1. Programme title(s):

MSc/PG Dip/PG Cert[1] Geographical Information Science
MSc Geographical Information Science with Industry

2. Awarding body or institution

University of Leicester

3. a) Mode of study:

Full Time/Part time[2]

The taught modules would all be taken in the first two semesters. This is followed by the industrial placement, which is between 3 and 12 months long. This is followed by the in-house project, taking 10 weeks.

b) Type of study:

Campus-based (ignite blended learning)

The taught modules and project are campus based. The industrial placement is off campus, on the site of the Placement Provider.

4. Registration periods:

The normal period of registration for the MSc in Geographic information Science is 12 months (full time) and 24 months (part time)

The maximum period of registration for the MSc in Geographic information Science is 24 months (full time) and 48 months (part time)

Note: Normal and maximum periods of registration for the 'with industry' variant accommodate an extra period of registration corresponding to the placement duration, such that normal period is between 18-24 months (dependent on length of placement obtained) and the maximum period is 36 months.

5. Typical entry requirements:

Students are required to have a first, upper second or lower second class honours degree (or equivalent) in any subject and/or ii) several years appropriate professional experience. However, students with nonstandard qualifications are expressly encouraged to apply. In particular we give due consideration to prior professional experience gained by mature students in relevant areas of work. In such cases applicants would be expected to provide detailed information on work experience to enable its full evaluation by admissions staff. We also consider alternative qualifications, for example in different subject areas, where these are supported by relevant experience within the field of the MSc programme. Students for whom English is not their first language are required to achieve a minimum IELTS score of 6.5 with at least 6 in all four categories.

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[1] Diploma and certificate are exit awards only
[2] Part time study is not available for the 'with industry' optional route.

6.   Accreditation of Prior Learning:

No accredited prior learning would be accepted for exemption from modules on the programme.

7.   Programme aims:

The programme aims to provide students with a broad-based education in geographical information science and systems suitable for careers ranging from the commercial GIS industry, or to further academic research. Specifically, the objectives of this course are:

- To develop comprehensive understanding in both the geographical and computational aspects of geographical information science.
- To develop systematic understanding regarding the concepts and algorithms associated with the collection, manipulation and representation of spatial data.
- To develop practical analytical skills in geographic information science.
- To ensure students are familiar with typical GIS applications and have the capacity to translate geospatial inquiry into a GIS framework.
- To ensure students can evaluate/critique both the potential and the limitations of current software, spatial data sources, and information quality.
- To develop a critical perspective on GIS.
- To expose students to the frontiers of current GIS research.To build a high level of competence in independent learning skills; original research methodology; original research implementation; oral presentations; report writing; web-based and multimedia communication.

    For the with industry variant only, these additional programme aims apply:

- Prepare students for career and training opportunities which relates to their degree – in both the private and public sectors, and voluntary organisations.
- Construct effective applications for placement opportunities
- Provide students the opportunity to recognise suitable plans for transitioning into the workplace

8.   Reference points used to inform the programme specification:

- University of Leicester Learning and Teaching Strategy 2017-2021[3]
- University of Leicester Periodic Developmental Review Report
- External Examiners' reports (annual)
- Survey of competitor programmes

9.   Programme Outcomes:

Unless otherwise stated, programme outcomes apply to all awards specified in 1. Programme title(s).

NOTE: In the table below, some portion of teaching and learning methods mode of delivery will be online/distance based.

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[3] https://www2.le.ac.uk/offices/sas2/quality/learnteach#discovery-led-and-discovery-enabling-learning-strategy

