**Module Descriptor**

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| **Title** | Applied GIS and 3D Modelling | | |
| **Session** | 2025/26 | **Status** | Published |
| **Code** | ENGG09058 | **SCQF Level** | 9 |
| **Credit Points** | 20 | **ECTS (European Credit Transfer Scheme)** | 10 |
| **School** | **Computing, Engineering and Physical Sciences** | | |
| **Module Co-ordinator** | TBC | | |

**Summary of Module**

This module aims to develop advanced GIS skills and introduce 3D modelling techniques to support spatial analysis, and town and country planning. The key outcomes of this moule is the ability to apply advanced GIS techniques, create and analyse 3D urban models, and evaluate how these tools support planning decisions. Students will engage with spatial data collection, scenario-based planning and ethical consideration of GIS use. Teaching methods include lectures, practical lab sessions and individual/group projects.

The Graduate Attributes relevant to this module are:

Academic: Digitally literate, Problem-solver, Analytical, Knowledgeable

Personal: Creative, Motivated, Resilient, Effective communicator

Professional: Collaborative, Research-minded, Enterprising, Socially responsible

| **Module Delivery Method** | **On-Campus**[1] ☒ | **Hybrid**[2] ☐ | **Online**[3] ☐ | **Work -Based Learning**[4] ☐ |
|---|---|---|---|---|
| **Campuses for Module Delivery** | ☐ Ayr<br>☐ Dumfries | ☐ Lanarkshire<br>☐ London<br>☒ Paisley | ☐ Online / Distance Learning<br>☐ Other (specify) | |

[1] Where contact hours are synchronous/ live and take place fully on campus. Campus-based learning is focused on providing an interactive learning experience supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus contact hours will be clearly articulated to students.

[2] The module includes a combination of synchronous/ live on-campus and online learning events. These will be supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus and online contact hours will be clearly articulated to students.

[3] Where all learning is solely delivered by web-based or internet-based technologies and the participants can engage in all learning activities through these means. All required contact hours will be clearly articulated to students.

[4] Learning activities where the main location for the learning experience is in the workplace. All required contact hours, whether online or on campus, will be clearly articulated to students

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| **Terms for Module Delivery** | Term 1 | ☒ | Term 2 | ☐ | Term 3 | ☐ |
| **Long-thin Delivery over more than one Term** | Term 1 – Term 2 | ☐ | Term 2 – Term 3 | ☐ | Term 3 – Term 1 | ☐ |

| **Learning Outcomes** | |
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| **L1** | Able to apply advanced GIS techniques for spatial analysis relevant to urban planning, such as land use mapping, transport modelling, and Environmental Impact Assessment. |
| **L2** | Able to utilise 3D modelling software to create visualisations of urban spaces, analyse building typologies, and to simulate future development scenarios. |
| **L3** | Interpret and integrate multiple layers of spatial data to inform planning decisions. |
| **L4** | Critically assess the limitations and advantages of using GIS and 3D models in the context of urban development and planning practice |
| **L5** | Present spatial analysis and 3D modelling outputs effectively to both professional and non-technical audiences. |

| **Employability Skills and Personal Development Planning (PDP) Skills** | |
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| **SCQF Headings** | **During completion of this module, there will be an opportunity to achieve core skills in:** |
| **Knowledge and Understanding (K and U)** | **SCQF 9**<br>Knowledge and understanding of spatial data and relevant analyses for understanding urban systems and their management.<br>A critical knowledge about the role of digital technology in planning. |
| **Practice: Applied Knowledge and Understanding** | **SCQF 9**<br>Practical skills in spatial data analysis.<br>Practical skills of create and interprete 3D models of urban spaces.<br>Application of ICT and their management. |
| **Generic Cognitive skills** | **SCQF 9**<br>Supports the development of critical thinking.<br>Support to develop independent research skills. |
| **Communication, ICT and Numeracy Skills** | **SCQF 9**<br>Developing confidence in complex modelling software.<br>Oral and written communication skills related to spatial data |
| **Autonomy, Accountability and Working with Others** | **SCQF 9**<br>Working with group<br>Developing ethical awareness related to spatial data. |

| **Prerequisites** | **Module Code** | **Module Title** |
|---|---|---|
| | **Other** | |

