

## Introduction

Environmental scientists have never been in greater demand. It is widely acknowledged that in the next few decades, particularly given the consequences of climate change, societies will increasingly need individuals who understand the challenges of sustainable development and who have the experimental, numerical and verbal skills necessary to engage critically in these debates. In the School of Environmental Sciences at the University of East Anglia (UEA) we ensure that all our students graduate with these capabilities.

Both scientists and decision-makers face huge challenges in trying to observe, model and predict how best to manage our world more sustainably. In response we have pioneered the development of interdisciplinary environmental research and teaching and have long recognised the dynamic interplay between natural and social systems.

The School of Environmental Sciences at UEA has signed an agreement with the Colleges of

- Environmental Science and Engineering
- Physical and Environmental Oceanography
- Marine Geo-Science

of the Ocean University of China for students to have the opportunity to study at UEA following the second year of their programme at OUC. You will enter into what is described further on in this document as Year 2 of the relevant programme at UEA, **as an undergraduate programme takes 3 years to complete in England.**

We are one of the longest established departments of environmental sciences anywhere in the world and the largest and **arguably the best** in the UK. It is a measure of the foresight of our founding fathers that this approach to understanding the environment is now regarded as part of the mainstream in academia. The School continues to build and develop on this strong legacy and now enrolls some 150 undergraduates every year and has 150 PhD and 50 Master's students from all over the world.

The University of East Anglia is ranked in the top 1% of Universities in the World (Times Higher Education, 2013), in the top 25 of UK Universities (The Guardian, 2013) and in the top 10 for Research Citation in the UK (Times Higher Education, 2013)

The School of Environmental Sciences is ranked first in the country on student satisfaction for Ocean Sciences and ranked joint second in teaching in the UK for Environmental Sciences (National Student Survey 2012)

UEA is committed to maintaining a strong, long-term and cohesive relationship with China. Over the past years, UEA has established collaborations with Chinese Ministries, other government agencies, universities, research institute and private sector partners.

Just to highlight a few:

- we set up joint research institute with Fudan University, “Fudan Tyndall Centre”, tackling climate change and sustainable development
- we work with the Ministry of Agriculture to deliver advice and research on sustainable and innovative agriculture and food security
- we work with urban design and architectural firms to delivery energy efficient buildings and communities
- we work with Peking University on improvement of air quality in Chinese cities

Through these engagements, we aim to be more informed and involved in the sustainable development of your home country, which, in return, will impact positively on the development of the rest of the world on a grander scale, and individually, it means an empowered educational experience enabled by our trend-setting research, effective teaching and seamless student services.

We welcome you to embark on this important dual degree journey at UEA, which we are sure will prepare you well in making distinct contributions to your country, and in living a more fulfilling and happy life.

## **Our Teaching**

We are a large School, with around 90 Faculty and Research Fellows which means that we can teach over the broad range of disciplines with lecturers who are at the forefront of their subjects.

## **Dynamic and Flexible Programmes**

Our programmes are constantly evolving in response to feedback from students and employers. The choice available to you through optional modules, especially after your first year, can lead to opportunities to study subjects such as earthquake and volcanic hazards, aquatic ecology, climate change, biodiversity conservation, environmental politics, geochemistry, soil science, and low carbon energy amongst many others. This flexibility enables you to pursue the areas that most interest you. Our programmes offer a solid grounding in the first year, across the disciplines, necessary for you to get the most from your optional modules.

## **Our Research**

We have major global influence when it comes to our research. Ninety five per cent of research activity was classified as world leading or internationally excellent/

recognised in the most recent Research Assessment Exercise (2008), and we have world-renowned research centres located in the School. These include the Climatic Research Unit, the Tyndall Centre for Climate Change Research, the Laboratory for Global Marine and Atmospheric Chemistry and the Centre for Social and Economic Research on the Global Environment.

### **Our Facilities**

Our excellent research facilities are well funded. On campus these include the Energy Materials Laboratory, the Fluid Dynamics Laboratory, the Virtual Reality and Experimental Laboratories, the Environmental Analytical Chemistry Suite and the Microscope Suite. Off-campus, on the North Norfolk coast, we also have the Weybourne Atmospheric Observatory. An abundance of scientific equipment is available to our undergraduates including excellent computing and newly refurbished teaching laboratory facilities, located in state of the art buildings such as the Zuckerman Institute for Connective Environmental Research (ZICER).

