

Marine Mammal Science

Programme Requirements:

Marine Mammal Science - MSc
BL5104 (15 credits) and BL5115 (30 credits) and BL5210 (30 credits) and BL5599 (60 credits) and 45 credits from Module List: BL5103, BL5121 - BL5122, BL5124 - BL5125, MT5751

Compulsory modules:

BL5104 Conservation and Management of Marine Mammals				
SCOTCAT Credits:	15	SCQF Level 11	Semester	2
Academic year:	2018/9			
Planned timetable:	Weeks 8 - 11			
From the heated debates surrounding whaling to calls for seal culls to protect commercial fish stocks, issues pertaining to marine mammals feature regularly in the public domain and often polarise public opinion. Finding ways to address human-marine mammal conflicts and advise on mitigation have become important tasks for many marine mammal scientists. Through a series of lectures, seminars, debates and workshops, students will explore human-marine mammal interactions to better understand the underlying factors. They will learn to critically evaluate current conservation and management issues and will explore ways in which sound science can contribute to alleviate existing and future conflicts.				
Learning and teaching methods of delivery:	Weekly contact: 3 lectures and 1 seminar each week for 4 weeks, plus 1 workshop in total.			
Assessment pattern:	1.5-hour Written Examination = 50%, Coursework = 50%			
Re-assessment pattern:	100% exam			
Module coordinator:	Dr S Heinrich			
Module teaching staff:	Team taught			

BL5115 Mathematical and statistical modelling for Biologists				
SCOTCAT Credits:	30	SCQF Level 11	Semester	1
Academic year:	2018/9			
Planned timetable:				
Maths can be used to represent processes in nature, and to predict their outcomes. We will show how a statistical model can be fitted to biological data, allowing us to improve our understanding of the system concerned and our ability to make predictions about it.				
Learning and teaching methods of delivery:	Weekly contact: 1 lecture (X 4 weeks) then 4 lectures (X 4 weeks), 4 R labs (X 5 weeks)			
Assessment pattern:	Coursework = 100%			
Re-assessment pattern:	Coursework = 100%			
Module coordinator:	Dr S C Smout			
Module teaching staff:	Dr S Smout, Dr L Rendell, Dr M Morrissey			

Biology - Marine Mammal Science - MSc - 2018/9 - June 2018

BL5210 Principles of Marine Mammal Biology				
SCOTCAT Credits:	30	SCQF Level 11	Semester	1
Academic year:	2018/9			
Planned timetable:	To be arranged.			
<p>This module is core to the MSc Marine Mammal Science and covers key concepts of marine mammal biology. The module introduces the zoogeography of marine mammals and the morphological, physiological and behavioural adaptations that have enabled this diverse group to successfully colonise all of the world's oceans and some freshwater systems. Lectures will focus on topical issues illustrating and contrasting some of the strategies shown by different marine mammal groups and the research techniques currently employed to study the diverse aspects of marine mammal biology and conservation. Student-led seminars and practical classes will complement the lecture series and will introduce some of the applied skills needed to investigate marine mammal ecology and behaviour, including the use spatial and acoustic tools.</p>				
Learning and teaching methods of delivery:	Weekly contact: 10 hours of lectures (x 5 weeks), 2 hours of seminars (x 5 weeks) and 4 hours of practicals (x 5 weeks)			
	Scheduled learning: 90 hours		Guided independent study: 210 hours	
Assessment pattern:	As used by St Andrews: 3-hour Written Examination = 30%, Coursework = 70%			
Re-assessment pattern:	100% exam			
Module coordinator:	Dr S Heinrich			
Module teaching staff:	Team taught			

BL5599 Biology Research Project				
SCOTCAT Credits:	60	SCQF Level 11	Semester	Full Year
Academic year:	2018/9			
Availability restrictions:	Students must be enrolled in one of the Biology MSc degree programmes			
Planned timetable:				
<p>The research project forms an important part of the MSc degree. It involves the study of a defined problem within the field of the relevant MSc degree programme. Students will be required to collate and analyse data and discuss their results in the light of existing literature. In some cases, projects might also involve the design of experiments, the gathering of data and/or collaboration with external data providers. Each student will be paired with designated member(s) of staff who will supervise and provide guidance for the duration of the research project. Students will be tasked with developing a research proposal on their project topic early on during their degree programme. Each project will then be written up in the form of a thesis for submission during the summer and presented as a poster during the end of year MSc student conference.</p>				
Learning and teaching methods of delivery:	Weekly contact: To be arranged.			
Assessment pattern:	Coursework = 100%			
Re-assessment pattern:	No Re-Assessment Available			
Module coordinator:	Dr M Johnson			

Optional modules:

BL5103 Population Biology

SCOTCAT Credits:	15	SCQF Level 11	Semester	2
Academic year:	2018/9			
Planned timetable:	Weeks 5 - 7			
Which human activities might put a population at risk? Can we find out why a wild population appears to be in decline? This module covers the essentials of population biology and population modelling. The principles taught will provide essential background to those who are interested in future careers that involve the conservation and management of wildlife populations..				
Learning and teaching methods of delivery:	Weekly contact: 4 lectures (x 3 weeks), seminar (x 2 weeks), tutorial (x 1 week), lab (x 3 weeks)			
Assessment pattern:	Coursework = 100%			
Re-assessment pattern:	Resubmission of failed item(s) of Coursework			
Module coordinator:	Dr S C Smout			
Module teaching staff:	Team taught			