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
(a) Discipline specific knowledge and competencies		
Knowledge		
Systematic understanding of GIScience and GIS; the spatial database and principles of spatial data analysis and spatial data display. Understand how GIS operates in an industrial setting ('with industry' programme only)	Lectures, targeted reading, practical classes, self-directed project work, self-directed research work. Work placement	Essays, project reports, practical exercises, oral presentations, dissertation Work placement report
Concepts		
Understand and explain Geographical Information Systems and Geospatial Data Analytics including practical approaches within GIS to enable advanced scholarship.	Lectures, targeted reading, practical classes, self-directed project work, self-directed research work.	Essays, project reports, practical exercises, oral presentations, dissertation
Techniques		
Demonstrate a comprehensive understanding and practical application of GIScience and GIS techniques; development and execution of spatial data management strategies; GIS-based analysis of spatial data including skills such as programming Work as a GIS specialist in and industrial setting ('with industry' programme only)	Lectures, targeted reading, practical classes, self-directed project work, self-directed research. Work placement	Practical exercises, project reports, essays, oral presentations, dissertation Work placement report
Critical analysis		
Critical appraisal of published material. Ability to apply understanding of concepts with independence, rigour and self-reflexivity	Lectures, targeted reading, practical classes, self-directed project work, self-directed research work, work placement (where 'with industry' programme)	Essays, project reports, oral presentations , dissertation, work placement report (where 'with industry' programme)
Presentation		
Presentation of: project results to professional standard; thematic data analyses and maps to a professional standard. Ability to organise and structure research material; ability to deliver written and oral seminar reports and summaries	Self-directed project work, self-directed research work, work placement (where 'with industry' programme)	Essays, project reports, oral presentations, dissertation, work placement report (where 'with industry' programme)

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Appraisal of evidence		
Ability to analyse and evaluate a variety of complex geographical issues. Ability to assess the relevance and quality of a substantial range of primary and secondary literatures and materials. Ability to mount and sustain an independent level of inquiry at an advanced level. Ability to identify, assemble, analyse and manage complex datasets; ability to analyse and assess a body of thematic data using appropriate techniques and data models	Targeted reading, practical classes, self-directed project work, self-directed research work	Essays, project reports, oral presentations dissertation, work placement report (where 'with industry')
(b) Transferable skills		
Research skills		
Ability to: independently analyse complex ideas and construct sophisticated critical arguments; plan and manage projects using spatial data; locate, organise and analyse evidence; report on findings; demonstrate GIS and data analytical skills.	Essays, practicals, project work	Project reports, practical exercises, oral presentations , dissertation
Communication skills		
Ability to: communicate clearly and effectively to a high level; write clearly and concisely; make effective use of graphical summaries	Essays, practicals, project work	Project reports, practical exercises, oral presentations, exams, dissertation
Data presentation		
Ability to: present results clearly and effectively to a high level; use appropriate IT resources; to undertake basic statistical summaries and analysis; employ appropriate and effective graphical representations incl. maps and summaries	Essays, practicals, project work	Project reports, practical exercises, oral presentations, dissertation

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Information technology		
The whole course is centered around information technology		
Confident and informed use of personal computer hardware and associated software including programming	Computer-based practical classes; project/dissertation work using computers/computer software	Project reports, practical exercises, oral presentations, dissertation
Ability to: collect and process geospatial digital data from a variety of sources	Computer-based practical classes; project/dissertation work using computers/computer software	Project reports, practical exercises, oral presentations, dissertation
Problem solving		
Solving spatial problems	Practical classes, project work	Project reports, practical exercises, oral presentations, dissertation
Working relationships		
Project management; organisational skills; time management; ability to contribute and comment on ideas; working in groups	Practical exercises, dissertation proposal meeting	Meeting coursework deadlines
Managing learning		
Identifying a credible research project; establishing an effective research timetable; managing information; reflecting on and writing up results. Developing specialised analytical skills. Revision for exams	Dissertation module, exams	Exams, dissertation
Career management		
The ability to see how skills learnt in a university can be used in 'real world' settings; appreciation of the knowledge and skills required by the GIS specialist in an industrial setting	Talks by visiting speakers, work placement (where 'with industry' programme)	Discussions with personal tutors and concerning career progression and the applications of GIS, work placement report (where 'with industry' programme)

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Placement Preparation 1 and 2		
1. Select appropriate resources for researching/securing placement opportunities 2. Explain the process for applying for and securing a relevant placement 3. Construct effective applications for placement opportunities 4. Recognise suitable plans for transitioning into a placement	Students are provided with dedicated and timetabled sessions to prepare to search and secure an industrial placement. Problem solving classes, Masterclasses, Career development programmes, Independent research.	Formative module feedback through session tasks and exercises
On Placement		
1. Apply the theoretical and practical aspects of the material studied at the University and demonstrate the personal and professional skills necessary for your role within the organisation. 2. Compose a Professional Development Plan considering your strengths, development areas and motivations for your next step 3. Modify your CV to include the skills and experience you have gained through your significant experience gained in the past 12 months.	Students undertake a minimum of 3 months experience in the workplace. Project supervision, independent research	Completion of Monthly Reflective Journals to record skills development, major achievements, key areas of work, learning points and challenges overcome. Assessed by a Placement Portfolio, comprising of a Reflective Summary, Professional Development Plan, and Updated CV (excluded from word count) to formally assess on a pass or fail basis. Formative feedback during a Placement Visit (in person or via Skype) from Placement Provider and Placement Tutor regarding reflection on skills development, areas of strength and weakness and contribution to the workplace.

