2020/1 - ENV-4006B BIODIVERSITY AND SUSTAINABILITY

Spring Semester, Level 4 module
(Maximum 180 Students)
UCU: 20 Organiser: Professor Carlos Peres
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Examination with Coursework or Project
Timetable Slot:D1/, D3/, F2-A2\, E1-H3\

This module focuses on exploring and understanding the evolving relationships between human development and the natural environment from ecological perspectives with some context from social sciences. The module is intended to give you a flavour of the issues, themes and considerations relating to biodiversity at different scales of biological organization, ecosystem services and sustainable development. The module (1) examines practical and theoretical considerations of sustainable development; (2) explores the options advanced for establishing a sustainable balance between human needs and those of natural systems and ecosystems; (3) investigates how the growing human enterprise and human resource use has affected biodiversity and the biosphere and (4) considers the scales of biodiversity loss, from the biosphere to biomes, ecosystems, ecological communities, populations, individuals, and genes. The module comprises 12 weeks of lectures and practicals. You will attend two lectures and one practical session in most weeks. The lectures introduce, review and critique particular concepts and perspectives. The practicals provide opportunities to examine in more detail some of the issues raised during the lectures, accompanied by practical exercises. Identical practical sessions will be run each week, on Tuesday and Thursday mornings. You will be notified in which group and on which day you are expected to take part in the practical. The beginning of the module revolves around sustainable development, the human footprint and examine sustainable development in relation to human resource use and ecosystem services. Lectures consider interactions between human societies and the composition and structure of natural (terrestrial, freshwater and marine) ecosystems, anthropocentric impacts on biomes, ecosystems, communities, populations, and the genetic diversity of individuals. They introduce some approaches and ideas fundamental to modern quantitative conservation ecology. The practicals will introduce ecological communities, there will be some elementary statistical analysis and if Government advice at the time allows, there will be a field trip to a nature reserve. The slides of the lectures will be posted every week on the Blackboard pages of this module. You can download or print them off for yourself as and when required. These are not a substitute for taking part in the lectures. For each lecture and practical, you will be pointed to additional readings to explore some of the issues raised in more depth. These are found on the module Talis reading list and reading lists at the end of each lecture. These will be useful for your assignments.

2020/1 - ENV-4007B ATMOSPHERE & OCEANS

Spring Semester, Level 4 module
(Maximum 100 Students)
UCU: 20 Organiser: Dr Parvadha Suntharalingam

(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Examination with Coursework or Project
Timetable Slot:D2-I2\, E2, C3, A1-F1\

IN TAKING THIS MODULE YOU CANNOT TAKE ENV-4008B

The habitability of planet Earth depends on physical and chemical systems that control everything from the weather and climate to the growth of all living organisms. This module introduces you to some of these key cycles and the ways in which physical and chemical scientists investigate and interpret them. It leads naturally to second and third year study of these systems in more detail, but even if you choose to study other aspects of environmental sciences, a basic knowledge of these systems is central to understanding our planet and how it responds to human pressures. The module is made up of two distinct components. One focuses on the physical study of the environment (Physical Processes: e.g. weather, climate, ocean circulation, etc.) The other focuses on the chemical study (Chemical Processes: weathering, atmospheric pollution, ocean productivity, etc.). Interrelationships between these components are explored throughout. Teaching of this module is through a mix of lectures, laboratory practical classes, workshops and a half-day field trip. This module provides a Basic Chemistry introduction for those students who have little or no background in chemistry prior to joining UEA.

2020/1 - ENV-4008B ATMOSPHERE & OCEANS II

Spring Semester, Level 4 module
(Maximum 0 Students)
UCU: 20 Organiser: Dr Parvadha Suntharalingam
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Examination with Coursework or Project
Timetable Slot:D2-I2\, E2, C3, A1-F1\

IN TAKING THIS MODULE YOU CANNOT TAKE ENV-4007B

The habitability of planet Earth depends on physical and chemical systems that control everything from the weather and climate to the growth of all living organisms. This module introduces you to some of these key cycles and the ways in which physical and chemical scientists investigate and interpret them. It leads naturally to second and third year study of these systems in more detail, but even if you choose to study other aspects of environmental sciences, a basic knowledge of these systems is central to understanding our planet and how it responds to human pressures. The module is made up of two distinct components. One focuses on the physical study of the environment (physical processes: weather, climate, ocean circulation etc.) while the other focuses on the chemical study (chemical processes: weathering, atmospheric pollution, ocean productivity etc.). Interrelationships between these components are explored throughout. Teaching of this module is through a mix of lectures, laboratory practical classes, workshops and a half-day field trip.