### **Integrated Masters of Science (MSci) Degrees**

Drawing on our prestigious and long-standing expertise in postgraduate teaching we offer a portfolio of MSci integrated undergraduate Masters courses, which provide you with cutting-edge knowledge, highly developed practical skills, plus a demonstrable ability to work independently. You develop self-direction in learning, the ability to evaluate research techniques critically and the confidence to make sound judgements on complex issues.

In addition to boosting your employability the MSci is an excellent route into further study for a PhD should you wish to develop your research interests. Your final year allows you to pursue research frontiers in Masters level modules.

You may learn to use state of the art instrumentation or interpretation methodologies, or have access to specialist facilities, including re-circulating flumes, geochemical analytical facilities, isotope ratio mass spectroscopy, geotechnical microanalysis facilities, geophysical equipment and Earth observation data and models.

### **Careers and Employability**

Environmental Sciences is a degree intrinsically linked to employability and putting theory into practice. The School of Environmental Sciences has well-established links with some of the biggest industry names, which work alongside us in shaping our students for the job market.

Our graduates have excellent career prospects. The majority find graduate employment, for example in environmental management and conservation, local and central government agencies, environmental consultancy, weather forecasting,

government and university research, geophysical services, the energy sector, oil industries and the water industry. Statistics for employment data in 2012 show that our average graduates' salary, six months after graduating, is more than 10 per cent higher than the national figure. About 28 per cent of our graduates go on to further study for a higher degree.

The UEA Careers and Employability Service supports students to reflect on their skills and aspirations and relate these to potential jobs and careers. They also give advice and run invaluable workshops on finding vacancies, interview techniques and how you can write your CV effectively for job or higher-degree applications.

The School, in conjunction with the Careers Centre, also organises regular career events, including graduates returning to give advice about developing your job prospects and career ideas to exhibitions and networking with potential employers in the environmental industries.

It is not only technical skills and subject specific knowledge that we empower our students with during their time with us; the array of transferrable skills in report writing, presenting, statistical and analytical research as well as the confidence gained from being part of an engaged and intellectual student body mean that our graduates are more than prepared for careers in non-environmental sectors as well.

The School develops employability skills within all of its modules. We constantly look to strengthen our links with industry as part of our programmes, and also for opportunities of joint final year research projects. We also have two industry-sponsored prizes for undergraduate students studying geophysics (the Gardline prize and the Mobil prize).

## **Courses**

As a student at Ocean University, we have made available to you the following courses to study:

- BSc Environmental Sciences and MSci Environmental Sciences
- BSc Climate Sciences and MSci Climate Sciences
- BSc Meteorology and Oceanography and MSci Meteorology and Oceanography

- BSc Environmental Earth Sciences and MSci Environmental Earth Sciences
- BSc Environmental Geophysics and MSci Environmental Geophysics

After your first two years of study at OUC the BSc courses will require you to study two further years and the MSci courses will require three years of study.

## **Environmental Sciences**

As the flagship degree of the School of Environmental Sciences, this course is designed to provide you with a broad spectrum of modules that reflect the interdisciplinary nature of the subject.

Environmental Sciences focus on how the human environment and society are inextricably linked to the physical, chemical, geological and ecological processes of the Earth, enabling you to understand, predict and manage future challenges of environmental change.

### **Year 2**

You will have considerable flexibility to tailor your degree according to your interests. You will choose from the substantial range of modules that are spread across thematic areas, including: Earth Sciences and Natural Hazards; Atmospheric and Marine Pollution; Ecology and Conservation; Environmental Management.

### **Year 3**

Students will carry out some original research involving fieldwork into an environmental topic of their choice, under the supervision of a faculty member who will be an expert in your specialist area of the environmental sciences. This can be one of the most exciting and challenging parts of your degree.

### **Year 4 (MSci only)**

During the final year of the integrated Masters programme you will study advanced Masters level modules chosen from the substantial optional range and undertake a further substantial piece of independent research under the supervision of a research active member of faculty. Some examples of MSci dissertations include:

- Exploring consequences of biochar incorporation into agricultural soils
- Examining risk communication strategies for natural disasters
- Examining the effects of climate change on coastal biodiversity.

