

CH-224 Forensic Chemistry

Credit Hours: 2-1

Pre-requisite: Nil

Course Objectives

1. This course aims to provide an introduction to forensic chemistry, covering its scope, history, and fundamental principles. Students will explore various branches and functions of forensic science, techniques for analyzing fingerprints, hair, trace evidence, and controlled substances. The course also includes an overview of forensic instrumentation, biological sample collection, DNA analysis, and the application of chemical and biological methods in crime scene investigation and forensic serology.

Course Contents

2. Introduction to Forensic Chemistry, scope, background history. Branches of Forensic science; Functions of Forensic Science, Concepts and need of forensic science. Basic principles of forensic chemistry. Forensic analysis of Finger print, Hair, Trace evidence and Controlled substance. Forensic Science and Instrumentation. Types of biological Samples, its Collection and Preservation, Chemical and Biological Techniques of Analysis and its Applications, Crime scene investigation and management, Forensic serology. The basic principle of DNA extraction and analysis.

Course Outcomes

By the end of this course, the students will be able to:

3. Describe the fundamental principles and methodologies used in forensic chemistry for analyzing physical evidence, including chemical, biological and toxicological analysis.
4. Apply laboratory techniques such as chromatography, spectroscopy, and microscopy to detect, identify and qualify substances in forensic samples.
5. Evaluate and interpret chemical evidence within the context of forensic investigations.

Relevant Experiments

1. Evidence/samples collection, labeling, and storage, Include sample logs, labeling photos, timestamps, Finger Print Analysis, Hair Analysis, Question Document Analysis, DNA extraction from a biological samples, Analysis of Presumptive Test and confirmatory tests for blood, saliva and drugs. Group Discussion and Report on Field visits.

Recommended Books

1. White, P. C. (2004). *Crime scene to court: The essentials of forensic science* (3rd ed.). Royal Society of Chemistry. ISBN-13: 978-0-85404-656-0
2. Warlow, T. (2012). *Firearms, the law, and forensic ballistics* (3rd ed.). ISBN-13: 978- 1-4200-9073-6
3. Shaler, R. C. (2012). *Crime scene forensics: A scientific method approach*. Press. ISBN-13: 978-1-4398-4283-4
4. Hodgkinson, T., & James, M. (2009). *Expert evidence: Law & practice* (3rd ed.). Sweet & Maxwell Ltd. ISBN-13: 978-0-414-03117-6
5. Saferstein, R. (2010). *Criminalistics*. Pearson Education Ltd. ISBN-13: 978-0-13- 138465-0
6. Bell, S. (2013). *Forensic chemistry* (2nd ed.). Pearson Education. ISBN-13: 978-1- 2920-2037-4
7. Lawrence, F. (2009). *Forensic DNA analysis* (Inside Forensic Science Series). Facts On File, Incorporated. ISBN-13: 978-0-8160-7592-4
8. Current Literature and Reviews.