

### Summary Information

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|----------------------------|---------------------------------------|
| <b>Module Code</b>         | 6306NATSCI                            |
| <b>Formal Module Title</b> | Environmental Modelling and GIS       |
| <b>Owning School</b>       | Biological and Environmental Sciences |
| <b>Career</b>              | Undergraduate                         |
| <b>Credits</b>             | 20                                    |
| <b>Academic level</b>      | FHEQ Level 6                          |
| <b>Grading Schema</b>      | 40                                    |

### Module Contacts

#### Module Leader

| Contact Name  | Applies to all offerings | Offerings |
|---------------|--------------------------|-----------|
| Jonathan Dick | Yes                      | N/A       |

#### Module Team Member

| Contact Name  | Applies to all offerings | Offerings |
|---------------|--------------------------|-----------|
| Laura Edwards | Yes                      | N/A       |
| Timothy Lane  | Yes                      | N/A       |

#### Partner Module Team

| Contact Name | Applies to all offerings | Offerings |
|--------------|--------------------------|-----------|
|--------------|--------------------------|-----------|

### Teaching Responsibility

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| <b>LJMU Schools involved in Delivery</b> |
| Biological and Environmental Sciences    |

## Learning Methods

| Learning Method Type | Hours |
|----------------------|-------|
| Lecture              | 10    |
| Practical            | 25    |
| Workshop             | 3     |

## Module Offering(s)

| Offering Code | Location | Start Month | Duration |
|---------------|----------|-------------|----------|
| SEP-CTY       | CTY      | September   | 12 Weeks |

## Aims and Outcomes

|             |  |
|-------------|--|
| <b>Aims</b> | To provide students with a critical understanding of different environmental modelling techniques To develop skills in the selection and application of appropriate models to investigate a range of environmental phenomena To explore the rich integrating role of Geographic Information Systems in environmental modelling |
|-------------|--|

## Learning Outcomes

After completing the module the student should be able to:

| Code | Description  |
|------|--|
| MLO1 | Discuss the key principles of environmental modelling  |
| MLO2 | Critically evaluate the role of modelling in addressing contemporary environmental challenges  |
| MLO3 | Demonstrate practical skills in quantitative data analysis   |
| MLO4 | Apply appropriate models to investigate environmental phenomena and critically evaluate environmental interpretations based on such models |

## Module Content

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| <b>Outline Syllabus</b>  |
| Environmental modelling concepts. Data management and manipulation. Quantitative data analysis and numerical modelling. Geographic Information Systems in environmental modelling. Natural resource monitoring and management. |

## Module Overview

The aim of this module is to provide you with a critical understanding of different environmental modelling techniques and to develop skills in the selection and application of appropriate models to investigate a range of environmental phenomena.

## Additional Information

Climate change and population growth increase pressure on natural resources and the risk posed by natural hazards. Consequently, there is a need to understand the workings of important environmental systems, so that we are informed about the possible challenges that lay ahead and thus in the best position to plan accordingly. "Environmental modelling" refers to a broad suite of tools that permits us to do this; through modelling we can explore the workings of the environment around us, informing our understanding and permitting prediction of future behaviour. In this module, modelling principles are introduced from scratch and practical modelling experience is acquired. Geographic Information Systems (GIS) provide a rich framework for environmental modelling, and this is exploited in the delivery of the module. Through practical (mainly computer-based) exercises containing formatively-assessed components, students will have ample opportunity to receive feedback on their acquisition of key modules skills, fostering a progressive learning environment which builds towards the summatively-assessed course components.

## Assessments

| Assignment Category | Assessment Name     | Weight | Exam/Test Length (hours) | Learning Outcome Mapping |
|---------------------|---------------------|--------|--------------------------|--------------------------|
| Portfolio           | Modelling portfolio | 70     | 0                        | MLO4, MLO3               |
| Centralised Exam    | Exam                | 30     | 1.5                      | MLO2, MLO1               |