

***Bachelor of Science in  
Geography and Geosystems***

**FOURTH-YEAR**

**Academic Year 2023/2024**

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*Office Hours: Tuesdays 14:00-15:00 and Thursdays 14:00-15:00*

All students are cordially invited to address any issues, and questions, they may have about the program or modules with your program coordinators. Make an appointment or drop into our office hours.

**Year Four of the Programme**

In Year Four of the Programme, a large portion of the student's efforts will be dedicated to an independent research project supervised by staff members in Geography. In parallel, students will further develop their GIS skills and advance their understanding in the pathways of their choices to deepen their knowledge and understanding in these areas.

**Learning Outcomes for Year Four [Core]:**

- Be able to compare and differentiate among methods for *measuring, estimating, and calculating* hydrological data sets.
- Assess past hydrological events and future (predicted) events and contextualize these into return intervals.
- Formulate a novel research question and perform field-based research to answer this question.
- Design and execute a research project.
- Apply GIS skills in an independent research project within the field of Geography.
- Demonstrate a comprehensive knowledge and application of the theoretical background that underpins research communication with different audiences.
- Demonstrate ability to apply appropriate communication methods relative to different audiences.
- Appraise the merit and value of science and research communication activities to help improve communication practices.

**PW 1: Coastal and Marine Sciences**

- Demonstrate an understanding of using the systems approach to coastal environments.
- Demonstrate an understanding of contemporary coastal processes and landforms.
- Identify complex constraints on, and opportunities for, human exploitation of coastal resources.

- Describe and characterise environments (terrestrial, freshwater, marine) suitable for algal growth, with particular detail on growth requirements and controlling factors regarding seaweeds and phytoplankton.
- Describe the basic forces that drive ocean circulation.
- Critically evaluate the different field and laboratory methods used in analysing and interpreting the short- and long-term behaviour of coastal environments.
- Communicate and interpret human impacts on coastal and marine environments and conceptualize the problems of managing coastal and marine natural systems

### PW 2: Ecosystem Sciences

- Assess critically the importance of links between plant and crop communities and their prevailing environment, including climate, soil type, and the availability of water and nutrients.
- Relate the characters of plant communities to variability in nutrient status, soil, and salinity.
- Produce and interpret soil profiles and texture triangles.
- Relate different soils to their possible agricultural uses and consider the possible environmental impacts of these.
- Identify and compare global terrestrial biomes and ecosystems, and their distributions.
- Describe and identify features of seaweeds on rocky shore ecology and zonation patterns and factors driving temporal and spatial variability.
- Identify and interpret the ecological requirements of important local Irish and global habitats.
- Explain the evolution and different types of plants.
- Appraise the economic and human relationships of various ecosystems.
- Describe how plants interact with pollinators, and how this has driven floral evolution.
- Describe the types of interactions that exist between plants and microorganisms.

### PW 3: Environmental Planning and Policy

- Demonstrate an understanding of the variety of different theoretical perspectives by which issues central to politics at sea, such as fishing and marine energy disputes, can be understood from a broad social and political science tradition.
- Distinguish major habitat types in Ireland.
- Describe current conservation management practices for the major habitats in Ireland.
- Recognise the conservation value of habitats.
- Explain the complexities inherent in making conservation management decisions.

### PW 4: Palaeosciences

- Demonstrate a comprehensive understanding of long-term environmental change as it pertains to modern environmental systems.
- Discuss causes and impacts of modern climate change in the context of palaeoclimate data.
- Critique the array of methodologies used to reconstruct past environments and climates.
- Assess long-term human-environment interactions through time.
- Apply theoretical concepts in a real-world context through hands-on field-based instruction.
- Discuss the role humans have played in shaping the landscape.
- Describe and appraise the key building blocks for a habitable planet.