10. Special features

After completing the eight taught modules and exams in the first year of the course, students on the industry variant will carry out between 3 and 12 months employment in an industrial placement. Students will be encouraged to undertake the maximum period of employment possible, to gain the full benefit of experience in industry.

On the return from an industrial placement, the Placement Student will carry out an in-house project in the School or Department, as per the normal non-Industry MSc. The project will be supervised and assessed within the Department. The project title will be decided, in conjunction with the Placement Student, while they are on placement.

During the industrial placement, appropriate support will be provided by the School or Department as defined in the Code of Practice.

Placement Students will be expected to complete a Monthly Reflective Journal to record their training. This will support the Placement Student to complete the Placement Portfolio which is assessed on a pass/fail basis, and will have no credit weighting in the MSc

Placement Students who do not pass the assessment or meet the minimum duration of an industrial placement will receive the standard MSc degree.

11. Indicators of programme quality

This course has to date been accredited by the Royal Institution of Chartered Surveyors (RICS), who we are in liaison with in respect of programme revision.

It is the student's responsibility to secure an industrial placement. Students are invited to attended Placement Preparation modules, additional support workshops and 1-2-1 appointments with the Career Development Service. Employer led activities provide a platform for students to engage with organisations who are recruiting students for year in industry roles.

The 'with Industry' MSc relies on the Placement Provider to provide work suitable for an MSc student. To ensure the role is relevant, the School or Department assesses the industrial placement through the University's Placement Approval Process. The Placement Provider will be asked to provider:

- An indication of the area of the organisation where the Placement Student will work.
- An indication of the area of expertise that the Placement Student should have or will gain.
- Whether the work is suitable only for a UK national, for and EU national or for an overseas student.
- The resources available to the Placement Student. For example, design software, textbooks, laboratory equipment, product specimens, access to facilities in the organisation.
- Identification of a suitable industrial mentor (i.e. a graduate with knowledge of the area and at least a couple of years of experience in the field).

When a Placement Student starts an industrial placement, they will be required to complete health and safety documents and confirm they have completed a formal induction process no later than the 2nd week of placement. A Placement Student on an industrial placement will also gain from being able to:

1. Apply the theoretical and practical aspects of the material studied at the University and demonstrate the personal and professional skills necessary for your role within the organisation.
2. Compose a Professional Development Plan considering your strengths, development areas and motivations for your next step
3. Modify your CV to include the skills and experience you have gained through your significant experience gained in the past 12 months

Placement Students will be provided with a Study Guide for their industrial placement and support them to complete the assessment. The School or Department will undertake a placement start check, regular communications, visits to the workplace (physical and/or virtual) and evaluation. Communication and contact between the Placement Student, Placement Provider and University provides support should issues arise.

12. Scheme of Assessment:

As defined in [Senate Regulation 6:](#) Regulations governing taught postgraduate programmes of study.

13. Progression points

As defined in [Senate Regulation 6:](#) Regulations governing taught postgraduate programmes of study with the additional requirement that students must pass the dissertation proposal. A candidate who does not pass the dissertation proposal (PASS = 50%) at the second attempt will not be able to progress to the dissertation component of the Degree and therefore can only, at best, graduate with a PG Diploma.

For the 'with industry' option students are subject to the following progression rules (in addition to any rules applicable to their core programme):

1. If a student does not achieve an overall merit level or fail (<50) more than 15 credits at the end of their first taught semester or fail (<40) 15 or more credits at the end of their first semester they will revert to the degree without industry.

2. If a student fails more than 60 credits at the end of their second semester they will not be able to proceed with the programme, in accordance with Senate Regulation 6.28, and will have to cancel any arrangements made for placements.

