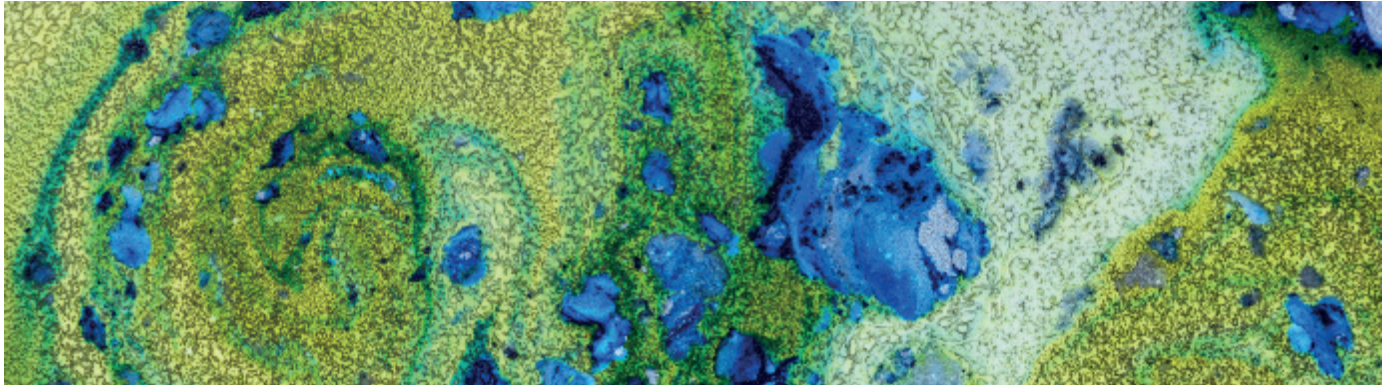




Geographical Information Management

MSc, PgDip, PgCert



Sustainable use or conservation of the earth's resources requires the organisation, exploitation and integration of technologies such as database management, image processing and digital cartography, to ensure provision of high quality, reliable and up-to-date information. The Geographical Information Management MSc has been developed in direct collaboration with industry, in response to the increased global demand for multi-disciplinary managers, advisors and consultants in resource management. Taught by a dedicated faculty, this course is unique in providing balanced coverage of the key GIS technologies to prepare you for a successful career across the full range of global sectors using geographical information (GI) technologies.

Who is it for?

We welcome students from a variety of backgrounds who have a passion for technology and data, an interest in solving real world problems and making a positive impact. You will acquire experience of world-class spatial problem solving and develop a range of personal and leadership skills to set you on the path for a rewarding career in any one of the growing range of industrial and research sectors that now routinely make use of the GI technologies.

Course structure

- Eight taught modules (40%),
- Group project (20%),
- Individual research project (40%).

Informed by industry

The Geographical Information Management MSc has been developed in direct collaboration with industry, in response to the increased demand globally for multi-disciplinary managers, advisors and consultants in geographic information. Integration of geospatial technologies is a core theme of the course.

Future career

Successful students develop diverse and rewarding careers in the spatial information industry, national and local government, consultancies, utilities and research organisations. The international nature of this course means that career opportunities are not restricted to the UK. Cranfield

graduates develop careers around the world and this course is internationally recognised by employers across the scientific, industrial and educational communities.

Cranfield is the leading British University in terms of income generated from industrially and commercially-funded research. The applied GIS and related research our staff undertake is fed back into our GIS teaching programmes, thereby ensuring all students who complete the Geographical Information Management programme are equipped at the leading edge.

Previous students have followed careers in the consulting industry or with government research establishments; whilst others are successfully running their own companies.

Successful graduates have been able to pursue or enhance careers in a variety of key areas such as: Data Scientist, Academic Researcher, GIS Technician, Geospatial Analyst, GIS officer, Project Development Officer and Remote Sensing Scientist, at organisations such as British Telecom and Cambridgeshire Acre.

Key information

Duration:

MSc: one year full-time, two to three years part-time, PgDip, PgCert: one year full-time, two years part-time.

