



Swansea University
Prifysgol Abertawe

FACULTY OF SCIENCE AND ENGINEERING

POSTGRADUATE STUDENT HANDBOOK

Year 4 (FHEQ LEVEL 7)

MRes Biosciences

**SUBJECT SPECIFIC
PART TWO OF TWO
MODULE AND COURSE STRUCTURE
2022-23**

DISCLAIMER

The Faculty of Science and Engineering has made all reasonable efforts to ensure that the information contained within this publication is accurate and up-to-date when published but can accept no responsibility for any errors or omissions.

The Faculty of Science and Engineering reserves the right to revise, alter or discontinue degree programmes or modules and to amend regulations and procedures at any time, but every effort will be made to notify interested parties.

It should be noted that not every module listed in this handbook may be available every year, and changes may be made to the details of the modules. You are advised to contact the Faculty of Science and Engineering directly if you require further information.

The 22-23 academic year begins on 26 September

2022 Full term dates can be found [here](#)

IMPORTANT

Swansea University and the Faculty of Science of Engineering takes any form of **academic misconduct** very seriously. In order to maintain academic integrity and ensure that the quality of an Award from Swansea University is not diminished, it is important to ensure that all students are judged on their ability. No student should have an unfair advantage over another as a result of academic misconduct - whether this is in the form of **Plagiarism**, **Collusion** or **Commissioning**.

It is important that you are aware of the **guidelines** governing Academic Misconduct within the University/Faculty of Science and Engineering and the possible implications. The Faculty of Science and Engineering will not take intent into consideration and in relation to an allegation of academic misconduct - there can be no defence that the offence was committed unintentionally or accidentally.

Please ensure that you read the University webpages covering the topic – procedural guidance [here](#) and further information [here](#). You should also read the Faculty Part One handbook fully, in particular the pages that concern Academic Misconduct/Academic Integrity. You should also refer to the Faculty of Science and Engineering proof-reading policy and this can be found on the Community HUB on Canvas, under Course Documents.

Welcome to the Faculty of Science and Engineering!

Whether you are a new or a returning student, we could not be happier to be on this journey with you.

This has been a challenging period for everyone. The COVID-19 pandemic has prompted a huge change in society as well as how we deliver our programmes at Swansea University and the way in which you study, research, learn and collaborate. We have been working hard to make sure you will have or continue to having an excellent experience with us.

We have further developed some exciting new approaches that I know you will enjoy, both on campus and online, and we cannot wait to share these with you.

At Swansea University and in the Faculty of Science & Engineering, we believe in working in partnership with students. We work hard to break down barriers and value the contribution of everyone. Our goal is an inclusive community where everyone is respected, and everyone's contributions are valued. Always feel free to talk to academic staff, administrators, and your fellow students - I'm sure you will find many friendly helping hands ready to assist you.

We all know this period of change will continue and we will need to adapt and innovate to continue to be supportive and successful. At Swansea we are committed to making sure our students are fully involved in and informed about our response to challenges.

In the meantime, learn, create, collaborate, and most of all – enjoy yourself!

Professor Johann (Hans) Sienz
Interim Pro-Vice Chancellor/Interim Executive Dean
Faculty of Science and Engineering

Faculty of Science and Engineering	
Interim Pro-Vice Chancellor/Interim Executive Dean	Professor Johann Sienz
Head of Operations	Mrs Ruth Bunting
Associate Dean – Student Learning and Experience (SLE)	Professor Paul Holland
School of Biosciences, Geography and Physics	
Head of School: Siwan Davies	
School Education Lead	Laura Roberts
Head of Biosciences	Geoff Profitt
Biosciences Programme Director	Wendy Harris
Year Coordinators	MSc – Dr Aisling Devine MRes - Dr Nicole Esteban

STUDENT SUPPORT

The Faculty of Science and Engineering has two **Reception** areas - Engineering Central (Bay Campus) and Wallace 223c (Singleton Park Campus).

