

PROGRAMME SPECIFICATION

Bachelor of Science with Honours in Climate Change

Awarding institution	LJMU
Teaching institution	LJMU
UCAS Code	SCCD
JACS Code	F764
Programme Duration	Full-Time: 3 Years, Sandwich Thick: 4 Years
Language of Programme	All LJMU programmes are delivered and assessed in English
Subject benchmark statement	Earth Sciences, Environmental Science and Environmental Studies (2014); Geography (2014)
Programme accredited by	
Description of accreditation	
Validated target and alternative exit awards	Bachelor of Science with Honours in Climate Change Bachelor of Science with Honours (SW) in Climate Change Diploma of Higher Education in Climate Change Diploma in Higher Education (SW) in Climate Change Certificate of Higher Education in Climate Change
Programme Leader	Tim Lane

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:

- 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.
- 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.
- Enhance employment prospects by developing graduates with a wide range of transferable technical (including ICT & GIS), analytical and critical skills.
- 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.

Alternative Exit/ Interim Award Learning Outcomes - Certificate of Higher Education

A student who is eligible for this award will be able to:

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/ Interim Award Learning Outcomes - Diploma of Higher Education

A student who is eligible for this award will be able to:

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.

Target award Learning Outcomes - Bachelor of Science with Honours

A student successfully completing the programme of study will have acquired the following subject knowledge and understanding as well as skills and other attributes.

A student who is eligible for this award will be able to:

1. Demonstrate a comprehensive understanding of climatology, and climate change.
2. Demonstrate an understanding of how the processes affecting climate change vary at a range of spatial and temporal scales.
3. Articulate appropriate techniques which may be employed in order to provide a holistic and interdisciplinary approach to managing climate change
4. 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
5. Demonstrate critical awareness of the main methodologies (including GIS) used in the analysis and interpretation of climatological data
6. Apply appropriate techniques to problem solving and hypothesis testing
7. Observe, collect, analyse, synthesize and summarise climatological information from a range of diverse sources
8. Evaluate the significance of data (both quantitative and qualitative), draw appropriate interpretations and conclusions and contextualise their findings
9. Critically evaluate the strengths and weaknesses of contrasting theories and interpretations and consequently develop logical argument
10. Evaluate and take responsibility for their own learning and reflect upon that learning
11. Communicate (including all written, verbal and visual forms of communication) complex results and synthesise outputs via the use of analytical techniques

12. Design, plan and implement relevant methodologies to collect data (including secondary data sources) relevant for addressing a particular problem or question
13. Apply professional ethics and standards
14. Undertake the management of large datasets
15. Undertake field and laboratory investigations with due regard for health and safety

Alternative target awards

A student who is eligible for the following awards will be able to:

Bachelor of Science with Honours (SW) in Climate Change -

Demonstrate the professional and personal skills necessary for effective employment within a professional environment.

Teaching, Learning and Assessment

The methods used to enable outcomes to be achieved and demonstrated are as follows:

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.

Programme structure - programme rules and modules

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.

Level 6	Potential Awards on completion	Bachelor of Science with Honours
Core	Option	Award Requirements
6301NATSCI Dissertation (40 credits)	6300NATSCI WORK-BASED LEARNING (20 credits)	80 core credits at level 6 40 option credits at level 6

6315NATSCI COLD ENVIRONMENTS: PROCESSES AND CHANGE (20 credits) 6401NATSCI ADVANCED TOPICS IN CLIMATE CHANGE (20 credits)	6306NATSCI ENVIRONMENTAL MODELLING AND GIS (20 credits) 6307NATSCI ENVIRONMENTAL CHANGE (20 credits) 6402NATSCI RENEWABLES AND LOW CARBON FUTURES (20 credits) 6403NATSCI Sustainability and the Circular Economy (20 credits)	
Level 5	Potential Awards on completion	
Core	Option	Award Requirements
5302NATSCI GIS AND EMPLOYABILITY (20 credits) 5306NATSCI PROJECT DESIGN AND MANAGEMENT (20 credits) 5402NATSCI CLIMATE CHANGE: CATCHMENTS AND OCEANS (20 credits) 5403NATSCI THE CRYOSPHERE IN A CHANGING CLIMATE (20 credits) 5404NATSCI RESPONDING TO CLIMATE CHANGE (20 credits) 5405NATSCI IMPACT OF CLIMATE CHANGE ON BIOLOGICAL PROCESSES (20 credits)		120 core credits at level 5 0 option credits at level 5
Level 4	Potential Awards on completion	
Core	Option	Award Requirements
4301NATSCI METHODS SKILLS AND CAREERS 1 (20 credits) 4302NATSCI EARTH SYSTEMS (20 credits) 4305NATSCI ENVIRONMENT SOCIETY AND SUSTAINABILITY (20 credits) 4400NATSCI CLIMATE AND HUMAN EVOLUTION (20 credits) 4401NATSCI INTRODUCTION TO CLIMATOLOGY AND METEOROLOGY (20 credits) 4402NATSCI SKILLS IN CLIMATE CHANGE SCIENCE (20 credits)		120 core credits at level 4 0 option credits at level 4

