

Programme Specification

Geo-information Science and Earth Observation for Environmental Modelling and Management (GEM) (2017-18)

This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided.

Awarding Institution	University of Southampton
Teaching Institution	Lund University, Sweden, University of Iceland, University of Southampton, University of Twente, The Netherlands, University of Warsaw, Poland
Mode of Study	Full-time
Duration in years	2
Accreditation details	None
Final award	Master of Science (MSc)
Name of award	Geo-information Science and Earth Observation for Environmental Modelling and Management (GEM)
Interim Exit awards	None
FHEQ level of final award	Level 7
UCAS code	N/A
Programme code	4526
QAA Subject Benchmark or other external reference	N/A
Programme Lead	Booker Ogutu (boo1c14)

Programme Overview

Brief outline of the programme

This MSc was initiated through the EU Erasmus Mundus programme, with fully funded EU scholarships available for exceptional students from outside the EU. Students may come to the University of Southampton for the dissertation module worth 60 ECTS/120 CATS in Year 2 after a foundational year of study at level 7 worth 60 ECTS/120 CATS at either Lund University or University of Twente.

The 22-month programme is run collaboratively by: the University of Southampton; Lund University (Sweden); the University of Warsaw (Poland); the University of Iceland and the University of Twente (Netherlands).

Teaching is provided by world-renowned staff and visiting scholars. The programme will enable you to develop:

- A critical understanding of technical and scientific tools
- Excellent management and personal skills
- An ability to operate in different cultural and linguistic settings

You will learn about environmental systems, their components and interactions with society, as well as become qualified in the rapidly expanding field of geo-information science.

Your contact hours will vary depending on your module/option choices. Full information about contact hours is provided in individual module profiles.

Learning and teaching

To assist the development of your knowledge and understanding of remote sensing, GIS and environmental management, we use a wide range of teaching methods. These include lectures, seminars, supervisions, fieldwork, practical classes and independent research.

Assessment

Assessment of your knowledge and understanding is undertaken throughout the programme using a combination of formative assessments and summative assessments. The Research Project is the only element of assessed work you will do while at the University of Southampton. It is worth 60 ECTS and is therefore a very significant proportion of your Masters assessment. For this reason, it will be assessed using a range of criteria designed to capture all aspects of the research process. The final Mark of research project will be derived from a seminar presentation (25%) and a 25,000 words report (75%). Each report will be marked by the supervisor and 'blind marked' by one other member of academic staff.

Special Features of the programme

The programme provides unique opportunity to study the application of Geo-information Science and Earth Observation for Environmental Modelling and Management from one of the top universities in this field across Europe.

Please note: As a research-led University, we undertake a continuous review of our programmes to ensure quality enhancement and to manage our resources. As a result, this programme may be revised during a student's period of registration; however, any revision will be balanced against the requirement that the student should receive the educational service expected. Please read our [Disclaimer](#) to see why, when and how changes may be made to a student's programme.

Programmes and major changes to programmes are approved through the University's [programme validation process](#) which is described in the University's [Quality handbook](#).

Educational Aims of the Programme

This EU Master of Science (M.Sc.) in Geo-information Science and Earth Observation for Environmental Modelling and Management, acronym 'GEM', is an ongoing joint European degree program that has been developed by five leading European institutes in the field of geo-information management in five European countries (Sweden, UK, Netherlands, Poland, Iceland).

Employers in the public and private sectors require top quality graduates as managers, planners, policy makers, researchers or advisors who can make a difference in environmental management. They need people who have the ability to think through complex environmental issues, who can analyse environmental problems with spatial/information systems, who are capable of managing projects and programs, and have well developed leadership and interpersonal skills.

The programmes's objective is to provide highly qualified and motivated students from around the world to do a fully integrated world class EU Masters programme that combines the best elements of existing courses offered by the consortium members.

