Liverpool John Moores University

Title:	VIRTUAL METHODS AND GIS
Status:	Definitive
Code:	**7117NATSCI** (125496)
Version Start Date:	01-08-2020

Owning School/Faculty:	Biological and Environmental Sciences
Teaching School/Faculty:	Biological and Environmental Sciences

Team	Leader
Carlo Meloro	Y
Richard Jennings	

Academic Level:	FHEQ7	**Credit Value:**	20	**Total Delivered Hours:**	30
Total Learning Hours:	200	**Private Study:**	170		

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	3
Practical	6
Tutorial	4
Workshop	17

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	VM rpt	3500-word report on results from Virtual Method or GIS analyses	70	
Test	VM test	Online test on appropriate applications of virtual methods	30	

Aims

This module consists of two components: 1) Virtual methods and 2) Geographic Information Systems (GIS)

This module provides an overview of virtual method and GIS applications in the field of palaeoarchaeology and human evolution: from data collection to analysis using multivariate statistical approaches.

Learning Outcomes

After completing the module the student should be able to:

1   Demonstrate a capacity to gather, analyse and present a substantial piece of academic work on a selected topic in the field of palaeoarchaeology and human evolution.
2   Achieve competency in 2D and 3D virtual data collection methods and critically assess their applications in archaeology
3   Apply appropriate statistical methods in the analysis of variation, covariations with form and intergroup analysis using Geometric Morphometrics
4   Demonstrate an expertise in the application of GIS and appropriate spatial analytical techniques to data in order to solve archaeological problems

Learning Outcomes of Assessments

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

Analytical report	1	2	3	4
Short answer test	2	3	4	

Outline Syllabus

Virtual data acquisition (CT, MRI, X-Ray, photogrammetry, laser scanning, photography)
Geometric Morphometric analyses
GIS
Drones

Learning Activities

This course will be delivered through lectures and interactive workshops. In addition, students will work with a personal tutor in preparation of their report. This work may involve critical reading, experiments, data collection and writing a journal style article. The report topic cannot be the dissertation topic.

Notes

Recent advances in 3D technology have led to the increased use of virtual methods of data collection and analysis in archaeology, including the use of computed tomography (CT), portable laser scanners, UAV mounted sensors and photography. This module provides an overview of virtual applications in archaeology. During the

course the basics of 2D and 3D data collection and Geometric Morphometrics will be covered and key multivariate morphometric methods reviewed. This module is also aimed at deepening students' basic GIS skills by developing their understandings of analysis and model building in archaeology for application of complex, spatially based archaeological investigation and analysis of species distributions.