PROGRAMME SPECIFICATION	

1	**Awarding Institution**	Newcastle University
2	**Teaching Institution**	Newcastle University
3	**Final Award**	Masters by Research (MRes)
4	**Programme Title**	Masters by Research
5	**UCAS/Programme Code**	4807F MRes Medical & Molecular Biosciences 4812F MRes Nanomedicine 4813F MRes Immunobiology 4814F MRes Ageing & Health 4815F MRes Systems Biology 4816F MRes Cancer 4817F MRes Stems Cell & Regenerative Medicine 4818F MRes Neuroscience 4819F MRes Biotechnology & Business Enterprise 4820F MRes Toxicology 4822F MRes Translational Medicine & Therapeutics 4829F MRes Transplantation 4826F MRes Epidemiology 4825F MRes Animal Behaviour 4828F MRes Molecular Microbiology 4827F MRes Medical Genetics 4830F MRes Medical Sciences 4831F MRes Biosciences 4832F MRes Evolution and Human Behaviour 4834F MRes Mitochondrial Biology and Medicine 4835F MRes Diabetes 4836F MRes Neuromuscular Diseases 4837F MRes Cardiovascular Science in Health and Disease
6	**Programme Accreditation**	N/A
7	**QAA Subject Benchmark(s)**	N/A
8	**FHEQ Level**	7
9	**Date written/revised**	1st February 2013

10 Programme Aims

This programme has been designed to provide students with opportunities to develop a scholarly approach to a chosen area of research in biosciences practiced in the faculty. The programme aims to help students acquire the necessary expertise for effective day-to-day management and reporting of research activities in the context of their own roles, responsibilities and interests.

i) to enable students to gain an advanced knowledge and understanding of self-selected areas of biosciences.

ii) to enable students to undertake a general training in an area of research in a leading research laboratory either within the University or in local industry.

iii) to encourage the students to develop a range of professional and key skills which will enable them to engage in teaching and/or research at an advanced level in higher education or in a senior professional capacity in other fields of employment.

11 Learning Outcomes

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas.

Knowledge and Understanding

On completing the programme students will be able to:
A1 demonstrate an advanced knowledge in self selected areas of special interest or professional relevance
A2 demonstrate an appropriate knowledge of the principles of safe working practice that under-pin their chosen area of study
A3 demonstrate an appropriate knowledge of the ethical principles that under-pin their chosen area of study

Teaching and Learning Methods

Students undertaking the MRes select three subject knowledge modules from a wide range of options for study. In addition all students study a compulsory module in Research Skills and Principles for the Biosciences. Additional training in critical appraisal, presentation skills and library and IT skills is offered to all students. Subject knowledge module selection allows students a wide-choice, subject to module viability, timetabling and individual programme-specific requirements (see below) and is made in consultation with supervisors and the Degree Programme Director or nominees, and subject to confirmation by the Degree Programme Director. Students select areas to study that are within their own areas of interest and that are key to developing a better understanding of their project. A1 is addressed through a mixture of lectures, small group discussion and classroom exercises, augmented by independent study, directed by the provision of reading lists, resource materials and by individual tutorial support, with feedback on in-course assignments. A2 is addressed in the research project and A3 in the compulsory module in research skills and principles for the biosciences.

Assessment Strategy

Knowledge and understanding are assessed through a range of methods including in-course essays, MCQ tests, student presentations, data interpretation tests, critical appraisal of published works and conventional unseen examinations. Formative feedback is given for all in-course assessment. A2 is assessed by the project supervisor both on a day-to-day basis and through regular interaction with research staff. Guidance is provided at all times and the students understanding is assessed summatively as part of the students overall project assessment. A3 is assessed by written essay.

Intellectual Skills

On completing the programme students will be able to:
B1 source and evaluate current research evidence in biosciences
B2 formulate arguments and engage in academic debate about current research and research practice in biosciences
B3 critically appraise and contribute to the body of knowledge about current research in biosciences
B4 discuss ethical issues in biosciences research and the need for ethical approval in research

Teaching and Learning Methods

All of these skills are developed through the mixture of lectures, small group discussion and classroom exercises in semester 1 above and are further developed during the research project through active participation as a member of the research group where there are additional (less formal) activities including: journal clubs, regular research seminars, group meetings etc. Throughout the programme much emphasis is placed on independent study and guided reading. In-course work is assessed and formative feedback is given.

Assessment Strategy

Intellectual skills are assessed in two parts. First: along with knowledge and understanding where a range of methods are employed depending on the modules selected including: in-course essays; MCQ tests; student presentations; data interpretation tests; critical appraisal of published works and conventional unseen examinations. Second: there is further substantial assessment of the research project through a submitted dissertation and an oral

presentation.

