Programme Specification for MRes Biology

This document applies to students who commence the programme in or after September 2017

1	**Awarding institution/body** University of Worcester
2	**Teaching institution** University of Worcester
3	**Programme accredited by** N/A
4	**Final award** MRes
5	**Programme title** MRes in Biology
6	**Pathways available** N/A
7	**Mode and/or site of delivery** Taught and Research at the University of Worcester
8	**Mode of attendance** Full time and part time
9	**UCAS Code** N/A
10	**Subject Benchmark Statement and/or Professional Benchmark statements** The programme is informed by Vitae's Researcher Development Framework and the QAA's Masters Degree Characteristics.
11	**Date of Programme Specification preparation/revision** June 2012, August 2014 and October 2014 (regulations and admissions section amended). July 2016 regulations amended (Section 20), Section 21 updated, Section 14 amendment to MRes thesis July 2017; August 2017 - AQU amendments

12 **Educational aims of the programme**

Masters by Research programmes provide an opportunity for students to gain a qualification involving intensive research without the commitment of spending 3-4 years as in a PhD programme. The gaining of a Masters qualification is increasingly regarded as way of distinguishing a graduate from others who may hold a BA or BSc. The Institute of Science and Environment's educational and research expertise within Biology extends across Molecular Biology, Cell Biology, Plant Sciences, Microbiology, Parasitology, Human Physiology, Biochemistry, Plant Pathology, Genetics, Human Genetics and Animal Biology
The impact of biology on society and the effects of human influences on the environment are important issues demanding increasing research activity.

The specific educational aims of the course are to enable postgraduate students to:

- Prepare for doctoral level study
- Engage in a career in biological research in a HE or industrial context
- Meet the global need for highly trained individuals who can make informed decisions on future research directions
- Think for themselves in the development of a critical approach to the analysis of data and interpretation of published research.

13 Intended learning outcomes and learning, teaching and assessment methods

Knowledge and understanding:	***Examples of learning, teaching and assessment methods used:***
By the end of the programme, students should be able to: 1. Employ Biological research techniques, including information retrieval, experimental design and statistics, analysis and presentation of results. 2. Formulate hypotheses, collect appropriate data to test them and analyse data appropriately.	These skills are developed through MBIO 4001, research methods in Biology and the thesis preparation module MBIO 4002. They are then utilised in MRES 4001, the MRes Thesis

3. Develop and acquire knowledge at the cutting edge of Biology	
Cognitive and intellectual skills: By the end of the programme, students should be able to: 1. Integrate and evaluate information and data from a variety of sources; 2.Creatively seek solutions to Biological problems; 3. Plan, conduct and report on a programme of original research. 4. Extrapolate theories from complete and incomplete data sets	***Examples of learning, teaching and assessment methods used:*** Intellectual skills are developed through the teaching and learning programme outlined above. Analysis and problem solving skills are further developed through journal club sessions, seminars and production of scientific posters within ISE. This may involve activities with established research groups. Experimental research skills are further developed through coursework activities, laboratory experiments and later on through the research project. Assessment of results will provide an important feedback on student's progress. Assessment of thinking skills is achieved through coursework, the individual research project, and practical assignments.
Practical skills relevant to employment: By the end of the programme, students should be able to: 1. Apply bioinformatics to a wide range of biological problems; 2. Use and critically evaluate biochemical, molecular biology, cytological and/or other biological techniques for a range of experiments; 3. Critically evaluate Biological data.	***Examples of learning, teaching and assessment methods used:*** Students will experience laboratory-based research in MBIO 4001, MBIO 4002 and MRES 4001.

Transferable/key skills:	***Examples of learning, teaching and assessment methods used:***
By the end of the programme, students should be able to: 1.Communicate effectively using appropriate communication methods such as oral presentations and written reports to deliver scientific results specialist and non-specialist audiences ; 2. Apply information technology literacy skills to identify and search online bioinformatic databases, analysis and integration methods at the cutting edge of Biology; 3.Exercise initiative, take personal responsibility and practice self direction; 4. Learn effectively for the purpose of continuing professional development; 5. Comply with existing, and design new and appropriate, risk assessments and health and safety procedures. 6. Time management	Modules will give opportunity to develop these key skills through presentations, workshops and laboratory-based practical classes. Presentations may be given as a part of the ISE research seminar series.

14 Assessment Strategy

The Assessment strategy has been designed to provide students with a variety of challenges appropriate for Master's level modules. The range of assessments specified in the module outlines have been developed in order to support the pedagogical and research approaches employed and which are appropriate for the nature of the subject disciplines covered.

In line with the University of Worcester Assessment Policy, assessments for the individual modules have been designed to enable students to demonstrate that they have successfully met the learning outcomes. These are specified in each assignment brief along with any assessment criteria. Students are also supported through the use of the University of Worcester grade descriptors. These are customised in each module and provided in the module outlines.