## Timetables and Module Outlines for Semester 1

<b>Year 4 - Semester 1 PW1*</b>				
<b>CORE</b>	Code	Title	ECTS	Sem.
	<i>TI3129</i>	<i>Dissertation</i>	10	1
	<i>MG3113</i>	<i>Megatrends</i>	5	1
	<i>EOS305</i>	<i>Applied Field Hydrology</i>	5	1
<b>PW1</b>	<i>TI303</i>	<i>Coastal Dynamics</i>	5	1
<b>PW3</b>	<i>PI3103</i>	<i>Environmental Ethics OR</i>	5	1
	<i>EC388</i>	<i>Environmental and Natural Resource Economics</i>	5	1
<b>PW4</b>	<i>TI3128</i>	<i>Palaeoceanography</i>	5	1

**\* NOTE: If you chose PW2 in Year 2 please skip to the next timetable**

<b>Semester 1 (PW1)</b>	Monday	Tuesday	Wednesday	Thursday	Friday
09:00					EOS305 w1-6
10:00	TI3129			EOS305 w1-6	
11:00	EOS305 w1-6				
12:00					
13:00		EOS305 w1-6	TI303		EOS305 P w1-6
14:00	TI303				
15:00					
16:00	MG3114	TI3128	PI3103	PI3103	
17:00					

<b>Year 4 - Semester 1 PW2*</b>				
<b>CORE</b>	Code	Title	ECTS	Sem.
	<i>TI3129</i>	<i>Dissertation</i>	10	1
	<i>MG3113</i>	<i>Megatrends</i>	5	1
	<i>EOS305</i>	<i>Applied Field Hydrology</i>	5	1
<b>PW2</b>	<i>BPS3102</i>	<i>Plant Resources &amp; Ecosystems</i>	5	1
<b>PW3</b>	<i>PI3103</i>	<i>Environmental Ethics OR</i>	5	1
	<i>EC388</i>	<i>Environmental and Natural Resource Economics</i>	5	1
<b>PW4</b>	<i>TI3128</i>	<i>Palaeoceanography</i>	5	1

**\* NOTE: If you chose PW1 in Year 2 please consult the timetable above**

Semester 1 (PW2)	Monday	Tuesday	Wednesday	Thursday	Friday
09:00			BPS3102 W1-6		EOS305 w1-6
10:00	BPS3102 W1-6			EOS305 w1-6	
11:00	EOS305 w1-6	BPS3102 W1-6			
12:00					BPS3102 W1-6
13:00		EOS305 w1-6			EOS305 P w1-6
14:00					
15:00				BPS3102 P* W1-6	
16:00	MG3114	TI3128	PI3103	PI3103	
17:00				BPS3102 P* W1-6	

*\*make sure you sign up for a BPS3102 Practical that does not clash with MG3113 or PI3103*

### **CORE: TI3129 Final Year Dissertation (Semester 1 & 2)**

<b>Lectures</b>	<b>Mon 10:00; Venue TBD</b>
Coordinator:	Drs Terry Morley & Audrey Morley
E-mail	<a href="mailto:Terry.morley@universityofgalway.ie">Terry.morley@universityofgalway.ie</a>
Telephone:	TBC
Office Hours:	TBC

#### **Course Overview:**

This course guides students through an extended period of research and toward the writing of a major, final-year project. As such, it is an integral part of a student's university education in that it teaches organisational and research skills, as well as skills critical for any career path. This research seminar is specifically for students who would like to undertake independent research in a specific field of Geography and Geosystems

#### **Learning Outcomes:**

- Formulate an original research question and perform a comprehensive literature review and identify appropriate conceptual and theoretical frameworks.
- Gather evidence from primary sources using appropriate research methodologies.
- Identify and access relevant sources of secondary data.
- Interpret and analyze research findings and discuss them in a critical manner.
- Communicate research findings appropriately and coherently in written form, using the 10,000-word thesis structure, complete with appendices of evidence and full and proper referencing, and complete an oral presentation on the topic.