Practical Skills

On completing the programme students should be able to:
C1 identify practical and methodologically robust design solutions to selected research questions in medical and molecular biosciences
C2 select and apply relevant statistical techniques in an appropriate research setting
C3 identify key safety issues and procedures related their own research project

Teaching and Learning Methods

Practical skills C1, C2 and C3 are achieved largely during the research project. Work on the project leads to the practise and development of these skills. Project learning is informed by independent guided reading necessary for the production of a dissertation and oral presentation. Students receive tutorial guidance from their supervisors and feedback where relevant.

Assessment Strategy

These skills are assessed by the project supervisor who gives an independent mark for student's ability/application and effort; through an oral presentation and through an 8000 word dissertation, which is assessed by an external examiner and an internal examiner.

Transferable/Key Skills

On completing the programme students should be able to:

D1 communicate effectively orally and in writing
D2 use library and other information sources skilfully and appropriately
D3 plan, organise and prioritise work activities in order to meet deadlines
D4 work independently

Teaching and Learning Methods

These skills are developed through the requirement to carry out and produce written assignments for study modules and the research project. Tutorial guidance with the support of liaison librarians aims to enhance these skills. The course is deliberately designed in a way that requires students to address D1 to D4 throughout its duration.

Assessment Strategy

These skills are formatively assessed through the written assignments and dissertation. D2 and D4 are not summatively assessed independently, although they are indirectly assessed through the successful production of written assignments and the dissertation.

12 Programme Curriculum, Structure and Features

Basic structure of the programme

This broad-based full-time research programme has a modular structure. Level 7 (Masters) academic credits are accrued for each module completed successfully. Students undertake 180 credits in total: 100 credits are assigned to the research project; 20 credits are assigned to a compulsory module in Research Skills and Principles for the Biosciences, and 60 credits to three subject knowledge modules (see below). In addition critical appraisal, presentation and library and IT skills training is offered to all students.

Research Project: The research project is the largest single component of the degree programme at 100 credits. Projects are selected by students with help and guidance as required. Projects run for 24 weeks and include a week devoted to project preparation; a two week allowance for a break at Easter and a three week period set aside for writing up**.**

Subject Knowledge Modules: All subject knowledge modules are 20 credits and students have a free choice (subject to module viability, timetabling and **programme-specific requirements** – see below). The 20 credit modules available are:
MMB8001 Medical Biotechnology & Enterprise (currently inactive)
MMB8002 Current Research Trends in Musculoskeletal Disease

MMB8003 The Biological Study of Behaviour
MMB8004 Ageing & Health
MMB8005 Experimental Medicine & Therapeutics
MMB8006 Drug Discovery & Development
MMB8007 Cancer Studies
MMB8008 Cell Cycle Control & Cell Signalling in Health & Disease
MMB8009 Clinical Epidemiology
MMB8010 Cognitive Neuroscience & Psychiatric Illness
MMB8011 Biology of Ageing
MMB8012 Applying the 3Rs to *in-vivo* Experimental Techniques
MMB8014 Genetics of Common Disease
MMB8015 Applied Immunobiology
MMB8016 Molecular Microbiology
MMB8017 Nanomaterials in Healthcare Technologies
MMB8018 Protein Structure & Function
MMB8019 Sensory Systems & Neuroimaging
MMB8020 Scientific Basis of Neurological Disorders
MMB8021 Innovation in Industrial Bioscience (currently inactive)
MMB8022 Stem Cells & Regenerative Medicine
MMB8023 Systems Biology
MMB8024 Techniques in the Molecular & Cellular Biosciences
MMB8025 Transplantation Sciences
MMB8031 Developmental Genetics
MMB8030 Genetic Medicine
MMB8029 Medical Genomics
MMB8032 Toxicology
MMB8033 Surgical Anatomy
MMB8034 Mitochondrial Biology and Medicine
MMB8035 Diabetes
MMB8036 Neuromuscular Diseases: Bench to Bedside
MMB8037 Cardiovascular Science in Health and Disease
MMB8038 Medical Biotechnology, Enterprise and Innovation in Industrial Bioscience
ACE8074 Applied Ethology
CSC8313 Bioinformatics Theory and Practice

Programme requirements: All students must select three 20 credit modules. There is a free choice of optional modules for students undertaking the MRes 4807F (Medical and Molecular Biosciences), 4830F (Medical Sciences) and 4831F (Biosciences) subject to timetabling and availability.