3. Failure to satisfactorily perform (attendance, participation and completion of set tasks) in the employability modules will lead to the student being transferred to the degree without industry.

In the course of their placement the student will receive one or two support visits from a member of staff. The second 'visit' can be in the form of a Skype call. Typically where an overseas placement is secured both visits will be conducted via a Skype call.

A Placement Student will revert back to the degree without Year in Industry if:

1. They fail to secure an industrial placement role.
2. They fail to pass the assessment related to the industrial placement.
3. The industrial placement ends early due to the behaviour of the Placement Student not being in accordance with the University's Regulations for Students, Student Responsibilities. The Placement Student will need to return to the University and carry out an in-house project in the School or Department, as per the normal non-Industry MSc. To prevent such an incident from happening, processes are in place to identify any possible issues or concerns early in the industrial placement role. This includes a start check, regular communications, visits to the workplace (physical and/or virtual) and evaluation. Communication and contact between the Placement Student, Placement Provider and University provides support should issues arise.
4. They discontinue their industrial placement and carry out an in-house project in the School or Department, as per the normal non-Industry MSc.

In the event that a Placement Student is moved to the standard campus-based MSc, the Placement Provider will be notified immediately. For overseas students, the UKBA will also be informed immediately. Placement Provider's will be made that any contract of employment shall be made subject to satisfactory completion of the taught part of the MSc.

Three months is the minimum time required for an industrial placement to be formally recognised. If the industrial placement is terminated earlier than 3 months as a result of event

outside of the Placement Students control (for example redundancy, or company liquidation), the following process will be adopted:

1. If the Placement Student has completed less than 2 months, they will be supported to search for another placement to take them up to the required minimum of 3 months for the industrial placement to be formally recognised. If the Placement Student does not find a placement to meet this criteria they will be required to suspend and transferred onto the degree without industry.

2. If the Placement Student has completed 2 months, they will be supported to search for another placement to take them up to the 3 months required for the industrial placement to be formally recognised. If the Placement Student cannot source an additional placement to take them to 3 months, assessments related to the industrial placement will be set for the student to make it possible for the individual learning objectives for the industrial placement to be met. This will allow with industry to be recognised in the degree certificate.

3. The duration of time between the two Placement Providers to meet the minimum 3 months of an industrial placement must not exceed the period of time required to comply with visa requirements.

4. A Placement Student is permitted to undertake an industrial placement which runs across two academic years.

14. Rules relating to re-sits or re-submissions:

As defined in Senate Regulation 6: Regulations governing taught postgraduate programmes of study students can resit up to 50% of the credits. The mark obtained for resubmitted work or a re-sit is capped at 50%.

15. **Additional features** (e.g. timetable for admissions)

Admissions are in October only.

For the 'with industry' option, students will be required to undertake reflective activities whilst on placement which are marked on a pass/fail basis.

Appendix 1: Programme structure (programme regulations)

MSc in Geographical Information Science

SEMESTER 1

Core Modules		Credits
GY7701	FUNDAMENTALS OF GIS	15
GY7702	R FOR DATA SCIENCE	15
GY7704	GEOGRAPHICAL VISUALISATION	15
GY7705	REMOTE SENSING	15
	Semester Total	**60**

SEMESTER 2

Core Modules		Credits
GY7707	GEOSPATIAL DATA ANALYTICS	15
GY7708	GEOSPATIAL DATABASES AND INFORMATION RETRIEVAL	15
GY7709	SATELLITE DATA ANALYSIS IN PYTHON	15
GY7710	GIS IN ENVIRONMENTAL HEALTH	15
	Semester Total	**60**

SUMMER

Core Modules		Credits
GY7720	MSc DISSERTATION	60

| | **Total Credits** | **180** |

MSc in Geographical Information Science with Industry

Programme structure is the same as for the non-industry degree (above), with the addition of

YEAR 1

SEMESTER 1

Core Modules		Credits
ADGY7221	PLACEMENT PREPARATION 1	0

SEMESTER 2

Core Modules		Credits
ADGY7222	PLACEMENT PREPARATION 2	0

ON PLACEMENT

Core Modules		Credits
ADGY7223	ON PLACEMENT	0

Appendix 2: Module specifications

See module specification database http://www.le.ac.uk/sas/courses/documentation