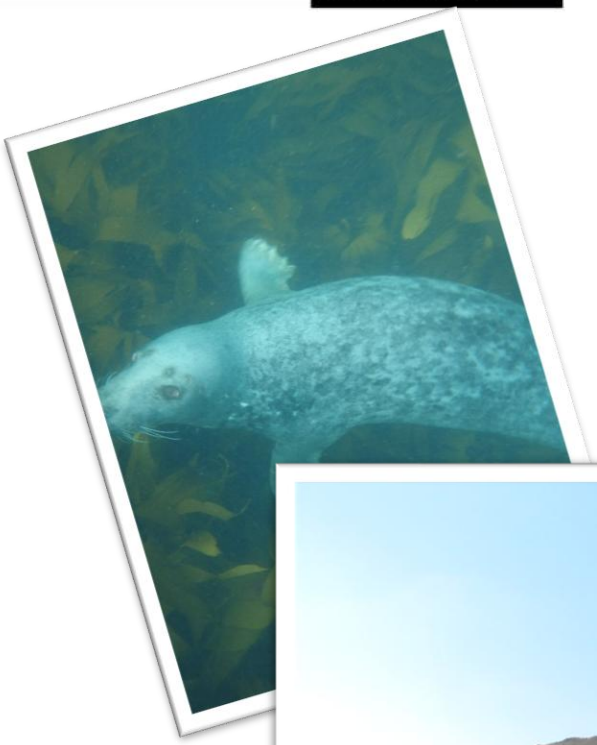
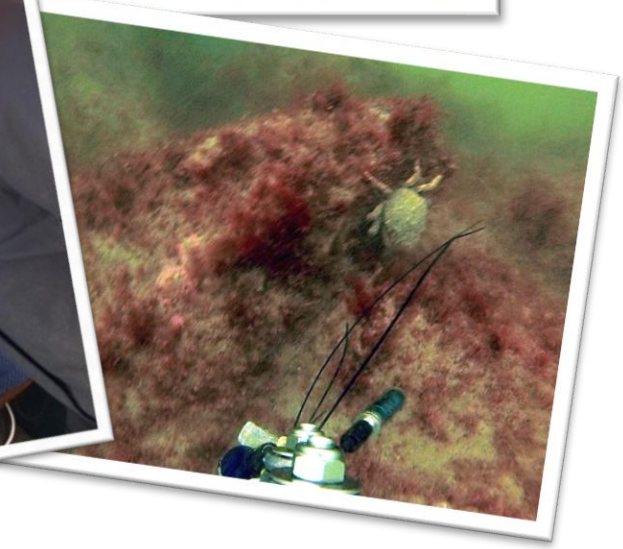
Newquay UNIVERSITY CENTRE CORNWALL COLLEGE

ZOOLOGY SURF MARINE

BSc Applied Marine Zoology





BSc Applied Marine Zoology

Module descriptions*

YEAR 1

Key Professional Skills (Core) | 20 credits | 70% Coursework | 30% Test
Develop skills for employability and for effective degree study in this module. Study skills will be addressed to allow you to develop an effective learning strategy and a foundation for your own personal and professional development. The module will also develop your career strategy and help you find suitable work experience placements. You will enhance your IT and data handling abilities.

Global Ocean Science (Core) 20 credits | 60% Coursework | 40% Practical
You can't understand ocean life without some understanding of the ocean! This module addresses key scientific concepts and practical skills which underpin the study of marine conservation. Delivered in an exciting range of lectures interlinked with practical sessions, field trips and boat activity, topics covered range from geology, sedimentology and marine chemistry to meteorology and oceanography.

Ocean Ecology and Conservation (Core) | 20 credits | 100% Coursework
In this module, you will develop an understanding of ecological relationships from food webs and competition through to reproduction strategies and dispersal. We explore different aquatic habitats and learn about conservation efforts to protect them. Practical sessions and fieldtrips run throughout the year to develop insights into marine ecology.

Fundamentals of Biology (Core) | 20 credits | 50% Test | 50% Coursework
This biology-based module provides you with an understanding of the key biological concepts and practical skills which underpin the study of marine biological organisms. Initially building a knowledge of the cellular and molecular biology relevant to marine biological processes, it then proceeds to look at basic anatomical and physiological features of marine organisms.

Diversity, Classification and Evolution (Core) | 20 credits | 60% Coursework | 40% Test
This module explores the incredible variety of life on Earth and the process of evolution that produced it. You will become familiar with the characteristics and classification of animals, providing a foundation for more detailed study of specific groups. You will also investigate the evolutionary processes that resulted in today's species and how those processes continue to impact on them. During the practical session which supplement this module students learn systems and techniques to accurately identify and classify organisms.

