

# **Msc in Biodiversity and Land Use Planning**

## **Module Overview:**

### EcosystemScience: (Semester 1)

This module explores how the ecosystem can be assessed from a number of different perspectives including; i.e. geology, hydrology, soils, biodiversity, etc. Emphasis will be placed on understanding the connections between these parameters with a view to producing an overall integrated ecosystem assessment procedure. Ecosystem services are considered in detail.

### IntroductiontoFloraandFaunaofIreland: (Semester 1)

This module is an introduction to the skills required to identify Irish plant and animal communities with special reference to legally protected species. The biogeography, life-cycles, distribution and ecology of a number of significant flora and fauna are assessed in addition to which their conservation status will be discussed in relation to ecological requirements. Emphasis will be placed on understanding the connections between their requirements and their conservation status.

### EcologicalSurveyTechniques: (Semester 1)

The objective of this course is to introduce students to a variety of fieldwork techniques used for ecological surveys. Survey methodologies include plant surveys using frame and pin quadrats, animal surveys using small mammal traps and stream / river surveys with reference to macroinvertebrate sampling and associated physical parameters. Data from field exercises are analysed and discussed in class with the objective of encouraging students to critically appraise data with reference to methodological limitations and to think in a logical and scientific fashion.

### BiodiversityLegislationandPolicy: (Semester 2)

This module explores how conservation legislation and biodiversity policy can be linked into day to day planning work at a strategic and local level. Emphasis will be placed on understanding the connections between national biodiversity actions, species action plans and local biodiversity action plans.

### HabitatIdentificationandAssessment: (Semester 2)

This module explores what a habitat is and the factors that influence habitat assessments. Specific reference will be made to habitat requirements, attributes & properties, monitoring issues (such as establishing a baseline, recruitment & mortality) and conservation evaluation criteria etc. Emphasis will be placed on understanding the connections between these requirements with a view to producing an overall habitat assessment procedure. Fossitt's Guide to Habitats in Ireland will be used to identify and assess habitats.

### Habitat Management, Creation and Restoration: (Semester 2)

This module outlines what habitat management is and why it is necessary. Philosophical approaches to habitat management, creation and restoration are explored. Principles of habitat management are summarised in relation to the objectives of any management technique, with special reference to management for a number of different taxa including; i.e. plants, fungi, lichens, invertebrates and vertebrates, etc. Emphasis will be placed on understanding the general principles of habitat management, creation and restoration for a variety of habitats.

### Environmental Impact Assessment: (Semester 1)

The objective of this course is to introduce students to EIA with regard to EU and Irish legislation; principles of environmental assessment theory; ecological and landscape survey methods. This multidisciplinary module focuses on the theory and methods of environmental assessment and the decision-making contexts in which they are employed. It explains the procedural stages of, and selected methodologies for, environmental assessment and provides practical experience in applying them. A critical review of the quality of EISs in Ireland is undertaken in conjunction with case studies with field visits for which EIAs have been prepared. Recent trends in European Court Judgements will be discussed.

### Strategic Environmental Assessment: (Semester 1)

This module explores the legislation involved and outcomes of the Strategic Environmental Assessment (SEA) process for biodiversity. Roles and responsibilities of Local Authorities will be outlined with respect to the SEA Directive (& related Regulations) and County Development Plans, Town Plans & Local Area Plans. The stages involved in Strategic Environmental Assessments from scoping and screening to monitoring will be outlined. Special reference will be made of toolkits to enable assessments at each stage of the SEA process. Emphasis is placed on commonalities between SEA process and other environmental assessments. Case studies will highlight issues of non-compliance, best practice and current legal advice.

### Appropriate Assessment: (Semester 1)

This module explores how an appropriate assessment is undertaken. It provides a framework to enable course participants understand key terms such as "significant impacts", "alternatives", "no net loss", "imperative reasons of over-riding public importance" to judge the likely impacts taking into account "individual", "in combination" and "cumulative" effects. Emphasis will be placed on understanding the connections between Appropriate Assessment and assessments undertaken to comply with other environmental directives such as Water Framework Directive and Strategic Environmental Assessment. Case studies will highlight best practice and current legal advice.

### Climate Change and Biodiversity: (Semester 2)

This module summarises the evidence for climate change and explores projected climate change impacts on biodiversity. Key characteristics such as "uncertainty", "no regret" and

"low regret" will be introduced to enable an appraisal of the impacts of climate change mitigation and adaptation strategies on biodiversity. Climate change and nature conservation case studies will be used to illustrate the implications for policy and practice in Ireland. Emphasis will be placed on understanding how to adapt existing plans and projects in the light of climate change. The role of spatial planning to address climate change and biodiversity adaptation will be outlined. The Natura 2000 network in Ireland will be described in the context of: "coherence", "connectivity" and "resilience".

#### WaterframeworkDirectiveandBiodiversity: (Semester 2)

This module explores the linkages between the Water Framework Directive (WFD) and conserving biodiversity and outlines how different EU countries have defined targets such as "good ecological status". Case studies illustrate that increases in the resilience of biodiversity in aquatic ecosystems can be achieved by balancing sustainable water use with the long-term protection of available resources, while recognising limitations to the legislation. Emphasis will be placed on understanding the WFD and connections with Biodiversity Action Plans.

#### InvasiveSpeciesandBiodiversity: (Semester 2)

This module explores how the local biodiversity can be impacted by a range of invasive species. Emphasis will be placed on understanding how invasive species become established and will look at case studies highlighting current thinking on control or eradication measures.

#### ResearchProject:

The student carries out an individual piece of scientific work. This will be written up according to the requirements of an appropriate journal. The project will be work-based and applicable to the course.