Standard Reception opening hours are Monday-Friday 9am-5pm.

The **Student Support Team** provides dedicated and professional support to all students in the Faculty of Science and Engineering. Should you require assistance, have any questions, be unsure what to do or are experiencing difficulties with your studies or in your personal life, our team can offer direct help and advice, plus signpost you to further sources of support within the University. There are lots of ways to get information and contact the team:

Email: studentsupport-scienceengineering@swansea.ac.uk (Monday–Friday, 9am–5pm)

Call: +44 (0) 1792 295514 and 01792 6062522 (Monday-Friday, 10am–12pm, 2–4pm).

Zoom: By appointment. Students can email, and if appropriate we will share a link to our Zoom calendar for students to select a date/time to meet.

The current student **webpages** also contain useful information and links to other resources:

<https://myuni.swansea.ac.uk/fse/coe-student-info/>

READING LISTS

Reading lists for each module are available on the course Canvas page and are also accessible via <http://ifindreading.swan.ac.uk/>. We've removed reading lists from the 22-23 handbooks to ensure that you have access to the most up-to-date versions. Access to print material in the library may be limited due to CV-19; your reading lists will link to on-line material whenever possible. We do not expect you to purchase textbooks, unless it is a specified key text for the course.

THE DIFFERENCE BETWEEN COMPULSORY AND CORE MODULES

Compulsory modules must be **pursued** by a student.

Core modules must not only be **pursued**, but also **passed** before a student can proceed to the next level of study or qualify for an award. Failures in core modules must be redeemed.

Further information can be found under “Modular Terminology” on the following link -

<https://myuni.swansea.ac.uk/academic-life/academic-regulations/taught-guidance/essential-info-taught-students/your-programme-explained/>

MRes (FHEQ Level 7) 2022/23

MRes Biosciences

Compulsory Modules

Semester 1 Modules
BIOM25B Science Skills and Research Methods 20 Credits Dr MS Fowler/Dr AP Devine/Dr JN Griffin/Dr C Pimiento
<i>Select 40 credits of Optional Modules</i>
Semester 2 and 3
BIOM64 Research Project 120 Credits
Total 180 Credits

Optional Modules

Choose exactly 40 credits

BIB700	Trends in Biosciences	Dr M Lurgi Rivera	TB1	20
BIOM12	Biodiversity and Health Ecology	Dr KL Wells	TB1	20
GEGM04	Environmental Modelling	Prof PRJ North/Prof B Kulesa	TB1	20
GEGM26	Climate Science and Policy	Prof T Murray	TB1	20

BIB700 Trends in Biosciences

Credits: 20 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr M Lurgi Rivera

Format: 18 hours seminars
18 hours round table discussion
2 hours lectures

Delivery Method: "International Initiative for Theoretical Ecology seminar series, generally held every second Tuesday at 5pm, as well as a series of scientific journal clubs and practical workshops on quantitative methods for bioscientists, held on the Thursdays in between the biweekly seminars.

Recordings of seminars will be watched in-person in the classroom and will be followed by scientific discussions of the topic.

Journal clubs will involve personal learning through the reading of scientific papers and a marked component of attendance and in-class participation.

Quantitative Methods will be delivered in two workshops that will cover fundamentals of spatial ecology including metapopulation and metacommunity paradigms; and the analysis of complex networks structure and dynamics."

Module Aims: In this module you will discover what it takes to be a research scientist and discuss world-leading research with your module lecturer. You will watch the International Initiative for Theoretical Ecology seminar series, generally held every second Tuesday (or watch the recordings online), as well as a series of journal clubs and workshops on quantitative techniques for Bioscientists, held on the Thursdays in between the biweekly seminars. You will gain practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge in Biosciences. For a selection of seminars, you will summarise the research highlights (3 to 5 bullet points, maximum 85 characters) and write an abstract on the research (max 300 words). You will also produce brief, webinar-style video-blogs and blogs for the remaining seminars. Lastly, you will write a short essay, with the accompanying computer code, discussing and implementing one of the quantitative approaches of your choice amongst those introduced during the workshop sessions. These tasks will allow you to fine-tune your communication skills and increase your depth of understanding of the latest research in Biosciences.

