

B.Sc. Forensic Science: Semester-IV

EST 403: Chemistry- IV

Teaching Scheme  
Lectures - 10x Week  
Tutorials - 2x Week  
Credits - 4

Examination Scheme  
Class Test -12 Marks  
Teachers Assessment - 6 Marks  
Attendance - 12 Marks  
End Semester Exam - 70 marks

Course Objectives: After studying this paper the students will know –

1. The methods of analyzing trace amounts of petroleum products in crime scene evidence.
2. The methods of analyzing contaminants in petroleum products.
3. The method of searching, collecting, preserving and analyzing arson evidence.
4. The classification of explosives, including the synthesis and characterization of representative analogs.
5. The significance of explosion scene management.
6. The techniques of locating hidden explosives.

**Unit 1: Petroleum and Petroleum Products**

Distillation and fractionation of petroleum. Commercial uses of different petroleum fractions. Analysis of petroleum products. Analysis of traces of petroleum products in forensic exhibits. Comparison of petroleum products. Adulteration of petroleum products.

**Unit 2: Arson**

Chemistry of fire. Conditions for fire. Fire scene patterns. Location of point of ignition. Recognition of type of fire. Searching the fire scene. Collection and preservation of arson evidence.

**Unit 3: Analysis of Fire Debris**

Analysis of ignitable liquid residue. Post-flashover burning. Scientific investigation and evaluation of clue materials. Information from smoke staining.

**Unit 4: Explosives**

Classification of explosives – low explosives and high explosives. Homemade explosives. Military explosives. Detonators. Synthesis and characteristics of TNT, PETN and RDX. Explosion process. Shock waves.

**Unit 5: Explosion Scene Management**

Searching the scene of explosion. Mechanism of explosion. Post blast residue collection and analysis. Blast injuries. Detection of hidden explosives.

Head

Department of Biotechnology  
Invertis University, Bareilly (U.P.)

Dean

Faculty of Science  
Invertis University, Bareilly (U.P.)

Registrar  
Invertis University  
Bareilly