

**University of the West of Scotland
Postgraduate Programme Specification**

Session: 2022/23

Last modified: 25/04/2022 22:38:01

Named Award Title:	MSc Biotechnology / (Professional Practice)
Award Title for Each Award:	MSc Biotechnology / (Professional Practice) PG Dip Biotechnology / (Professional Practice) PG Cert Biotechnology / (Professional Practice)
Awarding Institution/Body:	University of the West of Scotland
Language of Instruction & Examination:	English
Award Accredited By:	n/a
Maximum Period of Registration:	
Mode of Study:	Full Time Part Time
Campus:	Lanarkshire
School:	School of Health and Life Sciences
Programme Leader:	Dr Steven Kelly

Admission Criteria

Candidates must be able to satisfy the general admission requirements of the University of the West of Scotland as specified in Chapter 2 of the University Regulatory Framework together with the following programme requirements:

Appropriate Undergraduate Qualification

An Undergraduate degree in a relevant subject including evidence of completing an independent research project.

Other Required Qualifications/Experience

Applicants may also be considered with other academic, vocational or professional qualifications deemed to be equivalent.

Further desirable skills pre-application

In the case of a candidate whose native language is other than English, a Qualification Minimum Requirement applies. Details on UWS web site
Information on other English language test scores is available from Admissions.

General Overview

The PgDip/ MSc Biotechnology has been designed to develop subject knowledge at the forefront of current developments in biotechnology as well as relevant practical skills in areas such as nucleic acid technology, protein technology, microbiology, immunoassays, cell culture and medical biotechnology. The importance of research and commercialisation in biotechnology will also be key features of the programme. Research skills will be developed during the programme and applied in an independent research project. Theories in change and risk management will be explored and applied to the long term sustainability of the biotechnology industry.

The full time MSc programme will consist of six taught modules, a total of 120 credits over two terms and MSc research project. The course will be delivered through a mix of formal lectures and workshops, practical laboratory work and online material.

The course is designed primarily for students who have a BSc (Hons) in a biological science or chemical biology-related field, and who wish to proceed to further PhD research studies or to develop a career in the biotechnology or life science industry. It is common for current students with a BSc (Hons) in Biotechnology / Applied Bioscience to want to pursue a PhD by research. Completion of this MSc will greatly enhance the potential of any student to progress to a PhD by research in the life science/biotechnology sector.

The teaching and learning strategies adopted for the PgDip/MSc Biotechnology are designed to provide students with the necessary subject knowledge, understanding, abilities and skills for a career in the biotechnology or bioscience industry. A variety of teaching methods will be used to ensure that students remain engaged, motivated and challenged to learn. This will include enquiry-based learning, group working, interactive workshops, critical thinking and reflection, data analysis, and problem solving. There will be strong links with research and industry throughout the course, for example through the postgraduate research methods, research techniques in biotechnology and MSc research project modules as well as guest lecturers from industry and industrial visits incorporated into the research and commercialisation in biotechnology module. The VLE will facilitate many of these approaches, for example, group projects, development of graduate skills or making data sets available for analysis. The VLE will also allow some flexibility in the pace of study for students, for example, in the use of self-teaching materials, PowerPoint slides with commentary and self assessment tests. Traditional laboratory exercises to build practical lab skills will be augmented with the use of group case studies.

In the MSc research project, the graduate skills of independent learning, planning, lab working, team-working, data analysis and communication will all be required for success. The biotechnology industry requires graduates who are safe, competent and careful practical workers and so there will be substantial laboratory-based practical components with emphasis on quality control and good lab practice. The teaching methods chosen aim to meet the learning outcomes for the course and the individual modules. They cover the range of abilities that would be expected from an MSc graduate in Biotechnology.

Cognisance was taken of the QAA Subject Benchmark statements for Biosciences (2015) and the SCQF level 11 benchmark statements which describe the general expectations of the attributes and capabilities that can be expected at Masters level. The assessment strategies are designed to enhance student engagement with the full learning process. Accordingly, criteria for assessment will reflect the aim of enhancing learning flexibility. Students will be required to reflect on their graduate skills development and thereby personal reflection will be developed. Assessment across the programme requires students to use various forms of written and oral presentation appropriate to a professional scientist. This will include laboratory reports, log books, essays, scientific papers, case studies, literature reviews, research proposals, posters and oral presentations. Within this process, students will be required to critically review the results of their work, using evidence from literature and personal experience.

These skills will enhance their abilities to self-analyse, self-reflect and self-critique.

