

Programme Specification

MSc in Skin Sciences and Regenerative Medicine

Academic Year:	2018/9
Degree Awarding Body:	University of Bradford
Partner(s), delivery organisation or support provider (if appropriate):	N/A
Final and interim award(s):	[Framework for Higher Education Qualifications (FHEQ) level 7] MSc in Skin Sciences and Regenerative Medicine Postgraduate Diploma in Skin Sciences and Regenerative Medicine Postgraduate Certificate in Skin Sciences and Regenerative Medicine
Programme accredited by (if appropriate):	Not applicable
Programme duration:	12 months full-time
QAA Subject benchmark statement(s):	
Date of Senate Approval:	
Date last confirmed and/or minor modification approved by Faculty Board	March 2017

Introduction

This new research-led Masters programme is designed to enable life science graduates to understand the biology behind, and applications of, a cutting edge area of the biomedical sciences, regenerative medicine, using the skin with its amazing regenerative capacity as a main focus. Regenerative medicine aims to treat human disease by producing replacement cells, tissues or organs. It involves a group of novel technologies based on the use of stem cells. This exciting area is currently at an early stage, but it is developing rapidly due to the recent ability to manipulate specialised adult stem cells to revert to a more flexible, embryonic-like stage (induced pluripotent stem cells) which can produce all cell types (Nobel Prize, 2012). Since regenerative medicine has the potential to become an area of major practical importance in clinical medicine, but is currently at a very early stage, postgraduates with advanced knowledge in this topic will be well-placed at the forefront of a new and rapidly expanding area. Graduates from this unique Masters programme, which is the only one providing expertise in both skin sciences and regenerative medicine, will have a particular advantage as their proficiency will cover these two important fields with major significance for both research and industrial employment.

The skin is a particularly useful model for regenerative studies as it contains very active stem cells and is a relatively accessible source of human cells. The unique human regenerative capacity of the hair follicle is particularly interesting. Follicles shed their hairs during frequent growth cycles regenerating new replacements; the newly synthesised hair may resemble previous ones or differ in size and/or colour (e.g. dark beard hairs replacing tiny facial hairs). Learning about stem cells and skin function in health and disease will also give students an understanding of areas already important to pharmaceutical and cosmetic industries.

The content of this programme is strongly research-led in line with both our University and Faculty strategies and the majority of academic staff who will teach on the programme are active researchers who publish in high quality, international scientific journals. The programme has developed from the interests and expertise of academic staff in the internationally-renowned Centre for Skin Sciences, a leading research centre at the University of Bradford with a well-recognised, longstanding reputation for world-leading research. Centre for Skin Sciences staff carry out academic research at the forefront of their fields supported by grants from Research Councils e.g. Medical Research Council, research charities e.g. National Alopecia Areata Foundation, USA and international industry e.g. Allergan. This research often has relevance to the pharmaceutical or cosmetic industry leading to good relations with companies, funding support, clinical trials and development of new treatments. These are examples of research having impact, a high priority for the British government. All Centre for Skin Sciences academic staff were entered in the last national Research Excellence Framework assessment in 2013, where 92% of our research in the Allied Health area was classified as world-leading or internationally excellent. The impact of our research was also rated as being outstanding or very considerable in terms of reach and significance and our environment as conducive to producing research of world-leading or internationally-excellent quality. Many of

academic staff who teach on the programme also have Higher Education teaching qualifications and/or long-standing expertise in the learning and teaching field from delivery at all levels from undergraduate to research degrees. Consequently, the programme will provide opportunities for students to learn from experienced academic staff actively involved in related research and to experience current biomedical techniques and study alongside established research teams.