| Co-requisites | Module Code | Module Title |
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| Learning and Teaching | |
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| In line with current learning and teaching principles, a 20-credit module includes 200 learning hours, normally including a minimum of 36 contact hours and maximum of 48 contact hours. | |
| **Learning Activities**<br>During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below: | **Student Learning Hours**<br>(Note: Learning hours include both contact hours and hours spent on other learning activities) |
| Lecture / Core Content Delivery | 09 |
| Laboratory / Practical Demonstration / Workshop | 27 |
| Tutorial / Synchronous Support Activity | 12 |
| Independent Study | 152 |
| n/a | |
| n/a | |
| **TOTAL** | 200 |

| Indicative Resources |
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| **The following materials form essential underpinning for the module content and ultimately for the learning outcomes:**<br>Ferrari, E. and Rae, A., 2019. GIS for planning and the built environment: an introduction to spatial analysis (Vol. 23). Bloomsbury Publishing.<br>Van Maarseveen, M., Martinez, J. and Flacke, J., 2019. GIS in sustainable urban planning and management: a global perspective (p. 364). Taylor & Francis. |
| **(N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)** |

| Attendance and Engagement Requirements |
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| **In line with the Student Attendance and Engagement Procedure, Students are academically engaged if they are regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities, course-related learning resources, and complete assessments and submit these on time.**<br>**For the purposes of this module, academic engagement equates to the following:**<br>The School of Computing, Engineering and Physical Sciences considers attendance and engagement to mean a commitment to attending, and engaging in, timetabled sessions. You will scan your attendance via the scanners each time you are on-campus and you will login to the VLE several times per week. Where you are unable to attend a timetabled learning session due to illness or other circumstance, you should notify the Programme Leader that you cannot attend. Across the School an 80% attendance threshold is set. If you fall below |

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| this, you will be referred to the Student Success Team to see how we can best support your studies. |

| **Equality and Diversity** |
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| **The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: UWS Equality, Diversity and Human Rights Code.**<br><br>Aligned with the University's commitment to equality and diversity, this module supports equality of opportunity for students from all backgrounds and learning needs. Using the VLE, material will be presented electronically in formats that allow flexible access and manipulation of content. This module complies with University regulations and guidance on inclusive learning and teaching practice. This module has lab-based teaching and as such you are advised to speak to the Module Co-ordinator to ensure that specialist assistive equipment, support provision and adjustment to assessment practice can be put in place, in accordance with the University's policies and regulations. |
| **(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)** |

**Supplemental Information**

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| **Divisional Programme Board** | **Engineering Physical Sciences** |
| **Overall Assessment Results** | ☐ **Pass / Fail** ☒ **Graded** |
| **Module Eligible for Compensation** | ☒ **Yes** ☐ **No**<br>**If this module is eligible for compensation, there may be cases where compensation is not permitted due to programme accreditation requirements. Please check the associated programme specification for details.** |
| **School Assessment Board** | Engineering |
| **Moderator** | TBC |
| **External Examiner** | TBC |
| **Accreditation Details** | None |
| **Module Appears in CPD catalogue** | ☐ **Yes** ☒ **No** |
| **Changes / Version Number** | |

| **Assessment (also refer to Assessment Outcomes Grids below)** |
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| **Assessment 1** |
| A practical report based on spatial analysis (70%). |
| **Assessment 2** |
| A quiz (30%). |
| **Assessment 3** |
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| (N.B. (i) Assessment Outcomes Grids for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed.<br><br>(ii) An indicative schedule listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Module Handbook.) |

| Component 1 | | | | | | | |
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| **Assessment Type** | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** | **Weighting of Assessment Element (%)** | **Timetabled Contact Hours** |
| Practical report | ☒ | ☒ | ☒ | ☐ | ☒ | 70 | |

| Component 2 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Assessment Type** | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** | **Weighting of Assessment Element (%)** | **Timetabled Contact Hours** |
| Quiz | ☐ | ☐ | ☒ | ☒ | ☐ | 30 | |

| Component 3 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Assessment Type** | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** | **Weighting of Assessment Element (%)** | **Timetabled Contact Hours** |
| | ☐ | ☐ | ☐ | ☐ | ☐ | | |
| **Combined total for all components** | | | | | | 100% | hours |

**Change Control**

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