Each MSc research project will be supervised by a member of academic staff and supported by technical and research staff. With obvious constraints, the research topic will be selected by the student in consultation with staff in the subject area. The choice of project offers students a chance to develop an interest in a particular area of research. Since this is a course at Master's level, it is important that students are required to apply their knowledge to the solution of unfamiliar problems. Assessment of the research project will be crucial in determining whether Master's level learning outcomes have been achieved. Students undertaking assessment within this programme are bound by the regulations in relevant chapters of the UWS regulatory framework. An overview of these is given in the Student Handbook and full details of the assessment criteria for each module is provided in the module descriptor which will be made available to students on the VLE. Assessment schedules and assignments will be available to students through the VLE on individual module sites. Regulations for the anonymous submission of work are in force, as are those for marking, moderation and external examination of assessment material. The marking and grading scheme is available to students in the Student Handbook.

Graduate Attributes, Employability & Personal Development Planning

Graduate Attributes

The development of UWS graduate attributes is embedded within the programme. Our aim is to provide students at UWS with opportunities to develop academically, professionally and personally: to broaden their ambitions, extend their attitudes, challenge their assumptions, and assist towards unlocking their potential to succeed in their studies and future lives.

Critical Thinker The ability to evaluate yourself and your own thinking; assessing and evaluating complex information from different sources, challenging and questioning presented knowledge and facts, drawing reflective conclusions and articulating knowledge. Thinking reflectively and logically, being able to explain your thought processes, forming your own conclusions, constructing coherent arguments and taking actions based on your own thinking and relevant information.

Ethically-Minded Understanding ethical principles, awareness and appreciation of the values and beliefs of others in relation to own actions. Knowledge of moral decisions; respect for other people's beliefs and the environment; being non-judgmental.

Collaborative Ability to work with a range of people, receptive to others' views and working well with others to reach shared goals. Being a good communicator, open-minded, flexible, empathetic, a good listener, and pro-active.

Autonomous Taking responsibility for own actions to help become an independent learner. Applying learning and knowledge outwith university, having confidence in self, taking responsibility for own actions and making informed decisions. Self-directed, disciplined, using initiative and being self-motivated.

Resilient The ability to weather challenges and setbacks, utilising adversity to build new skills and support others in the future. Being determined, motivated, self-confident and demonstrating will-power. Not fearing failure.

Driven Ambitious; highly motivated to achieve desired outcome; focussed. A willingness to work hard; committed to achieving objectives; highly engaged with self-determination. Pushing personal boundaries and having the confidence to gain new experience.

Problem Solver Identifying what the problems are, including both what is known and what is unknown. Showing the application of knowledge to problematic situations/issues and evaluating a range of creative options; Identifying a problem and then finding solutions. Ability to be creative and knowledgeable enough to ask the right questions and to step up to take ownership of tasks/activities.

Effective Communicator To adapt what you are communicating to a specific audience. Communicating effectively to present ideas, discuss, persuade, negotiate, debate and challenge. Possessing skills to communicate verbally and non-verbally in an engaging and articulate manner. Listening.

Ambitious Aiming to achieve. Know where you want to be, setting goals, targets and making progress to accomplish these.

Individual modules will specify where opportunities to develop these attributes occur.

Work Based Learning/Placement Details

An optional work based learning module, Professional Practice, will be available to students who wish to undertake this element. The module is 60 credits and will extend the total credit value to 240. To allow for flexibility in start dates this option can be undertaken at different points in the programme. These placements will be operated within the context of the University Code of Practice for staff and students.

Professional Practice will take place with the student being placed with a business or other organisation for a period of unpaid work experience through which the student will have the opportunity study the company and its work and to carry out a piece of work that will be of value to the company. This learning arrangement will need all three of the parties involved (placement provider, student and University) to accept specific responsibilities during the placement period and so a Placement Learning Partnership Agreement will be used for each individual student placement. Students will be supported by a member of staff acting as a placement tutor.

Students who do not wish to take the optional Placement (or who fail to obtain a position with an employer) will be able to meet the learning outcomes of the programme via study within the University. The mechanism by which students are selected for a particular placement can be employer-dependent; some wish to interview; others will select solely on the basis of supplied CVs while others will trust the judgement of the Placement Co-ordinator. Factors that are important in placement selection include the student's academic interests, ease of travel to and from the placement, and availability of time in relation to other lifestyle commitments.

Prior to the Placement there will be tutorial sessions covering topics such as commercial organisations, CV writing; interview technique; learning logs and quality aspects that they will encounter while on placement.

Engagement

In line with the [Academic Engagement Procedure](#), Students are defined as academically engaged if they are regularly engaged with timetabled teaching sessions, course-related learning resources including those in the Library and on the relevant learning platform, and complete assessments and submit these on time.