2020/1 - ENV-5002B ENVIRONMENTAL POLITICS AND POLICY MAKING

Spring Semester, Level 5 module
(Maximum 90 Students)

UCU: 20 Organiser: Dr Irene Lorenzoni
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Coursework
Timetable Slot:D3\, A2/, G1/-H2\

The most significant obstacles to problem solving are often political, not scientific or technological. This module examines the emergence and processes of environmental politics. It analyses these from different theoretical perspectives, particularly theories of power and public policy making. The module is focused on contemporary examples of politics and policy making at UK, EU and international levels. The module supports student-led learning by enabling students to select (and develop their own theoretical interpretations of) ‘real world’ examples of politics. Assessment is via seminar slides and a case study essay. The module assumes no prior knowledge of politics.

2020/1 - ENV-5004B EXPLORING THE EARTH'S SUBSURFACE

Spring Semester, Level 5 module
(Maximum 25 Students)
UCU: 20 Organiser: Dr Jessica Johnson
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Examination with Coursework or Project
Timetable Slot:D3\, A2/, G1/-H2
Exam Period:SPR-02

In this module you will learn about the processes that shape the Earth's shallow subsurface, and how to detect and map subsurface structures and resources. Physical properties of solid materials and subsurface fluids will be explored, including how fluid movement affects these properties. Methods to image the subsurface will be introduced using real datasets, collected by the class where possible. We will apply the theory to real-life problems including risk mitigation, engineering and resource exploration. This module will include fieldwork on campus where possible, specialist computer software, and some light mathematical analysis (trigonometry, rearranging linear equations, logarithms).

2020/1 - ENV-5016B OCEAN CIRCULATION

Spring Semester, Level 5 module
(Maximum 0 Students)
UCU: 20 Organiser: Dr Xiaoming Zhai
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Examination
Timetable Slot:AGJ
Exam Paper(hrs):2 Exam Period:SPR-02

This module gives you an understanding of the physical processes occurring in the basin-scale ocean environment. We will introduce and discuss large scale global ocean circulation

including gyres, boundary currents and the overturning circulation. Major themes include the interaction between ocean and atmosphere, and the forces which drive ocean circulation.

2020/1 - ENV-5017B SHELF SEA DYNAMICS AND COASTAL PROCESSES

Spring Semester, Level 5 module
(Maximum 40 Students)
UCU: 20 Organiser: Dr Robert Hall
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Examination with Coursework or Project
Timetable Slot:H3/, C1/-B3, G2/
Exam Paper(hrs):2 Exam Period:SPR-02

The shallow shelf seas that surround the continents are the oceans that we most interact with. They contribute a disproportionate amount to global marine primary production and CO2 drawdown into the ocean, and are important economically through commercial fisheries, offshore oil and gas exploration, and renewable energy developments (e.g. offshore wind farms). You will explore the physical processes that occur in shelf seas and coastal waters, their effect on biological, chemical and sedimentary processes, and how they can be harnessed to generate renewable energy. You will develop new skills during this module that will support careers in the offshore oil and gas industry, renewable energy industry, environmental consultancy, government laboratories (e.g. Cefas) and academia. The level of mathematical ability required to take this module is similar to Ocean Circulation and Meteorology I. You should be familiar with radians, rearranging equations and plotting functions.

