Archaeological Science

MSc

Full-time/Part-time

Cranfield
Defence and
Security

Unlock the secrets of the past with science

Why did people start using metal? How did Chinese porcelain stimulate global innovation? How did craftspeople in the Middle East figure out how to transform mundane materials into colourful glass?

Archaeological Science is about exploring humanity's engagement with the material world. The study of archaeological remains through the lens of geology, chemistry, biology, and materials science helps us understand how people lived in the past, and how many foundational aspects of the modern world (e.g. technology, food, or long-distance trade) first emerged and spread. Scientific techniques help us unravel the tangled histories of artefacts and the people who made them, from their manufacture and use to their repair, deposition, and conservation, while experimental recreations provide direct insight into the experience of traditional crafting techniques.

Why Archaeological Science?

The MSc in Archaeological Science will give you a strong foundation in the principles and practice of archaeological science research from field to the laboratory. Key themes include technology, innovation, exchange, interaction, and production, which are explored through the analysis of metals, glass, stone, ceramics, as well as organic remains.

Drawing on Cranfield Forensic Institute's outstanding new laboratory facilities, its long-standing research excellence in archaeological materials analysis, small group learning environment, and robust collaborative relationships, you will gain hands-on experience with all aspects of the scientific research process, from data collection and analysis to interpretation and presentation. The course emphasises active learning, through group discussion, laboratory practicals, and recreating ancient technologies. You will learn how the tiniest traces preserved in ancient artefacts help reconstruct trade routes between distant lands, and grapple first-hand with the challenges faced by the world's first pyrotechnologists.

We welcome students interested in archaeological science with a wide range of prior experience, from archaeologists interested in exploring the potential of laboratory analysis, to natural scientists interested in archaeological and historic applications. The course is intended for students interested in careers in archaeology, museums, and heritage science, and those who seek to gain further experience using science to study the past.

What will you learn?

- How to choose the optimum analytical methodology for a given research question, material type, and sampling constraints.
- Techniques for preparing and analysing samples of organic and inorganic materials commonly encountered in archaeological research.
- The reconstruction of ancient technologies by reverse engineering ancient artefacts and experimentally recreating traditional technologies.
- How to design an analytical research project that will address questions of broad interest within archaeology, anthropology and history.
- How to critically assess published research on archaeological science topics, with respect to data quality, research design, and logic of argumentation.
- Effective skills in the analysis, synthesis and presentation of archaeological data, enabling you to produce compelling research and intervene in key discussions about the past.

Key information

Part-time
Three years

Full-time
One year

Awards
MSc

Fees
£10,300*

Start date
October

Location
Cranfield

Delivery
Lectures, practicals, and seminar discussions.

Entry requirements
See website

*See website for international fee.

"The scientific analysis of archaeological materials gives us a deep understanding of human behaviour, from the choices of ancient craftspeople to far flung trading networks. Ultimately, these insights about technology, innovation, and human decision-making carry important lessons for the modern world."

Dr Nathaniel Erb-Satullo,
Course Director, Archaeological Science MSc

Archaeological Science MSc

200 credits

Compulsory modules

180 credits

Fundamentals of Geomaterials 10 credits	**Approaches to Ceramic Studies** 10 credits	**Archaeometallurgy** 10 credits
Vitreous Materials 10 credits	**Materials of Biological Origin** 10 credits	**Research Design and Data Analysis** 10 credits
Research Themes in Archaeological Science: Seminar 10 credits	**Making Materials: Experimental Approaches** 10 credits	**Analytical Techniques** 20 credits
Research project 80 credits		

Elective modules

Choose two (20 credits)

- **Practical Archaeological Excavation** 10 credits
- **Fundamentals of Forensic Anthropology and Osteology** 10 credits
- **Fakes and Forgeries** 10 credits
- **Environmental Forensic Science** 10 credits

Cranfield Forensic Institute (CFI)

Cranfield Forensic Institute (CFI) has a long history of providing the next generation of forensic experts, and alumni have gone on to work around the world for a multitude of public, private and government services. We also have invested in extensive expertise and exceptional facilities in a wide range of forensic sciences specialties. Our education and research is unsurpassed with state of the art and brand new facilities and equipment.

CFI was established as the home for the many forensic-related disciplines already active at Cranfield University, such as ballistics, explosives, materials science, engineering failures and forensic computing.

These were greatly enhanced by the addition of forensic archaeology and anthropology, making us the only university in the world to accommodate these disciplines within a science and technology faculty. Students have opportunities to join existing research teams, study overseas and produce research papers.

The recent investment of £7.2 million into the latest forensic equipment, teaching spaces and experienced and industry relevant academic staff has meant students and staff now have access to brand new world-class facilities and teaching spaces that are unmatched in the UK.

Cranfield University

Cranfield is an exclusively postgraduate university that is a global leader for education and transformational research in technology and management. We are focused on the specialist themes of aerospace, defence and security, energy and power, environment and agrifood, manufacturing, transport systems, and water.

Home to many world-class, large-scale facilities which enhance our teaching and research, we graduate 4,500 postgraduate students each year, with over half studying part-time. We have the largest number of engineering and technology postgraduates in the UK and award over five percent of the UK's engineering and technology PhDs each year.

We employ over 1,500 staff, making our staff-to-student ratio one of the best for any university in the UK and the world (one member of academic staff to every five students).

We work closely with business, industry and government across the world. Through our industry partnerships, applied research projects and our executive education and professional development programmes, we currently work with over 1,500 companies and organisations.

£7 million investment in the latest **forensic science** teaching and research facility

Professional alumni network of over **70,000** across **177 countries**

1:8 **teaching staff to student ratio,** one of the best ratios for any university in the UK

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www.cranfield.ac.uk/archaeologicalscience