Where a programme has Professional, Statutory or Regulatory Body requirements these will be listed here:

Regular engagement with timetabled teaching sessions, course-related learning resources including those in the library and VLE, completing assessments and submitting these on time.

Equality and Diversity

The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: [UWS Equality and Diversity Policy](#)

In line with current legislation (Equality Act, 2010) and the UWS Equality, Diversity, and Human Rights Code, our modules are accessible and inclusive, with reasonable adjustment for different needs where appropriate. Module materials comply with University guidance on inclusive learning and teaching, and specialist assistive equipment, support provision and adjustment to assessment practice will be made in accordance with UWS policy and regulations. Where modules require practical and/or laboratory based learning or assessment required to meet accrediting body requirements the University will make reasonable adjustment such as adjustable height benches or assistance of a 'buddy' or helper

Programme structures and requirements, SCQF level, term, module name and code, credits and awards (**Chapter 1, Regulatory Framework**)

A. PG Cert

Learning Outcomes (Maximum of 5 per heading)

Knowledge and Understanding	
A1	Demonstrate critical understanding of current knowledge and challenges in selected aspects of biotechnology.
A2	Demonstrate an understanding of selected techniques applicable to research in biotechnology.
A3	Show a critical awareness of selected laboratory techniques used in biotechnology.
Practice - Applied Knowledge and Understanding	
B1	Be able to use a selection of specialised skills and techniques relevant to the development of biotechnology products.
B2	Be able to design and/or execute a program of work taking full account of health, safety and ethical issues.
Communication, ICT and Numeracy Skills	
C1	Be able to use appropriate information technology and numerical methods to facilitate the recovery, analysis and reporting of data relating to biotechnology processes and products.
C2	Be able to communicate information effectively to different audiences using a range of appropriate methods
Generic Cognitive Skills - Problem Solving, Analysis, Evaluation	
D1	Be able to plan and evaluate programs of work relating to selected areas of biotechnology.

D2	Be able to prepare reports that demonstrate working knowledge of the biotechnology sector.
D3	Demonstrate an understanding of a complex issue and develop a sensible solution to an industrial problem.
Autonomy, Accountability and Working With Others	
E1	Demonstrate self- direction and originality in tackling and solving problems and act autonomously in planning and executing tasks.
E2	Be able to contribute effectively to the functioning of a group and reflect on the learning experience.

Core Modules

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	
11	BIOL11019	Research & Commercialisation in Biotechnology	20		✓		
11	BIOL11025	Advanced Laboratory Techniques	20		✓		

* Indicates that module descriptor is not published.

Footnotes

Optional Modules

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	
		20 credits from the following modules					
11	BIOL11007	Research Design	20		✓		
11	BIOL11006	Nucleic Acid & Protein Technology	20	✓			
11	BIOL11004	Microbial Technology	20	✓			
11	BIOL11001	Bioanalysis	20	✓			
		For the qualification of PG Cert Biotechnology (Professional Practice) the following 60 credit module must be taken					
11	QUAL11024	Professional Practice	60	✓	✓	✓	1

* Indicates that module descriptor is not published.

Footnotes

1 QUAL11024 Professional Practice is an additional module (please see criteria for progression and award) which is offered subject to availability of suitable placement opportunities and is not guaranteed

Criteria for Progression and Award

Postgraduate Certificate (Pg Cert) Biotechnology

For the award of a PG Cert Biotechnology, at least 60 Credit points (excluding the

Professional Practice module) must be achieved of which a minimum of 40 are at level 11 and none are below level 10.

The award of PgCert Biotechnology (Professional Practice) will be made on completion of the required credit for the award plus the additional 60 credits from the Professional Practice module. [Note that this module is offered subject to availability of suitable placement opportunities and cannot be guaranteed]

The standard of the Postgraduate Certificate shall be that expected of a graduate who has successfully completed a programme of study, either at a level demanding more advanced study than a first degree or at a level appropriate for a conversion programme, suitable for the fulfilment of the University's graduate skills and attributes and learning outcomes (see Quality Handbook). The normal length of the programme shall be half of one year of full-time study.