Students wishing to graduate in the subject-specific programmes must study the modules as listed below, which are **compulsory** for the programme:

MRes 4812F Nanomedicine: MMB8017
MRes 4813F Immunobiology: MMB8015
MRes 4814F Ageing & Health: MMB8004 and/or MMB8011
MRes 4815F Systems Biology: MMB8023
MRes 4816F Cancer: MMB8007
MRes 4817F Stems Cell & Regenerative Medicine: MMB8022
MRes 4818F Neuroscience: two of the following modules: MMB8010, MMB8019, MMB8020
MRes 4819F Biotechnology & Business Enterprise: MMB80381
MRes 4820F Toxicology: MMB8032
MRes 4822F Translational Medicine & Therapeutics: MMB8005 and MMB8006
MRes 4825F Animal Behaviour: MMB8003
MRes 4826F Epidemiology: MMB8009
MRes 4827F Medical Genetics: MMB8030 plus one of: MMB8029, MMB8014, MMB8031
MRes 4828F Molecular Microbiology; MMB8016
MRes 4829F Transplantation: MMB8025
MRes 4832F Evolution and Human Behaviour: MMB8003
MRes 4834F Mitochondrial Biology and Medicine: MMB8034
MRes 4835F Diabetes: MMB8035

MRes 4836F Neuromuscular Diseases: MMB8036
MRes 4837F Cardiovascular Sciences in Health and Disease: MMB8037

Professional/Key Skills:

MMB8100 Research Skills and Principles for the Biosciences (compulsory).

Project: 100 credits and core

MMB8099 Research Project

Key features of the programme (including what makes the programme distinctive)

The key feature of this programme is student choice:

This Masters' programme provides a wide choice of select areas of study that suit student's individual needs. Thus students can chose three from a list of 36 subject choice modules.

Projects are self-selected by the students and map to areas of research excellence within the Faculty of Medical Sciences, University and others including industry and NHS. Thus, projects offered on this course form part of on-going research programmes and students have an opportunity to experience cutting-edge research identified in their chosen area.

Students may opt to graduate in one the specialist areas of the MRes (specific MRes programmes, listed above) or to graduate with l MRes in Medical and Molecular Biosciences, MRes in Biosciences or MRes in Medical Sciences, all of which offer a free choice of modules and project.

It may be possible to select alternative level 7 (Masters) modules offered in the University at the discretion of the Degree Programme Director.

Programme regulations (link to on-line version)

http://www.ncl.ac.uk/regulations/programme/

13 Criteria for admission

Entry qualifications

A minimum upper second class honours degree, or equivalent qualification, in a science or related discipline.

Admissions policy/selection tools

Selection is by academic quality and relevance of previous studies, supported by appropriate references.

Non-standard Entry Requirements

Successful completion of the third year of the Batchelor of Medicine and Batchelor of Surgery *or* Batchelor of Dental Surgery programme or equivalent.

Level of English Language capability

IELTS minimum level 6.5 in all domains is required.

14 Support for Student Learning

The Student Services portal provides links to key services and other information is available at: http://www.ncl.ac.uk/students/

All students are registered in the Graduate School which has an excellent infrastructure to support postgraduate students and their learning.

Induction

All students attend a course introduction where they are issued with the degree programme handbook detailing the course curriculum, degree regulations, assessment methods and sources of help and support. Following this they attend a reception which offers a chance to meet the programme team and ask questions and to socialise with fellow students. During the first week of the programme students are introduced to their module options, the Walton Library, a computer cluster and may attend an optional session on careers.

Study skills support

Training in professional and key skills including study skills is integral to the programme as outlined above. In addition, all students may attend optional seminars provided through the Faculty of Medical Sciences Research Skills Development Programme.

Numeracy support is available through Maths Aid.

Help with academic writing is available from the Writing Centre. Details can be obtained from Alicia.Cresswell@ncl.ac.uk

Academic support

Students benefit from a strong support team headed by the Degree Programme Director including deputies with responsibility for recruitment, projects, liaison with industry, advice on medical careers and advice for international students. The initial point of contact for a student is with a lecturer or module leader, their tutor or the course administrator (see below). Thereafter the Degree Programme Director or appropriate Deputy Degree Programme Director may be consulted. Issues relating to the programme may be raised at the Staff Student Committee and at the Curriculum Committee (sub-committee of Graduate School Board of Studies) both of which have nominated student representation.

Pastoral support

All students are assigned a personal tutor whose responsibility is to monitor the academic performance. In addition, two MRes senior tutors are available for direct consultation by students and also support and advise the individual personal tutors.

The University also offers a range of support services, including the Student Advice Centre, the Counselling and Wellbeing team, the Mature Student Support Officer, and a Childcare Support Officer.