A memorandum of agreement (MoA) exists between the University of Southampton, UK, Lund University, Sweden, University of Warsaw, Poland, University of Iceland and the University of Twente that sets out the nature of the collaboration between the five partners of this European MSc. The MoA is a consortium-level document. Two important statements from the MoA are reproduced here for clarity, although the original MoA, is the definitive source:

- All Partners have overall responsibility for the academic standards and quality of the Programme delivered under this Agreement; this responsibility is normally exercised through the Joint Programme Board (JPB).
- All Parties recognize the equivalence of each Partner's quality assurance (QA) procedures. When the students study at the site of one of the Partners, the relevant institutional QA protocols of this Partner will be used.

The aim of the programme is to develop your critical understanding of technical and scientific tools together with excellent management abilities and inter- skills through:

- (a) understanding of the scientific process and ability to undertake scientific research.
- (b) thorough awareness of european and global environmental problems and understanding of the complexity of factors involved.
- (c) understanding of geographical information management and ability to apply gis, remote sensing and related tools.
- (d) familiarity with project and programme management.
- (e) leadership, negotiation, and communication skills.

Programme Learning Outcomes

Knowledge and Understanding

On successful completion of this programme a student will have knowledge and understanding of:

- A1. Geographical information systems principles and techniques at an advanced level;
- A2. Remote sensing principles and techniques at an advanced level, particularly applied to the ocean and terrestrial environments;
- A3. The fundamental principles of environmental management, particularly from a geographer's perspective;
- A4. The application of geographical knowledge (especially the use of remote sensing and geographic information systems) to contribute to the sustainable management of the environment;
- A5. The influence of spatial and temporal scale upon observed forms and inferred processes;
- A6. The use of concepts of space and spatial variation in geographic analysis.

Teaching and Learning Methods

To assist the development of your knowledge and understanding of remote sensing, GIS and environmental management, we use a wide range of teaching methods. These include lectures, seminars

(these are often student-led and frequently involve making individual or group presentations on selected geographical topics), supervisions (an example is weekly supervisor-led activities focusing on both generic and key skills), fieldwork (including site visits and fieldcourses), practical classes and independent research. Some modules are delivered through mixed-mode teaching (distance learning and e-learning backed up with face-to-face tutor contact and lectures). Guest lecturers and local companies and agencies also contribute to the delivery of the programme. You will be encouraged from an early stage to supplement and consolidate your understanding and knowledge by independent reading and you will be provided with learning support material and informal assistance to guide your private study. We also provide feedback on examinations and assignments.

Assessment Methods

Assessment of your knowledge and understanding is undertaken throughout the programme using a combination of formative assessments (designed to provide you with constructive feedback to help develop your knowledge and understanding) and summative assessments (designed to measure your achievements).

Formative assessment is delivered in part through informal assessment of work. For example, staff members might provide informal feedback on a group project or presentations. Particularly in Semester 1, this assessment mechanism will be used to coach and provide support to students whose written English usage is below average.

Summative assessment contributes to your marks and usually involves a combination of unseen written examinations (at the end of the study module) and coursework (which includes essays, project reports, and computing practicals, etc.). Assessment of your knowledge and understanding is undertaken primarily via these summative assessment methods; in addition you will receive feedback on all formally assessed work.

Subject Specific Intellectual and Research Skills

On successful completion of this programme a student will be able to:

- B1. Understand the scientific process;
- B2. Be aware of a full range of European and global environmental problems and be able to think through complex environmental issues relevant to society;
- B3. Analyse reflectively and critically the literature in remote sensing, GIS and environmental management;
- B4. Understand geographical information management principles and abstract and synthesise information from a range of different geographical sources;
- B5. Use remote sensing and GIS principles, theories and methods to design and undertake primary research;
- B6. Understand the importance of the spatial characteristics of geographical data;
- B7. Analyse, reflect on and critically interpret primary and secondary geographical data; structure conceptual and empirical geographical material into a reasoned argument.

