Drug Analysis in Forensic Chemistry and Toxicology

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The use of drugs of abuse and pharmaceutical drugs is an important issue in forensic science and indeed relevant to society in general. A large proportion of work carried out in general forensic science laboratories consists of the chemical analysis of drugs, either in the body or from seized materials. This course will cover the analysis of various drug and related substances within the remit of forensic toxicology and chemistry.

Important aspects of forensic toxicology such as an introduction to the various biological matrices used for analysis such as blood, urine, liver and an appreciation of other less common specimens including bile, hair and oral fluid. Coverage of drug substances will include amphetamine type stimulants, cocaine, opiates/opioids, cannabinoids, benzodiazepines, emerging NPS substances. Some forensically important pharmaceuticals, along with some of the common metabolites and conjugates formed from phase 1 and 2 metabolic processes will be discussed. Throughout methods of analysis will be discussed including extraction procedures such as solid phase extraction, instrumental analysis using chromatographic and mass spectrometric techniques, as well as the importance of chain of custody. In addition, alcohol in a forensic science context will be discussed with reference to methods of analysis, interpretation of results and casework examples including driving under the influence and post-mortem situations.

Drug analysis in forensic chemistry is focused on drug materials seized by law enforcements organisations such as the police or customs. In terms of drugs of abuse the various forms of cannabis are important along with heroin, amphetamines, cocaine and some pharmaceuticals. This course will include a description of typical analytical procedures for the analysis and identification of drugs such as colour tests, spectroscopy, chromatography and mass spectrometry. In addition microscopic identification of cannabis will be discussed.

Seminars will be based on the following broad areas:
The use of advanced analytical techniques such as GCMS and LCMS will be discussed when part of the analytical process for drug analysis.
Extraction from complex biological matrices with reference to forensic toxicology and the unique problems faced in this area for a variety of drug molecules.
Interpretation of analytical results will be discussed with an emphasis on forensic toxicology/chemistry and the outcomes required by various investigative processes.

Biography

Dr Calum Morrison completed a B.Sc. in Chemistry (1992) and a Ph.D. in Forensic Toxicology (1996) both from the University of Glasgow. He carried out casework in the Department of Forensic Medicine and Science while completing his Ph.D. until 2000 when he moved to the Police Forensic Science laboratory in Dundee and was employed in the Forensic Chemistry section and carried out casework in the areas of drug and alcohol analysis and fire investigation. In the summer of 2004 he moved to the University of the West of Scotland (formerly the University of Paisley) to take up a post as Lecturer in Forensic Chemistry where he was heavily involved in the development of the Forensic Science degree program.
In 2014 he returned to the Department of Forensic Medicine and Science at the University of Glasgow to become Senior Lecturer in Forensic Toxicology. He is currently lead academic within this department and course leader for MSc in Forensic toxicology.
He currently supervises 4 Ph.D. students in the areas of forensic drug analysis and environmental chemistry.

Termin		Dzień tygodnia	Godzina	Miejsce
03.12.2018		Poniedziałek	14.15 – 17.00	Minicentrum Konferencyjne (Luwr)
04.12.2018		Wtorek	12.15 – 15.00	Minicentrum Konferencyjne (Luwr)
05.12.2018		Środa	12.15 – 15.00	Minicentrum Konferencyjne (Luwr)
06.12.2018		Czwartek	12.15 – 15.00	Minicentrum Konferencyjne (Luwr)
07.12.2018		Piątek	12.15 – 15.00	Minicentrum Konferencyjne (Luwr)