

Program SPECIFICATION

COURSE TITLE: MSC BIOTECHNOLOGY

PLEASE NOTE: This specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he or she takes full advantage of the learning opportunities provided.

1 **AWARDING INSTITUTION/BODY:** *UNIVERSITY OF ULSTER*
2 **TEACHING INSTITUTION:** *UNIVERSITY OF ULSTER*
3 **LOCATION:** *Coleraine CAMPUS*
4 **COURSE ACCREDITED BY:** *NA*
5 **FINAL AWARD:** *PgCert/ PgDip/ MSc. in BIOTECHNOLOGY*
6 **MODE OF ATTENDANCE:** *FULL-TIME or Part time on-campus*
7 **SPECIALISMS:** *Biotechnology*
8 **COURSE CODE:** *F150 (MSc FT) F 547 (MSc PT)*
9 **LAST UPDATED:** *2007*

10 **EDUCATIONAL AIMS AND OBJECTIVES OF THE COURSE**
The overall aim of the postgraduate certificate/diploma/Masters Biotechnology is to provide advanced education in biotechnology; and the main objective of the course is to improve the pool of technological skills available to support biotech-based industry and research in Northern Ireland and wider a field internationally.

11 **MAIN LEARNING OUTCOMES**

The following reference points were used to inform the development of the programme and its learning outcomes:

- The University's vision and core strategic aims, teaching and learning strategy and policies;
- Current research or other advanced scholarship carried out by academic staff;
- National and University qualifications and credit frameworks;

11K **KNOWLEDGE AND UNDERSTANDING OF SUBJECT**

For Pg Cert

Successful students will be able to:

- K1** Discuss moral and ethical issues associated with biotechnology research, its exploitation, and commercialization
- K2** Discuss molecular biotechnology with particular reference to large molecules; the properties of biological entities and how these may be used for quantitative and qualitative analysis and prediction
- K3** Describe concepts employed in choosing, adapting and developing biotechnological processes
- K4** Recognise the significance of statistical techniques in problem solving.
- K5** Describe in detail the techniques of DNA technology;

For Pg D/MSc

Successful students will be able to:

- K1** Discuss moral and ethical issues associated with biotechnology research, its exploitation, and commercialization
- K2** Demonstrate a comprehensive understanding of molecular biotechnology with particular reference to large molecules; understand the properties of biological entities and how these may be used for quantitative and qualitative analysis and prediction
- K3** Demonstrate a sound understanding of concepts employed in choosing, adapting and developing biotechnological processes

<p>K4 Recognise and display mastery in the significance of statistical techniques in problem solving. To have a comprehensive knowledge of the techniques of DNA technology; and the ability to acquire, organize, critically analyze, interpret and present information relating to current issues and controversies in the biological sciences;</p> <p>K5 Use the principles and methods of scientific inquiry and research design to plan a research project in the field of biosciences.</p>
<p>K1-K4 will be achieved at Postgraduate Diploma level K1-K4 +K5 will be achieved at Masters level</p>
<p>Learning and Teaching Methods: Lectures, student-led seminars, group-work, module-assignments, practical classes, problem-based learning</p> <p>Assessment Methods: PgC and Pg D: Examination and course work; MSc: research-project completion + supervisor's report</p>

<p>111 INTELLECTUAL QUALITIES</p> <p>Successful students will be able to:</p> <p>I1 Suggest a variety of routes by which biotechnology products can be commercialised</p> <p>I2 Make scientific critiques of published work</p> <p>I3 Identify and implement appropriate computing, analytical or statistical solutions to solve problems in systems biology</p> <p>I4 Obtain and critically review appropriate information and tools from a wide range of resources and to construct and defend reasoned conclusions; Demonstrate creativity in the identification of problems and their solutions;</p> <p>I5 Combine theoretical, practical and presentation skills to complete a research project.</p>
<p>I1-I4 will be achieved at Postgraduate Certificate level I1-I4 will be achieved at Postgraduate Diploma level I1-I5 will be achieved at Masters level</p>
<p>Learning and Teaching Methods: Student-led seminars, small group (2-3 students) -work, team-work, private study, assignment preparation, and business-plans, Laboratory experiments</p> <p>Assessment Methods: laboratory based assignments, computer-based exercises in statistics and system biology Masters research projects</p>