B. PG Dip

Learning Outcomes (Maximum of 5 per heading)

Knowledge and Understanding	
A1	Demonstrate critical understanding of current knowledge and challenges in the biotechnology sector.
A2	Demonstrate an understanding of a range of techniques applicable to research in biotechnology
A3	Show awareness of the range of laboratory techniques used in biotechnology and a selection of statistical techniques used to analyse laboratory data.
A4	Show a critical awareness of the methodologies required to evaluate and develop research proposals at the forefront of biotechnology
Practice - Applied Knowledge and Understanding	
B1	Be able to use a range of specialised skills and techniques relevant to the development of biotechnology products
B2	Be able to design and/or execute a program of work taking account of health, safety and ethical issues
B3	Be able to use a range of practices and techniques to assess the commercial viability of a biotechnology process or product
Communication, ICT and Numeracy Skills	
C1	Be able to use appropriate information technology and numerical methods for the recovery, analysis and reporting of data relating to biotechnology processes and products
C2	Be able to communicate information effectively to different audiences using a range of appropriate methods
Generic Cognitive Skills - Problem Solving, Analysis, Evaluation	
D1	Be able to plan and evaluate programs of work relating to the biotechnology industry
D2	Be able to prepare reports that demonstrate working knowledge of the biotechnology sector.

D3	Show ability to develop and implement solutions to practical problems.
D4	Be able to analyse and critically evaluate scientific literature and experimental data from biotechnology-based studies
Autonomy, Accountability and Working With Others	
E1	Demonstrate self- direction and originality in tackling and solving problems and act autonomously in planning and executing tasks
E2	Be able to contribute effectively to the functioning of a group and reflect on the learning experience
E3	Demonstrate the ability to work in a professional manner and be able to make informed judgements relating to professional and ethical issues.

Core Modules

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	
11	BIOL11007	Research Design	20		✓		
11	BIOL11019	Research & Commercialisation in Biotechnology	20		✓		
11	BIOL11025	Advanced Laboratory Techniques	20		✓		

* Indicates that module descriptor is not published.

Footnotes

Optional Modules

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	
		60 credits from the following modules					
11	BIOL11004	Microbial Technology	20	✓			
11	BIOL11006	Nucleic Acid & Protein Technology	20	✓			
11	BIOL11001	Bioanalysis	20	✓			
		Any appropriate L10 BIOL module					
		For the qualification of PG Dip Biotechnology (Professional Practice) the following 60 credit module must be taken					
11	QUAL11024	Professional Practice	60	✓	✓	✓	1

* Indicates that module descriptor is not published.

Footnotes

1 QUAL11024 Professional Practice is an additional module (please see criteria for

progression and award) which is offered subject to availability of suitable placement opportunities and is not guaranteed

Criteria for Progression and Award

Postgraduate Diploma Biotechnology (PgD)

For the award of a PgDip Biotechnology, at least 120 credit points (excluding the Professional Practice module) must be achieved of which a minimum of 90 are at level 11 and none are below level 10.

The award of PgDip Biotechnology (Professional Practice) will be made on completion of the required credit for the award plus the additional 60 credits from the Professional Practice module. [Note that this module is offered subject to availability of suitable placement opportunities and cannot be guaranteed]

Distinction will be awarded in line with Regulation 3.25

The standard of the Postgraduate Diploma shall be that expected of a graduate, who has successfully completed an appropriate programme of study in a field for which prior knowledge and skills have provided an appropriate foundation, either at a level demanding more advanced and intensive study than a first degree or at a level appropriate for a conversion programme, and which is suitable for the fulfilment of the University's learning outcomes (see Quality Handbook). The normal length of study will be the equivalent of one year of full-time study.

C. Masters

Learning Outcomes (Maximum of 5 per heading)

Knowledge and Understanding	
A1	Demonstrate a comprehensive and critical understanding of current knowledge and challenges including the development of principles of risk management in the biotechnology sector.
A2	Demonstrate comprehensive understanding of a range of techniques applicable to research in biotechnology
A3	Show a critical awareness of an extensive range of laboratory techniques used in biotechnology and a selection of statistical techniques used to analyse laboratory data.
A4	Show a critical awareness of the methodologies required to evaluate and develop detailed research proposals at the forefront of biotechnology
Practice - Applied Knowledge and Understanding	
B1	Be able to use a significant range of specialised skills and techniques relevant to the development of biotechnology products
B2	Be able to design and execute a comprehensive program of work taking account of health, safety and ethical issues
B3	Be able to use a comprehensive range of practices and techniques to assess the commercial viability of a biotechnology process or product
B4	Be able to critically review the scientific literature and use information from the literature to inform a programme of researchBIOL
B5	Apply and evaluate approaches to risk management.

