B.Sc. in Forensic Sciences

Study Plan

- **University Compulsory Courses** — **16 C.H**
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- **University Elective Courses** — **9 C.H**
  Pages (64 & 65)

- **Faculty Compulsory Courses** — **19 C.H**

Line No.	Code	Course	
901010	MATH101	CALCULUS(I)	3
901021	MATH102A	CALCULUS(FOR BIO.SCI.STUDENTS)	3
901310	MATH131	ELEMENTS OF STATISTICS	3
921012	PHY101B	GENERAL PHYSICS(1)	3
921022	PHY102B	GENERAL PHYSICS (2)	3
921072	PHY107B	GENERAL PHYSICS (LAB)	1
1721150	CS115	C++ PROGRAMMING .	3

- **Department Compulsory Courses** — **77 C.H**

Line No.	Code	Course	
102121	MED212A	PATHOLOGY	3
102181	MED218A	GROSS ANATOMY & HISTOLOGY	3
102182	MED218B	GROSS ANATOMY & HISTOLOGY (LAB)	0
102222	MED222B	BIOCHEMISTRY	3
911031	CHEM103A	GENERAL CHEMISTRY	3
911072	CHEM107B	GENERAL CHEMISTRY LAB	1
912170	CHEM217	ORGANIC CHEMISTRY	3
912180	CHEM218	ORGANIC CHEMISTRY PRACTICAL	1
912330	CHEM233	ANALYTICAL CHEMISTRY	3
912340	CHEM234	ANALYTICAL CHEMISTRY LAB.	1
913361	CHEM336A	PRINCIPLES OF CHEMICAL INSTRUMENTATION	3
913370	CHEM337	PRINCIPLES OF CHEMICAL INSTRUMENTATION LABORATORY	1
914370	CHEM437	CHEMICAL SEPARATION METHODS	2
931030	BIO103	GENERAL BIOLOGY	3
931070	BIO107	GENERAL BIOLOGY (PRACTICAL)	1
932510	BIO251	CELL BIOLOGY	3
933311	BIO331A	GENERAL MICROBIOLOGY	3
933322	BIO332B	GENERAL MICROBIOLOGY (LABORATORY)	1
933331	BIO333A	IMMUNOLOGY & SEROLOGY	3
933360	BIO336	IMMUNOLOGY & SEROLOGY (LABORATORY)	1
933413	BIO341C	MOLECULAR GENETICS	3
933440	BIO344	MOLECULAR GENETIC (LAB)	1
933520	BIO352	BIOCHEMISTRY (LAB)	1
964510	BT451	MOLECULAR BIOLOGY (1)	3
983110	FSC311	INTRODUCTION TO FORENSIC SCIENCE	3
983120	FSC312	INTRODUCTION TO CRIMINALISTICS	3
983210	FSC321	FORENSIC CHEMISTRY	3
983900	FSC390	TECHNICAL WRITING IN FORENSIC SCIENCE	1
983990	FSC399	FIELD TRAINING	3
984210	FSC421	TOXICOLOGY	3
984211	FSC421A	TOXICOLOGY (LAB)	0
984510	FSC451	FORENSIC MOLECULAR BIOLOGY	3
984520	FSC452	FORENSIC MOLECULAR BIOLOGY(LABORATORY)	1
984710	FSC471	FORENSIC MICROSCOPY	3
984720	FSC472	FORENSIC DNA PROFILING & DNA FINGERPRINT	3
984721	FSC472A	FORENSIC DNA PROFILING & DNA FINGERPRINT	0
984910	FSC491	SEMINAR	1

- **Department Elective Courses** — **9 C.H**

Line No.	Code	Course	
102304	MED230A	HUMAN PHYSIOLOGY	3
102550	MED255	PHARMACOLOGY	3
173510	LM351	HEMATOLOGY	4
963010	BT301	BIO-COMPUTING	1
964410	BT441	HUMAN GENETICS	3
964950	BT495	LABORATORY MANAGEMENT	1
984220	FSC422	ANALYTICAL TOXICOLOGY	3
984230	FSC423	ANALYTICAL METHODS IN FORENSIC SCIENCE	3
984920	FSC492	SELECTED TOPICS IN FORENSIC SCIENCES (A)	3
984921	FSC492A	SELECTED TOPICS IN FORENSIC SCIENCES (B)	2
984922	FSC492B	SELECTED TOPICS IN FORENSIC SCIENCES (C)	1
984930	FSC493	RESEARCH PROJECT IN FORENSIC SCIENCE	3

TOTAL — **130 C.H**

**** For prerequisite & equivalent courses see the Courses' Description.***

B.Sc. in Forensic Sciences

Courses' Description

FSC 311. Introduction to Forensic Science (3-3-0)
This course introduces the basic principles and relationships between the applications of chemistry, biology, and physics to forensic science as they relate to the criminal investigative process. The course is designed to give students insight into the many areas of forensic science and to study the newest techniques used by forensic laboratories. Topics discussed include organic and inorganic chemical analyses of physical evidence, principles of serology and DNA analysis, identification of fresh and decomposed human remains, ballistics, fingerprint analysis, facial reconstruction, drug analysis, and forensic entomology. *Prerequisite: BIO 103 + CHEM 103*

FSC 312 Introduction to Criminalistics (3-3-0)
The course includes an overview of forensic science laboratory techniques. The subject introduces the student to information collected and chain of custody followed at the crime scene; photography; physical evidence and its properties (trace evidence, fingerprints; firearms; fibers; paint; documents examination). This subject includes principles of microscopy; serology (blood identification procedures); origin determination; semen identification procedures; other biological substances of interest; hair comparison; drugs and toxicology; casework interpretation; quality control, proficiency testing and accreditation; and recent criminal cases. Lectures, demonstrations, and basic laboratory exercises are used to present the subject matter.