Information about assessment regulations

All programmes leading to LJMU awards operate within the University's Academic Framework.
<https://www.ljmu.ac.uk/about-us/public-information/academic-quality-and-regulations/academic-framework>

Opportunities for work-related learning (location and nature of activities)

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.

Criteria for admission

A/AS Level

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.

BTEC National Diploma

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.

AVCE

AVCE applicants should normally have (or expect to obtain) 112 points in an appropriate discipline (normally science).

Irish Leaving Certificate

Applicants must have passed (or expect to pass) their Irish Higher exams with at least grade BBC in 3 subjects, 2 of which must be sciences (Psychology may be considered a science).

Scottish Higher

Applicants must have passed (or expect to pass) their exams with at least grade BBC in 3 subjects, 2 of which must be sciences (Psychology may be considered a science).

International Baccalaureate

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

Access

Access applicants should have (or expect to obtain) a pass in an appropriate QAA-approved Access course.

Higher national diploma

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

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.

Mature entry

We welcome applications from highly motivated mature applicants with relevant experience but without the necessary formal qualifications. To qualify as a mature student you have to be at least 21 years of age by the 31st December of the year of entry.

Overseas qualifications

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.

External Quality Benchmarks

All programmes leading to LJMU awards have been designed and approved in accordance with the UK Quality Code for Higher Education, including the Framework for Higher Education Qualifications in the UK (FHEQ) and subject benchmark statements where applicable.

The University is subject to periodic review of its quality and standards by the Quality Assurance Agency (QAA). Published review reports are available on the QAA website at www.qaa.ac.uk

Programmes which are professionally accredited are reviewed by professional, statutory and regulatory bodies (PSRBs) and such programmes must meet the competencies/standards of those PSRBs.

Support for students and their learning

The University aims to provide students with access to appropriate and timely information, support and guidance to ensure that they are able to benefit fully from their time at LJMU. All students are assigned a Personal Tutor to provide academic support and when necessary signpost students to the appropriate University support services.

Students are able to access a range of professional services including:

- Advice on practical aspects of study and how to use these opportunities to support and enhance their personal and academic development. This includes support for placements and careers guidance.
- Student Advice and Wellbeing Services provide students with advice, support and information, particularly in the areas of: student funding and financial matters, disability, advice and support to international students, study support, accommodation, health, wellbeing and counselling.
- Students studying for an LJMU award at a partner organisation will have access to local support services

Methods for evaluating and improving the quality and standards of teaching and learning

Student Feedback and Evaluation

The University uses the results of student feedback from internal and external student surveys (such as module evaluations, the NSS and PTES), module evaluation questionnaires and meetings with student representatives to improve the quality of programmes.

Staff development

The quality of teaching is assured through staff review and staff development in learning, teaching and assessment.

Internal Review

All programmes are reviewed annually and periodically, informed by a range of data and feedback, to ensure quality and standards of programmes and to make improvements to programmes.

External Examining

External examiners are appointed to programmes to assess whether:

- the University is maintaining the threshold academic standards set for awards in accordance with the FHEQ and applicable subject benchmark statements
- the assessment process measures student achievement rigorously and fairly against the intended outcomes of the programme(s) and is conducted in line with University policies and regulations
- the academic standards are comparable with those in other UK higher education institutions of which external examiners have experience
- the achievement of students are comparable with those in other UK higher education institutions of which the external examiners have experience

and to provide informative comment and recommendations on:

- good practice and innovation relating to learning, teaching and assessment observed by external examiners
- opportunities to enhance the quality of the learning opportunities provided to students

Please note:

This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content, teaching, learning and assessment methods of each module can be found in module and programme guides.