

Archaeometry

Module Code:	ARC7035-B
Academic Year:	2018-19
Credit Rating:	20
School:	School of Archaeological and Forensic Sciences
Subject Area:	Archaeology
FHEQ Level:	FHEQ Level 7 (Masters)

Pre-requisites:

Co-requisites:

Contact Hours

Type	Hours
Lectures	33
Seminar	12
Laboratory	9
Directed Study	146

Availability Periods

Occurrence	Location/Period
BDA	University of Bradford / Semester 2 (Feb - May)

Module Aims

To explore the role of scientific methods in addressing key areas of study of the past: chronology, diet and identity. What has been achieved? How do we evaluate the importance of the findings? What challenges remain and how might they be addressed?

To give the opportunity to study stable light isotope analysis and its archaeological applications in detail.

Particular emphasis will be placed on the applications of techniques and the inherent

challenges in placing interpretation into a wider understanding of people in the past. There is an emphasis on specific themes and the use of case studies based on recently published research.

Outline Syllabus

The module will introduce, through case studies & the development of specific themes, a range of techniques & approaches used in archaeology to address questions of identity, diet and chronology. It will also cover the lessons learned from previous studies & future potential.

The identity theme will cover the place of molecular investigation in defining identity, residence & migration; source, stability & transformation of molecules; ancient DNA: What survives? How does it survive? What does it tell us about people in the past? The danger of contamination & the importance of sampling strategies; Biogeochemical studies & their use in identifying migration.

The diet theme will examine chemistry of lipids & proteins & their application in identifying past use of food; pottery vessel function; stable light isotopes & trace elements as indicators of diet.

The chronology theme will cover an introduction to chronology & issues of precision and accuracy, dating using short and long lived isotopes, radiation exposure dating and dating using patterns of change, including newly developed methods.

The stable light isotope theme will provide specialist knowledge in the principles of stable light isotope mass spectrometry, sample preparation, instrumental fundamentals and design. The specialist knowledge will be reinforced by the 'hands on' practical component and will include use of the analytical centre instruments, collecting and analysing data, troubleshooting and method development/enhancement. The practical sessions will also involve following written experimental protocols, working in a small group, and working to deadlines.

Module Learning Outcomes

On successful completion of this module, students will be able to...

- 1 Critically discuss the contribution that scientific methods make to the study of identity, diet and chronology in the past.
- 2 Critically review the principles of key scientific approaches.
- 3 Evaluate and apply knowledge and understanding of the theories of stable light isotope analysis, including sample preparation and analysis (if this theme is selected).
- 4 Critically review the theoretical and methodological framework for evaluating the contribution of isotopic, molecular and scientific dating studies within an archaeological context.
- 5 Interpret and critically evaluate published work.
- 6 Manipulate samples for selection, preparation and analysis; analyse, interpret and critically review experimental data generated with isotope techniques; identify poor

quality analytical results and suggest/apply remedial action (if this theme is selected).

- 7 Apply enhanced analytical and problem-solving skills gained through the evaluation and synthesis of recently published research.

Learning, Teaching and Assessment Strategy

Lectures will be used to introduce key principles and case studies will be developed in seminar/workshops which will include group discussion and primary data evaluation.

Laboratory sessions will be used to gain hands-on experience of light isotope analysis. The emphasis on evaluating current research will be demonstrated by the assessment, which will comprise critical reviews of recently published research and a laboratory report. Detailed feedback will be given on each critical review before the next submission is due and there will be an opportunity to view annotations on the scripts: individual meetings arranged by appointment. During Directed Study hours students are expected to undertake reading to consolidate and expand on the content of formal taught sessions; research and prepare for assessments; revise material from formal taught sessions; and undertake specific elements of reading as directed.

Mode of Assessment

Type	Method	Description	Length	Weighting	Final Assess'
Summative	Coursework	Critical Review	-1000 words	33%	No
Summative	Coursework	Critical Review	-1000 words	33%	No
Summative	Coursework	Either Critical Review (1000 words) or Laboratory Report (1500 words)	-1500 words	34%	Yes

Legacy Code (if applicable)

Reading List

To view Reading List, please go to [rebus:list](#).