

## Overview of MSc Courses offered through IBAHCM

TITLE <sup>a</sup>	Contact <sup>b</sup> /Course Code	Brief Description
<p><i>Key research skills</i> (Term 1: Required for all Master's students) Note: This course is not available for PhD students but lecture notes can be downloaded from MOODLE</p>	<p>Barbara.Mable BIOL5126P</p>	<p>Training in the key skills essential for any modern ecology/evolution-based research career. Includes principles of effective Scientific Communication, Introduction to the Programming Environment R, Advanced Statistics, and Experimental Design and Power Analysis.</p>
<p><i>Measuring biodiversity &amp; abundance</i> (Term 1: Required for QMBCE)</p>	<p>Ross.MacLeod BIOL5129</p>	<p>Evidence-based training in the use of a wide range of sampling techniques for invertebrate and vertebrate organisms in a terrestrial environment, as well as to explore GIS-based techniques used for quantification of biodiversity and measurement of abundance.</p>
<p><i>Programming in R</i> (Term 2: Required for QMBCE)</p>	<p>Richard.Reeve BIOL5133</p>	<p>Hands-on training in programming in the R environment, including the use of data structures and libraries for problem solving</p>
<p><i>*Infectious disease ecology &amp; the dynamics of emerging disease</i> (Term 2: Option)</p>	<p>Louise.Matthews BIOL5123</p>	<p>Training in developing the mathematical and programming skills and theoretical background to be able to create simple epidemiological models, to interpret their outputs and to be able to critically evaluate published papers on infectious disease dynamics.</p>
<p><i>*Introduction to Bayesian statistics</i> (Term 2: Option)</p>	<p>Jason.Matthiopoulos BIOL5124</p>	<p>Evidence-based founding in the basic theory and practice of Bayesian statistics, using Markov Chain Monte Carlo approaches and Metropolis-Hastings and Gibbs sampling procedures.</p>
<p><i>*Multi-species models</i> (Term 2: Option)</p>	<p>Dan.Haydon BIOL5135</p>	<p>Theory and practice of formulating multi-species population models, using the programming environment R. Emphasis will be placed on identifying the key assumptions of different models, and critical assessment of when different formulations are most appropriate.</p>
<p><i>*Single-species population models</i> (Term 2: Option)</p>	<p>Jan.Lindstrom BIOL5131</p>	<p>Theory and practice of formulating single species population models, using the programming environment R. Emphasis will be placed on identifying the key assumptions of different models, and critical assessment of when different formulations are most appropriate.</p>
<p><i>*Spatial and network processes in ecology &amp; epidemiology</i> (Term 2: Option)</p>	<p>Rowland.Kao BIOL5136</p>	<p>Introduction to the importance of spatial processes in ecological and epidemiological interactions, with a focus on appreciating, understanding, describing and working with different model formulations and their correct interpretation.</p>

<i>Conservation genetics &amp; phylodynamics</i> (Term 2: Option)	Roman.Biek BIOL5119	Conceptual background and hands-on training required for analysing and interpreting genetic data to answer applied questions in ecology, conservation biology and epidemiology, through the use of relevant specialised computer software (including Bayesian approaches).
<i>Molecular analyses for DNA barcoding and biodiversity measurement</i> (Term 2: Option)	Barbara.Mable BIOL5130	Hands-on practical training integrated with the theoretical underpinning of the manipulation and analysis of DNA sequence data, as applied to problems in the assessment of biodiversity, including critical assessment of the DNA barcoding approach.
<i>Phyloinformatics</i> (Term 2: Option)	Roderic.Page BIOL5132	Evidence-based advanced practical training in using web services to aggregate and visualise biodiversity data, using an interactive and open-access based approach.
<i>Freshwater sampling techniques</i> (Term 2: Option)	Colin.Adams BIOL5122	Hands-on training in the use of a wide range of sampling techniques for invertebrate and vertebrate organisms in a freshwater environment.
<i>Invertebrate identification</i> (Term 2: Option)	Stewart.White BIOL5125	In depth hands-on training to enable identification of key vertebrate groups, using field guides, and identification keys , as required for assessment of biodiversity.
<i>Vertebrate identification</i> (Term 2: Option)	Stewart.White BIOL5137	Evidence-based training in techniques for identifying key vertebrate groups, including bird songs and mammalian scats.
<i>Animal Ethics</i> (Term 1: Required for AWSEL)	Ruedi.Nager BIOL5114	A thorough understanding of animal ethics is an important attribute in anyone interested in the study of animal welfare. The aim of this course is to provide students with a critical awareness of the principles of relevant ethical frameworks and how these relate to relevant welfare issues and legal considerations across a wide range of human uses of animals. This course will provide you with a rigorous foundation in understanding of ethical principles allowing you to develop key ethical skills, reflect on your own standpoint and participate in topical debates. These skills may lead to opportunities for PhD programmes in animal welfare and ethics and in communication with the general public on underlying ethical considerations on the use of animals in research, farming, entertainment and other contexts.
<i>Animal Welfare Science</i> (Term 2: Required for AWSEL)	Ruedi.Nager BIOL5115	The aim of the course is to provide students with a critical and detailed understanding of welfare assessment methodologies and practical experience with how welfare issues are addressed at sites that keep

		animals for different forms of human use, including research on wild animals.
<i>Legislation (Term 2: Required for AWSEL)</i>	Ruedi.Nager BIOL5127	The aim of the course is to provide students with a rigorous understanding of the different pieces of legislation underlying the use of animals in scientific research, in zoos and in farms. It will also allow each student to argue the legal situation in a public debate.
<i>Assessment of Physiological State (Term 2: Option)</i>	Ruedi.Nager BIOL5116	Scientific research also makes wide use of wild animals where the assessment of physiological state and resource use is interesting in its own right, in an applied aspect of conservation relevance or monitoring the health, welfare and reproductive state of individuals in the wild. The aim of the course is to provide students with an understanding of methods and techniques to assess physiological state of wild animals and being able to competently identify the health state of wild animal and to respond appropriately to this.
<i>Biology of Suffering (Term 2: Option)</i>	Ruedi.Nager BIOL5117	This course will give the student an advanced understanding on animal consciousness, the biology of pain and suffering, welfare and cognitive functions and the physiology of stress.
<i>Care of Captive Animals (Term 2: Option)</i>	Ruedi.Nager BIOL5118	This course will cover husbandry techniques, health assessment and nutrition of captive animals. Students will have the opportunity to visit a range of settings where animals are kept in order to see and discuss care issues at research laboratories, zoos/aquariums, farms/aquacultures and wildlife rescue centres.
<i>Enrichment (Term 2: Option)</i>	Ruedi.Nager BIOL5120	This course will give the student a critical understanding of how welfare issues can be addressed through enrichment and appropriate design of the enclosure/cage.

<sup>a</sup> Optional courses are clustered by broad subject groups: Modelling & Statistics; Evolutionary Analysis; Biodiversity Measurement; and Animal Welfare. Courses with an asterisk require Programming in R as a prerequisite.

<sup>b</sup> All email addresses end in @glasgow.ac.uk; please contact course coordinators for more details and/or to express an interest in taking the course