For more information on your Final Year Dissertation please consult the **Final Year Dissertation**

**Handbook** which will provide clear guidelines and information on this module.

**CORE: EOS305 Introduction to Applied Field Hydrology**

Lectures	Weeks 1-6: Venue: TBC
Coordinator:	Dr Tiernan Henry
E-mail	<a href="mailto:Tiernan.henry@universityofgalway.ie">Tiernan.henry@universityofgalway.ie</a>
Telephone:	TBC
Office Hours:	TBC

**Course Overview:**

Hydrology is the term that broadly describes the study of water on, in and above the Earth's surface. This module is designed to introduce the students to the theories and concepts underpinning the discipline and to allow them to learn how to measure, estimate and calculate river and groundwater flows in the field and in the lab.

**Learning Outcomes:**

- Have an appreciation of the nature of the relationships between water and the land.
- Be able to complete water balances at local and regional scales.
- Know where and how to source data and information to prepare and produce water balances and water audits at various scales.
- Be able to compare and differentiate between methods for measuring, estimating and calculating hydrological data sets.
- Be able to assess past hydrological events and future (predicted) events and contextualise these into return intervals.
- Be able to incorporate field data, published data and interpreted data to make reasonable inferences about water and the land.

**CORE: MG3113 Megatrends**

Lectures	Thu 13:00-14:50 Venue: TBC
Coordinator:	Dr Cathy Melia
E-mail	<a href="mailto:Cathy.Melia@universityofgalway.ie">Cathy.Melia@universityofgalway.ie</a>
Telephone:	TBC
Office Hours:	TBC

**Course Overview:**

The aim of this class is to enable students to become proficient in environmental scanning, by researching the world's most significant long-term trends in technology, climate, or demography that could open up new opportunities for business, such as the Internet of Things, artificial intelligence, autonomous vehicles, personalised medicine, wearables, climate change, international demographic and migration patterns, megacities, veganism, income inequality, fintech, and cybersecurity. In the first seven weeks, diverse student teams will research one Megatrend. During this process, students will learn to distinguish research-based evidence from hype, gauge the limits of prediction in long term trends, and assess implications for an organization of their choice. In weeks 8 and 9, teams will present audiovisual presentations on their research in conference format and be peer assessed. In weeks 10 to 12, students will develop personal reflections on how each Megatrend might affect their chosen organization and their career.

**Learning Outcomes:**

- Conduct in depth research on a chosen complex trend (Megatrend) that is potentially highly significant for the future of business and society.
- Understand the limits of prediction in Megatrends.
- Know how to identify the implications of a Megatrend for a specific organization.
- Be able to present the implications of a Megatrend to others in an accessible way.
- Understand the implications of a broad range of Megatrends for organizations and society.

### **PW1: TI303 Coastal Dynamics**

<b>Lectures</b>	<b>Thu 13:00-14:50 Venue: TBC</b>
Coordinator:	Dr Kevin Lynch
E-mail	<a href="mailto:kevin.lynch@universityofgalway.ie">kevin.lynch@universityofgalway.ie</a>
Telephone:	091 495779
Office Hours:	Geography 125, TBC

#### **Course Overview:**

The coastal zone exists at the interface of land, sea and atmosphere, making it a highly complex environment. Only through improved understanding of the processes operating in this zone can we hope to understand and manage this valuable resource in a sustainable manner. This course introduces the basic concepts of coastal science. The role of waves, wind and sea-level in shaping the coast are explored. Conversely, the shape of coastal landforms affects these processes; this interaction between process and form is considered within a morphodynamic framework. Topics include: Coastal systems, Wave processes, Sediments, Shoreface, Nearshore-Zone, Aeolian processes, Beaches, Coastal Dunes, Tidal processes, Beach dune ecology and Beach dune management.

