Forensic Biochemistry Honours 2010

The module will explore the role of the biochemist and some of the techniques available to forensic analysis. The emphasis will be on sample collection, storage, preparation for analysis, sample analysis, and interpretation and representation of results. The main techniques that will be discussed are HPLC, GC and mass spectrometry for the identification of small biological molecules, and the techniques used for DNA analysis in forensics.

The main objectives are to:
1. Acquire an insight into the role of the forensic scientist, and some of the scientific challenges which involve biochemistry.
2. Gain a thorough theoretical understanding of HPLC and its application.
3. Gain an understanding of the principles of GC and its application.
4. Gain a theoretical understanding of DNA analysis in a forensic laboratory.
5. Design a method(s) for the extraction, identification and separation of compounds of interest.
6. Understand the procedures required validate a method.
7. Understand the principles of mass spectrometry.

Lectures and discussions

Week 1:

08 February 2010
09h00 to 10h30
Introduction to forensic science
- Aspects of forensic sciences and the role of the biochemist
- Case studies

09 February 2010
14h15 to 15h30
Chromatography
- Sample treatment and preparation
- Application of HPLC

10 February 2010
08h00 to 09h00
Discussion of case study papers; student presentations (~ 10 min, Mark allocation 10%)

12 February 2010
09h00-13h00
HPLC: quantification practical session (Lab notes, mark allocation 10%)
**Week 2:**

**15 February 2010**

08h30 to 10h00
Chromatography
- Principles Gas Chromatography
- Application of Gas Chromatography

**16 February 2010**

08h30 to 10h30
Mass spectrometry
- Principles
- Data interpretation

**18 February 2010**

09h30 to 10h45
Chromatography papers; student presentations (~ 15 min, Mark allocation 15%)

**19 February 2010**

08h00 to 09h00
Molecular Forensics
- Current and future trends
- Basic tools and techniques
09h00
Centrifugation safety talk

**Week 3:**

**22 February 2010**

08h30 to 10h00
- Minisatellite and Microsatellite DNA typing analysis
- Application of SNPs in Forensic casework

**23 February 2010**

08h30 to 10h00
- X and Y chromosome in Forensic Science
24 February 2010

08h30 to 10h00
Molecular forensic journal article; student presentations (~ 15 min, Mark allocation 15%)

25 February 2010

08h30
Receive comprehension article via e-mail

26 February 2010

08h30-10h00
Comprehension test (mark allocation 50%)

Week 4:

02 March 2010

Project proposal oral presentations

05 March 2010

08h30-10h00
Final Test

Papers to be considered:


**Case studies**


**References**

2. Gunn A. Essential Forensic Biology, John Wiley and Sons, Ltd, Chichester, 2006