2.2) 2.2 Legal considerations at the crime scene	
3. 3. Physical Evidence 3.1) 3.1 Common types of physical evidence 3.2) 3.2 The significance of physical evidence 3.3) 3.3 Forensic database	
4. 4. Hairs 4.1) 4.1 Morphology of hair 4.2) 4.2 Identification and comparison of hair 4.3) 4.3 Collection of hair evidence	

<p>5. 5. Fibers 5.1) 5.1 Types of fibers 5.2) 5.2 Identification and comparison of manufactured fibers 5.3) 5.3 Collection and preservation of fiber evidence</p>
<p>6. 6. Fire Investigation 6.1) 6.1 Chemistry of fire 6.2) 6.2 Factors affecting flame propagation 6.3) 6.3 Collection and preservation of arson evidence 6.4) 6.4 Analysis of flammable residues</p>
<p>7. 7. Explosions 7.1) 7.1 Explosives technology 7.2) 7.2 Collection and analysis of explosives</p>
<p>8. 8. Drugs of Abuse 8.1) 8.1 Drugs of abuse and their sources 8.2) 8.2 Drug-control laws 8.3) 8.3 Drug identification 8.4) 8.4 Profiling of drugs of abuse</p>
<p>9. 9. Forensic Toxicology 9.1) 9.1 Absorption, distribution and elimination of alcohol 9.2) 9.2 Analysis of body fluid samples for alcohol 9.3) 9.3 Analysis of breath for alcohol</p>
<p>10. 10. Forensic Serology 10.1) 10.1 Composition of blood 10.2) 10.2 Blood grouping 10.3) 10.3 Immunoassay technique 10.4) 10.4 Forensic characterization of bloodstains 10.5) 10.5 Forensic characterization of semen 10.6) 10.6 Test for blood and body fluids 10.7) 10.7 Preservation of blood and body fluids evidence</p>
<p>11. 11. Bloodstain pattern analysis 11.1) 11.1 Reconstruction of crime scene using blood patterns</p>
<p>12. 12. Forensic DNA 12.1) 12.1 What is DNA? 12.2) 12.2 Replication of DNA 12.3) 12.3 Recombinant DNA 12.4) 12.4 DNA typing 12.5) 12.5 DNA identification from blood, semen and saliva</p>

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	n/a	10%	
	Lab Exercise	n/a	10%	CLO2 , CLO3
	Test	Test 3	10%	CLO1 , CLO2 , CLO3
	Test	Test 1	15%	CLO1 , CLO2 , CLO3
	Test	Test 2	15%	CLO1 , CLO2 , CLO3

Reading List	Recommended Text	<ul style="list-style-type: none"> James, S., Nordby, J.J., & Bell, S. 2014, <i>Forensic Science: An Introduction to Scientific & Investigation Techniques</i>, 4th edition Ed., CRC Press Boca Raton [ISBN: 9781439853832] Saferstein, R. 2006, <i>Criminalistics: An Introduction to Forensic Science</i>, 9th edition Ed., Prentice Hall [ISBN: 9780132216555]
	Reference Book Resources	<ul style="list-style-type: none"> Houck, M.M., & Siegel, J.A. 2014, <i>Fundamentals of Forensic Science</i>, 2nd edition Ed., Academic Press China [ISBN: 9780123749895] Saferstein, R. 2012, <i>Forensic Science</i>, 2nd edition Ed., Pearson Education [ISBN: 9780133073140]
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	