#### **Learning Outcomes:**

- Demonstrate an understanding of using the systems approach to coastal environments.
- Demonstrate an understanding of contemporary coastal processes and landforms.
- Through fieldwork appreciate and develop skills that are used in the investigation of coastal environments.
- Be able to identify complex constraints on, and opportunities for, human exploitation of coastal resources.
- Comprehend and evaluate the patterns and processes controlling long-term coastal evolution and relative sea-level change.

### **PW3: PI3103 Environmental Ethics**

<b>Lectures</b>	<b>Wed &amp; Fri 16:00-16:50 Venue: TBC</b>
Coordinator:	Dr. Nora Ward
E-mail	<a href="mailto:nora.ward@universityofgalway.ie">nora.ward@universityofgalway.ie</a>
Telephone:	TBC
Office Hours:	TBC

#### **Course Overview:**

The course considers the ethical and social dimensions of environmental issues. The first part provides an overview of the field of environmental ethics. In particular, we explore the perception and valuation of nature in Western thought, and analyse the changing relationship between human and non-human nature. The second part considers the philosophical implications of major environmental issues and theories, such as climate change, indigenous rights, ecofeminism, environment justice

and ecoterrorism.

**Learning Outcomes:**

- Develop critical and analytical skills associated with identifying and understanding philosophical concepts in environmental ethics.
- Show a good understanding of the history of environmental ethics and the central debates in the field.
- Be able to apply ethical concepts to contemporary environmental issues.
- Be able to explain and analyse selected philosophical concepts of nature, human and property.
- Develop critical skills associated with evaluating claims, issues and arguments, and identifying mistakes in reasoning.

**PW3: EC388 Environmental and Natural Resource Economics (NOTE CLASH timetables might change)**

<b>Lectures</b>	<b>Tuesday 12:00-13:50; Venue TBC</b>
Coordinator:	Dr Thomas Van Rensburg
E-mail	<a href="mailto:thomas.vanrensburg@universityofgalway.ie">thomas.vanrensburg@universityofgalway.ie</a>
Telephone:	TBC
Office Hours:	TBC

**Course Overview:**

This course introduces students to the use of economic tools in analysing natural resource issues. The course discusses issues surrounding environmental sustainability in the context of economic growth. The theory of externalities and public goods are discussed and this addresses environmental external effects with respect to depletion and pollution. Causes of environmental externalities are also included in the context of missing markets and property rights. The components of value which, make up total economic value of environmental goods is considered. These include direct, indirect, option value and existence value. Willingness to pay and willingness to accept approaches are discussed. Revealed and stated preferences valuation techniques are included. Consideration is also given to the analysis of environmental policy instruments, with an emphasis on pollution control. Issues surrounding international environmental problems including climate change are also discussed.

**Learning Outcomes:**

- Demonstrate an understanding of weak and strong sustainability conditions.
- Explain the relevance of the first and second law of thermodynamics for economic sustainability.
- Explain the theory of externalities, Coase Theorem, missing markets, public goods and Nash-Cournot equilibria.
- Critically evaluate the optimal extraction of renewable and non-renewable resources.
- Critically evaluate revealed preference and stated preference valuation methods.
- Critically assess pollution control instruments including standards, emission permits and Pigouvian taxes and evaluate how these instruments work in practice.
- Convey an understanding of key international environmental problems including climate change, biodiversity loss, trade in wildlife products and acid rain.

**PW4: TI3128 Palaeoceanography**

<b>Lectures</b>	<b>Tue 16:00-17:50 Venue: TBC</b>
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Coordinator:	Dr. Alessio Fabbrini
E-mail	<a href="mailto:Alessio.fabbrini@universityofgalway.ie">Alessio.fabbrini@universityofgalway.ie</a>
Telephone:	TBC
Office Hours:	TBC

### **Course Overview:**

Climate change is not a modern phenomenon, as Earth's systems are dynamic and rarely stable over extended periods of time. Climate variability occurs across multiple spatial and temporal scales, but we generally lack long enough scientific or historical records to directly measure most long-term patterns of climate change. Palaeoceanography fills this void by providing evidence of past changes in ocean conditions including temperature, salinity, productivity, circulation, and ecology. These variables are typically reconstructed through analyses of the geochemistry, microfossil composition, and organic contents of ancient marine sediments that have either been exposed on land or collected through seafloor drilling. Palaeoceanography offers an opportunity to reconstruct past climate change across timescales, providing a broader context for studying modern climate change.