Marine Survey Techniques (Core) | 20 credits | 100% Coursework
Through a series of lessons and fieldtrips which complement your academic theory you will learn how to use the techniques and equipment skills needed to understand and investigate marine life. You will learn about marine charts and navigation and how these are used in boat operation. You will also develop skills in geographical information systems (GIS) to the produce maps of collected data – a vital skill in modern conservation science.

YEAR 2

Marine Vertebrate Biology and Conservation (Core) | 20 credits | 40% Practical | 10% Test | 50% Exam
How do you learn about animals which spend so much of their lives hidden from us? As well as exploring the functional biology of a range of marine vertebrate species, you will also develop an understanding of the techniques developed to study them. We focus on and compare the extremes of physiological and anatomical adaptations shown by these animals. You will develop a detailed understanding of the life history of selected species including: feeding, migration, social systems and behaviour. We will also explore the challenges we face to conserve flagship species; such as turtles, marine mammals and sharks.

Fish Ecology (Core) | 20 credits | 60% Coursework | 40% Exam
Fish are extraordinary animals, demonstrating some of the most extreme adaptations to sometimes variable and challenging environments. You will explore the fundamentals of fish physiology and taxonomy, compare the anatomy of different fish species and relate form to function. This module also explores the complexity of fish behavioural ecology which has enthralled biologists for centuries and through a series of detailed case studies discovers how some species are being protected and conserved.

Marine Invertebrates (Core) | 20 credits | 50% Practical | 50% Coursework
In this module you will study the fascinating diversity of marine invertebrates such as Cnidarians (jellyfish & coral), Echinoderms (starfish), Molluscs (shellfish and octopus), and Crustaceans (lobsters & crabs) amongst others. Aspects that will be explored are taxonomy (how are they all related?), biology, physiology (does an octopus really have 3 hearts!), form & function (how does a jellyfish sting!), ecology, special adaptations (how does a cuttlefish change colour!), life cycles & conservation issues. You will also investigate the husbandry and fisheries associated with select species.

Marine Conservation in Practice (Core) | 20 credits | 100% Coursework
Over the course you are encouraged to undertake 100 hours of work-based learning. This module allows you to contextualise and evaluate those experiences. You will investigate contemporary methods for effective communication and audience engagement, learn how to negotiate between stakeholders and source funding for marine conservation projects.

Research methods and GIS (Core) | 20 credits | 60% Coursework | 40% Test
This module aims to provide the learner with the appropriate tools for designing and carrying out a research project within the field of zoology. Students will also learn how to select and apply appropriate statistical tests to analyse and interpret quantitative data, and to present findings appropriately as either a presentation or report.
Students will become familiar with G.I.S. and its applications in zoology based research

You can choose one from the following

Global Issues in Conservation (Optional) | 20 credits | 50% Coursework | 50% Test
We are facing the sixth extinction event. Due to human activity we are losing species at a terrifying rate. It has never been more urgent to face up to this. In this module you will explore a range of current conservation issues and what inspiring and courageous people around the world are doing to combat them.

Population Genetics and Community Ecology (Optional) | 20 credits | 60% Coursework | 40% Exam
This module will analyse the interactions between population dynamics and ecosystem functioning, employing current software to predict population changes. Factors affecting population size and variability will also be investigated and related to genetic diversity and its importance to practical conservation.
So what does that mean? You will gain an understanding of what genetic diversity is, how genetic variation is created and maintained in populations, but also the factors that can cause genetic diversity to be lost and what the consequences may be for populations with low genetic diversity.
We will also look at the wider ecosystem and see how impacts on one species will have consequences for other species within the ecosystem. We will use genetic and population modeling software to investigate and predict the probable outcomes for species or systems experiencing different management or pressure scenarios.

YEAR 3

Honours Project (Core) | 40 credits | 20% Literature Review | 80% Report and Presentation
A major part of your final year this module allows you to undertake your own in-depth research project. The module comprises a substantial research study element, which includes a literature review, experimental design, the collection, analysis and interpretation of data and report writing.

GIS and Marine Environmental Management (Core) | 20 credit | 50% Coursework | 50% Exam
As technology develops apace, we have increasing potential to use marine resources and the pressure on these has never been greater. In the last decade there has been a shift towards an 'Ecosystem approach' to resource management which requires an ability to understand the potential impacts and conflicts surrounding a variety of marine resources, from current use of fisheries to developing areas such as offshore power and seabed mining. GIS is a powerful tool to aid management and spatial planning. Using ecological data and models students will map use of marine systems and also examine where impacts with marine life and ecosystems may occur.

Monitoring Marine Ecosystems (Core) | 20 credits | 100% Coursework
This module builds on survey methods developed in Stage 1 and 2. Students will investigate and employ a range of methods including fieldwork, remote sensing, bio-indicators and ecological models to enable them to effectively plan and undertake monitoring programmes. Students will select a taxonomic group to specialise in and hone their identification and survey skills in that area.