Communication, ICT and Numeracy Skills	
C1	Be able to use a wide range of appropriate information technology and numerical methods for the recovery, analysis and reporting of data relating to biotechnology processes and products
C2	Be able to communicate information highly effectively to different audiences using a comprehensive range of appropriate methods
C3	Communicate the results of scientific research in a thesis with full referencing of literature sources
Generic Cognitive Skills - Problem Solving, Analysis, Evaluation	
D1	Be able to plan and critically evaluate programs of work relating to the biotechnology industry
D2	Be able to prepare comprehensive reports that demonstrate extensive working knowledge of the biotechnology sector.
D3	Show ability to develop and implement creative solutions to practical problems.
D4	Be able to analyse and critically evaluate scientific literature and experimental data from biotechnology-based studies.
Autonomy, Accountability and Working With Others	
E1	Demonstrate extensive self- direction and originality in tackling and solving problems and act autonomously in planning and executing tasks
E2	Be able to contribute effectively to the functioning of a group and critically reflect on the learning experience
E3	Demonstrate the ability to work in a highly professional manner and be able to make informed judgements relating to professional and ethical issues.

Core Modules

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	
11	BIOL11007	Research Design	20		✓		
11	BIOL11005	Masters Research Project	60	✓	✓	✓	1
11	BIOL11001	Bioanalysis	20	✓			
11	BIOL11004	Microbial Technology	20	✓			
11	BIOL11006	Nucleic Acid & Protein Technology	20	✓			
11	BIOL11019	Research & Commercialisation in Biotechnology	20		✓		
11	BIOL11025	Advanced Laboratory Techniques	20		✓		

* Indicates that module descriptor is not published.

Footnotes

1 BIOL11005 Students will be allocated a bioscience project and, in consultation with

the academic supervisor and key technical staff, detailed planning of the project goals and work schedule will take place and appropriate ethical, health and safety risk assessment and COSHH documentation will be produced. There will be at least weekly, recorded progress meetings with supervisory staff.

After carrying out the relevant research, an appropriately structured report will be produced. This will detail the aims of the research, the state of knowledge in the particular research area, the need for the research project, the research methods used, their advantages and drawbacks, a critical analysis and assessment of results, appropriate methods of presentation (graphs, charts, tables) and for the critical analysis of the results (statistical analysis), critical discussion of and conclusions drawn from the, in light of current theoretical and practical understanding of the research area, suggestions for future work. A properly constructed and detailed collection of relevant references should be included.

Optional Modules

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	
		For the qualification of MSc Biotechnology (Professional Practice) the following 60 credit module must be taken					
11	QUAL11024	Professional Practice	60	✓	✓	✓	1

* Indicates that module descriptor is not published.

Footnotes

1 QUAL11024 Professional Practice is an additional optional module (please see criteria for progression and award) which is offered subject to availability of suitable placement opportunities and is not guaranteed

Criteria for Award

Candidates will be bound by the regulations of the University as specified in the University Regulatory Framework.

For the award of MSc Biotechnology at least 180 credit points (excluding the Professional Practice module) must be achieved of which a minimum of 150 are at level 11 and none are below level 10. Distinction will be awarded in line with Regulation 3.25

The award of MSc Biotechnology (Professional Practice) will be made on completion of the required credit for the award plus the additional 60 credits from the optional Professional Practice module. [Note that this module is offered subject to availability of suitable placement opportunities and cannot be guaranteed]

None of the 180 credit points taken in the final SCQF level of the award comprises prior credit imported from outside the University, unless the prior credit derives from a student exchange or study abroad programme in which a translation of the relevant grading system into the University system has been approved by the programme leader as part of the exchange agreement.

The standard of the degree of Master of Science shall be that expected of an Honours graduate who has successfully completed an appropriate programme of study in a field for which prior knowledge and skills have provided an appropriate foundation, at a level demanding more advanced and intensive study than a first degree, and which is suitable for the fulfilment of the University's learning outcomes (see Quality Handbook) and which includes a compulsory element of advanced independent work. The normal length of the programme shall be forty-eight weeks of full-time study or equivalent and will meet the expectations of the SCQF Master Degrees Framework.

Regulations of Assessment
Candidates will be bound by the general assessment regulations of the University as specified in the University Regulatory Framework . An overview of the assessment details is provided in the Student Handbook and the assessment criteria for each module is provided in the module descriptor which forms part of the module pack issued to students. For further details on assessment please refer to Chapter 3 of the Regulatory Framework. To qualify for an award of the University, students must complete all the programme requirements and must meet the credit minima detailed in Chapter 1 of the Regulatory Framework.
Combined Studies
There may be instances where a student has been unsuccessful in meeting the award criteria for the named award and for other more generic named awards existing within the School. Provided that they have met the credit requirements in line with the SCQF credit minima (please see Regulation 1.21), they will be eligible for an exit award of PgCert/ PgDip in Combined Studies.

Version Number: 2.07