The assessment strategy is designed to provide students with the knowledge and skills that are required to work in Biology.

Taught Modules

The course will incorporate a range of assessment items - the mapping of assessment strategies to individual modules is included in the course handbook. Broadly speaking, the course structure of 3 20-credit modules plus a 120-credit Thesis provides a sound background in Biology. Research skills will be developed through the taught modules from generic research skills in RTP 401, to more specific Biological research skills in MBIO 4001 to very specific preparation for the MRes thesis in MBIO 4002.

During module RTP401 the student will prepare their research proposal for the thesis. This proposal will form the assessment for the module along with a short presentation on research. MBIO 4001 is assessed by a collection of lab note books, which prepare the student for recording work effectively during the thesis. It is also assessed by means of a primer design exercise which will provide skills in Bioinformatics and by a written grant proposal, a skill required in research to obtain further research funding. MBIO 4002

Research Thesis Preparation is assessed by means of an initial PDP assessment and action plan to address any specific issues required before moving onto the thesis, a completed action plan giving evidence how specific issues have been addressed and a 30 minute presentation on the intended project which will include scheduling and information on intended methods.

MRes Thesis

The MRes has a substantial research component (120 credits) assessed by means of a significant piece of writing in the form of a Thesis. This enables the student to demonstrate initiative and creativity in formulating and carrying out a research project. In order to progress from the taught element of the programme to the thesis stage the student must pass all three taught modules (see below). The thesis is designed to give practical experience of laboratory-based research and provide the opportunity to develop a wide range of skills.

The thesis will be submitted to an examination team comprising two internal examiners.

15 Programme structures and requirements

Award Map

The Programme consists of:

- 60 credits at Level 7 (PG Cert Research Methods in Biology) plus
- 120 credit thesis at Level 7 (MRes Biology)

A student can only progress to the MRes Thesis if the taught modules for the PG Cert have been passed.

Taught modules at Level 7

Module code	Module title	Credit value
RTP 401	Processes and Skills, Management and Methods	20
MBIO 4001	Research Methods in Biology	20
MBIO 4002	Research Thesis Preparation	20
MRES 4001	MRes Thesis	120

The module “MBIO 4001 Research Methods in Biology” will mainly be laboratory based practicals and Mini-Project work preparing the student for study in Biology such as

a) Molecular biology workshops
b) Collection of Biological Samples from the Environment
c) Detection and Identification of microscopic organisms
d) Inter-organism interactions
e) Imaging including various forms of microscopy
g) Bioinformatics Sessions
   i) Navigating through plant and microbial databases
   ii) Genome sequencing and annotation
   iii) Generation of PCR-based markers

MRES 4001 MRes Thesis
The text of the thesis in science, excluding ancillary data, must not normally exceed 15,000 words. It must fulfil the requirements for format, content and appearance as set out in the Course Handbook.

16 QAA and Professional Academic Standards and Quality

The programme has been designed with reference to the QAA Masters Degrees Characteristics (2010) and FHEQ (2008) Qualification Descriptors for Level 7 as well as the Vitae Researcher Development Framework.

17 Support for Students

Students are provided with:

- an induction programme
- the *Handbook for Professional Doctorate Students and Supervisors*
- day to day support through the Research School
- an introduction to the process of Personal Development Planning (PDP)
- training opportunities for career planning through the Research School and the Careers Service
- support through Student Services
- support through the Language Centre
- access to the Disability and Dyslexia Service
- access to Laboratory accommodation within ISE and/or the National Pollen and Aerobiology Research Unit (NPARU)
- access to Laboratory equipment and consumables within ISE and/or NPARU
- technical laboratory support within ISE/NPARU.

In addition to the above, on acceptance, students are assigned a supervisor (Director of Studies) for the thesis stage of the programme, who has expertise in their specialist area of Biology. The supervisor provides advice and undertakes regular progress reviews during the thesis stage of the programme. Written records are normally kept for all meetings.

18 Admissions policy, criteria and procedures

Admissions Policy
The University aims to be accessible; it is committed to widening participation and encouraging diversity in the student population. The Institute of Science and the Environment works closely with central student support services, including the Research School, the Disability and Dyslexia Service and the International Office, to support students from a variety of backgrounds. We actively encourage and welcome people from the widest range of economic and cultural backgrounds.

See Admissions Policy for further details.

Entry requirements
Applicants are normally expected to:

(a) Have a First or Second Class Honours Degree or equivalent award in an appropriate discipline
or

(b) Have appropriate research or professional experience which has resulted in appropriate evidence of achievement. For example experience in a research

environment such as private research and development or public research laboratories.

International applicants will also be required to demonstrate that they have the appropriate level of written and spoken English (normally IELTS score of 6.5 with a minimum score of 6 in written English). Entry qualifications for international students are guided by the National Academic Recognition Information Centre's (NARIC) advice on international qualifications.

Recognition of Prior Learning
Students with relevant previous study at postgraduate level or with extensive experience may be considered eligible for recognition of prior learning. Please contact Research School for further information or guidance on 01905 855214.