2020/1 - ENV-5028B GIS SKILLS FOR PROJECT WORK

Spring Semester, Level 5 module
(Maximum 90 Students)
UCU: 20 Organiser: Dr Katy Appleton
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Coursework
Timetable Slot:E1-H3\, F1/, A3

This module focuses on developing practical skills to support independent use of spatial analysis and digital mapping in a Geographical Information System. It covers ways to obtain data, integrate it, undertake analysis to address research questions, and present the results. Weekly teaching will consist of both lecture material to cover underlying concepts, and a three-hour practical exercise focusing on a particular aspect of GIS data and/or analysis. At the time of writing this module description (May 2020) we cannot guarantee there will be continuous access to UEA's IT labs during the module – Government advice may mean that we must all work remotely, or that lab capacity is reduced due to social distancing. If working remotely it would be essential to have access to a Windows PC/laptop that can run ArcGIS Pro, or to very good (fast and reliable) broadband. Specifications for the software are available via Blackboard under UEA Software & Support (below your list of modules). Please contact the MO if you have any questions.

2020/1 - ENV-5038B CONSTRUCTING HUMAN GEOGRAPHIES

Spring Semester, Level 5 module
(Maximum 40 Students)
UCU: 20 Organiser: Professor Andrew Lovett
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Coursework
Timetable Slot:G2/, H3/, C1/-B3
Exam Paper(hrs): Exam Period:SPR-02

BEFORE TAKING THIS MODULE YOU MUST TAKE ENV-4010Y OR TAKE ENV-4006B OR TAKE DEV-4007B

How can human geographers help us understand and address pressing environmental and social problems? This is the central question of the module which affirms the distinctive value and relevance of work in contemporary human geography. Throughout you will explore a wide range of approaches to environmental and social problems in contemporary human geography. You'll gain a firm grounding in social constructivism which is underlying philosophy of these approaches. You'll also learn how to communicate insights from human geography to policy-makers and practitioners, and how to critically evaluate examples of human geographers' engagements with policy. You'll begin with the basics of social constructivism, learn why this approach is used by human geographers, and consider the value of this perspective. You'll then delve deeper, exploring the social construction of a different object or problem each week. Topics covered will include: nature, hazards, alternative economies, and social difference. By looking at what these human geography perspectives mean for real-world environmental and social problems you'll practice applying what you've learnt to current policy problems and learn about how human geographers are making a difference to these issues. You'll learn through a mixture of lectures, workshops and self-directed study and you'll be assessed through a written policy brief and reflective report (100%).

2020/1 - ENV-5039B AQUATIC BIOGEOCHEMISTRY

Spring Semester, Level 5 module
(Maximum 35 Students)
UCU: 20 Organiser: Professor Alex Baker
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Examination with Coursework or Project
Timetable Slot:B1/-D1, D3/, A2\
Exam Paper(hrs):2 Exam Period:SPR-02

The Earth's terrestrial and marine water bodies support life and play a major role in regulating the planet's climate. This module will train you to make accurate measurements of the chemical composition of the aquatic environment. In lectures and in the lab you will explore important chemical interactions between life, fresh and marine waters and climate, looking at nutrient cycles, dissolved oxygen, trace metals, carbonate chemistry and chemical exchange with the atmosphere. Students taking this module are expected to be familiar with

basic chemical concepts and molar concentration units. This module makes a good combination with Aquatic Ecology.

2020/1 - ENV-6001B GEOPHYSICAL HAZARDS

Spring Semester, Level 6 module
(Maximum 45 Students)
UCU: 20 Organiser: Dr Richard Herd
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Examination with Coursework or Project
Timetable Slot:H3/-C1-B3, G2/
Exam Paper(hrs):2 Exam Period:SPR-02

Geophysical hazards such as earthquakes, volcanic eruptions, tsunamis and landslides have significant environmental and societal impacts. This module focuses on the physical basis and analysis of each hazard, their global range of occurrence, probability of occurrence and their local and global impact. You will address matters such as hazard monitoring, modelling and assessment, and consider approaches towards risk mitigation and the reduction of vulnerability (individual and societal), with an emphasis on their practical implementation. Scenarios and probabilities of mega-disasters are also investigated. All the teaching faculty involved have practical experience of supplying professional advice on these hazards (and related risks) in addition to their own research involvement. A basic knowledge of physical science and of mathematics is assumed e.g. use of logs, exponentials, powers, cosines, rearrangement of equations.