The programme is designed to start with formal learning approaches to provide students with a good grounding in the structure and function of the skin, the biology of stem cells, the principles of regenerative medicine and the research and analytical methods and techniques and experimental design approaches used to study these areas. Learning and teaching methods will include lectures, seminars, tutorials, laboratory sessions and workshops. The programme will then develop into more student-led study with individual or group projects covering topics in more depth, particularly in an individual critical appraisal of a current topic in regenerative medicine. Students will also gain knowledge of the practicalities of bringing a new skin sciences and regenerative medicine research-based idea to the market and will practice this in a case study, group project involving a role play presentation to a panel of industrial experts trying to raise money to take their project into further development in (as seen in the 'Dragons Den' television programme). In preparation for the research project, students will use their chosen project topic to practice some of the skills of experimental design. The final third of the programme involves a substantial, individual research project. Students will be guided in the substantive pieces of work for their individual critical appraisal of a current topic in regenerative medicine and the research project by their individual supervisors. Students will also be supported throughout the programme by their Personal Academic Tutor.

As well as developing key knowledge and skills specific to skin sciences and regenerative medicine, the programme will enhance students' autonomous learning ability and develop the transferable skills and knowledge to a postgraduate level in areas such as scientific communication, critical review and analytical thinking, complex problem solving and reflective practice using examples from these areas. These will build students' confidence as well as competence, thereby enhancing their employability. The main topics of the programme will provide successful students with knowledge and understanding of the skin sciences, relevant not only to those in the biological arena, but also to the pharmaceutical and cosmetic industry, and of regenerative medicine, one of the most advanced and rapidly expanding areas of the biomedical sciences.

In summary, this unique research-led programme in a University with an international research group in the Centre for Skin Sciences builds expertise in two important areas at the forefront of the biosciences, Skin Sciences and Regenerative Medicine. After completion, successful graduates should find their exceptionally high levels of expertise in these widely-applicable, important areas, combined with their advanced communication and transferable skills, are in great demand with potential PhD supervisors and a range of employers including the pharmaceutical and cosmetic industries both within the UK and internationally.

Programme Aims

The aims and outcome statements which follow below have been referenced to the Quality Assurance Agency (QAA's) Master's Degree Characteristics Statement (2015) and the UK Quality Code for Higher Education: the Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies (2014) (FHEQ). This should also ensure that the programme is aligned with European-wide guidance, particularly the Framework for Qualifications of the European Higher Education Area (QF-EHEA).

The programme is intended to:

- A1 Deliver an exciting programme of postgraduate study in skin sciences and regenerative medicine to students from diverse cultural and educational backgrounds;
- A2 Enable students to develop a systematic understanding and critical awareness of current issues within skin sciences and regenerative medicine;
- A3 Develop competence in the design and execution of research and the interpretation of scientific data;
- A4 Enable students to appreciate the advantages, limitations and applications of a range of biomedical techniques used in the skin sciences and regenerative medicine;
- A5 Provide learning opportunities to enable critical thinking to develop autonomous and lifelong learning;
- A6 Develop and enhance students ability in a range of personal and key transferable skills;
- A7 Enhance skills associated with the communication of scientific data;
- A8 Develop an understanding of the processes and challenges involved in taking research ideas into the marketplace.

Programme Learning Outcomes

To be eligible for the award of **Postgraduate Certificate** at FHEQ level 7, students will be able to:

- LO1 Demonstrate a systematic understanding and critical awareness of current issues and techniques in skin sciences and regenerative medicine
- LO2 Critically evaluate and communicate scientific data
- LO3 Critically evaluate and appraise experimental design and experimental techniques

Additionally, to be eligible for the award of **Postgraduate Diploma** at FHEQ level 7, students will be able to:

- LO4 Write, interpret and peer review scientific reports
- LO5 Write a scientific grant proposal

LO6 Demonstrate understanding of the processes and challenges involved in taking research ideas into the market place

LO7 Effectively use reflective practice to modify their personal and professional activities

Additionally, to be eligible for the award of **Degree of Master** at FHEQ level 7, students will be able to:

LO8 Prepare and present a scientific poster based upon research data

LO9 Demonstrate self-direction and originality in implementing a research project

Curriculum

The MSc in Skin Sciences and Regenerative Medicine Programme consists of 120 taught Credits (60 credits in each of Semesters 1 & 2) and a substantial 60 credit individual research project (Semester 3).

