Interdisciplinary (IS) Modules

**ID5011 Geographic Information Systems for Environmental Management**

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<tr>
<th>SCOTCAT Credits:</th>
<th>15</th>
<th>SCQF Level: 11</th>
<th>Semester:</th>
<th>1</th>
</tr>
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<tr>
<td>Academic year:</td>
<td>2019/0</td>
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<td></td>
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<tr>
<td>Planned timetable:</td>
<td>To be arranged (Weeks 1 - 5)</td>
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This module provides an introduction to Geographic Information systems and their use in environmental problem solving. The module will be taught through a series of lectures, tutorials, laboratory classes and individual projects. The module will be assessed through class exercises and the final, short individual project. Students will be introduced to methods of acquiring, storing, analysing and displaying (2D and 3D) spatial digital data using the ArcGIS data package. An introduction to data manipulation and statistical techniques on a variety of environmental examples will be given. The module is taught within the School of Geography and Geosciences but incorporates datasets and analysis techniques used in earth and environmental science, biology, archaeology, and mathematics.

**Pre-requisite(s):** Requires a basic ability in computer skills (basic word processing, spread sheet analysis) gained through saltire if not demonstrated

**Anti-requisite(s):** You cannot take this module if you take GE5005 or take ID5010 or take ID5012

**Learning and teaching methods of delivery:**

Weekly contact: 6 lectures and 14 practicals and support sessions (Weeks 1 - 6).

**Assessment pattern:**

Coursework = 100% (portfolio 70%, Individual Project 30%)

**Re-assessment pattern:**

Resubmission of failed item(s) of Coursework

**Module coordinator:** Dr C R Bates

**ID5059 Knowledge Discovery and Datamining**

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<th>SCOTCAT Credits:</th>
<th>15</th>
<th>SCQF Level: 11</th>
<th>Semester:</th>
<th>2</th>
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<td>Academic year:</td>
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<tr>
<td>Planned timetable:</td>
<td>11.00 am Mon (odd weeks), Wed and Fri</td>
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Contemporary data collection can be automated and on a massive scale e.g. credit card transaction databases. Large databases potentially carry a wealth of important information that could inform business strategy, identify criminal activities, characterise network faults etc. These large scale problems may preclude the standard carefully constructed statistical models, necessitating highly automated approaches. This module covers many of the methods found under the banner of Datamining, building from a theoretical perspective but ultimately teaching practical application. Topics covered include: historical/philosophical perspectives, model selection algorithms and optimality measures, tree methods, bagging and boosting, neural nets, and classification in general. Practical applications build sought-after skills in programming (typically R, SAS or python).

**Antirequisite(s):** Null

**Learning and teaching methods of delivery:**

Weekly contact: Lectures, seminars, tutorials and practical classes.

**Assessment pattern:**

2-hour Written Examination = 60%, Coursework = 40%

**Re-assessment pattern:**

2-hour Written Examination = 60%, Existing Coursework = 40%

**Module coordinator:** Dr Carl Donovan

**Module teaching staff:** Team taught