Choose two from:

Marine Pollution and Ecotoxicology (Optional) | 20 credits | 60% Exam | 40% Coursework
Examining current topics within marine pollution from specific organic chemicals to chronic noise; this module looks at the sources, pathways impacts and sinks of different pollutants and evaluates prevention and mitigation strategies. Considering the effects of specific pollutants from a cellular, whole organism, community and the ecosystem, students will evaluate the use of biomarkers and bioindicator species for monitoring pollutants.

Applications in Zoology (Optional) | 20 credits | 100% Coursework
This module enables students to study and develop ideas related to selected zoological themes relevant to the workplace or research situation. The student will explore these themes through the literature, seminars and tutorials developing his/her own research skills.

Conservation Project Management (Optional) | 20 credits | 80% Coursework | 20% Test
Project management is a vital component of conservation work, as most activities are time-limited projects based on limited funds, a need to maximise planned activity, keep to a budget and regularly report to funding providers. Effective communication of research is a vital skill to increase public awareness of conservation issues, this module will explore how science is effectively and appropriately communicated to a range of audiences and evaluate their effectiveness in the delivery of coherent messages.

Conservation Genetics (Optional – requires previous study of genetics eg a suitable level 4 or 5 genetics module) | 20 credits | 40% Report | 60% Exam
This module aims to equip the learner with the most up to date molecular techniques being used in genetics for conserving and protecting species. This will look at genome sequencing of animals, the importance of maintaining genetic diversity within a captive and wild population, and the implication of genetic diversity in management of small populations of possibly threatened species

Careers and Progression:

It is a fantastic career, but marine biology is a highly competitive field, so you must be prepared to work hard and make the most of work-related learning opportunities. Luckily Cornwall has a very active marine community so there are plenty of opportunities. The marine environment has come to the forefront of the agenda for the European community so the demand for academically qualified and practically experienced people has never been higher. The Marine Conservation specialism provides the opportunity to move into a wide range of careers including consultancy, or working for organisations like the Environment Agency, English Nature or Wildlife Trusts.

Additional Activities and Expenses:

Visits: There are activities and day trips to supplement the academic side of the course – most of these are free but some may entail small costs towards travel costs or entry fees (approx £20 per year)
Equipment: Good waterproofs (coat and trousers), and footwear for fieldwork are essential. Your own IT equipment (a good laptop) will make your studies much easier.
Fieldtrips: There may be opportunities for fieldtrips within the UK and abroad depending on demand and availability, for example we have offered international fieldtrips to South Africa, Borneo and Honduras costing approximately £2500.
Activities: We encourage students to undertake some training in boat handling and/or diving this is entirely optional, cost vary (approximate costs for examples: RYA level 2 powerboat £180, PADI Open water diver £400)

*Please note – modules are indicative and may be subject to change.

F/T Route Year	When in Year? (I.e. Autumn, Spring etc.)	Core or Option Module	Credits	Module Title
1	All	Core	20	CORN172 Marine Science
1	All	Core	20	CORN128 Ecology of Aquatic Systems
1	All	Core	20	CORN1000 Fundamentals of Biology
1	All	Core	20	CORN1005 Key Professional Skills
1	All	Core	20	CORN135 Marine Survey Techniques
1	All	Core	20	CORN1002 Diversity Classification & Evolution
FHEQ Level: 5 BSc (Hons) Applied Marine Zoology (Full Time 4897)				
F/T Route Year	**When in Year? (I.e. Autumn, Spring etc.)**	**Core or Option Module**	**Credits**	**Module Title**
2	All	Core	20	CORN2018 Marine Vertebrate Biology and Conservation
2	All	Core	20	CORN290 Fish Ecology
2	All	Core	20	CORN291 Marine Invertebrates
2	All	Core	20	CORN276 Research Methods and GIS for Zoology
2	All	Optional	20	CORN2016 Global Conservation Issues
2	All	Optional	20	CORN273 Population Genetics & Community Ecology
2	All	Core	20	CORN236 Marine Conservation in Practice
FHEQ Level: 6 BSc (Hons) Applied Marine Zoology (Full Time 4897)				
F/T Route Year	**When in Year? (I.e. Autumn, Spring etc.)**	**Core or Option Module**	**Credits**	**Module Title**
3	All	Core	20	CORN316 Monitoring Marine Ecosystems
3	All	Core	20	CORN317 GIS and Marine Environmental Management
3	All	Core	40	CORN328 Honours Project
3	All	Optional	20	CORN318 Marine Pollution and Ecotoxicology
3	All	Optional	20	CORN314 Conservation Project Management
3	All	Optional	20	CORN306 Applications of Zoology
3	All	Optional	20	CORN315 Conservation Genetics
3	All	Optional	20	CORN305 Communicating Zoology