

**MASTER OF SCIENCES
FORENSIC SCIENCE
Program code: 0409**

INTRODUCTION

The Department of Chemistry and the Department of Biological Sciences (College of Science) offer a M.Sc. program in **Forensic Science**. English is the language of instruction and research. The aim of this program is to develop analytical and interpersonal skills along with expertise in the specific fields of forensic science. This training will best prepare the graduates in pursuing and succeeding in a career of their choice within the field of forensic science without the need for further training. The program offers two fields of study; Biological Forensic Studies, and Chemical Forensic Studies. Non-thesis option is offered. Student has to choose one track (Forensic Biology or Forensic Chemistry).

PROGRAM REQUIREMENTS**33 TOTAL COURSE CREDITS****18 COMPULSORY COURSE**

0250-510	Criminal Procedures and Testimony	(3)
0409-512	Forensic Sciences Skills	(2)
0409-514	Trends and Case Studies in Forensic Science	(2)
0409-593	Project	(3)
0420-513	Forensic Instrumentation	(3)
0510-501	Biostatistics and Computer in Medicine	(2)
0560-565	Forensic Pathology	(3)

6 COMPULSORY I. FORENSIC BIOLOGY (3 credits each)

0497-522	Forensic Biochemistry
0497-555	Molecular Forensics

9 ELECTIVE COURSES * (3 credits each)

0409-516	Advanced Forensic Microscopy
0420-517	Food Analysis
0493-524	Forensic Entomology
0409-526	Forensic Microbiology and Biohazards
1100-570	Forensic Pharmacokinetics and Pharmacodynamics

9 COMPULSORY II. FORENSIC CHEMISTRY (3 credits each)

0420-533	Forensic Analysis of Glass and Soil
0420-534	Drug Chemistry

0420-535 Arson, Textile and Paint Analysis

6 ELECTIVE COURSES* (3 credits each)

- 0409-516 Advanced Forensic Microscopy
- 0420-517 Food Analysis
- 0420-537 Surface Analysis for Forensic Investigation
- 0420-539 Environmental Crimes
- 1100-570 Forensic Pharmacokinetics and Pharmacodynamics

- Graduate students enrolled in the Forensic Biology may also select only one course from the Forensic Chemistry course list. The graduate students will be allowed to take 3 credit hours of 400-level courses from the Minor Forensic Science Program. Students can take these courses only with the approval of the supervisor.

COURSE DESCRIPTION

**0409-512: FORENSIC SCIENCES SKILLS
CR: 2**

This is a general theoretical course that aims to introduce students and train them in basic skills used in Forensic science and Crime scene Analysis. The course will be divided into two main parts, the first dealing with tools in Forensic Biology and the other with tools in Forensic Chemistry including mainly Forensic Microscopy and Chromatography. In addition, the course will provide an insight into the importance of computers and specialized software programs in the areas of both Forensic Biology and Chemistry. The course will also cover and practice quality assurance and report writing procedures and professional ethics emphasizing the importance of efficient communication skills of scientific concepts and testimony will be discussed and practiced. The lectures of this course will be equally shared between the Department of Biological Sciences and the Department of Chemistry, as well as guest lecturers from the department of Forensic Sciences, Ministry of Interior.

**0409-514: TRENDS AND CASE STUDIES IN FORENSIC SCIENCE
CR: 3**

This course will review and discuss current trends and innovative techniques in Forensic Science.

The course will also involve student presentations on recent publications (seminar series) and group discussion of news-breaking case reports both local and international and studies involving the use of Forensic Science techniques as well as ethical issues and concerns arising from such cases. (Review of recent peer-reviewed research publications).

**0409-516: ADVANCED FORENSIC MICROSCOPY
CR: 3 PR: 0409-513**

The course is a combined theory and practical course designed to provide an in-depth understanding of the theory and practice of microscopy as it applies to forensic trace evidence. Basic and advanced types of microscopes will be covered including light microscopy, polarized light microscopy, dark field and phase contrast microscopy, fluorescent microscopy, scanning electron microscopy, spectroscopic methods that can be interfaced with the microscope (such x-ray microanalysis) and photomicrography. Students will have the opportunity to analyze different types of trace evidence in the laboratory using a variety of microscopes.

**0409-526: FORENSIC MICROBIOLOGY AND BIOHAZARDS
CR: 3**

This course will introduce methods and techniques used in bioterror detection and identification as well as medical intervention. Many topics will be

covered including microbial forensic analysis of trace and unculturable specimens, biological agents, collection and preservation of specimens, decontamination and removal of microbial forensic samples. A practical approach will also be used to demonstrate forensic analysis of bacterial pathogens, procedures for working in biosafety level 3 and 4 environments. The course will also include discussion of case studies such as microbial forensics investigation of the anthrax-letter attacks, viral forensics and food-borne outbreaks. Response to biological threats and legal aspects of biosecurity will also be discussed.

0409-593: RESEARCH PROJECT
CR: 3