11P PROFESSIONAL/PRACTICAL SKILLS

Successful students will be able to:

- P1 Work effectively in multidisciplinary teams to achieve objectives;
Recognise the interplay of commercial and scientific factors in the transfer of technology from laboratory to business;
Use appropriate communication tools to disseminate information to a variety of audiences.
- P2 Use key analytical instrumentation
- P3 Be familiar with fermentation operating parameters; Competently analyse and interpret biological data
- P4 Resolve problems using appropriate resources and statistical techniques and
Critically evaluate published research work
- P5 Plan experiments, and their time-management for the timely completion of a research project

P1-P4 will be achieved at Postgraduate Certificate level

P1-P4 will be achieved at Postgraduate Diploma level

P1-P4 and P5 will be achieved at Masters level

Learning and Teaching Methods: Student-led seminars, small group (2-3 students) -work, team-work, private study, assignment preparation, and business-plans, Laboratory experiments

Assessment Methods: Masters research projects, laboratory based assignments, computer-based exercises in statistics

11 **PROGRAM OUTCOME MAP: Pg Certificate Biotechnology (Exit Award)**

Please Note: The matrix displays only the main measurable outcomes. There may be other outcomes detailed in the module descriptions (eg attitudes and behaviours) which are not assessed.

MODULE																					
TITLES	Level	CODE	K1	K2	K3	K4	K5	I1	I2	I3	I4	I5	P1	P2	P3	P4	P5	T1	T2	T3	T4
Enterprise in Biotechnology	M	BMS829C1	√					√	√				√					√	√		
Process Biotechnology	M	BMS824C1		√	√				√	√					√						
Research Design and Statistics	M	BMS815C1				√		√	√		√					√					√
Recombinant DNA technology	M	BMS823C1	√	√	√	√			√									√			
Molecular Biotechnology	M	BMS844C2		√					√					√						√	
Environmental Biotechnology	M	BMS845C2			√	√			√												

These are the same modules as for the diploma BUT all these modules are optional for the certificate.

11 **PROGRAM OUTCOME MAP: Pg Diploma Biotechnology (Exit Award)**

Please Note: The matrix displays only the main measurable outcomes. There may be other outcomes detailed in the module descriptions (eg attitudes and behaviours) which are not assessed.

MODULE																					
TITLES	level	CODE	K1	K2	K3	K4	K5	I1	I2	I3	I4	I5	P1	P2	P3	P4	P5	T1	T2	T3	T4
Enterprise in Biotechnology	M	BMS829C1	√					√	√				√					√	√		
Process Biotechnology	M	BMS824C1		√	√				√	√					√						
Research Design and Statistics	M	BMS815C1				√		√	√		√					√					√
Recombinant DNA technology	M	BMS823C1	√	√	√	√			√									√			
Molecular Biotechnology	M	BMS844C2		√					√					√						√	
Environmental Biotechnology	M	BMS845C2			√	√			√												

These are the same modules as for the certificate BUT all these modules are compulsory for the diploma

11 **PROGRAM MODULE OUTCOME MAP: Master (MSc) in Biotechnology (Exit Award)**

Please Note: The matrix displays only the main measurable outcomes. There may be other outcomes detailed in the module descriptions (eg attitudes and behaviours) which are not assessed

MODULE			OUTCOMES																			
TITLES	Level	CODE	K1	K2	K3	K4	K5	I1	I2	I3	I4	I5	P1	P2	P3	P4	P5	T1	T2	T3	T4	T5
Enterprise in Biotechnology	M	BMS829C 1	√					√	√				√					√	√			
Process Biotechnology	M	BMS824C 1		√	√				√	√					√							
Research Design and Statistics	M	BMS815C 1				√		√	√		√					√					√	
Recombinant DNA technology	M	BMS823C 1	√	√	√	√			√									√				
Environmental Biotechnology	M	BMS845C 2			√	√			√													
Molecular Biotechnology	M	BMS844C 2		√					√					√						√		
Masters Research project module	M	BMS851C 3	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√