Further information on Recognition of Prior Learning can be found at http://www.worcester.ac.uk/registryservices/941.htm

Admissions procedures
All applications are submitted to the Research School and passed to the relevant Programme Leader for consideration. In the application form applicants are required to outline a research proposal for their intended thesis. If the application has potential, an interview is scheduled by a panel comprising at least two members of academic staff. Completion of an interview checklist allows for a thorough rigorous evaluation of the candidate's strengths at interview. It also means that details about the offer conditions are passed back to the Research School, enabling a comprehensive offer letter and contract to be produced.

Applications from those with international qualifications are checked by the Research School Manager against NARIC and copies of all certificates are required before an unconditional offer is made to the student. All international applicants are checked for their competency in English language by the Language Unit. When it is felt that the applicant does not possess the appropriate level of English language, an in house English language course may be recommended before the student embarks on their RDP. Information about all offers made to international students is passed back to the relevant personnel in Student Services who can provide the student with additional support and guidance (for example, to obtain a visa, accommodation etc).

The selection and admission processes outlined above ensure that only appropriately qualified students are admitted to an MRes and that the student can be satisfactorily supported in their research.

Admissions/selection criteria
An offer of a place on an MRes in Biology will be made when the following conditions are satisfied:

- Applicant meets the specified entry requirements.
- The Institute has the supervisory capacity and expertise to support the research project outlined in the application form
- The proposal outlined has the potential to become a viable research project at Masters level.

19 Methods for evaluating and improving the quality and standards of teaching and learning

The external examiner system and Boards of Examiners are central to the process by which the University monitors the reliability and validity of its assessment procedures and academic standards. Boards of Examiners comment on the assessment procedures within the Institute of Science and the Environment (ISE) and may suggest improvements for action by relevant Institute Teaching Committees.

Mechanisms for review and evaluation of teaching, learning, assessment, the curriculum and outcome standards:
Quality and standards are maintained through: examiner reports, student evaluation of modules and the course management committee which will meet once a semester. In addition, the programme is subject to comment and review through the Research Degrees Board, the Research School Steering Group and through the Research Student Forum and the Research Supervisors' Forum.

20 Regulation of assessment

The course operates under the University's Taught Courses Regulatory Framework

Requirements to pass modules

- Modules are assessed using a variety of assessment activities which are detailed in the module specifications.
- The minimum pass mark is D- for each module.
- Students are required to submit all items of assessment in order to pass a module, and in some modules, a pass mark in each item of assessment may be required.
- Full details of the assessment requirements for a module, including the assessment criteria, are published in the module outline.
- Students are required to pass the three taught modules (RTP401, MBIO4001 and MBIO 4002) in order to progress to the thesis stage of the programme (MRES 4001)

Submission of assessment items

- Students who submit course work late but within 5 days of the due date will have work marked, but the grade will be capped at D- unless an application for mitigating circumstances is accepted.
- Students who submit work later than 5 days but within 14 days of the due date will not have work marked unless they have submitted a valid claim of mitigating circumstances.
- For full details of submission regulations please see the Taught Courses Regulatory Framework.

Retrieval of failure

- Students are entitled to resit failed assessment items for any module that is awarded a fail grade.
- Reassessment items that are passed are capped at D-.
- If a student is unsuccessful in the reassessment, they have the right to retake the module (or, in some circumstances, take an alternative module); the module grade for a re-taken module is capped at D-.

- A student who fails 60 credits or more after exhausting all reassessment opportunities may be required to withdraw from the University.

Requirements for Awards

Award	Requirement
PG Cert Research Methods in Biology	Passed a minimum of 60 credits at level 7, as specified on the award map
MRes Biology	Passed a minimum of 180 credits at level 7 including 120 credits for the Research Project module, as specified on the award map

PG Cert is unclassified. The award of Masters (MRes) may be made with Pass, Merit or Distinction.

21 Indicators of quality and standards

Postgraduate research in Biology is highly important in ISE. Publications from members of staff in the University are made available via a research repository called WRAP (Worcester Research and Publications). ISE and NPARU has a significant proportion of these publications. Most of these are in the Biology subject area and are almost all comprised of Peer reviewed publications.

22 Employability and graduate destinations

Generally, MRes Graduates will pursue a career either in academia or in industry. The knowledge and training students receive will provide a springboard for vocational careers in biological science within the agricultural, medical and pharmaceutical industry, government and industrial research, and education as well as by going on to PhD study in academia. Emphasis on high level academic attainment and the development of transferable skills will generate job opportunities in aspects of natural sciences and other areas of employment.

As well as being a qualification in its own right, an MRes qualification in Biology is an important pathway into Doctoral study in the Biological Sciences. Students with this qualification will be better placed to progress to successful doctoral study at the University of Worcester or elsewhere.

Please note: This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the module outlines and the Course Handbook.