

### **3.2.38 CHE 3270: FORENSIC METHODS OF ANALYSIS 4.5 UNITS**

Pre-requisite - None 3.2.38.1

#### **Purpose of the Course**

This course introduces the student to the basics of forensic chemistry and the chemical methods used for such analysis. Familiarize the student with the methodologies involved in analyzing forensic samples. Provide a background in statistical analysis of data and allow students to assess forensic methodologies utilized in the popular media.

#### **3.2.38.2 Expected Learning Outcomes of the Course**

Upon completion of this course, students should be able to:

1. Describe the methodologies involved in forensic analysis
2. Determine the accuracy and reproducibility of these techniques
3. Apply chemical methods in forensic analysis

#### **3.2.38.3 Course Content**

Crime laboratory services; Handling of physical evidence; Identification of evidence using microscopy and spectroscopy; Methods of drug identification; Arson investigation; characterization of hydrocarbon mixtures; Chemistry and firearms; Carbon dating and aging; Analysis of blood samples; Analysis of inorganic systems as evidence; glass, soil; Chemistry of fingerprint collection; Data collection and handling; Laboratory safety, microscope maintenance, stereomicroscope; The compound light microscope, the fluorescence microscope, the phase contrast microscope, Physical Match Examinations, Construction and examination of evidence, Lamp Filament Examinations, Fingerprint Examinations and Comparison, Tool Mark Examination, Fire arm Examination, Shoe and Tire Examination, Print /impression Examinations, Botanical Examinations, Paint Examinations Hair Examinations Glass Examinations, Fibre Examinations, Soil Examinations, microchemical Examinations – Inorganic ions, Microscopic analysis of controlled Substances, Semen Examinations - Instrumental Microscopy, Fourier Transform Infrared Microspectrometry, UV-Visible – NIR Microspectrometry, Thermal Microscopy, Scanning Electron Microscopy. Organic and inorganic contaminants analysis in body fluids, blood, urine and tissues (hair, feathers, nails etc) for forensic purposes.

#### **Lab Session**

The practical component of the course is a 1.5 credit which will be a one three hour session per week. It will provide the students with the skills on forensic techniques using safe and effective

laboratory practice. Experiments will include use of different analytical techniques in forensic sample analysis, DNA interpretations....