Module Content: - Introduction to the module, including specific details of assignments and timetable for the term (lecture) x1

- International Initiative for Theoretical Ecology seminar series (talks and round table) x5
- Series of journal clubs informal talks (talks and round table) x2
- Workshops on Quantitative Methods x2

Intended Learning Outcomes: 1) Gain a systematic understanding of knowledge, and a critical awareness of current problems and/or new insights at the forefront of Biosciences

2) Interpret, classify, and summarise new techniques and methodologies applicable to Biosciences

3) Reorganise and use established techniques of research and enquiry to create and interpret knowledge in Biosciences

4) Understand and apply quantitative analytical, statistical, and modelling methods in innovative ways to tackle scientific questions in the field of ecology and biology.

Assessment: Coursework 1 (20%)
Coursework 2 (20%)
Coursework 3 (20%)
Coursework 4 (20%)
Attendance (20%)

Assessment Description: Assignments 1 (20%) - Research highlights (3 to 5 bullet points, maximum 85 characters) and abstract on the research presented at the seminar attended on that week (max 300 words).

Assignment 2 (20%) - Webinar-style presentation (video blog) on the research presented at the seminar attended on that week

Assignment 3 (20%) - Written blog on the research presented at the seminar attended on that week

Assignment 4 (20%) – Mini research report (max 2,000 words) presenting one of the quantitative techniques using during the course to tackle a specific scientific question.

Attendance and Contribution (20%) - Attendance at seminars and workshops is mandatory and this assessment component will be split amongst all module's sessions. Failure to attend will result in marks being deducted.

Moderation approach to main assessment: Second marking as sampling or moderation

Assessment Feedback: Oral feedback during scientific discussions and written feedback on assignments.

Failure Redemption: Assessments are not deferrable due to the requirement to attend the appropriate seminar. Students who fail the module overall (i.e. a final overall module mark of less than 50%) will be required to write a further essay that includes a quantitative modelling component on Trends in Biosciences.

Additional Notes: "Delivery of both teaching and assessment will be blended live and self-directed activities online (seminar videos) and on-campus.

Check out past seminars here: <https://www.youtube.com/c/TheoreticalEcologySeminarSeries>"

BIOM12 Biodiversity and Health Ecology

Credits: 20 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr KL Wells

Format: Lectures (15 hrs)
Practical (PC and Lab)
Tutorials/Workshops
Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

Blended learning, lectures, practicals, workshops

Module Aims: Biodiversity & Health Ecology emerges as a new interdisciplinary research field at the intersection of humans, animals and ecosystems. It acknowledges that the spread of infectious diseases and pollutants in time of global changes strongly links health issues across organisms and ecosystems. Understanding and controlling Emerging Infectious Diseases (e.g. SARS, Ebola and Nipah virus) requires interdisciplinary and holistic concepts and approaches that account for human and animal interactions in all kind of natural and anthropogenic environments. This module addresses contemporary topics in the field of One Health from an ecological perspective and in context of changing biodiversity. It introduces background information and essential tools for environmental biologists, disease ecologists and resource managers to take part in tackling this global challenge. Through participation in this module you will develop the foundations to engage in research in this field.

Module Content: The growing awareness that health of humans, animals and ecosystems are tightly interwoven in times of global change requires interdisciplinary approaches in conservation and resource management. This module addresses contemporary topics in the field of One Health from an ecological perspective and in context of changing biodiversity due to human impacts. We will explore health at the human – domestic animal – wildlife interface with emphasis on interdisciplinary concepts and tools necessary to tackle global challenges in context of changing environments, agriculture, biodiversity and socioeconomic trends.