## **Climate Science**

This innovative degree provides a thorough and comprehensive grounding in the physical science basis of climate change in the past, present and future; delivered by internationally recognised experts in their fields.

Climate change has been a feature throughout the Earth's past, and is now taking place in response to human activity. It is one of the most pressing, and most complex, problems facing society in the 21st century.

The emphasis in this programme is on the underpinning scientific drivers of climate change, with consideration given to the societal impacts from, and in response to, climate change. Students will have the opportunity to study with scientists who have contributed to the Intergovernmental Panel on Climate Change (<http://www.ipcc.ch/>) – we prepare the next generation of climate scientists who will act on the national and international stages of climate research and policy development.

## **Practical Work**

We emphasise practical work throughout and you will have the opportunity to attend a number of field courses in the UK and overseas. Modelling and field observations are two key practical skills often required to study the climate system, and these are addressed as embedded skills training within several of the modules, or as stand-alone modules such as the optional Marine Sciences field course. For project work the School benefits from extensive analytical facilities, comprehensive field equipment, and even our own internationally-known [National Centre for Atmospheric Science](#) atmospheric observatory at Weybourne.

## **Year 2**

You will study compulsory topics in atmospheric chemistry, global change and meteorology whilst building on your mathematical skills. You will have the opportunity to choose from a range of optional modules to tailor the remainder of your study plan. Some options outside the School may be taken, allowing you to explore your other interests, for example a foreign language, international development studies or environmental law.

## **Year 3**

In the third year you will undertake an independent research project (BSc only) under the supervision of an actively researching member of faculty. MSci Year 3 students will undertake a compulsory module – Climate Change: Physical Science Basis.

Alongside these you will have the opportunity to choose modules from the wide range available.

### **Year 4 (MSci only)**

During the final year of the integrated Masters programme you will undertake a substantial piece of independent research in a topic that matches your interests. You will also study advanced level modules chosen from the substantial optional range available including Fossil Fuels, Ecological Responses to Climate Change, Paleoclimatology, Fossil Fuels, Narratives of Environmental Change and Dynamical Oceanography.

### **Environmental Earth Sciences**

This innovative programme provides undergraduate training for those wanting to study aspects of geology while extending their study to include the way society affects and is affected by the Earth and its behaviour.

The main focus of the degree programme is the solid Earth, geological processes and their impact on the Earth and on society.

Among other topics you will investigate:

- Geological evidence for past environmental change, notably of climate and sea level, and  
how that evidence can be used to predict future climate change and the Earth's responses
- The results of human activity on the Earth in the form of engineering structures, agriculture and pollution of land and water by waste
- Geological hazards such as volcanic eruptions, earthquakes and flooding
- Natural resources such as water and fossil fuels
- The impact of extraction and consumption of natural resources.

The traditional Earth sciences often merge with other areas. For example, the geochemistry course module deliberately explores interrelationships between the solid Earth, aqueous and atmospheric chemistry. The study of mineral and fossil fuel resources investigates the wider links between the geology of these resources (their origin and distributions) and the economic, political and environmental aspects of their extraction.

The approach we take to our teaching provides you with a much more holistic knowledge of topical environmental issues than you would get from a more conventional Geology or Earth Science degree.

## **Fieldwork**

Fieldwork is an essential part of your training as an Earth scientist. Earth Sciences students are encouraged to take a fieldwork skills module in year 2 and an overseas geosciences field course in the final year. You will be introduced to a variety of field skills and methods in a geological area such as Wales, Western Ireland, Scotland or Greece. You will also have the opportunity to attend field courses on such diverse subjects as Geophysics, Geochemical Cycling and Hydrogeology and Water Resources.

## **Year 2**

You will develop your Earth science skills through a compulsory research skills module. In addition, you will choose a number of optional modules from the range available. Some options outside the School may be taken, for example a foreign language or, international development studies.

