Programme Specification Document

Approved, 2022.04

Overview

Programme Code	36376
Programme Title	Climate Change
Awarding Institution	Liverpool John Moores University
Programme Type	Degree
Programme Leader	Jonathan Dick
Link Tutor(s)	

Awards

Award Type	Award Description	Award Learning Outcomes
Alternative Exit	Diploma in Higher Education (SW) - SDHE	Employ a wide range of field and practical techniques including primary observations of climatological and environmental factors and relevant statistical analyses, to develop solution based answers to problem solving. Critically analyse and evaluate information pertaining to environmental contexts and drivers of climate change. Accept responsibility for group and personal work in a range of climatic, environmental, and meteorological contexts. A student who successfully completes a placement year will be eligible for the Sandwich award and will, in addition to the above, be able to demonstrate the professional and personal skills necessary for effective employment within a professional environment.
Alternative Exit	Bachelor of Science - BS	Demonstrate a broad and comparative knowledge of the general scope of the subject, its different areas and applications, and its interactions with related subjects. A detailed knowledge of a defined subject or a more limited coverage of a specialist area balanced by a wider range of study. In each case, specialised study will be informed by current developments in the subject. Demonstrate a critical understanding of the essential theories, principles and concepts of the subject(s) and of the ways in which these are developed through the main methods of enquiry in the subject.
Alternative Exit	Bachelor of Science (SW) - SBS	Demonstrate a broad and comparative knowledge of the general scope of the subject, its different areas and applications, and its interactions with related subjects. A detailed knowledge of a defined subject or a more limited coverage of a specialist area balanced by a wider range of study. In each case, specialised study will be informed by current developments in the subject. Demonstrate a critical understanding of the essential theories, principles and concepts of the subject(s) and of the ways in which these are developed through the main methods of enquiry in the subject.
Recruitable Target	Bachelor of Science with Honours (SW) - SBSH	See Learning Outcomes Below
Target Award	Bachelor of Science with Honours - BSH	See Learning Outcomes Below
Alternative Exit	Certificate of Higher Education - CHE	Apply a broad knowledge base and a range of appropriate analytical techniques to climatological, environmental, and geographical problem solving. Communicate a structured and coherent evaluation of the interaction between the physical and human environment. Operate in a range of natural environments, and take responsibility for their contributions and outputs.
Alternative Exit	Diploma of Higher Education - DHE	Employ a wide range of field and practical techniques including primary observations of climatological and environmental factors and relevant statistical analyses, to develop solution based answers to problem solving. Critically analyse and evaluate information pertaining to environmental contexts and drivers of climate change. Accept responsibility for group and personal work in a range of climatic, environmental, and meteorological contexts.

Alternate Award Names	

External Benchmarks

Subject Benchmark Statement	UG-Earth sciences, environmental sciences and environmental studies (2022), UG-Geography (2022)

Programme Offering(s)

Mode of Study, Mode of Delivery	Intake Month	Teaching Institution	Programme Length
Full-Time, Face to Face	September	LJMU Taught	3 Years
Sandwich Year Out, Face to Face	September	LJMU Taught	4 Years