We will look at relevant tools and methods to explore interdisciplinary OneHealth as a topic of interest in basic and applied science and for informed decision making for governmental and non-governmental stakeholders.

This module will help you to develop the necessary ways of thinking and skills to link the manifold changes in our urban and natural environments to issues of human and wildlife health. We will highlight important ecological principles and topics that are at the backbone to understand the epidemiology and spread of infectious diseases, including human demography and habitat exploitation, biological invasions, population and community ecology, biotic interactions, functional biodiversity and, more generally, global change and climate change.

The course instructors look forward to sharing different skills and perspectives as we journey together through this interdisciplinary module!

Intended Learning Outcomes: On completion of this course, students will be able to:

L01 Develop and describe key concepts of EcoHealth and One Health and interdisciplinary approaches to tackle global challenges for conservation and resource management

L02 Understand system dynamics such as the spread of infectious diseases at the interface of humans, domestic and wild animals and ecosystems in context of changing environments, agriculture, biodiversity and socioeconomic trends

L03 Work independently and as a team to gather, synthesize and critically evaluate information pertaining to One Health scenarios.

L04 Apply ecological key principles into ecosystem and animal health issues

L05 Be familiar with surveillance, risk assessment, and control measures to combat infectious disease spread at the human-wildlife interface

Assessment: Examination 1 (40%)
Coursework 1 (20%)
Coursework 2 (20%)
Coursework 3 (20%)

Resit Assessment: Examination 1 (100%)

Assessment Description: 3 hours exam

CW1 Poster

CW2 Essay

CW3 Report

Moderation approach to main assessment: Second marking as sampling or moderation

Assessment Feedback: Annotated feedback on coursework and exams

Failure Redemption: August resit exam, resubmission of coursework

Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.

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BIOM25B Science Skills and Research Methods

Credits: 20 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr MS Fowler, Dr AP Devine, Dr JN Griffin, Dr C Pimiento

Format: Contact hours are divided into 20 hrs of lectures and 23 hrs of practicals/seminars/self-directed learning.

Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.

The form of contact may vary depending on local requirements related to COVID-19.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

Lectures on campus

ICT Practicals on campus (PC Labs)

Group Symposium on Campus

Module Aims: This intensive lecture and practical based module covers science skills for students wishing to pursue postgraduate studies, including MSc, MRes, MPhil and PhD degrees. It will teach students how to make good use of library and internet resources (including Web of Science, Canvas and Dryad), to design and analyse their experiments, and to make presentations of their data during conferences and symposia.

It will provide PG students in the Department of Biosciences (and other Departments in the College of Science) with the research and analytical skills necessary to carry out their research projects. It will teach them how to formulate and test scientific hypotheses, and how to generate and analyse scientific results using a variety of research methods.

Lecture topics include Reporting and Presentation skills, Numerical skills and Data Analysis and Scientific Writing.

The lectures are taught during the first part of the Semester. The module is examined through a combination of Continuous Assessment (90%) and an online examination in the form of a MCQ test (10%).

Basic reading:

Whitlock, M. and Schluter, D. (2014) *The Analysis of Biological Data* (Roberts & Co.).

Crawley, M.J. (2005) *Statistics: An Introduction Using R* (Wiley).

Original research papers given in reading list and found through self-directed learning.