Postgraduate Certificate

Students will be eligible to exit with the award of Postgraduate Certificate in Skin Sciences and Regenerative Medicine if they have successfully completed 60 credits including the module *Skin Biology, Stem Cells and Regenerative Medicine* and achieved the award learning outcomes.

FHEQ Level	Module Title	Type (Core/ Option/ Elective)	Credits	Semester(s)	Module Code
7	Skin Biology, Stem Cells and Regenerative Medicine	Core	20	1	BIS7013-B
7	Critical Appraisal of a Current Topic in Regenerative Medicine	Core	20	1&2	BIS7010-B
7	Research & Analytical Methods	Core	20	1&2	BIS7006-B
7	Innovation in Life Sciences: From Concept to Market Place	Core	20	1&2	BIS7011-B
7	Personal & Professional Development for Postgraduate Bioscientists	Core	20	1&2	BIS7012-B
7	Experimental Design	Core	20	2	BIS7016-B

Postgraduate Diploma

Students will be eligible to exit with the award of Postgraduate Diploma in Skin Sciences and Regenerative Medicine if they have successfully completed at least 120 credits including the modules *Skin Biology, Stem Cells and Regenerative Medicine* and *Critical Appraisal of a Current Topic in Regenerative Medicine* and achieved the award learning outcomes.

FHEQ Level	Module Title	Type (Core/option/elective)	Credits	Semester(s)	Module Code
7	Skin Biology, Stem Cells and Regenerative Medicine	Core	20	1	BIS7013-B
7	Critical Appraisal of a Current Topic in Regenerative Medicine	Core	20	1&2	BIS7010-B
7	Research & Analytical Methods	Core	20	1&2	BIS7006-B
7	Innovation in Life Sciences: From Concept to Market Place	Core	20	1&2	BIS7011-B
7	Personal & Professional Development for Postgraduate Bioscientists	Core	20	1&2	BIS7012-B
7	Experimental Design	Core	20	2	BIS7016-B

Degree of Master

Students will be eligible for the award of Degree of Master in Skin Sciences and Regenerative Medicine if they have successfully completed at least 180 credits and achieved the award learning outcomes.

FHEQ Level	Module Title	Type (Core/option/elective)	Credits	Semester(s)	Module Code
7	Skin Biology, Stem Cells and Regenerative Medicine	Core	20	1	BIS7013-B
7	Critical Appraisal of a Current Topic in Regenerative Medicine	Core	20	1&2	BIS7010-B
7	Research & Analytical Methods	Core	20	1&2	BIS7006-B

7	Innovation in Life Sciences: From Concept to Market Place	Core	20	1&2	BIS7011-B
7	Personal & Professional Development for Postgraduate Bioscientists	Core	20	1&2	BIS7012-B
7	Experimental Design	Core	20	2	BIS7016-B
7	Research Project	Core	60	3	BIS7005-E

Learning and Teaching Strategy

The learning and teaching strategy employed in this programme takes into consideration the learning outcomes for the programme, the nature of the topics that will be studied and the need for students to demonstrate significant autonomy in students learning to fulfil the national requirements for postgraduate awards. Directed study, involving reading appropriate texts and the preparation of assessed work, is used to address the majority of the learning outcomes. This will help students appreciate that understanding in much of these subject areas is moving rapidly.