Teaching and Learning Methods

Subject specific intellectual skills are embedded within the curriculum and many of the teaching

methods used to develop these skills are common to those discussed above. Greater emphasis is placed on direct interaction with staff members during supervisions (i.e. tutorials), seminars, fieldwork and project work. Independent reading and study, as well as on-line search assignments and computational exercises, are other particularly important means by which you will develop these skills. Particular skills (such as public speaking in groups, formal presentations, chairing meetings, writing skills, computer software skills etc) are structured into the thematic modules.

Assessment Methods

Much of the assessment of subject specific intellectual skills is similarly common with the methods used to assess your knowledge and understanding. However, greater emphasis is placed on formative assessment methods through informal and formal feedback, e.g. during supervisions, meetings with tutors, etc. Nonetheless, summative assessment remains a very important component of the way in which these skills are assessed.

Transferable and Generic Skills

On successful completion of this programme a student will be able to:

- C1. Pursue knowledge in an in-depth, ordered and motivated way;
- C2. Produce fluent and comprehensive written reports on complex topics;
- C3. Give oral presentations that are clearly structured and sustain the interest of the audience;
- C4. Confidently use a range of relevant forms of IT software;
- C5. Marshall and retrieve data from library and internet resources;
- C6. Use your interpersonal skills in group activities, including project work in the field and laboratory, and have a respect for differing views;
- C7. Be aware of the role and importance of evidence-based research;
- C8. Display leadership, negotiation and communication skills;
- C9. Apply the principles of project and programme management, including financial and human resources aspects.

Teaching and Learning Methods

Generic skills are embedded throughout all stages of the programme. Communication skills are developed through written reports, fieldwork, and individual and group presentations. Numeracy and IT skills are continually developed throughout the programme, projects and field work and some modules specifically focus on IT skills (e.g. GIS, Image Processing, Geographical Skills, etc). Group projects and fieldwork are also effective ways of developing your interpersonal and teamwork skills.

Subject Specific Practical Skills

On successful completion of this programme a student will be able to:

- D1. Plan and carry out research in remote sensing, GIS or environmental management and produce a report to a high standard;
- D2. Conduct field and computer-based research with appropriate techniques, in a responsible and safe manner, paying due attention to risk assessment, rights of access, relevant health and safety regulations, and sensitivity to the impact of investigations on the environment and stakeholders;
- D3. Use appropriate techniques, including computer software, to produce clear diagrams and maps;
- D4. Collect, analyse and understand remote sensing and geographical data, using field and computer techniques;
- D5. Understand the ways in which remote sensing and geographical data of various types can be combined, interpreted and modelled;
- D6. Understand the importance of data integrity, quality assurance and archiving in field and computer-based contexts.

Teaching and Learning Methods

Subject specific practical skills are developed mainly through fieldwork, computer practicals, and group work, with lectures playing a supporting role. We particularly value the so-called “problem-based learning approach” where you understand concepts and ideas by tackling defined problems.

Assessment Methods

Subject specific practical skills are assessed through a combination of summative and formative assessments during both practical classes, supervisions and meetings with tutors. Greater emphasis is placed on formative assessment methods through informal and formal feedback.

Programme Structure

Progression Requirements

The programme will follow the University's regulations for [Progression, Determination and Classification of Results: Undergraduate and Integrated Masters Programmes](#) or the University's regulations for [Progression, Determination and Classification of Results: Standalone Masters Programmes](#) as set out in the General Academic Regulations in the University Calendar: <http://www.calendar.soton.ac.uk/sectionIV/sectIV-index.html>

Support for student learning

There are facilities and services to support your learning some of which are accessible to students across the University and some of which will be geared more particularly to students in your particular Faculty or discipline area.

