

**NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
ADJ 175 - FORENSIC INSTRUMENTAL ANALYSIS (4 CR)**

Course Description

Examines instrumental methods of analyzing physical evidence. Teaches the theoretical and practical applications of ultra-violet, visible, and infrared spectrophotometry, gas chromatography thin-layer chromatography, electrophoresis, trace metals detection, X-ray and atomic absorption analyses

General Course Purpose

The purpose of this course is to provide the student with knowledge of the types of examinations that are performed in the analysis of forensic evidence, and the instruments used in order to perform such exams.

Course Prerequisites/Corequisites

Students enrolled in this class should have a general understanding of chemistry and the capabilities of the laboratory.

Course Objectives

Upon completion of this course, the student should be able to:

- Understand the instrumentation and methodology of analysis of accelerants and explosives using infrared spectrometry and gas chromatography/ mass spectrometry
- Understand the instrumentation and methodology of analysis of gun shot residue using colorimetric tests and atomic spectroscopy
- Understand the instrumentation and methodology of analysis of drugs and poisons using colorimetric tests, infrared spectrometry and gas chromatography/ mass spectrometry
- Understand the instrumentation and methodology of analysis of glass using chemical tests and refractive index measurements
- Be acquainted with the literature, resources and references available on the topic of forensic chemistry
- To gain general familiarity with the instrumentation and applications of forensic microscopy, mass spectrometry, compound microscope, gas chromatography, and liquid chromatography instrumentations

MAJOR TOPICS TO BE INCLUDED

- Introduction to forensic chemistry
- General laboratory procedures and safety
- Use of the compound microscope
- Colorimetric tests
- Polarized light microscopy and scanning electron microscopy
- High Performance Liquid Chromatography and Capillary Electrophoresis
- Infrared spectrometry
- Gas chromatography/ mass spectroscopy
- Atomic spectroscopy
- Refractive index measurement
- Forensic applications of mass spectrometry such as sample Ionization, Mass analyzer and sample inlets
- Literature and resources