

## **2.3.1.8 Geographical Information Systems**

### **What is GIS?**

GIS—or Geographical Information System—is a multidisciplinary technology for the collection, storage, manipulation, analysis and display of all types of spatial information about locations and relations of different phenomena on the earth’s surface. The GIS analytical process is like the work of a detective trying to put all the pieces of evidence together to solve a mystery. GIS provides a means of integrating information in ways that help us understand and solve pressing research, planning, and management problems, such as tropical deforestation, rapid urbanisation, transportation planning, disease dispersal, hazard mitigation, and the impact of climate change. Using GIS to take the pulse of the Earth helps scientists plan, map, and model changes and trends to make better decisions for the future.

Students who choose to minor in GIS will gain experience using GIS software, as well as familiarity with various modern geospatial techniques, including GPS (Global Positioning Systems) and remote sensing. Completion of the minor will provide the student with skills and experience that are in great demand in today’s workplace, from government, private industry, to not-for-profit sectors. For example, the WHO has used GIS for emergency preparedness for flooding in SE Asia. In Singapore, the Urban Development Authority has used GIS in town planning and the National Environment Agency has used GIS to analyse patterns of dengue fever cases.

This Minor is open to all students.

### **Programme Requirements**

Pass at least 24 MCs of modules, which include the following:

1. GE2215 - Introduction to GIS
2. GE2227 - Cartography and Visualisation
3. GE3238 - GIS Design and Practices
4. a minimum of 4 MCs from Quantitative modules
5. a minimum of 8 MCs from Elective modules

Note 1:

A maximum of 8 MCs from the minor can be used to satisfy the requirements of a major or another minor.

### **QUANTITATIVE MODULES**

- DSC3222E/UIS3941R - Research Methods
- GE2225/GE2101 - Methods and Practices in Geography

- SC2101 - Methods of Social Research
- ST1131/ST1131A - Introduction to Statistics
- ST1232 - Statistics for Life Sciences
- ST2334 - Probability and Statistics

## **ELECTIVE MODULES**

### Cluster 1 System Development

- CS1010/CS1010E/1010FC/CS1010J/CS1010S/CS1010X/CS1101S - Programming Methodology
- CS1020/CS1020E - Data Structures and Algorithms I
- CS2040 or CS2040C - Data Structures and Algorithms
- CS2030 - Programming Methodology II
- CS2102 - Database Systems
- CS3223 - Database Systems Implementation
- CSD2301 - Scientific Simulations and Modelling with Java
- IT1002 - Introduction to Programming
- IT2002 - Database Technology and Management

### Cluster 2 Applications

- CE2409 - Computer Applications in Civil Engineering
- GE3216 - Application of GIS and Remote Sensing
- GEK2503 - Remote Sensing of Earth Observation
- RE2301 - GIS for Real Estate
- GEK2050 - Digital Humanities in Arts Research (cohorts 2014 and before)
- GET1030 - Digital Humanities in Arts Research (cohorts 2015 onwards)
- NM3213 - Digital Humanities

For Geography major students also taking the Minor in GIS, up to 8 MCs of the essential modules may be counted towards both the Geography major and the GIS minor. The third essential module will have to be taken in excess of graduation requirements. For all other students, please check with your Faculty with regard to double counting of modules.

**For the latest updates, please visit the Minor in Geographical Information Systems website at: <http://www.fas.nus.edu.sg/geog/programmes/GISminor.html>**