Aims and Outcomes

Educational Aims of the Programme

The core aim of the Climate Change programme is to develop an integrated approach to the study of this global issue, producing students educated in all aspects relevant to this issue. The main objective of the programme is to deliver a degree in Climate Change, led by a team of research-active teaching staff within an innovative and inclusive teaching and learning environment. With a practical and applied focus, this programme will examine the subject of Climate Change through the twin lenses of scientific scrutiny and socio-political analysis. This will include: Detailed introduction of the physiochemical and life processes that operate across the climate system of the Earth. Introduction to the physical basis of climate and earth systems. Examination of evidence for observed changes in climate and potential future impacts on all aspects of the Earth, including society and the economy. Exploration and evaluation of the current and potential future responses, adaptation, and mitigation to Climate Change. Understanding of issues concerning science communication and the reasons for climate scepticism and denialism. The specific programme aims are to: a) Develop graduates with a critically informed understanding of the processes that control climate, who have an integrated approach to the understanding and management of the interaction between the natural and human world in relation to anthropogenic Climate Change. b) Demonstrably link fieldwork and experiential learning to the wider development of both subject specific and practical skills and to apply such skills to the understanding, mitigation and adaptation of anthropogenic Climate Change. c) Enhance employment prospects by developing graduates with a wide range of transferable technical (including ICT & GIS),analytical and critical skills. d) Develop powers of critical and analytical thinking, problem solving and logical argument through the progressive development of understanding, critical awareness and research skills over the course of the degree programme. e) Promote the concept of continuous improvement, lifelong learning, and contribution to the wider community through personal development and scholarly activity. f) Encourage students to engage with the development of employability skills. In addition to the aims for the main target award, the sandwich programme aims to provide students with an extended period of work experience at an approved partner that will complement their programme of study at LJMU. This will give the students the opportunity to develop professional skills relevant to their programme of study, as well as attitude and behaviours necessary for employment in a diverse and changing environment.

Learning Outcomes

Code	Description
PLO1	Demonstrate a comprehensive understanding of climatology, and climate change.
PLO2	Evaluate and take responsibility for their own learning and reflect upon that learning
PLO3	Communicate (including all written, verbal and visual forms of communication) complex results and synthesise outputs via the use of analytical techniques
PLO4	Design, plan and implement relevant methodologies to collect data (including secondary data sources) relevant for addressing a particular problem or question
PLO5	Apply professional ethics and standards
PLO6	Undertake the management of large datasets
PLO7	Undertake field and laboratory investigations with due regard for health and safety
PLO8	Demonstrate an understanding of how the processes affecting climate change vary at a range of spatial and temporal scales.
PLO9	Articulate appropriate techniques which may be employed in order to provide a holistic and interdisciplinary approach to managing climate change
PLO10	Demonstrate a critical awareness of the interaction between people and the environment and how human alteration impacts upon natural process at a range of temporal and spatial scales
PLO11	Demonstrate critical awareness of the main methodologies (including GIS) used in the analysis and interpretation of climatological data
PLO12	Apply appropriate techniques to problem solving and hypothesis testing
PLO13	Observe, collect, analyse, synthesize and summarise climatological information from a range of diverse sources
PLO14	Evaluate the significance of data (both quantitative and qualitative), draw appropriate interpretations and conclusions and contextualise their findings
PLO15	Critically evaluate the strengths and weaknesses of contrasting theories and interpretations and consequently develop logical argument

Programme Structure

Programme Structure Description

Study Abroad Students will be offered the opportunity of study abroad at Level 5. Option 1: Replacement of 60 credits of Level 5 with study abroad The programme will offer the opportunity of 60 credits of study at Level 5. Students will be enrolled on a 360 credit honours with study abroad programme. A 60 credit Level 5 study abroad module [5352NATSCI Study Semester Abroad Climate Change] will replace Semester 2 modules on the standard BSc Climate Change Programme. This study abroad will cover the same learning outcomes as the modules being replaced. The modules to be studied in the host institution must be agreed in advance. The Level 5 mean for the final award mark will be calculated based upon the 120 credits at Level 5. Option 2: Additional study year abroad following Level 5 The programme will offer the opportunity of an additional study year abroad following Level 5. Students will be enrolled on a 480 credit honours with study abroad programme. Of those 480 credits, 120 will be taken via a Level 5 study abroad module [5359NATSCI Study Year Abroad Climate Change]. The modules to be studied in the host institution must be agreed in advance. The Level 5 mean for the final award mark will be calculated based upon the 240 credits at Level 5. Option 3: Sandwich Year The aim is to provide students with an extended period of work experience at an approved partner that will complement their programme of study at LJMU. This will give the students the opportunity to develop professional skills relevant to their programme of study, as well as attitude and behaviours necessary for employment in a diverse and changing environment. The placement year [5406NATSCI Sandwich Year Climate Change] will follow Level 5 and students will be enrolled on a 480 credit honours sandwich programme. The Level 5 mean for the final award mark will be calculated based upon the 240 credits at Level 5.