BL5121 Current Issues in Marine Mammal Behaviour

SCOTCAT Credits:	15	SCQF Level 11	Semester	2
Academic year:	2018/9			
Planned timetable:	Weeks 5 - 7			
Marine mammals are often seen as highly intelligent and complex in their behaviour. This module will investigate such claims by discussing current views and recent advances in the study of marine mammal social behaviour. Each student will present one topic to the class and lead the discussion on it. Topics covered will include brain evolution, dolphin signature whistles, referential communication, cetacean culture, equivalence classes, cooperation and concept formation.				
Learning and teaching methods of delivery:	Weekly contact: 1 lecture and 9 seminars spread over 3 weeks.			
Assessment pattern:	1.5-hour Written Examination = 50%, Coursework = 50%			
Re-assessment pattern:	100% exam			
Module coordinator:	Prof V Janik			

BL5122 Current Issues in Biologging

SCOTCAT Credits:	15	SCQF Level 11	Semester	2
Academic year:	2018/9			
Planned timetable:	Weeks 1 - 4			
This module will present an introduction to biologging science: the theory and practice of logging and relaying physical and biological data using animal-attached tags. Lectures will cover the technology currently available for measuring animal movements, investigating behaviour, ecology and physiology, some of the challenges associated with tag design in terms of how data is stored and transmitted, and problems associated with data analysis and data display. Seminars will discuss some of the ethical and conservation issues that biologging science raises. Two practicals and the continuous assessment for this module introduce students to the difficulties collecting biologging data (using heart-rate dataloggers on themselves) and look at aspects of experimental design and how to write results in a publishable format. A further two practicals explore some of the methods used to view and analyse movement and diving data.				
Learning and teaching methods of delivery:	Weekly contact: 1 - 2 lectures, 1 seminar and 1 practical class each week for 4 weeks.			
Assessment pattern:	Coursework = 100%			
Re-assessment pattern:	Resubmission of failed item(s) of Coursework			
Module coordinator:	Dr S K Hooker			
Module teaching staff:	Team taught			

BL5124 Predator Ecology in Polar Ecosystems - a Field Course in Antarctica				
SCOTCAT Credits:	15	SCQF Level 11	Semester	Full Year
Academic year:	2018/9			
Planned timetable:	lectures in S1, field course in S2 including 3 weeks in southern Argentina and Antarctica)			
<p>This module offers students the unique opportunity to gain theoretical and practical experience in polar ecology with special emphasis on top predators (cetaceans, pinnipeds, sea birds), ecosystem functionality and management of Antarctic marine living resources. Students will participate in a vessel-based expedition to Antarctica during the austral summer and will also explore southern Argentina. This field trip involves travelling to southern Argentina, conducting at-sea surveys during transit to/ from the Antarctic Peninsula, participating in shore-based activities, and exploring Antarctic coastal waters from small boats. Through a series of specialist lectures, workshops, on-board practicals, field excursions and dedicated observational studies students will gain in-depth understanding and critical awareness of the current scientific, conservation and management challenges of the Antarctic ecoregion. Upon return to St Andrews students will complete a specialist case study on a selected topic which will culminate in the presentation of a manuscript for submission to a journal. Participating students will need to cover all logistic expenses via payment of a substantial expedition fee.</p>				
Pre-requisite(s):	In taking this module you must have a medical certificate documenting fit for travel to remote antarctica			
Anti-requisite(s)	You cannot take this module if you take BL4301			
Learning and teaching methods of delivery:	Weekly contact: 8 x 1.5-hour lectures in S1 and several tutorials plus full day field practicals during the expedition.			
Assessment pattern:	Coursework = 100%			
Re-assessment pattern:	Resubmission of failed item(s) of Coursework			
Module coordinator:	Dr S Heinrich			
Module teaching staff:	Dr S Heinrich & Dr L Boheme			

BL5125 Advanced Bioacoustics for Marine Mammal Science				
SCOTCAT Credits:	15	SCQF Level 11	Semester	2
Academic year:	2018/9			
Planned timetable:	Weeks 1 - 4			
<p>Bioacoustics is an important topic in marine mammal science, because of the use the animals themselves make of sound, because it is often the most practical way to detect their presence, and because of the impacts anthropogenic sounds can have on acoustically sensitive species. This course provides an advanced survey of current topics, from understanding the physics of sound and how it is measured and analysed, through using sound to detect and monitor marine mammal presence, to the assessment and mitigation of anthropogenic noise impacts. There will be a strong emphasis on digital analysis and practical exercises designed to introduce students to the range of techniques and tools currently used in the field.</p>				
Learning and teaching methods of delivery:	Weekly contact: 8 lectures and 8 practical classes, 3 tutorials and 4 hours of fieldwork over a 4 week period.			
Assessment pattern:	Coursework = 100%			
Re-assessment pattern:	Resubmission of failed item(s) of Coursework			
Module coordinator:	Dr L E Rendell			
Module teaching staff:	Team taught			

MT5751 Estimating Animal Abundance				
SCOTCAT Credits:	15	SCQF Level 11	Semester	2
Academic year:	2018/9			
Planned timetable:	12.00 noon Mon (odd), Wed and Fri			
The module will introduce students to the main types of survey method for wildlife populations. It will cover simple methods in some detail and provide students with a conceptual framework for building understanding of more advanced methods. By the end of the course, students will be able to identify an appropriate assessment method for a given population, be able to design a simple survey to assess the population, and perform simple analyses of survey data. Students will get experience in using the methods via computer practical sessions involving design and analyses of surveys conducted by computer simulation.				
Pre-requisite(s):	Before taking this module you must (pass MT3507 or pass MT3508) and pass one 4000-level mt module			
Learning and teaching methods of delivery:	Weekly contact: 1.5 hrs lecture, 1 hr practical, 0.5 hr tutorial (weeks 1 - 10)			
Assessment pattern:	2-hour Written Examination = 50%, Coursework = 50%			
Re-assessment pattern:	2-hour Written Examination = 100%			
Module teaching staff:	TBC			