2020/1 - ENV-6012B NATURAL RESOURCES AND ENVIRONMENTAL ECONOMICS

Spring Semester, Level 6 module
(Maximum 100 Students)
UCU: 20 Organiser: Dr Rosalind Bark
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Coursework
Timetable Slot:D3/, A2\, B1/-D1\

Environmental economics provides a set of tools and principles which can be useful in understanding natural resource management issues. This module introduces you to key principles and tools of environmental economics for students who have not studied the subject previously. It then explores how these principles can be applied to address a number of complex economy-environment problems including climate change, over-fishing and water resources management. In this module you will have the opportunity to practically apply cost-benefit analysis as a framework for decision-making and will gain knowledge on the key non-market valuation techniques that are used to monetarily value environmental goods and services. At the end of the module you will have gained insights into how environmental economics is used in developing natural resource management policy as well as some of the challenges in using environmental economics in policy-making.

2020/1 - ENV-6017B PALAEOCLIMATOLOGY

Spring Semester, Level 6 module
(Maximum 40 Students)
UCU: 20 Organiser: Dr Mark Chapman
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Examination
Timetable Slot:I4\, D3\, A2/, G1-H2
Exam Paper(hrs):2

This module examines the geological evidence for climatic change through the Quaternary Period (the last 2.6 million years) and the longer-term evolution of climate through the Cenozoic Era (the last 65 million years). You will explore the interpretation and causal mechanisms behind these major global environmental changes using a diverse range of approaches – isotope geochemistry, sedimentology, palaeoecology and organic geochemistry. We will focus on the geochemical, biological and sedimentological information that can be obtained from marine sediments, ice cores, and terrestrial environments and use these records to reconstruct the timing extent and magnitude of selected climatic events in the geological record.

2020/1 - ENV-6018B LAND AND WATER PROCESSES AND MANAGEMENT

Spring Semester, Level 6 module
(Maximum 50 Students)
UCU: 20 Organiser: Dr Richard Cooper
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Coursework
Timetable Slot:E2+-C3, B2, F1\
Exam Period:SPR-02

In this module, you will adopt an integrated approach to studying surface water and groundwater resources in river basins. You will address the fundamental requirement for an interdisciplinary catchment-based approach to managing and protecting water resources that includes an understanding of land use and its management. The module content includes the design of catchment monitoring programmes, nutrient mass balance calculations, river restoration techniques, an overview of UK and European agri-environmental policy and approaches to assessing and mitigating catchment flooding.

2020/1 - ENV-6026B ENERGY AND PEOPLE

Spring Semester, Level 6 module
(Maximum 80 Students)
UCU: 20 Organiser: Dr Tom Hargreaves
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Coursework
Timetable Slot:C1/-B3, H3/, G2/

Modern everyday life rests fundamentally on the availability of energy. Since the 1970s, however, serious concerns have been raised about the sustainability of current energy systems. Traditionally, these problems have been analysed (and solutions proposed) from within the engineering and physical sciences. Understanding, managing and attempting to solve energy problems, however, demands a thorough appreciation of how people, at a range of scales, engage with energy in the course of their daily lives. This is a critical challenge for the social sciences, and will be the core focus of this module. Through this module, you will discover and explore a range of social science perspectives on the inter-relationships between energy and people. You will learn how to apply these ideas to contemporary energy problems and use them to generate your own visions for a sustainable energy future. You'll also be given the chance to work as part of a team and to communicate your ideas through both written and oral presentation. You'll begin by tracing the history and development of energy intensive societies and everyday lives as a means of understanding how energy has emerged as a key sustainability problem. You'll then go into more depth around different theories of social and technical change before exploring how these can be used to critically analyse a range of people-based solutions to energy problems that are currently being tried and tested around the world. You'll learn through a combination of lectures and seminars involving interactive group projects, class debates, practical exercises and student-led learning. At the end of the module, you will have developed the knowledge, skills and experience necessary to allow you to apply theories of social and technical change to a range of real-world energy problems. You'll be able to develop and critically analyse your own (and already existing) visions of a sustainable energy future, and you'll be able to creatively communicate these ideas to a range of different audiences.

some of the challenges in using environmental economics in policy-making.