Programme Structure - 360 credit points	
Level 4 - 120 credit points	
Level 4 Core - 120 credit points	CORE
[MODULE] 4301NATSCI Methods Skills and Careers 1 Approved 2022.02 - 20 credit points	
[MODULE] 4302NATSCI Earth Systems Approved 2022.01 - 20 credit points	
[MODULE] 4305NATSCI Environment Society and Sustainability Approved 2022.01 - 20 credit points	
[MODULE] 4306NATSCI Methods Skills and Careers 2 Approved 2022.01 - 20 credit points	
[MODULE] 4400NATSCI Climate and Human Evolution Approved 2022.02 - 20 credit points	
[MODULE] 4401NATSCI Introduction to Climatology and Meteorology Approved 2022.01 - 20 credit points	
Level 5 - 120 credit points	
Level 5 Core - 120 credit points	CORE
[MODULE] 5302NATSCI GIS and Employability Approved 2022.02 - 20 credit points	
[MODULE] 5306NATSCI Project Design and Management Approved 2022.02 - 20 credit points	
[MODULE] 5402NATSCI Climate Change: Catchments and Oceans Approved 2022.02 - 20 credit points	
[MODULE] 5403NATSCI The Cryosphere in a Changing Climate Approved 2022.01 - 20 credit points	
[MODULE] 5404NATSCI Responding to Climate Change Approved 2022.02 - 20 credit points	
[MODULE] 5405NATSCI Impact of Climate Change On Biological Processes Approved 2022.02 - 20 credit points	
Optional placement - 120 credit points	OPTIONAL
Placement Year - 120 credit points	OPTIONAL
[MODULE] 5406NATSCI Sandwich Year - Climate Change Approved 2022.01 - 120 credit points	
OR Study Abroad - 120 credit points	OPTIONAL
[MODULE] 5359NATSCI Study Year Abroad - Climate Change Approved 2022.01 - 120 credit points	

Optional Study Semester - 60 credit points	OPTIONAL
[MODULE] 5352NATSCI Study Semester Abroad - Climate Change Approved 2022.01 - 60 credit points	
Level 6 - 120 credit points	
Level 6 Core - 80 credit points	CORE
[MODULE] 6301NATSCI Dissertation Approved 2022.02 - 40 credit points	
[MODULE] 6315NATSCI Cold Environments: Processes and Change Approved 2022.01 - 20 credit points	
[MODULE] 6401NATSCI Advanced Topics in Climate Change Approved 2022.02 - 20 credit points	
Level 6 Optional - 40 credit points	OPTIONAL
[MODULE] 6300NATSCI Work-Based Learning Approved 2022.01 - 20 credit points	
[MODULE] 6306NATSCI Environmental Modelling and GIS Approved 2022.03 - 20 credit points	
[MODULE] 6307NATSCI Environmental Change Approved 2022.02 - 20 credit points	
[MODULE] 6402NATSCI Renewables and Low Carbon Futures Approved 2022.01 - 20 credit points	
[MODULE] 6403NATSCI Sustainability and the Circular Economy Approved 2022.01 - 20 credit points	

Module specifications may be accessed at https://proformas.ljmu.ac.uk/Default.aspx

Teaching, Learning and Assessment

The programme will be delivered through lectures, practical sessions including both PC based and laboratory based sessions, paper based practical sessions, workshops (discussion forums),group and individual project work, tutorials and field classes. The latter will include both day long field trips, and residential field classes. It is estimated that approximately 50% of learning activity will be non-lecture-based, providing students with an active and hands-on approach to learning about Climate Change through practice. The programme will be structured so that there is a transition from the introduction of methods and topics in L4 to increasing applicability in L5 and complex problem solving in L6. Specifically throughout L5 students develop the ability to employ methods and skills strategically to test hypotheses and solve environmental problems. Throughout L6 students will develop and demonstrate the ability to analyse with (increasingly complex data sets and hypotheses to test),synthesise, critically evaluate and apply solutions to real world practical problems relevant to environmental situations/management.