Support for students with disabilities

The University's Disability Support Service provides help and advice for disabled students at the University - and those thinking of coming to Newcastle. It provides individuals with: advice about the University's facilities, services and the accessibility of campus; details about the technical support available; guidance in study skills and advice on financial support arrangements; a resources room with equipment and software to assist students in their studies.

Learning resources

The University's main learning resources are provided by the Robinson and Walton Libraries (for books, journals, online resources), and Information Systems and Services, which supports campus-wide computing facilities.

The University Computing Service provides comprehensive computing facilities for all students at many open access sites on campus, including provision for disabled access, with regular software upgrades. There is also remote access on site and at the halls of residence to the Library catalogue and other services. All Institutes and most research groups have provision for computer access for postgraduate students.

The Virtual Learning Environment (VLE) Blackboard will be used to deliver the online resources for this course. Blackboard is the University's main VLE which enables students to access learning resources and interact in collaborative exercises online.

The graduate school offers a student learning space with dedicated on-line computer facilities, a number of study rooms and social space for interaction with other postgraduate students.

All new students whose first language is not English are required to take an English Language Proficiency Test. This is administered by INTO Newcastle University Centre on behalf of Newcastle University. Where appropriate, in-sessional language training can be provided.

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

Module reviews
All modules are subject to review by student evaluation questionnaires which are considered annually by the Curriculum Committee. Major changes to, or the introduction of new, modules are considered at the Curriculum Committee, Board of Studies (Graduate School) and are subject to approval by the Faculty Learning, Teaching and Student Experience Committee.

Research Projects
All research projects go through an approval process involving the DPD (or nominee) and deputy DPD – projects. Continual monitoring by individual supervisors is maintained and scrutinised by the deputy DPD – projects at all stages via email.

Programme reviews
The Curriculum Committee and Graduate School Committee monitor the programme annually through the University's Quality Assurance Framework for Postgraduate Research Degree Programmes, reporting to University Learning, Teaching and Student Experience Committee Postgraduate Research Degree Sub-Committee.

External Examiner reports
External Examiner reports on the overall degree programme are considered by the Curriculum Committee and Graduate School Committee. Responses to these reports are reported to University Learning, Teaching and Student Experience Committee. Responses are shared with the External Examiners and the External Examiner reports are shared with institutional student representatives, through the Staff-Student Committee.

Student evaluations
All modules, the project and the degree programme as a whole are subject to review by student evaluation questionnaires. Informal student evaluation is also obtained at the Staff Student Committee and Curriculum Committee.

Mechanisms for gaining student feedback
Student feedback is obtained through module and programme review and discussed at Staff Student Committee, Curriculum Committee. Informally feedback may be gained via meetings with the DPD (on request) or via tutors.

Faculty and University Review Mechanisms
The programme is subject to the University's Quality Assurance Framework for Postgraduate Research Degrees.

Additional mechanisms
None at present.

16 Regulation of assessment

Pass mark
The pass mark for all modules and the project is 50. However, University regulations allow for a student to pass the degree even if one module is failed, provided that the overall final degree mark is 50 or greater and provided: no single mark is below 40, marks less than 50 are compensated in the assessment of modules with a total value of no more than 20 credits, and no such compensation is permitted for core modules or the project.

Common Marking Scheme
The University employs a common marking scheme, which is specified in the Postgraduate Examination Conventions Research, namely:

Summary description applicable to postgraduate Masters programmes		**Summary description applicable to postgraduate Certificate and Diploma programmes**	
<50	Fail	<50	Fail
50-59	Pass	50 or above	Pass
60-69	Pass with Merit*		
70 or above	Pass with Distinction*		

*providing that additional, programme-specific requirements are met (see MRes Regulations, paragraph 6)

Course requirements
Progression is subject to the University's Masters Degree Progress Regulations, Research and Examination Conventions for Research Masters Degrees. There are reassessment opportunities, with certain restrictions.

Marking Scheme
Grading descriptors are available in the degree programme handbook for all assessed work. Final degree classification is according to the Examination Conventions for Research Masters Degrees.

Students who are ineligible for the award of a Masters degree but who have successfully complete 120 credits of the programme may qualify for the award of a postgraduate Diploma and students who are ineligible for the award of a Diploma but who have successfully complete 60 credits of the programme may qualify for the award of a postgraduate Certificate.

Role of the External Examiners

For each individual student an External Examiner who is a distinguished member of the biosciences community, is appointed by the Dean of Postgraduate Studies upon nomination of the Degree Programme Director. The External Examiner is expected to evaluate and mark the student's project dissertation and provide a detailed (brief) written report to the University. An External Examiner may be asked to consider more than one project.