## **Year 3**

In the third year you will undertake an independent project under the supervision of a member of faculty that will involve collecting and analysing data, collating and interpreting results and presenting them in oral and written form. Previous students have conducted projects on a vast range of different topics including, for example: volcanic ash, British beaches, earthquake hazard and risk assessment, sandstone variability, sedimentary geochemistry, hydrogeology, and palaeoclimatology. The transferable skills developed in this module are invaluable in future careers. Alongside this you will have the opportunity to choose modules in your preferred area of the environmental Earth sciences from the wide range available.

## **Year 4 (MSci only)**

During the final year of the integrated Masters programme you will study advanced Masters level modules chosen from the optional range and undertake a substantial piece of independent research under the supervision of a research active member of faculty. MSci projects may include topics such as:

- Palaeohydrology of the Yare River Valley
- Fracture patterns in lavas
- Seasonal variation in spring water chemistry
- Quantifying and explaining variation in chalk cliff erosion rates
- A sheet sandstone – record of a catastrophic Jurassic flood?
- Modelling volcanic dome collapse.



## **Environmental Geophysics**

This degree explores our physical environment using the powerful techniques of mathematics and physics. You will gain a theoretical and practical understanding of the atmosphere, oceans and solid Earth.

Associations between the atmosphere, oceans and solid Earth make our degrees unique. With a strong multidisciplinary component the courses offer you a more complete and integrated physical approach to understand the way the physical Earth works. Among other topics you will investigate how:

- The mathematics and physics of fluids in motion can be applied to the atmosphere, oceans, volcanoes or the Earth's fluid outer core
- Different kinds of waves are generated by earthquakes, by wind at the ocean surface and in the atmosphere by flow over the mountains
- Changes in the Earth's climate are driving changes in the global ocean circulation and vice-versa
- The atmosphere and hydrosphere interact with the Earth's surface to produce physical (and chemical) weathering, erosion, transport and deposition of sediments by the action of wind, water and ice
- Earthquakes initiate, propagate and stop using seismic and remote sensing data.

Within the geophysical sciences all topics involve understanding features of the Earth through mathematical methods and physics. For example, studying the hydrosphere draws on many aspects of Geophysics: at any one time parts of the Earth's water budget reside in the atmosphere, in ice caps and glaciers, run-off and rivers, in the oceans and in the ground. We aim to provide you with a broad-based course that allows specialisation in your field of interest. The degree is run in conjunction with the School of Mathematics. About one third of your degree will be spent studying mathematical techniques enabling you to analyse the physical environment. You may take subjects taught by the School of Mathematics such as Dynamical Oceanography or Fluids and Solids.

### **Fieldwork**

Fieldwork is an essential part of your training as a geophysical scientist. This may include seismic and gravity investigations, magnetic and electrical surveys, beach shore processes on the Norfolk coast, current measurements from boats and tracking balloons to determine local air circulation.

The field trips can take you throughout East Anglia, other parts of Britain, Europe and further afield

### **Links with Industry**

Given the strategic proximity of UEA to the North Sea, all our students are invited to visit the facilities of local geophysical companies including marine geophysics surveying ships and to carry out practical work using industrial data and software

### **Year 2**

You will have considerable flexibility to tailor your degree according to your interests. You will choose from the substantial range of optional modules available, including Hydrology and Hydrogeology, Meteorology, Ocean Circulation, Solid Earth Geophysics and Low Carbon Energy.

### **Year 3**

As well as continuing with compulsory and optional module choices, in the third year students on the BSc programmes will undertake an independent research project under the supervision of an actively researching member of faculty. Students develop their own final year research projects and previous topics have included geophysical investigation of buried channels; palaeomagnetism of dykes; archaeological surveys using electrical methods; climate change in the Mediterranean; hurricane landfalls; dynamics of estuaries; remote sensing of ocean upwelling; volcano seismology; earthquake hazard. MSci students undertake the compulsory Modelling Environmental Processes module and choose from a range of optional modules including Advanced Statistics, Fossil Fuels and Earthquake and Volcanic Hazards.

### **Year 4 (MSci only)**

During the final year of the integrated Masters programme you will undertake a substantial piece of independent research in a topic that matches your interests. You will also study advanced level modules chosen from the substantial optional range available. A couple of examples of MSci dissertations include; Stress and Strain in the Andes Mountains from Earthquake Data and Using High Performance Computing (HPC) to investigate realistic global seismic wave propagation.

