



THE UNIVERSITY OF EDINBURGH

PROGRAMME SPECIFICATION FOR M.Sc. IN ANIMAL BIOSCIENCES

- 1) **Awarding Institution:** The University of Edinburgh
- 2) **Teaching Institution:** The University of Edinburgh
- 3) **Programme accredited by:** Not Applicable
- 4) **Final Award:** M.Sc. in Animal Biosciences
- 5) **Programme Title:** Postgraduate Programme in Animal Biosciences
- 6) **UCAS Code:** Not Applicable
Relevant QAA Subject Benchmarking Group(s): There are no relevant Benchmarking Groups
- 7) **Postholder with overall responsibility for QA:** Professor Kim Summers
- 8) **Date of production/revision:** 28 February 2012
- 9) **External Summary**

The study of Animal Biosciences involves the study of all aspects of the biology of animals, with a focus on higher vertebrates of economic importance, particularly mammals and birds. Animal bioscientists use multidisciplinary approaches including (but not limited to) genetics, physiology, anatomy, pathology, immunology, mathematics, statistical modelling, biochemistry and biophysics to understand and explain the functioning of the animal body in health and disease. At Edinburgh, students will have the opportunity to learn from researchers who are international leaders in their field, and benefit from a particularly strong focus on the key element of experimental/practical work throughout the course. Students will be based in the world famous Roslin Institute and work closely with international experts in genetics and genomics, developmental biology, neurobiology and immunology and infection.

The programme aims to develop:

- a broad knowledge and understanding of theories, concepts, research paradigms and research findings in the animal biosciences;
- research skills, including statistical and other data analysis skills, which will equip students to contribute to knowledge in animal biosciences;
- an awareness of applications and implications of theories and research in 21st century animal biosciences;
- the ability to think critically and creatively about theoretical, empirical and applied issues and their inter-relationships;
- an appreciation of the diverse, wide-ranging nature of animal science and an ability to make links between different areas of the discipline;
- an understanding of how animal science relates to other disciplines;
- an understanding of the ethical issues involved in working with animals for research and industry;
- active-learning skills and transferable skills (e.g. study skills, information retrieval skills, information technology skills, communication skills, group-work skills).

10) Educational aims of programme:

The aim of this postgraduate programme is to provide scientific knowledge and skills relating to the health and welfare of animals, and applications of basic animal sciences to human and veterinary medicine, the livestock industry and food security. The programme is organized around the core activities of The Roslin Institute: Genetics and Genomics; Developmental Biology; Infection and Immunity; Neurobiology.

This purpose of this programme is to:

- Provide students with a detailed knowledge and understanding of animal biosciences;
- Develop an increased understanding and awareness of the application of scientific principles to the study of animal biosciences;
- Develop the ability to apply scientific knowledge and technical skills in research;
- Establish the ability to utilise effective and modern methods for interpreting, analysing and describing scientific data;
- Enhance the ability to communicate, in writing and verbally, scientific results and information in research;
- Ensure an understanding of animal biosciences, to enable the undertaking of independent research.

11) Programme outcomes:

This postgraduate course provides opportunities for students to develop and demonstrate scientific knowledge and understanding, skills, qualities and other attributes in the area of animal biosciences.

11a) Knowledge and understanding

A graduate from this programme will have knowledge and understanding of:

- Theoretical and practical scientific methodology
- Data interpretation and analysis
- Scientific writing and presentation
- Research methodology and project management
- Aspects of animal biosciences including
 - Physiology, Anatomy and Pathology
 - Embryology, Development and Reproduction
 - Stem Cells and Transgenesis
 - Infectious Diseases
 - Molecular Biology
 - Population Genetics, Epidemiology and Statistical Analysis
 - Bioinformatics
 - Avian model systems
 - Cell Culture Techniques
 - Visualisation in Biological Systems

11b) Graduate attributes: Skills and abilities in Research and Enquiry

Through tutorials and lectures, assessed scientific report writing, and extensive practical classwork, students gain essential skills for work in research and industry. These include:

- Interpretation of scientific papers
- Critical analysis and synthesis of scientific information
- Ability to conduct independent research
- Ability to place findings in context and suggest new research ideas
- Execution and writing up an independent research project
- Reporting of research data in formats suitable for publication
- Correct application of statistical methodologies and careful interpretation of results

11c) Graduate Attributes: Skills and abilities in Personal and Intellectual Autonomy

Critical and analytical thought is an essential element for a professional in the field of animal biosciences and scientific research and is developed during the course through a high degree of independent working and instruction. By the end of the course students are able to:

- Assimilate information from different sources into a single thread
- Critically assess reports in the scientific literature
- Perform laboratory studies, analyse the findings appropriately and summarise the results logically
- Become familiar with multiple approaches to the analysis of laboratory data
- Apply fundamental knowledge of biology to studies of animal form and function

11d) Graduate Attributes: Skills and abilities in Communication

Communication is an essential element of training in research and industry. Students acquire abilities in:

- Acquisition of knowledge from the scientific literature
- Accessing online information sources
- Scientific writing, in short answers to questions, and reports formatted as research publication and a dissertation.
- Preparation of scientific posters
- Preparation of effective Powerpoint slides for oral presentations
- Delivery of formal and informal oral presentations
- Responding to unrehearsed questions in oral presentation
- Communication of information about scientific studies to lay audiences

11e) Graduate Attributes: Skills and abilities in Personal Effectiveness

The students develop as individuals and as members of a small class facing the same challenges. They gain confidence in and abilities in

- Project planning
- Time management
- Independent and group working
- Managing stress effectively
- Learning to interact positively with other group members in the environment of a research group

11f) Technical/practical skills

- Techniques used in the molecular biology laboratory, from DNA to protein
- Performance and analysis of the post-mortem examination in vertebrates
- Statistical analysis using the R statistical environment
- General IT skills including data retrieval, bioinformatic analysis and the use of spreadsheets and other databases
- Computing skills and experience of a variety of software packages

12 Programme structure and features

12.1) Entry Requirements

Applications are welcomed from candidates with a strong interest in animal biology and animal research who have a first degree in either:

Biological Sciences, Agriculture or Animal Sciences, Veterinary Medicine, Medicine or Allied Health fields.

