



Component Standard

Laboratory Analysis

Purpose

To equip students with an understanding of the theory and application of the principal laboratory methods routinely used in forensic science.

General Outcomes

The course should be designed to enable the student to:

The location and analysis of macro and micro amounts of chemical and biological material lies at the heart of laboratory-based forensic science. Given the nature of contact trace material, it is essential to employ analytical methods that provide sufficient discrimination commensurate with sample size and purity.

The course should be designed to educate the student to:

1. explain and demonstrate competence in the range of methods used for the location and recovery/extraction of the commonly encountered physical, chemical and biological trace materials;
2. explain the relevance of contamination avoidance procedures and give examples in relation to the location, extraction and analysis of contact trace material;
3. explain the range of analytical techniques that are available to the forensic scientist, understand the parameters involved in method selection and be able to provide an analytical strategy for a given scenario;
4. discuss possible techniques for laboratory analysis of commonly encountered substances;
5. explain statistical sampling methods and outline their limitations;
6. demonstrate competence in operating a range of modern analytical instruments and be conversant with the use of related computer software;
7. describe the setting up of and demonstrate competent use of microscopes used for locating, identifying and comparing commonly encountered contact trace material;
8. for principal laboratory equipment used in forensic science explain in reasonable detail and usually from a comparative perspective, the principles of operation, calibration (incl. controls and reference standards), specificity, sensitivity, precision and accuracy. In addition utility, effectiveness and efficiency in terms of materials, time, and cost when applied in a forensic context;
9. explain the range of techniques used for the extraction and analysis of DNA;
10. demonstrate competence in the correct interpretation of analytical results;
11. explain the statistical methods used for the interpretation of analytical measurements;
12. describe and demonstrate adherence to safe working procedures.

It is appreciated that some specialist postgraduate courses include depth of analysis rather than breadth therefore all laboratory component standards may not be required for all students