### **Learning Outcomes:**

- Demonstrate an understanding of long-term environmental change as it relates to modern environmental systems.
- Critique the array of methodologies which are used in reconstructing past environments.
- Assess long-term human-environment interactions through time.
- Apply theoretical concepts in a real-world context through hands-on lab-based instruction.

## **Timetables and Module Outlines for Semester 2**

<b>Year 4 - Semester 2 PW1*</b>				
<b>CORE</b>	Code	Title	ECTS	Sem.
	<i>TI3129</i>	<i>Dissertation</i>	<i>10</i>	<i>2</i>
	<i>TI311</i>	<i>Advanced GIS</i>	<i>5</i>	<i>2</i>
	<i>TBD</i>	<i>TBD</i>	<i>5</i>	<i>2</i>
<b>PW1</b>	<i>EOS303</i>	<i>Ocean Dynamics</i>	<i>5</i>	<i>2</i>
<b>PW3</b>	<i>SP420</i>	<i>Sociology of the Environment (or)</i>	<i>5</i>	<i>2</i>
	<i>SP721</i>	<i>Ocean &amp; Marine Politics</i>	<i>5</i>	<i>2</i>
<b>PW4</b>	<i>TI338</i>	<i>Paleoecology: Reconstructing Past Environments</i>	<i>5</i>	<i>2</i>

**\* NOTE: If you chose PW2 in Year 2 please skip to the next timetable**

<b>Semester 2 PW1</b>	Monday	Tuesday	Wednesday	Thursday	Friday
09:00					
10:00					
11:00					
12:00		SP721			

13:00	EOS303 W1-6		EOS303 W1-6	EOS303 W1-6	
14:00	TI338		SP420*		TI338
15:00					
16:00		TI311	EOS303 P *		
17:00			W1-6		

\*note if you pick SP240 then you need to arrange a late practical for EOS303

Year 4 - Semester 2 PW2*				
CORE	Code	Title	ECTS	Sem.
	TI3129	Dissertation	10	2
	TI311	Advanced GIS	5	2
	TBD	TBD	5	2
PW2	BPS3107	Plants, atmosphere, & environment throughout Earth history	5	2
PW3	SP420	Sociology of the Environment (or)	5	2
	SP721	Ocean & Marine Politics	5	2
PW4	TI338	Paleoecology: Reconstructing Past Environm.	5	2

\* NOTE: If you chose PW1 in Year 2 please consult the timetable above

Semester 2 PW2	Monday	Tuesday	Wednesday	Thursday	Friday
10:00	BPS3107 w7-12	BPS3107 w7-12		BPS3107 w7-12	
11:00					
12:00		SP721			
13:00					
14:00	TI338	BPS3107 w7-12	SP420		TI338
15:00					
16:00		TI311			
17:00					

**CORE: TI3129 Final Year Dissertation (Semester 1 & 2)**

<b>Lectures</b>	<b>Mon 10:00; Venue TBD</b>
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Coordinators:	Drs Terry Morley & Audrey Morley
E-mail	<a href="mailto:Terry.morley@universityofgalway.ie">Terry.morley@universityofgalway.ie</a>
Telephone:	TBC
Office Hours:	TBC

**Course Overview:**

This course guides students through an extended period of research and toward the writing of a major, final-year project. As such, it is an integral part of a student’s university education in that it teaches organisational and research skills, as well as skills critical for any career path. This research seminar is specifically for students who would like to undertake independent research in a specific field of Geography and Geosystems