### **Meteorology and Oceanography**

The Meteorology and Oceanography degree is currently, we believe, the only degree course in the UK where you can study marine and atmospheric sciences jointly. The marine and atmospheric environments are inextricably linked and governed by similar physical and mathematical principles.

To understand the Earth's climate and its variability, we must consider both the oceanic and atmospheric influences. This degree is for you if you want to use mathematical and physical techniques to gain a thorough understanding of the processes driving the atmosphere and oceans. Areas of study include:

- El Niño
- Cloud formation
- Thermohaline circulation
- Ocean circulation
- Land-sea breezes
- Waves and tides
- Ocean-ice processes
- Hurricanes
- Weather forecasting
- Marine observations
- Thunderstorms
- Tornadoes
- Remote sensing
- Urban climatology
- Coastal upwelling

About one third of your degree is spent studying mathematical techniques enabling you to study the fluid environment.

### **Links with Industry**

The degree benefits from our own in-house weather forecasting company, "WeatherQuest", providing valuable teaching support. All students on the degree programme are invited to spend time working with WeatherQuest in order to gain commercial awareness of the meteorological industry.

UEA's close relationship with the government marine laboratory in Lowestoft (Cefas) brings benefits including teaching by Cefas scientists, visits to the laboratory, and the opportunity for industrial year placements. Students on the MSci degree have the opportunity in their Masters year to develop skills in offshore renewable energy engineering, a rapidly expanding industry.

### **Fieldwork**

Employers value practical experience of taking and analysing atmospheric and marine observations. Field courses include a week on the west coast of Scotland studying marine processes. Recently undergraduates, as part of their project work, have participated in research cruises led by the School, to places such as the Nordic Seas. Vacation work, which may form the basis of your third year research project can also be arranged, for example at the Met Office, Cefas, or the British Antarctic Survey.

### **Year 1**

During your first year you will develop your basic scientific skills, so courses in mathematics, research techniques, science communication and field skills are compulsory. This not only provides you with essential skills training, but also allows you to progress to your honours years with confidence. Furthermore you will be introduced to the scientific concepts that underlie atmospheric and marine science.

### **Year 2**

This is the year where you develop your meteorology and oceanography knowledge and skills with compulsory modules in these subjects as well as mathematical techniques including, Meteorology, Ocean Circulation, Waves, Tides and Shallow Water Processes.

### **Year 3**

In the third year students on the BSc programmes undertake an independent research project in a topic that matches their interests. MSci students study a compulsory module in modelling environmental processes. All students choose optional modules from the wide range available, allowing you to tailor the course to your interests.

### **Year 4 (MSci only)**

During this year you study advanced Masters level modules chosen from the substantial optional range available. You also undertake a substantial piece of independent research under the supervision of a research active member of faculty. Examples of recent MSci dissertation titles include; Ice shelf meltwater at the Antarctic Peninsula using oxygen isotope data, Modulation of the diurnal cycle of convection over the maritime continent of Indonesia by the Madden-Julian Oscillation, A mesoscale cyclone on the 26 February 2007 and its impact on the weather of the Faroe Islands.

## **The area**

### **Norwich and the Region**

Norwich is the perfect student city. Lively, and with a real character all of its own, it is a charming mix of the historical and the new. The history of the city is visible for all to see, whether it be the medieval Norman Castle which dominates the skyline, the two cathedrals within the city or the city walls themselves. The city also has superb facilities ranging from countless cafés, restaurants, retail outlets, shopping malls, entertainment venues and the stunning Millennium Library 'The Forum'.

There are plenty of opportunities to catch live music or theatre and the city is teeming with modern and traditional pubs. The local football team, Norwich City, is a top-flight club and suitably befitting such a wonderful city and county which was recently ranked as the safest place to live in the UK. Our students love Norwich so much, many stay long after their studies.

### **Shopping**

Norwich was voted one of the top 10 shopping destinations in the UK and it's no wonder. With modern shopping malls and chain stores sitting alongside stunning arcades, cobbled streets and the UK's largest open-air market, Norwich is a joy to walk around. As well as four department stores, Norwich has plenty of small independent stores, vintage second-hand shops and exciting new 'pop-ups'.