Module Content: Library and internet resources

Experimental design

Plagiarism and how to avoid it

Presentation skills (PowerPoint and graphics packages)

Scientific writing and literature reviews

Environmental data analysis and presentation using R

Intended Learning Outcomes: On completion of this course, students will be expected to:

Critically assess the merits of different experimental designs and the key concepts in methodology and philosophy of science

Understand safety requirements of their work

Make lucid and timely presentations of their data

Understand the problems and consequences of plagiarism in scientific research

Make efficient use of databases, library and internet resources for their postgraduate studies

Demonstrate knowledge of which statistical tests are appropriate for different data types

Write appropriate code to plot, explore and analyse data in the R programme environment

Interpret and evaluate the output of statistical models applied to data

Critically read, summarise and synthesise published scientific literature

Assessment:	Class Test 2 - Held under exam conditions (10%) Coursework 1 (40%) Coursework 2 (30%) Group Work - Presentation (20%)
Resit Assessment:	Examination 1 (100%)
Assessment Description:	Class Test: 1 hour online MCQ assessing Data Analysis Group Oral Presentation CW1 - Literature Review CW2 - Environmental Data Analysis using R (Report: Analysis of Provided (x2) and Own Data sets)
Moderation approach to main assessment:	Not applicable
Assessment Feedback:	Annotated scripts (using Turnitin/Grademark) Feedback posted on Canvas In-class questions, using clickers for instant feedback Mock MCQ practice examination questions, using clickers for instant feedback Model answers
Failure Redemption:	Resit with MCQ Exam in August. Module mark capped at 50%
Additional Notes:	Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.
	Not available to exchange or visiting students

GEGM04 Environmental Modelling

Credits: 20 **Session:** 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Prof PRJ North, Prof B Kulesa

Format: 21

Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

On Campus

Module Aims: An understanding of the environment is increasingly important in many areas, e.g. industry, agriculture, conservation, health, science, and planning. This module introduces computational modelling in a geographical context. It aims to develop thinking about environmental issues within a modelling framework, and to develop practical skills in developing and using computational models, and in computer data analysis and visualisation. Examples are focused on solving practical scientific problems in environmental dynamics and climate change, focussing on modelling the terrestrial carbon and hydrological cycles.

Module Content: This module introduces computational modelling in the context of environmental dynamics and climatic Change. It aims to develop thinking about environmental issues within a modelling framework, and to develop practical skills in developing and using computational models, and in computer data analysis and visualisation. Examples are focussed on solving practical scientific problems which involve modelling the terrestrial carbon and hydrological cycles.

Outline of lecture topics:

- Role of modelling in environmental dynamics and climate change.
- Land surface carbon and hydrological cycles
- Models of plant photosynthesis and respiration
- Climate modelling and GCMs
- Modelling vegetation dynamics and succession
- Hydrological modelling - ground water and evapotranspiration
- Modelling surface water flow
- Example applications in climate change science and environmental planning

Example practical sessions

- Computer data analysis and visualisation
- Modelling the terrestrial carbon cycle using Biome BGC
- Introduction to modelling groundwater flow

Intended Learning Outcomes: -A broad understanding of the purpose and scope of computational modelling in environmental dynamics and climate change

- A critical awareness of the range of modern applications to which environmental modelling contributes
- An understanding of the environmental processes related to the water cycle and to biogeochemical cycles
- An ability to independently develop and execute simple computational models
- The ability to solve problems and write reports based on application of existing environmental models

Assessment: Coursework 1 (25%)
Coursework 2 (25%)
Examination 1 (50%)

Assessment Description: Examination
Coursework 1 - biogeochemical cycles
Coursework 2 - groundwater hydrology

Moderation approach to main assessment: Universal non-blind double marking

Assessment Feedback: Continual assessment feedback in writing on standard department feedback forms

Failure Redemption: resit examination or resubmit continual assessment whichever if applicable

Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.

Available for visiting students.

GEGM26 Climate Science and Policy

Credits: 20 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Prof T Murray

Format:

Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

Campus

Module Aims: This module will develop critical thinking about the role of science, especially climate science, in society. This role will be discussed in terms of what is desirable, what is practical and what is the present reality. We will focus on a few specific areas; what climate science tells us about what we should do as a society; what current policy is and what is needed; how science provides advice to policy-makers (especially through the activities of bodies such as the Intergovernmental Panel on Climate Change); and the symbiotic/antagonistic relationship between science and the media. During the module you will be challenged to think about familiar topics in new ways - from the ownership of the information you consume to the role of housing, agriculture and business in a post-carbon society. We will also consider the communication of climate science topics to scientists, the general public and to policy makers.