**Learning Outcomes:**

- Formulate an original research question and perform a comprehensive literature review and identify appropriate conceptual and theoretical frameworks.
- Gather evidence from primary sources using appropriate research methodologies.
- Identify and access relevant sources of secondary data.
- Interpret and analyze research findings and discuss them in a critical manner.
- Communicate research findings appropriately and coherently in written form, using the 10,000-word thesis structure, complete with appendices of evidence and full and proper referencing, and complete an oral presentation on the topic.

For more information on your Final Year Dissertation please consult the ***Final Year Dissertation Handbook*** which will provide clear guidelines and information on this module.

**CORE: TI311 Advanced GIS**

<b>Lectures</b>	<b>Tue 16:00-16:50; Venue TBD</b>
Coordinator:	Dr.
E-mail	
Telephone:	TBC
Office Hours:	TBC

**Course Overview:**

Based on the basic concepts and simple applications of GIS that were covered in the course “Introduction to GIS”, this course focuses on the advanced topics and advanced functions of GIS, which are more practical and problem-solving. The concepts of advanced analysis functions of network analysis and spatial interpolation are explained, and the topics Google Earth and Big Data are discussed. Actual applications in geography are demonstrated and practical exercises are provided. The extensions of ArcGIS are selected as the software package for this course. Students will understand the latest development of the advanced GIS topics and perform advanced spatial data analyses.

**Learning Outcomes:**

- Demonstrate the practical skills of a GIS project design and completion.
- Make practical maps and perform advanced analyses through computer practical classes.

**PW1: EOS303 Ocean Dynamics**

<b>Lectures</b>	<b>Week 1-6: Mon, Wed, Thu: 13:00-13:50, Wed 15:00-18:00 (P)</b>
Coordinator:	Dr Martin White
E-mail	<a href="mailto:Martin.White@universityofgalway.ie">Martin.White@universityofgalway.ie</a>
Telephone:	TBC
Office Hours:	TBC

#### **Course Overview:**

This module will introduce students to the forces that control ocean and shelf dynamics. The module will introduce the different types of ocean currents and features such as wind driven flow, turbulence and mixing/diffusion. The fundamental links between these dynamics and basic biogeochemical cycling (nutrient and phytoplankton dynamics) will be explored.

#### **Learning Outcomes:**

- An appreciation of scales, dimensional analysis and problem solving.
- Understand the different balance of forces and flow character in shelf sea and deep ocean. and aspects of some associated biophysical interactions.
- Completed a case study through measurement and analysis of collected data.
- Developed skills appropriate for a career in marine geoscience.

#### **PW2: BPS3107 Plants, atmosphere, & environment throughout Earth history**

<b>Lectures</b>	<b>Week 1-6: Mon, Tue 10:00, Tue 14:00, Thu 09:00; Venue TBD</b>
Coordinator:	Dr Karen Bacon
E-mail	<a href="mailto:Karen.Bacon@universityofgalway.ie">Karen.Bacon@universityofgalway.ie</a>
Telephone:	TBC
Office Hours:	TBC

#### **Course Overview:**

Plants are of fundamental importance to life on land, providing the building blocks for terrestrial ecosystems and interacting with sediments and the atmosphere over millions of years. This module will track plant evolution and diversification as it is represented in the last 400 million years of the fossil record. We will examine the earliest evidence for plants and move through time considering the earliest leafless Devonian plants to the giants of the Carboniferous to the emergence of seeds and finally the modern dominance of the flowering plants. The interactions between plants and their environment will be examined as will the use of plants as environmental and atmospheric proxies in palaeobotany. Key developments in our understanding of how plants are preserved in the fossil record, how they respond to mass extinction events, and how they interact with their environment will be discussed.