The delivery of the programme is planned to enable students to take increasing responsibility for their own learning as student's progress through the programme. Lectures, seminars and tutorials will facilitate the acquisition of knowledge and understanding (LO1) of the structure and function of the skin, the biology of stem cells, the principles of regenerative medicine, the research and analytical techniques and experimental design approaches used to study these and the practicalities of bringing a new bioscience research-based idea from these fields to the market at the early stages of the programme. As the programme progresses, the main emphasis will move towards self-directed research and evaluation of related scientific literature and experimental approaches used in these areas (LO 2 & 3); students will be supported in these by their supervisors for both the individual *Critical Appraisal of a Current Topic in Regenerative Medicine* and the research project. These aspects further develop the research-informed nature of the curriculum. Students will be expected to critically evaluate scientific data (LO 2-7) and to design appropriate experimental approaches to test specific scientific hypotheses illustrating their abilities during the *Experimental Design* module in relation to the specific topic of their own research project (LO 3, 5 & 9). The large research project module which forms a third of the programme provides a major opportunity for students to gain and demonstrate competence in the execution of experimental work and autonomy in data handling and critical interpretation in a research context (LO 9).

Students will also develop their ability to effectively use reflective practice to modify their personal and professional activities on the programme while completing the *Personal and Professional Development for Postgraduate Bioscientists* (LO 7). This will increase students' ability to deal with complex issues and solve problems. Key

transferable skills are embedded in a number of modules but are consolidated in the *Personal and Professional Development for Postgraduate Bioscientists* module with examples to review from the skin sciences and regenerative medicine areas (LO 4). Students will be able to practice and demonstrate their communication skills in many parts of the programme including written essays and reports, oral presentations and preparing a scientific poster on the research project (LO 8). Students will also gain familiarity with a range of aspects relating to taking research ideas in the skin sciences and regenerative medicine areas into the marketplace while operating in a group, enhancing their understanding of work-related issues and the different focus needed when trying to source funds to support their future plans (LO 06). Overall, these transferable skills taken to postgraduate level will benefit students throughout life, particularly with regard to obtaining future employment.

Assessment Strategy

The assessment strategy for this programme is designed to allow students to demonstrate achievement of the learning outcomes of an individual module appropriate to the postgraduate level of study in areas specific to the skin sciences and regenerative medicine topics, whilst simultaneously achieving generic Masters level transferable skills. At level 7 as well as a systematic understanding and critical awareness of current topics and techniques, students are expected to demonstrate well developed skills of analysis, synthesis and criticism and to demonstrate self-direction and originality in dealing with complex problems.

These aspects will be assessed by a variety of strategies, including written examinations, report writing, case studies, group work, essays, a major individual critical appraisal dissertation, oral presentations, a poster presentation and the extensive project report. Many aspects will be assessed both formatively and summatively to assist in their learning.

Assessment Regulations

This Programme conforms to the standard University Regulations which are available at the following link:

<http://www.bradford.ac.uk/aqpo/ordinances-and-regulations/>

Admission Requirements

The University welcomes applications from all potential students and the most important aspect in the decision to offer a place is our assessment of a candidate's potential to benefit from their studies and of their ability to succeed on this particular programme. Consideration of applications will be based on a combination of formal academic qualifications and other relevant experience.

The standard entry requirements for the Programme are as follows:

- A Degree of Bachelor of an approved university or of the Council for National Academic Awards or of any other approved degree-awarding body in any aspect of the Biological Sciences or Biosciences or related Life

Sciences programmes. Candidates to have taken module(s) covering key aspects of molecular and cellular biology. A medical degree would also be appropriate. Minimum classification: Class 2, Division 2 or equivalent

- English requirement of:
GCSE Grade C or 4, *or*
IELTS 6.0 with a minimum score of 5.5 in any sub-unit

Applications are welcome from students with non-standard qualifications or with significant relevant experience.

Recognition of Prior Learning

If applicants have prior certificated learning or professional experience which may be equivalent to parts of this programme, the University has procedures to evaluate and recognise this learning in order to provide applicants with exemptions from specified modules or parts of the programme.

Minor Modification Schedule

Version Number	Brief description of Modification	Date of Approval (Faculty Board)
2	Updated module code for Experimental Design module. Additional information in Admission Requirements	28/03/17