Assuming there are no covid restrictions this module will be taught in a mixed format - there will be one or two face-to-face field trips, meetings and role playing sessions - but in order to allow visiting speakers from the widest range of sources - most sessions will be delivered online.

Module Content: Sample syllabus (details will change from year-to-year)

Climate Science and Policy, lectures, seminars and discussions

WEEK 1: Introduction / format of the module; The scientific method; Peer Review; Intro to the EN-ROADS simulator. Distribution of talk symposium topics.

WEEK 2: Visiting speaker; Science and the media; Assignment: critique of article.

WEEK 3: Visiting speaker; Science, risk and policy.

WEEK 4: NO SESSION

WEEK 5: Visiting speaker; Student talk symposium: [Topics: Extinction Rebellion; IPCC; Climate Change Committee; NRW; SPECIFIC, Institute for Government, IPCC topics].

WEEK 6: Citizen's assembly report <https://www.climateassembly.uk/recommendations/index.html> (Links to an external site.) Two visiting speakers.

WEEK 7: Visiting speaker; Feedback on critique. Science into stories... Getting science into the media, press releases; Assignment: writing a press release

WEEK 8: 2nd part of student talk symposium.

WEEK 9: Two visiting speakers.

WEEK 10: 23rd April World Climate Summit simulation <https://www.climateinteractive.org/programs/world-climate/> 6 bloc simulation plus possibly Extinction Rebellion => teams of 3 or 4 people, 3 rounds negotiations, ~20 minutes ea

Typical visiting speaker topics:

Purpose, People, Play - we are the leaders we are waiting for

Calculating and reducing the carbon footprint of Swansea University

Solutions to fuel poverty and climate change in the built environment

What is farming for? Agriculture and Climate Change in the UK

Why net zero is not enough

Well-being of future generations (Wales) act, 2015, The Environment Act and the Climate Emergency

IPCC, how it works and is it fit for purpose?

Natural Resources Wales, Welsh environmental legislation and the climate emergency

Use of activism to provoke behaviour change - Extinction Rebellion

Intended Learning Outcomes: At the end of this module you will have developed understanding of:

- the role of an individual in the climate system and your own carbon footprint
- inputs into climate models and the changes that are needed in society to limit climate warming to below 1.5/2.0 degrees C as per the Paris agreement
- current UK policy on climate change, including net zero - and whether this is sufficiently ambitious
- the role of different aspects of the UK economy in climate change (business, agriculture etc)
- the international basis for tackling climate change and the role of and challenges for different countries
- the workings and findings of the IPCC and other climate related policy bodies
- the way that science and the media interact and the ownership and influences on the media we consume

Assessment:	Coursework 1 (10%) Coursework 1 (10%) Coursework 2 (15%) Coursework 2 (15%) Participation Exercise (5%) Participation Exercise (5%) Coursework 3 (30%) Coursework 3 (30%) Coursework 4 (40%) Coursework 4 (40%)
Assessment Description:	Participation Exercise CW1 - Engagement CW2 - Press release on scientific paper CW3 - INDC document CW4 - COP26 essay
Moderation approach to main assessment:	Second marking as sampling or moderation
Assessment Feedback:	Via online marking and feedback in class sessions
Failure Redemption:	Resit coursework / alternative essay if coursework cannot be resat
Additional Notes:	Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.
Available to visiting postgraduate students with permission of scheme coordinator.	

BIOM64 MRes Research Project (Biosciences)

Credits: 120 Session: 2022/23 January-June

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr N Esteban

Format: Module staff: 5 hrs lecture/contact time in Q&A workshops.

Supervisor project Supervision: 60 hrs.