Start date:

Full-time: October. Part-time: October.

Qualification:

MSc, PgDip, PgCert.

Location:

Cranfield campus.

Entry requirements

A first or second class UK Honours degree in a relevant science, engineering or related discipline; or the international equivalent of these UK qualifications. Other relevant qualifications, together with significant experience, may be considered.

Overview of taught modules

Example modules

Modules form only part of the course content with the projects and theses making up the balance. Please see the course structure for details.

The list below shows the modules offered in the 2020-2021 academic year, to give you an idea of course content. To keep our courses relevant and up-to-date, modules are subject to change – please see the webpage for the latest information.

Compulsory modules

(all the modules in this list need to be taken as part of this course).

Aerial Photography and Digital Photogrammetry

Deriving digital elevation models and ortho-imagery is an important application of remote sensing data for many areas of spatial work. This module introduces techniques for the interpretation and extraction of topographic information using digital photogrammetry techniques.

Environmental Resource Survey

Environmental resource surveys are required to obtain the data used in environmental information management, including determining the appropriate survey design to undertake assessments that consider different types of existing data, information and models.

GIS Fundamentals

GIS is an important technology for handling geographic data and has wide application for studies of the environment. GIS is used widely in many companies and agencies and therefore this module provides the opportunity to develop GIS skills that will be of use within the course and in later employment.

Spatial Data and the Internet

It has been estimated that some 80% of the data used for environmental, business and policy-oriented decision making is geographical in nature. Web-based approaches offer extremely powerful means to reach out to end users, particularly those without access to specialist GIS software.

Spatial Data Management

Geographical information represents a key theme in environmental management; such spatial data require a structured approach in their management if the maximum benefit is to be derived from their analysis and dissemination.

Elective modules (Choose three)

Advanced GIS Methods

GIS analyses are based upon increasingly sophisticated methods, but the results are subject to both error and uncertainty. A range of advanced methods are introduced that will have potential use to students in their group and thesis projects and their future careers.

Applied Environmental Informatics

A basis and understanding of methods pertaining to Informatics is needed to effectively obtain information from data. The objective of the module is to supply the student with a toolbox of techniques for data mining and modelling.

Image Processing and Analysis

Image processing and analysis are fundamental tools of applied remote sensing. They are the means by which information is extracted from raw digital data from airborne and space imaging sensors.

Landscape Ecology

This considers the interactions between spatial patterns and ecological processes, and provides a foundational framework for problem solving, decision making and planning in land restoration, ecological conservation and natural resources management.

Modelling Environmental Processes

An introduction to the full suite of environmental models and modelling methods that are currently used to describe and predict environmental processes and outcomes.

Physical Principles of Remote Sensing

The appropriate application of remote sensing to the monitoring of earth resources requires an understanding of basic physics and imaging technology. This includes the basic radiometric concepts required for remotely sensed data to be analysed quantitatively.

Group project

The group project experience during the course is highly valued by both students and prospective employers. It provides you with the opportunity to take responsibility for a consultancy-type project while working under academic supervision. It also enables you to start building essential industry links and knowledge whilst studying.

The projects involve the application and integration of component technologies:

- GIS
- GPS and remote sensing
- Field methods, and statistical analysis to produce quality-assured innovative solutions.

Recent group projects include:

- Using GIS Mapping With UAV Integration And Historic Flood Extents To Explore Flood Emergency Response Pathways
- Integrated catchment planning using a natural capital approach: a case study of the Bristol Avon.

Individual project

The individual project is either industrially or University driven. You will be able to select the individual project in consultation with the course team and it will provide the opportunity to demonstrate independent research ability, the ability to think and work in an original way, contribute to knowledge, and overcome genuine problems in relation to the management of the earth's resources. It also offers you the opportunity to work and build links with the types of organisation you will be seeking employment with on successful completion of the course.

Accreditation

The MSc of this course is accredited by:



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For further information please visit
www.cranfield.ac.uk/gim