FSC 321 Forensic Chemistry (3-3-0)
Theory and practical laboratory applications with instrumentation used in a forensic laboratory for the chemical analysis of various types of physical evidence including: accelerants, explosives, paints, fibers, glass, suspected drug substances and other evidence.
Prerequisite FSC 311.

FSC 390 Technical Writing in Forensic Science (1-1-0)
This course provides students with a working knowledge of various types of technical and scientific communication, including writing proposals, instructions, and forensic reports for both specialist and nonspecialist. It aims to enable the students to present information professionally in clear, concise and appropriate format. It deals with ethical issues involved in professional technical writing. Formal elements of reports with library research are also emphasized. Prepare the students how to write a CV and letters for job application. *Prerequisite: FSC 311*

FSC 399 Field Training (3-0-3)
An eight week (40 hrs/week), full-time internship in a crime laboratory covering the following functions: document collection and examination, instrumental analysis, chemistry, toxicology, serology, crime scene review, special photography, explosive and incendiary device recovery, trace evidence collection, comparative microscopy in firearms and tool marks.
Prerequisite: Finish 90 C.H

FSC 421 Toxicology (3-2-3)
A comprehensive study of general principles and fundamentals of forensic toxicology, poisons, action, toxicity, postmortem characteristics, samples required for toxicological analysis and methods of collection, methods of preservation and analysis. Toxicologic and pharmacologic action on and by the host organism are examined along with a review of major drug and toxin types. In addition to the chemical, toxicological characteristics of commonly abused drugs. Details of the methods employed for analysis, such as color test, Chromatography (GC, GLC, HPLC), mass spectrometry (MS), GC-MS. Special topics of interest are covered in the detection and identification of drugs in biological fluids.
Prerequisite: FSC 321.

FSC 422 Analytical Toxicology (3-3-0)
Classification of toxic substances, identification and quantification of toxins in trace evidence including hairs and fibers, explosive residues, arson debries and biological fluids. Emphasis will be in application of atomic spectroscopy and chromatographic separation methods.
Perquisite: FSC 421, CHEM. 336, CHEM. 437

FSC423 Analytical Methods in Forensic Science (3-3-0)
Applications of analytical methods in trace evidence analysis. Sampling and sample preparation, application of classical and instrumental methods for comprehensive analysis including heavy metals, inorganic constituents and organic contaminants. *Prerequisite: CHEM 336, FSC 311*

FSC 451 Forensic Molecular Biology (3-3-0)
Provides an understanding of various DNA testing methodologies and their applicability to forensic science. Students will learn the skills necessary to evaluate the applicability of each method as it applies to particular case situations. *Prerequisite NG451*

FSC 452 Forensic Molecular Biology Laboratory (1-0-3)
Provides comprehensive coverage of the various types of DNA testing currently used in forensic science laboratories. Students will have hands-on experience with the analytical equipment employed in forensic science laboratories and the techniques for human identification in forensic casework. Students also will explore and practice both scientific style writing as well as writing DNA case-style reports. *Prerequisite FSC 451 or Cor.*

FSC 471 Forensic Microscopy (3-2-3)
An in-depth course in the theory and practical application of microscopy to the examination, identification and individualization of physical evidence submitted to forensic laboratories. The course will familiarize students with the microscopy equipment common to most modern crime labs. The course will enable students to select the most appropriate equipment and techniques and to make basic observations of the physical and optical properties of common evidential materials. This class is an introduction to various types of microscopy used in forensic science. The course is an introduction to microscopic analysis, identification, and characterization of materials, such as glass, hair, fiber, paint, and soil.
Prerequisite: FSC 311

FSC 472 Forensic DNA Profiling & DNA Fingerprint (3-2-3)
Basic methods used in cellular and molecular biology focusing on laboratory methods and instrumentation, experimental design and data collection, analysis and presentation. Exercises may include: Isolation of genomic DNA, and DNA profiling of evidence, DNA and RNA amplification by PCR, RFLP analysis, isolation and analysis; molecular genotyping and DNA sequence analysis; In addition, detection of mitochondrial DNA and short tandem repeat polymorphisms will be analysed.
Prerequisite: FSC 451 or Cor

FSC 491 Seminar (1 C.H., 1 lecture)
Both the student and the lecturer agree on a breaking news topic in biotechnology to be presented in an acceptable form of a scientific presentation.
Prerequisite: Finish 90 C.H

Fsc 492 Special Topics in Forensic Science (A, B, C) (3, 2, 1).
Normally, this course will be based on the development of forensic sciences issues. An approved topic should be original and make a contribution to the body of knowledge known generally as forensic science.
Prerequisite: Finish 90 C.H

FSC 493 Research Project in Forensic Science (3-0-3)
Normally, this course will be based on the development of a research problem. Research on an approved topic should be original and make a contribution to the body of knowledge known generally as forensic science.
Prerequisite: Finish 90 C.H. with an average of 70.