The University provides:

- library resources, including e-books, on-line journals and databases, which are comprehensive and up-to-date; together with assistance from Library staff to enable you to make the best use of these resources
- high speed access to online electronic learning resources on the Internet from dedicated PC Workstations onsite and from your own devices; laptops, smartphones and tablet PCs via the Eduroam wireless network. There is a wide range of application software available from the Student Public Workstations.
- computer accounts which will connect you to a number of learning technologies for example, the Blackboard virtual learning environment (which facilitates online learning and access to specific learning resources)
- standard ICT tools such as Email, secure filestore and calendars.
- access to key information through the MySouthampton Student Mobile Portal which delivers timetables, Module information, Locations, Tutor details, Library account, bus timetables etc. while you are on the move.
- IT support through a comprehensive website, telephone and online ticketed support and a dedicated helpdesk in the Hartley Library.
- Enabling Services offering support services and resources via a triage model to access crisis management, mental health support and counselling. Support includes daily Drop In at Highfield campus at 13.00 – 15.00 (Monday, Wednesday and Friday out of term-time) or via on-line chat on weekdays from 14.00 – 16.00. Arrangements can also be made for meetings via Skype.
- assessment and support (including specialist IT support) facilities if you have a disability, long term health problem or Specific Learning Difficulty (e.g. dyslexia).
- the Student Services Centre (SSC) to assist you with a range of general enquiries including financial matters, accommodation, exams, graduation, student visas, ID cards
- Career and Employability services, advising on job search, applications, interviews, paid work, volunteering and internship opportunities and getting the most out of your extra-curricular activities alongside your degree programme when writing your CV
- Other support that includes health services (GPs), chaplaincy (for all faiths) and 'out of hours' support for students in Halls and in the local community, (18.00-08.00)
- A Centre for Language Study, providing assistance in the development of English language and study skills for non-native speakers.

The Students' Union provides

- an academic student representation system, consisting of Course Representatives, Academic Presidents, Faculty Officers and the Vice-President Education; SUSU provides training and support for all these representatives, whose role is to represent students' views to the University.
- opportunities for extracurricular activities and volunteering
- an Advice Centre offering free and confidential advice including support if you need to make an academic appeal
- Support for student peer-to-peer groups, such as Nightline.

Associated with your programme you will be able to access:

- Module co-ordinators support. Module co-ordinators will be available at designated times during the week to discuss issues related to the particular modules you are studying at the time. This will be in addition to class contact time.
- Academic/personal tutor. As soon as you register on this programme, you will be allocated a personal tutor. S/he is a member of the academic team and will be available to discuss general academic issues related to the programme as well as offer advice and support on any personal issues which may affect your studies.
- Module handbooks/outlines. These will be available at the start of each module (often in online format). The Handbook includes the aims and learning outcomes of the module, the methods of assessment, relevant background material to the module and a session-by-session breakdown of the module together with appropriate reading lists.
- Within the Faculty, administrative support is provided by your Student Office which deals with student records and related issues and with queries related to your specific degree programme.

Methods for evaluating the quality of teaching and learning

You will have the opportunity to have your say on the quality of the programme in the following ways:

- Completing student surveys for each module of the programme.
- Acting as a student representative on various committees, e.g. Staff-Student Liaison Committees, Faculty Programmes Committee OR providing comments to your student representative to feedback on your behalf.
- Serving as a student representative on Faculty Scrutiny Groups for programme validation.
- Taking part in programme validation meetings by joining a panel of students to meet with the Faculty Scrutiny Group.

The ways in which the quality of your programme is checked, both inside and outside the University, are:

- Regular module and programme reports which are monitored by the Faculty.
- Programme validation, normally every five years.
- External examiners, who produce an annual report.
- A national Research Excellence Framework (our research activity contributes directly to the quality of your learning experience).
- Institutional Review by the Quality Assurance Agency.

Further details on the University's quality assurance processes are given in the [Quality Handbook](#).

Criteria for admission

The University's Admissions Policy applies equally to all programmes of study. The following are the typical entry criteria to be used for selecting candidates for admission. The University's approved equivalencies for the requirements listed below will also be acceptable.