In addition two External Examiners, who are also a distinguished members of the biosciences community, is appointed by Faculty Learning, Teaching and Student Experience Committee after recommendation from the Graduate School Committee to:

- See and approve examination papers
- Moderate examination and coursework marking
- Attend the Board of Examiners
- Report to the University on the standards of the programme

In addition, information relating to the programme is provided in:

The University Prospectus (see http://www.ncl.ac.uk/postgraduate/)

The Faculty Graduate School Websites (see http://medical.faculty.ncl.ac.uk/postgraduate/home/Page1a.html). and http://medical.faculty.ncl.ac.uk/postgraduate/prospective/Page2.html

The University Regulations (see http://www.ncl.ac.uk/calendar/university.regs/)

The Degree Programme Handbook

Please note. This specification provides a concise summary of the main features of the programme and of the learning outcomes that a typical student might reasonably be expected to achieve if she/he takes full advantage of the learning opportunities provided. The accuracy of the information contained is reviewed by the University and may be checked by the Quality Assurance Agency for Higher Education.

Annex 1

Mapping of Intended Learning Outcomes onto Curriculum/Modules

Intended Learning Outcome	Module codes (Compulsory / Core in Bold)
A1	MMB8001 – MMB8038 **, MMB8100**
A2	**MMB8099**
A3	Primarily in **MMB8100**; but also specifically in MMB8003; MMB8012, MMB8030
B1	MMB8001 – MMB8037 (excluding MMB8001, MMB8021); ACE8074; **MMB8099; MMB8100**
B2	MMB8001 – MMB8038; ACE8074; **MMB8099; MMB8100**
B3	MMB8001 – MMB8037; (excluding MMB8001, MMB8021); ACE8074; **MMB8099; MMB8100**
B4	Primarily in **MMB8100**; but also specifically in MMB8003; MMB8012; MMB8030;; MMB8034; MMB8035**; MMB8100**
C1	MMB8003 : MMB8012 ; MMB8013 ; MMB8018; MMB8024; MMB8001; MMB8017, MMB8033; MMB8035 ; ACE8074 ; CSC8313 ; **MMB8099**
C2	**MMB8100**
C3	**MMB8099**
D1	MMB8001 – MMB8038; ACE8074; **MMB8099**; **MMB8100**
D2	MMB8001 – MMB8038; ACE8074; CSC8313; **MMB8099; MMB8100**
D3	Primarily **MMB8099**, but also MMB8001 – MMB8038; ACE8074; CSC8313; **MMB8100**
D4	Primarily **MMB8099**, but also MMB8001 – MMB8038; ACE8074; CSC8313; **MMB8100**

Annex 2

		Intended Learning Outcomes			
Module	**Type**	**A**	**B**	**C**	**D**
MMB8001	Optional	1	2	1;	1; 2; 3; 4
MMB8002	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8003	Optional	1; 3	1; 2; 3; 4		1; 2; 3; 4
MMB8004	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8005	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8006	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8007	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8008	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8009	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8010	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8011	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8012	Optional	1; 3	1; 2; 3; 4	1	1; 2; 3; 4
MMB8013	Optional	1	1; 2; 3	1	1; 2; 3; 4
MMB8014	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8015	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8016	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8017	Optional	1	1; 2; 3	1;	1; 2; 3; 4
MMB8018	Optional	1	1; 2; 3	1;	1; 2; 3; 4
MMB8019	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8020	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8021	Optional	1	2		1; 2; 3; 4
MMB8022	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8023	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8024	Optional	1	1; 2; 3	1;	1; 2; 3; 4
MMB8025	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8029	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8030	Optional	1; 3	1; 2; 3; 4		1; 2; 3; 4
MMB8031	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8032	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8033	Optional	1	1; 2; 3	1	1; 2; 3; 4
MMB8034	Optional	1; 3	1; 2; 3; 4		1; 2; 3; 4
MMB8035	Optional	1; 3	1; 2; 3; 4	1	1; 2; 3; 4
MMB8036	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8037	Optional	1	1; 2; 3		1; 2; 3; 4
MMB8038	Optional	1	2		1; 2; 3; 4
ACE8074	Optional	1	1; 2; 3	1	1; 2; 3; 4
CSC8313	Optional	1		1	2; 3; 4
MMB8100	**Compulsory**	**1; 3**	1; 2; 3; 4	**2**	1; 2; 3; 4
MMB8099	**Core**	**2**	**1; 2; 3**	**1; 3**	**1; 3; 4**