Opportunities for work related learning

Employability sessions will be part of the curriculum, in order to raise student awareness and understanding of personal employability and skills acquisition. Briefly in many of the proposed core modules (e.g. Methods, Skills and Careers 1, Skills in Climate Change Science, and GIS and Employability) we have developed assessed employability sessions (tutorial, workshops) around job application, personal statement development and to raise understanding and awareness of the skill set students in Climate Change will need. Furthermore the Geography and Environmental Sciences Subject group have been working alongside the Careers advisors to develop links with Careers within JMU as well as with the industry. In addition through the utilisation of the common resources Climate Change students will enjoy several formal modular options regarding development of work based learning. These include a Work Based Learning Module where 6 weeks are spent at a host employer and the Sandwich year, where students can gain 12 months' work experience following their second year of study; both comply with the University Placement Learning Code of Practice. Once the students are accepted onto a sandwich or work-based placement the module leader arranges suitable mentor/tutors and manages communication with the student throughout the time in placement. Climate Change is a global issue affecting a large number of environmental processes and socioeconomic aspects of life, therefore graduates will have a broad range of career prospects. These include areas of environmental management and consultancy (e.g. Mouchel, Amec Foster Wheeler, nationally based consultancies including Applied iGeology), operational government authorities such as Environment Agency and Natural England, engineering and surveying roles and the business and insurance sector. Roles in science communication and science policy through governmental and non-governmental organisations also offer employability opportunities. Beyond the directly applied career potential, graduates can gain employment in the teaching profession, the civil service and a range of GIS (Geographical Information Systems) related roles across various (non-environment) employment sectors. Further study including Masters programmes develop research skills in more specific areas of the wider Climate, Life and Environmental Sciences, other graduates transfer to environmental engineering related Masters degrees to develop a more vocational career. Several modules in the proposed programme engage external professionals to introduce subject specific lectures and/or workshops, thus enriching the learning experience of the students with industry expertise whilst providing a chance for networking the development of their careers. Sessions involving industry experts at the module level are in: Environment Society and Sustainability (L4): Sefton Council, Centre for Alternative Technology, Coastal and Marine Management (L6): Sefton Council, Natural England, National Nuclear Laboratories Environmental Modelling and GIS (L6): JBA Consulting River Monitoring and Management (L6): AMEC Foster Wheeler/EA It is envisaged that several of the proposed modules will also have an input from external professionals.

Entry Requirements

Type	Description
NVQ	Second year entry can potentially be arranged for candidates who have a HND or HNC with merits in the key relevant units or for those who have passed the first year of a degree programme in a closely related subject elsewhere.
Other international requirements	Applicants should have acquired passes in appropriate examinations in their country of origin and provide evidence of English language ability equivalent to 6.0 IELTS.
Alternative qualifications considered	In common with standard University policy, applicants should have GCSE passes in Mathematics and English Language at grade C or above, or 4 and above. School/College leavers should be at least 17.5 years on admission.
BTECs	Applicants should be studying an appropriate Diploma and have (or expect to obtain) a pass with DMM grades in an appropriate science or social science subject.
A levels	Applicants should have (or expect to obtain) at least 2 A2 Levels or equivalent, at least one of which should be in an appropriate science or social science subject. Our minimum points tariff is 112 points; this will depend on subjects being studied. Our offers may be grade specific e.g. we usually expect at least 80 points in an appropriate science or social science subject.

International Baccalaureate	Applicants must have (or expect to obtain) the full award including grade 5 in one appropriate science.