

BIOL3320 The biology of marine mammals (6 credits)		Academic Year	1st semester
Offering Department	Biological Sciences	Quota	30
Course Co-ordinator	Dr L Karczmarski, Biological Sciences (<i>leszek@hku.hk</i>)		
Teachers Involved	Dr L Karczmarski, Biological Sciences (100%)		
Course Objectives	<p>Few other groups of animals have captured the public's imagination the way marine mammals, especially whales and dolphins have. This course covers the evolutionary biology, ecology, behaviour, and conservation of marine mammals: whales, dolphins and porpoises (cetaceans), seals and walruses (pinnipeds), manatees and dugongs (sirenians) and sea otters. Students will learn the ecology of mammalian life in the aquatic environment, their role in the marine ecosystem, their behavioural complexity and socio-ecology, and the current threats to these animals in the human-dominated world.</p>		
Course Contents & Topics	<p>The course begins with an overview of marine mammal species and their global distribution, followed by a review of the various adaptations that have evolved to meet the challenges of the marine environment. Next, the course discusses the life history, reproductive strategies, ecology and population dynamics of marine mammals, highlighting the similarities and differences between species in this taxonomically diverse group of animals. This is followed by sessions on behaviour and behavioural ecology; here we discuss animal movement, diving and ranging behaviour, foraging strategies, ecology of group living and social behaviour, behavioural complexity, cognition, and social strategies that guide the daily lives of these animals. The course concludes with a discussion of human influences on the fate of marine mammals, examples of critically endangered species and populations, and a review of conservation and management strategies; our emphasis is on the importance of applying the knowledge of population ecology, behaviour and behavioural ecology in ensuring long-term effective conservation of marine mammal populations. This course is designed for 3rd and 4th year students; it includes field trips, discussions of current scientific research, innovative research techniques and recent discoveries. Students will undertake independent literature-searches and will discuss their projects during classroom debates, training their skills in conceptual and analytical approaches to science.</p>		
Course Learning Outcomes	<p>On successful completion of this course, students should be able to:</p> <ol style="list-style-type: none"> 1. Appreciate marine mammal diversity and biogeography. 2. Understand how mammals adapt and function in an aquatic environment and their role in the marine ecosystem. 3. Understand and appreciate the complexity of interactions between environmental selective pressures and marine mammal behaviour, population structure and demography. 4. Appreciate the socio-ecological diversity and behavioural complexity of marine mammals. 5. Think analytically in terms of marine mammal ecology and anthropogenic impacts in the rapidly changing world. 		

Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BIOL2306 Ecology and evolution	
Course Grade	A+ to F	
Grade Descriptors	A	Evidence of a thorough grasp of the subject in a broader comparative perspective as demonstrated by background reading and excellent use of named examples and case studies. Evidence of independent critical thought with excellent use of a broad range of fundamental concepts to draw insightful and logical conclusions. Show eagerness to learn, great abilities of independent work, effective presentation skills with excellent analytical argumentation. Excellent or outstanding work relative to what is required at degree level.
	B	Evidence of a good grasp of the subject as demonstrated by some background reading and appropriate use of named examples and some case studies. Evidence of good critical thought, although not necessarily original. Good and very good (but not outstanding) abilities of independent work, effective presentation skills with good analytical and logical argumentation. Good general command of acquired knowledge to draw meaningful and logical conclusions. Work more than sufficient for what is required at degree level.
	C	Demonstrate an adequate, but not coherent and incomplete grasp of the subject, with limited background reading and limited use of named examples and case studies. Some abilities of logical critical thinking, but not insightful and/or independent; only partial abilities to use acquired knowledge and work independently to draw meaningful conclusions. Fair presentation skills, with mostly correct argumentation, but limited (or no) abilities to integrate broader concepts. Work sufficient for what is required for degree level.
	D	Demonstrate some grasp of the subject, but partial and limited to the most basic concepts, examples, and limited (or none) case studies. Insufficient evidence of background reading, limited abilities of critical independent thinking, and not particularly effective presentation skills with generally weak logical argumentation and restricted ability of drawing appropriate conclusions. Work barely meets what is required at degree level.
	Fail	No evidence of basic minimum knowledge and understanding of the subject. No evidence of background reading and no familiarity with any relevant examples and case studies. Inadequate evidence of coherent logical thought; ineffective presentation skills with poor argumentation and no abilities to draw meaningful conclusions. Work fails to reach degree level.
Course Type	Lecture with laboratory component course	

Course Teaching & Learning Activities	Activities	Details	No. of Hours
	Lectures		24
	Laboratory	including field trips, research site visits, demonstration of research techniques, interactive classroom debates	32
	Project work	project work review	8
	Reading / Self study		60
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Examination		45
	Assignments	including active participation/continuous assessment	55
Recommended reading and online materials	<p>Hoelzel AR (ed). Marine mammal biology: An evolutionary approach (Blackwell Science 2002)</p> <p>Reynolds JE & Rommel SA (eds). Biology of marine mammals (Smithsonian Institution Press 1999)</p> <p>Perrin WF, Wursig B & Thewissen JGM (eds). Encyclopedia of marine mammals (Academic Press 2008)</p> <p>Mann J, Connor RC, Tyack PL & Whitehead H (eds). Cetacean societies (The University of Chicago Press 2000)</p>		
Course Website	http://www.biosch.hku.hk/ecology/lsc/		
Additional Course Information	This course will be offered subject to a minimum enrolment number and availability of teachers.		
For Reference	Course equivalent to BIOL2622 (3-year curriculum)		