

Liverpool John Moores University

Title: FORENSIC ENVIRONMENTAL GEOSCIENCE
Status: Definitive
Code: **5104NATSCI** (112588)
Version Start Date: 01-08-2013

Owning School/Faculty: Natural Sciences & Psychology
Teaching School/Faculty: Natural Sciences & Psychology

Team	Leader
Laura Bishop	Y
Kostas Kiriakoulakis	
Jason Kirby	
Silvia Gonzalez	
Graham Sherwood	

Academic Level: FHEQ5 **Credit Value:** 24.00 **Total Delivered Hours:** 60.00
Total Learning Hours: 240 **Private Study:** 180

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24.000
Off Site	13.000
Practical	20.000
Seminar	3.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	Lit Review	Literature Review Essay	40.0	
Report	Field Rpt	Field and Lab Report	60.0	

Aims

This module aims to give a theoretical and practical introduction to a range of

geological, geophysical and geochemical techniques common to environmental sciences and explores their applications in forensic and archaeological contexts.

Learning Outcomes

After completing the module the student should be able to:

- 1 Observe, describe and evaluate a range of geological evidence in a forensic context.
- 2 Discuss and apply methods used to determine the environmental and geological contexts of forensically relevant occurrences.
- 3 Synthesise the results of field and laboratory studies and communicate them to specialists and non-specialists.
- 4 Evaluate the role that environmental science plays in forensic investigation.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Literature Review	3	4
Essay		
Field and Laboratory Report	1	2

Outline Syllabus

Prospecting and site detection. Maximising the information from a site – recovery, sieving and floatation. Collection and examination methods. Field methods – soil profiling and geophysical techniques. Optical microscopy and characterization of sediments and rocks. Analytical techniques - use and interpretation of data. Dating methods. Taphonomy. Environmental reconstruction . Provenance and life history of human remains – stable isotope analysis. Using secondary sources of data. Synthesis of field and laboratory data.

Learning Activities

The module has an emphasis on laboratory and field-based study. The majority of learning will be centred on an investigative project that will involve the use of a wide range of techniques.

References

Course Material	Book
Author	Brothwell, D.R. and Pollard, A.M.
Publishing Year	2005
Title	Handbook of Archaeological Sciences.
Subtitle	
Edition	

Publisher	Wiley.
ISBN	0470014768

Course Material	Book
Author	Murray, R.C.
Publishing Year	2004
Title	Evidence from the Earth :Forensic geology & criminal investigation.
Subtitle	
Edition	
Publisher	Mountain Press.
ISBN	0878424989

Course Material	Book
Author	Pye K. & Croft D.J.
Publishing Year	2004
Title	Forensic geoscience :principles, techniques and applications.
Subtitle	
Edition	
Publisher	Geological Society Publishing House.
ISBN	1862391610

Notes

This module introduces a range of field and laboratory techniques in forensic environmental geoscience to students of earth science and the forensic sciences. Emphasis is on practical and field skills and on the synthesis of analyses from a variety of techniques.

Archaeological science, also known as archaeometry, consists of the application of scientific techniques to the analysis of archaeological materials, to assist in dating the materials. It is related to methodologies of archaeology. Martín-Torres and Killick distinguish "scientific archaeology" (as an epistemology) from "archaeological science" (the application of specific techniques to archaeological materials). Martín-Torres and Killick claim that "archaeological science" has promoted the Archaeological science, i.e., the use of scientific techniques in archaeological investigations, comprises a wide range of methods of analysing remains, used to obtain indirect information and then deduce archaeological conclusions [1]. Apart from those methods requiring direct human observation, like microscopy, where the equipment enhances the researchers ability to inspect the finds, many methods involve automatic analyses and complex instruments, which produce. A revised version A Handbook of Archaeological Sciences (Brothwell and Pollard 2001). It would be fair to say that Brothwell was one of the scholars who laid the foundation for modern archaeological science. *Memoirs of a Pioneer in Bioarchaeology* – Review of D Brothwell. @inproceedings{Pollard2001HandbookOA, title={Handbook of archaeological sciences}, author={A. M. Pollard and D. Brothwell}, year={2001} }. A. M. Pollard, D. Brothwell. Published 2001. Geography. List of Contributors. Foreword: Martin Aitken FRS. Acknowledgements. Introduction: Archaeological Science: A current Perspective (D. Brothwell & A. Pollard). DATING. Overview -- Dating in Archaeology: Past, Present and Future (R. Hedges). Quaternary Geochronological Frameworks (J. Lowe). Radiocarbon Dating (R. Taylor). Dendrochronology and Other Applications of Tree-ring Studies in Archaeology (P.