Entry Requirements

We would welcome an application from you if you have a good quality undergraduate degree or an equivalent standard in other qualifications approved by the University in a relevant subject (e.g. Geography, Environmental Science, Oceanography, Biology, Soil Science, Agriculture, Social Science, Physics, Mathematics or Engineering subjects).

Intake: Applications are through an online portal for the programme (<http://www.gem-msc.org/application/Registration/>) managed by the University of Twente, Netherlands.

Applicants should have a first or upper second class (2.1) BSc honours degree, or an equivalent standard in other qualifications approved by the University, from a recognised university in a discipline related to the course, preferably combined with work experience in a relevant field.

The modules are taught and assessed in English, so proficiency in the English language is a prerequisite. At the time of writing the requirements for non-native speakers are an average of 6.5 for the British Council English Language Tests (IELTS), or equivalent test as recognised by the partner institutions. Please refer to the University guidelines for up-to-date information. Official certificates must be included with the application.

http://www.southampton.ac.uk/international/entry_reqs/english_language.shtml

Admission is by application to the MSc only. Application forms, letters of reference and certificate of English proficiency will be read and assessed by representatives of the Joint Programme Board comprising of the three National Coordinators of the MSc. The relevance of the BSc/BA degree (or equivalent) of the applicant will be assessed. In cases of doubt regarding the quality of the issuing institute colleagues or NARIC (or NUFFIC in the Netherlands, an organisation that offers independent evaluation of quality assurance for international students) will be consulted in order to establish the status and quality of the institute concerned. Students are selected based on the quality of the degree and the level of the marks obtained in previous studies. Relevance of work experience, motivation, and future career objectives are also taken into consideration in reaching a final decision. Offers will be made only to those applicants that satisfy the requirements for entry above, and for whom the supplemental information is deemed satisfactory according to the Joint Programme Board.

If you have a disability and have particular needs these will be discussed with you at selection and appropriate action will be taken at this stage. All Partner Institutions have comprehensive support for, and a lot of

experience with, students with a wide range of disabilities.

In accordance with the Partner Institutions' Equal Opportunities Policy, the programme is open to anyone regardless of age, class, creed, disability, ethnic origin, gender, marital status, nationality, sexual orientation or caring responsibilities.

Recognition of Prior Learning (RPL)

The University has a [Recognition of Prior Learning Policy](#)

Students are accepted under the University's recognition of prior learning policy; however, each case will be reviewed on an individual basis.

Career Opportunities

Potential employment could be within the Earth Observation or geographical information systems/science (GIS) communities, consultancies, private and public sectors.

External Examiner(s) for the programme

Name: Richard Armitage - University of Salford

Students must not contact External Examiner(s) directly, and external examiners have been advised to refer any such communications back to the University. Students should raise any general queries about the assessment and examination process for the programme with their Course Representative, for consideration through Staff: Student Liaison Committee in the first instance, and Student representatives on Staff: Student Liaison Committees will have the opportunity to consider external examiners' reports as part of the University's quality assurance process.

External examiners do not have a direct role in determining results for individual students, and students wishing to discuss their own performance in assessment should contact their Personal Academic Tutor in the first instance.

Please note: This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided. More detailed information can be found in the programme handbook.

Appendix 1:

Students are responsible for meeting the cost of essential textbooks, and of producing such essays, assignments, laboratory reports and dissertations as are required to fulfil the academic requirements for each programme of study. In addition to this, students registered for this programme also have to pay for:

Additional Costs

Type	Details
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In some cases you'll be able to choose modules (which may have different costs associated with that module) which will change the overall cost of a programme to you. Details of such costs will be listed in the Module Profile. Please also ensure you read the section on additional costs in the University's Fees, Charges and Expenses Regulations in the University Calendar available at www.calendar.soton.ac.uk.