### **Nightlife**

Norwich has a thriving club and bar scene with new establishments popping up all the time. There are also a number of live music venues in Norwich such as Norwich Arts Centre and UEA's very own LCR and The Waterfront.

There are hundreds of pubs dotted around Norwich, which at one time was said to have had a tavern for every day of the year. Many pubs host comedy and quiz nights whilst real-ale fans will not want to miss the famous Norwich Beer Festival.

## **Art and Culture**

There are four cinemas in Norwich including the art-house Cinema City and six theatres that regularly host performances of everything from Shakespeare to Jimmy Carr. There are also many museums and galleries in the city centre as well as annual events such as the arts-driven Norfolk and Norwich Festival.

The carnival and firework display for the Lord Mayor's celebration every July is also not to be missed while the Royal Norfolk Show is the country's largest two-day county show which celebrates all that is great about this diverse county from its agricultural heritage to its gourmet food producers.

## **Food and Drink**

Norwich has plenty of choice when it comes to eating out. Japanese, Thai and Italian sit alongside traditional English restaurants and pub grub. Celebrity chefs Delia Smith and Jamie Oliver both have restaurants in the city. Delia's is an established restaurant situated alongside Norwich City's football ground, whilst Jamie's Italian has only recently opened for business in the Royal Arcade. You'll be pleased to know that many Norwich eateries also offer student discount.

## **Perfect Location**

The University of East Anglia has a unique location. Situated on the edge of both the city and countryside, you are perfectly placed to explore both. The Norfolk coastline is home to world famous bird reserves and beautiful beaches, as well as ever-changing countryside interlaced with sleepy medieval villages, bustling market towns and stately homes. One of England's most beautiful national parks, The Broads, is also right on your doorstep for sailing, walking and cycling while paintballing, amusement parks, a trip to the zoo or a day at the races all are within easy striking distance of the University.

## **Travel**

Norwich has excellent public transport with trains every 30 minutes to London. Norwich International Airport is only 15 minutes from the city centre and has links worldwide via daily flights to Amsterdam. National Express and Megabus also operate services directly from the University.

## Application Requirements and Process

The requirements for coming to study in the School of Environmental Sciences at the University of East Anglia are:

You will need to pass Year 2 of the related Ocean University programme with 80% overall.

Language Requirements:

We require evidence of proficiency in English (including writing, speaking, listening and reading). Recognised English Language qualifications include:

- IELTS: 6.0 overall (minimum 5.5 in any component)
- TOEFL: Internet-based score of 78 overall (minimum 20 in Speaking component, 18 in Writing and Listening components and 19 in Reading components).
- PTE: 55 overall (minimum 51 in any component).

How to apply:

You will need to first express your interest with the International Office of OUC by 15 May 2013. To apply, you need to complete an **application form**, available from the International Office of OUC, and supply **one academic reference, academic transcripts for year 1 and 2** (your final transcript of year 2 will only be available in July 2013, but you can apply with existing transcript to secure a place and submit your final transcript to UEA in July), IELTS/TOLEF result (for those do not currently have an IELTS result and confident you are able to obtain a satisfactory result, please still apply without an English test result, but you will have to submit such a result to UEA by 15 June) sending them to [lisha.li@uea.ac.uk](mailto:lisha.li@uea.ac.uk) by the 30<sup>th</sup> May 2013.

If your application is accepted, you will receive an offer via email in June, together with a form which will ask you to choose your modules for your first year here at UEA (which is known as year 2 here at UEA).

Miss Lisha Li, China Projects Manager of UEA will be visiting OUC in May 2013. Please ask your International Office regarding her detailed days and time of visit, so she can help answer any important questions you may have about course application, visa application face to face.

The courses commence on the 19<sup>th</sup> September 2013. Fees for the programme for 2013 is: , as a general guidance, you are advised to secure an additional funding of GBP 9000? per year as living expenses during your stay at UEA.

If you have any questions about the opportunities, please do not hesitate to contact [lisha.li@uea.ac.uk](mailto:lisha.li@uea.ac.uk).

We look forward to receiving your application, and we wish you every success with your studies.

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