#### **Learning Outcomes:**

- Describe the evolution of plants as it is represented in the fossil record
- Evaluate evidence for plant–environment and plant–atmosphere interactions throughout Earth history
- Describe how plants can be used as environmental indicators throughout Earth history
- Demonstrate basic palaeobotanical techniques
- Describe key events recorded in the plant fossil record
- Evaluate how the fossil record can influence our understanding of modern plant ecology
- Produce concise reports and evaluate data

#### **PW3 SP721 Ocean & Marine Politics**

<b>Lectures</b>	<b>Tue 12:00-13:50; Venue IT125</b>
Coordinator:	Dr Brendan Flynn
E-mail	<a href="mailto:Brendan.Flynn@universityofgalway.ie">Brendan.Flynn@universityofgalway.ie</a>
Telephone:	TBC
Office Hours:	TBC

**Course Overview:**

This course explores some of the politics that happens at sea. In particular we will focus on the politics of fishing and marine renewable energy, and to a lesser extent we will look at conflicts over marine natural resources, disputes on marine boundaries, and the role of the state as regards all matters of the sea. The course explores various theoretical perspectives, in particular an emerging literature that stresses the ‘social construction’ of the sea, and the concept of ‘resilience’. We will also examine methodological questions, or how should we study a politics of the seas? Here the focus is on exploring to what extent qualitative ethnographic methods can help shed understanding and context on complex marine based activities.

**Learning Outcomes:**

- Demonstrate an understanding of the variety of different theoretical perspectives by which issues central to politics at sea, such as fishing and marine energy disputes, can be understood from a broad social and political science tradition (historical, social constructionist, ethnographic, and feminist approaches, etc.).
- Understand key threshold concepts (resilience, securitization, maximum sustainable yield) within the literature, and have a good understanding of important institutional regimes (such as the Law of the Sea regime, Common Fishery Policy regime).
- Analyse the need for critical and diverse understandings of the role of the state, and other actors, in managing marine natural resources, and how marine policy problems can be socially constructed in a variety of ways, suggesting a diversity of possibilities as regards policies and how we could understand them.

**PW3 SP420 Sociology of the Environment**

<b>Lectures</b>	<b>Wed 14:00-15:50; Venue ENG-G017</b>
Coordinator:	Dr Mike Hynes
E-mail	<a href="mailto:mike.hynes@universityofgalway.ie">mike.hynes@universityofgalway.ie</a>
Telephone:	TBC
Office Hours:	TBC

**Course Overview: TBC**

**Learning Outcomes: TBC**

**PW4: TI338 Palaeoecology - Reconstructing Past Environments**

<b>Lectures</b>	<b>Mon 14:00-14:50 and Fri 14:00-14:50; Venue TBD</b>
Coordinator:	Dr Karen Molloy
E-mail	<a href="mailto:Karen.Molloy@universityofgalway.ie">Karen.Molloy@universityofgalway.ie</a>
Telephone:	TBC
Office Hours:	TBC

**Course Overview:**

The Irish landscape as we know it today is governed by what has happened in the past. Both climate change and anthropogenic factors have played significant roles in shaping the development of the landscape. The objectives of this module are to introduce the student to palaeoenvironmental methods, in particular pollen analysis, as a means of interpreting the past 15, 000 years of vegetation and environmental change in Ireland. The course will consist of a series of lectures, a field excursion and 3 laboratory sessions where students will use microscope techniques to identify and count fossil pollen grains.

**Learning Outcomes:**

- Evaluate the main methods both direct and indirect of reconstructing past environments.
- understand the main principles of pollen analysis.
- understand the key vegetation changes that have occurred in Ireland since the end of the Ice Age.
- have an appreciation of the role people have played in shaping the Irish landscape from the arrival of the first farmers in Neolithic times.
- have a greater understanding of the natural world.
- use a microscope and identify the pollen of the most common Irish trees.
- interpret and evaluate a pollen diagram.