



HERODOT
Network for Geography
in higher education

GEOGRAPHIC INFORMATION SYSTEMS IN HIGHER EDUCATION GEOGRAPHY: A BENCHMARK STATEMENT

GIS and Geography in Higher Education

Geography affords students a competent level of spatial literacy and thinking that can assist them with the processing, analysis and application of Geographic Information. Given the wider social and environmental importance of digital worlds and the rise of GPS technologies embedded within familiar technologies, all geography students should be familiar with GI tools for spatial data management, analysis, visualisation and communication.

GIS, as a 21st Century tool, provides the means to answer questions geographically, develop new geographic hypotheses, investigate real-world problems and provide support for spatial decision-making.

A GIS component in an undergraduate programme prepares graduates who are:

- responsible, spatially aware 'digital world' citizens,
- able to use a set of tools to augment their geographic capabilities,
- more employable and with diverse job prospects, and
- able to pursue further specialised studies.

The objectives of a GIS component in a Geography post-graduate programme are to:

- specialise in applying GIS in a particular subject matter,
- increase GIS skills, and
- participate at a higher professional level in the workplace.

The objectives of a post-graduate programme with a GIS specialisation are to:

- specialise in GI Science,
- develop advanced GIS skills, and
- participate at a higher professional level in the workplace.

LEVEL DESCRIPTOR

Undergraduate level

This level of qualification should prepare students in the fundamentals of spatial understanding, spatial analysis and application. The essential knowledge and competences acquired should allow students to further their studies at post-graduate (specialised) levels. Students should display an ability to use a



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standard GIS and apply it within a multi-disciplinary team. Finally, students at this level should be able to present basic spatial information to other researchers, decision-makers, clients and the general public.

Graduate level (Masters in Geography)

This level of qualification should provide graduates with in-depth subject specialisation and the ability to identify effective application of GIS. Graduates should be able to critically and independently apply GIS in the context of their area of specialisation. Moreover graduates should communicate and cooperate with other specialists.

Graduates at this level can use GIS and work independently as well as part of a multi-disciplinary team. In their areas of specialisation, graduates should be able to apply GIS and present complex spatial information to other researchers, decision-makers, clients and the general public.

Graduate level (Masters in Geography with a specialisation in GIS/ Masters in GIS offered by a Geography Department)

This level of qualification provides graduates with in-depth specialisation in GISystems or GIScience, in which graduates will learn about GI structures and models. At this level, graduates possess GISystems expertise necessary to work in a multi-disciplinary environment. With such a qualification, the graduates are able to deal with real-world problems and use GI technologies as appropriate within applied contexts. In the case of a Masters in GIS, students will build on an initial grounding in GISystems and develop a solid foundation in GIScience; students should, in later parts of their course contribute to the advancement of aspects of GI Science.

A graduate at this level should be able to lead and manage GISystems projects with decision-makers, clients and the general public and /or conduct collaborative GIScience research.

LEARNING OUTCOMES

Undergraduate students should be able to recognise the societal relevance of GIS and weigh up its potential in the context of specific applications. Students completing undergraduate geography study programmes with a GISystems component should be able to use GISystems:

- to acquire, organise and represent spatial data at a basic level;
- to understand the nature of geographic relationships, including changes, patterns and processes; and



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- to apply geographic knowledge and understanding to deal with real world problems at a basic level.

Graduates completing postgraduate geography study programmes with a GISystems component should be able to use GISystems:

- in their area of specialisation, where relevant;
- as a tool to acquire an in-depth knowledge and understanding of their area of specialisation;
- to participate in multi-disciplinary teams; and
- communicate effectively geographic information.

Graduates completing postgraduate geography study programmes specialising in GIScience, should be familiar with the following concepts at an advanced level:

- knowledge of the concepts of GI Science;
- problem-oriented knowledge and skills in GI Science;
- the handling, management and manipulation of geographic information;
- the performance of complex spatial analysis and modelling;
- the visualisation and communication of spatial information; and
- management and coordination of GIScience & GISystems projects.

In addition, students will be expected to acquire specialist advanced knowledge in two or three of these subject areas (subject to the specialism of their particular curriculum) and undertake research on an advanced GIScience theme.

Acronyms

Geoinformation - geographic information, created by manipulating geographic (or spatial) data

GIS - Geographical Information Systems

GIScience - Geographical Information Science (the science behind geoinformation)

GISystems - Geographical Information Systems (the systems behind geoinformation)

GPS - Global Position System

This benchmark statement has been produced as a result of the HERODOT thematic network for Geography in higher education meeting in Madrid, Spain May 2008 and then revised at the AGIT Conference in July 2008.