The minimum entry requirement is a 2.1 Honours degree or equivalent. Specific professional experience may be deemed equivalent, on a case by case basis.

Evidence of proficiency in English must be provided by non-native English speakers.

12.2) Course structure

Students take courses totalling 180 credits. All courses are SCQF Level 11 (Postgraduate)

Taught stage (90 credits)

Semester 1 (60 credits)

<i>Course</i>	<i>Credits</i>	<i>Level</i>
Foundations of Animal Science	20	11
Laboratory Tools for the Biosciences	20	11
Comparative Animal Models	20	11

Semester 2 (30 credits)

<i>Course</i>	<i>Credits</i>	<i>Level</i>
Current Topics in Animal Biosciences	10	11
Advanced Analytical Methods in Animal Biosciences	10	11
One Health, Zoonoses and Emerging Infections	10	11

Dissertation Stage (90 credits)

<i>Course</i>	<i>Credits</i>
Dissertation	90

12.3) Progression requirements

Students must pass the assessment requirements of the taught stage at an appropriate level before progressing to the dissertation. Progression to the dissertation element of the MSc programme depends upon achieving 90 credits, **with a minimum mark of 50% for at least 60 credits and a final overall mark for the taught element of the programme of 50% or above.** In addition, **all courses must be passed at 40% or above.** The overall mark for the taught component of the programme is the weighted average of all the final marks for all courses. Please note there are **no re-sit examinations** at Master's level at the University of Edinburgh.

Students who fail to achieve the standard necessary for progression to the MSc will be considered for progression to the Diploma, as per Edinburgh University regulations.

12.4) Assessment

Assessment for the taught stage is by written assignments, tests, and project work. The assessment split for the taught stage is as follows:

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|---|----------------------------|
| a) written assessment papers (open and closed-book) | approximately 75% of total |
| b) assessment of practical abilities | approximately 25% of total |

Assessment items reflect the activities of a professional research scientist and include preparing material for written, oral and poster presentations, critical analysis of research papers and practical laboratory activities.

Students who proceed to the MSc dissertation stage prepare a research proposal and carry out a full-time research project from April to August, which is assessed by a 15,000 word written dissertation and a supervisor's assessment of performance.

Students who proceed to the PG diploma prepare a research proposal and carry out a short research project from April to June, which is assessed by a 4,000 word written dissertation and a supervisor's assessment of performance.

12.5) Modes of study

The programme is offered for full time (12 month) enrolment. A variety of teaching methods are used including lectures, tutorials, computer-based and laboratory practicals, and discussions of recent scientific papers. There is also a substantial research component, with a research proposal and a full time 5-month research project carried out over the summer. Students receive individual supervision for the dissertation components of the course.

12.6) Exit awards

In order to be awarded a masters degree candidates must obtain 180 credits: 90 from the taught element of the programme with a minimum overall mark of 50%, a minimum mark of 50% for at least 60 credits and a minimum mark of 40% for all courses, and 90 credits from the dissertation with a minimum mark of 50%.

In order to be awarded the degree with Distinction, students must achieve a minimum of 68% in the project/dissertation component and in the taught component, with an overall average of at least 70%. All courses must be passed at 50% or above. The award of the degree with Distinction is at the discretion of the Examination Board.

Students who fail to achieve the standard necessary for award of the MSc will be considered for award of the Diploma, as per Edinburgh University regulations.

12.7) Student Support

- Induction period for orientation and introduction to study skills
- Student handbook
- Access to list of courses and their descriptors/learning outcomes
- Library induction
- Extensive library and other learning resources and facilities
- Open personal access to programme tutor for advice on academic and pastoral issues
- Student e-mail
- Access to Student Welfare Service

The University provides assistance and guidance, eg dyslexia, physical disability.

13 Other Items

13.1) Mechanisms for review and evaluation of teaching, learning, assessment, the curriculum and outcome standards:

These are as follows:

- Student feedback questionnaires;

- Staff-student liaison committee;
- Course evaluation and review, presented to Board of Study;
- Annual programme review prepared by Programme Director and considered by Programme Teaching Committee and the School Post-graduate Committee. The Programme Teaching Committee will be: Dr Chris Low and representatives from course organisers,
- External Examiner reports;
- Staff appraisal;
- Staff development.

13.2) Committees responsible for monitoring and evaluating quality and standards:

These are:

- Senatus Quality Assurance Committee;
- Learning and Teaching Forum;
- College Quality Assurance Committee;
- Teaching Programme Review Teams;
- Board of Examiners for PG
- Programme Teaching Committees.

13.3) Mechanisms for gaining student feedback on the quality of teaching and their learning experience:

The following will be undertaken:

- Course evaluation questionnaires;
- Annual programme review, views sought from the year on the Programme;
- Staff-Student Consultative Committee meetings – 1 per year

13.4) Regulation of assessment

- Assessment rules and MSc classification details are as provided in the MSc Programme Handbook.

13.5) Indicators of quality and standards

- SHEFC Teaching Quality Assessment (1996/97) deemed the College's overall provision 'excellent'

13.6) Staff development priorities include:

- Identified through staff appraisal scheme.