Delivery Method: Research will be undertaken under the guidance of academic staff on campus, or at registered Swansea University field study locations, e.g.

Centre for Sustainable Aquatic Research (CSAR) with a 750 m² controlled environment building, plus separate primary quarantine facilities, ozone-sterilised water intake and discharge, centralised 12-27°C programmable air and mixed fresh/salt water supply, light intensity and photoperiod regimes. Associated with CSAR research group.

Swansea Lab for Animal Movement (SLAM), incorporates an electronic wall (3x4 m) linked to a high-speed computer cluster for processing and visualising spatiotemporal movement and population data. SLAM also designs and produces state-of-the-art animal tags to study organism movement and environmental interactions. Associated with SLAM research group.

Theoretical/mathematical research uses advanced university computing facilities that includes high-end graphics workstations, high-speed network links and the Blue Ice supercomputer located at the Mike Barnsley Centre for Climatic Change Research (Pembrokeshire). Associated with DEG research group.

Several dedicated Bioscience labs housed within our grade 2 listed Wallace Building recently benefitted from a £4.2 million renovation programme, providing world-class research facilities that includes a specialist molecular ecology lab and a dedicated arthropod facility. Associated with SNaP research group

Current postgraduate researchers undertake major fieldwork projects throughout Wales, the rest of the UK and beyond. Many also travel further afield, with departmental field projects run in Asia, Africa, South America, and Europe. Associated with CSAR, SNaP, SLAM, and DEG research groups.

Module Aims: Students conduct independent research in Biosciences under the guidance of academic staff in one or more of our Research Themes:

- marine and freshwater systems
- behavioural ecology and evolution
- biodiversity and ecosystems
- natural products and environmental resources

Students produce a written dissertation (thesis) based on their research. The thesis will be written in a scientific style suitable for publication in an appropriate journal.

Module Content: A thesis embodying the methods and results of the research project. All theses should be presented in accordance with the University's Research Degree Regulations (paragraph 11). To be undertaken and written in Terms 2 and 3. A candidate's progress will be monitored at specific stages as detailed in the University's Guide to Progress Monitoring of Research Students.

Intended Learning Outcomes: On completion of this module, students will be expected to demonstrate:

- a systematic understanding of knowledge, and a critical awareness of current problems and/or new insights in their chosen Research Pathway
- a comprehensive understanding of techniques applicable to their own research project
- originality in the application of knowledge, together with a practical understanding of how established techniques of research in their chosen Research Pathway
- conceptual understanding that enables the student: to (1) evaluate critically current research and advanced scholarship in the discipline and (2) evaluate methodologies and develop critiques of them and, where appropriate, to propose new hypotheses.

Assessment: Report (100%)

Assessment Description: A thesis embodying the methods and results of the research project. All theses should be presented in accordance with the University's Research Degree Regulations (paragraph 11).

Moderation approach to main assessment: Not applicable

Assessment Feedback: A candidate's progress will be monitored at specific stages as detailed in the University's Guide to Progress Monitoring of Research Students. The student will receive supervision and guidance from two Academic Staff throughout the research project which will

Include:

- advice and guidance on the research undertaken
- detailed advice on the expected milestones and dates for successive stages of research
- feedback and guidance and advice to ensure the research can be completed, including the preparation of the thesis
- guidance and advice on the writing up of the thesis, including reading and giving commentary upon the whole of the thesis during the period of composition

The frequency of supervision will vary during the duration of the research, but at a minimum there must be at least three formal supervisions via face-to-face meetings.

Feedback on the research thesis (examination) shall be conducted in accordance with the University's Guide to the Examination of Research Students.

Failure Redemption: If the thesis is not deemed to be of MRes standard but in terms of substance, there is real potential, the candidate could, within a period of 12 months, present a thesis of appropriate standard; amendments / alterations / additions required may concern both substance and presentation.

Additional Notes: Not available to exchange or visiting students