CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

Report of Validation Panel

Date of Meeting: 10th May 2018

Named Award:	Bachelor of Science (Honours)
Programme Title:	Bachelor of Science (Honours) in Agri-Biosciences
Award Type:	Bachelor of Science
Award Class:	Major Award
NFQ Level:	8
Intakes Commencing:	September 2018 (stage 3) & September 2019 (planned CAO intake)
ECTS/ACCS Credits:	240

Named Award:	Bachelor of Science
Programme Title:	Bachelor of Science in Agri-Biosciences
Award Type:	Bachelor of Science
Award Class:	Major Award – Exit Award
NFQ Level:	7
Intakes Commencing:	NA
ECTS/ACCS Credits:	180

PANEL MEMBERS

Name / Function / Institution
Dr Don Faller (Chairperson), Dean of Faculty of Science and Health, Athlone Institute of Technology
Dr Ken Byrne, Lecturer/Principal Investigator, Department of Biological Sciences, University of Limerick
Dr Noirin McHugh, Research Officer – Beef and Sheep Geneticist, Teagasc Moorepark
Dr Michael Reid, Export Business Executive, Nutribio Ltd., Cork
Dr Catherine Frehill, Strategic Management Facilitator, Strategic Development Office, Cork Institute of Technology

PROPOSING TEAM MEMBERS

Name / Function / Department
Dr Brendan O'Connell, Head of Department, Department of Biological Sciences
Prof Hugh McGlynn, Head of School of Science & Informatics
Dr Craig Murphy, Assistant Lecturer, Department of Biological Sciences
Ms Sarah O'Sullivan, Industry Placement and Development Officer
Prof Roy Sleator, Senior Lecturer, Department of Biological Sciences
Mr Joseph Croke, Lecturer, Department of Biological Sciences
Ms Anna Murphy, Lecturer, Department of Biological Sciences
Dr Aoife McCarthy, Lecturer, Department of Biological Sciences
Dr Fiona O'Halloran, Lecturer, Department of Biological Sciences
Dr Michael Callanan, Assistant Lecturer, Department of Biological Sciences

BACKGROUND TO THE PROPOSED PROGRAMME

This proposal seeks validation of *an abitio* Bachelor of Science (Honours) in Agri-Biosciences with an embedded exit award, Bachelor of Science in Agri-Biosciences. In developing this proposal, the programme proposers have identified a niche area as the programme will be centred on Agri-Food development and focus on the application of biotechnology, animal biotechnology, agri-technology development and "farm to fork" production systems. Specialisation areas in the programme include; animal breeding and physiology, food processing, bioinformatics, animal immunology, plant physiology, quality regulations, bioremediation and statistical modelling.

Within the proposed programme the learner will undertake a 30 credit work placement in the second semester of Stage 3. This introduces for the first time an extended work-placement in the Department of Biological Sciences at undergraduate level.

The programme has been designed to operate as a specialised option for students on the Common Entry (Biological Sciences) programme giving students an additional choice alongside Pharmaceutical Biotechnology and Nutrition & Health Science at the end of stage 2. The Department has planned to offer current second year Common Entry students this option for September 2018.

In addition to the level 8, Bachelor of Science (Hons) in Agri-Biosciences proposal, the proposers presented documentation seeking validation of an exit award, Bachelor of Science in Agri-Biosciences. The exit award may be made to a learner who does not complete the requirements for the Bachelor of Science (Hons) but who has gained the required credits for, and demonstrated achievement of the learning outcomes specified for the Bachelor of Science in Agri-Biosciences. The exit award will enable qualifying learners unable to complete the programme for which they have registered to obtain an academic qualification.

FINDINGS OF THE PANEL

*NOTE: In this report, the term "**Requirement**" is used to indicate an action or amendment which in the view of the Panel **must** be undertaken prior to commencement of the Programme. The term "**Recommendation**" indicates an item to which the Institute/Academic Council/Course Board should give serious consideration for implementation at an early stage and which should be the subject of ongoing monitoring.*

The Panel has considered the documentation provided and has discussed the programme with the proposers. Based on this, the Panel has arrived at a number of Findings, Requirements and Recommendations as follows.

1. Programme-Level Findings

1.1 NEED FOR THE PROGRAMME

Validation Criterion: Is there a convincing need for the programme with a viable level of applications?

Overall Finding: Yes

1.2 AWARD

Validation Criterion: Are the level and type of the proposed award appropriate?

Overall Finding: Yes

The proposers included the appropriate documentation for the award of Bachelor of Science as an exit award should learners not be in a position to continue into the final year of the Bachelor of Science (Honours).

1.3 LEARNING EXPERIENCE

Validation Criterion: Is the learning experience of an appropriate level, standard and quality overall?

Overall Finding: Yes

The proposed Programme Outcomes as presented to the Panel on the 10th May are attached as Appendix 1. Findings, requirements and recommendations concerning individual modules are recorded in Section 2 below.

1.4 PROGRAMME STRUCTURE

Validation Criterion: Is the programme structure logical and well designed (including procedures for access, transfer and progression)?

Overall Finding: Yes, subject to one Recommendations

The Semester Schedules as proposed for the Bachelor of Science (Honours) in AgriBiosciences are shown in Appendix 2.

In stage 1 of the ab-initio programme, two new modules are proposed *Animal & Plant Physiology* (semester 1) and *Intro. to Agri-Food* (semester 2) which differ from stage 1 of the Common Entry (Biological Sciences) programme. The Stage 2 schedule of the proposed programme and the Common Entry (Biological Sciences) programme are identical.

In stage 3, semester 6 the learners will undertake a placement for one semester (30 credits). The panel supports the introduction of an extended placement within the department and would encourage a review of placement on other programmes within the department to consider a semester long placement.

1.4.1 Recommendation: The panel recommends the proposers develop a brief document which shows the themes of study of the programme and the progression of these running through the programme. This document should help clarify for potential applicants and current learners the aims of programme.

1.5 PROGRAMME MANAGEMENT

Validation Criterion: Are the programme management structures adequate?

Overall Finding: Yes

1.5.1 Recommendation: An industrial advisory board should be established for the programme. This board should meet once or twice a year to advise on changes within the industry and to ensure the programme remains current and leading.

1.5.2 Recommendation: The programme team should review the programme content to ensure it is aligned with the Agricultural Science Association and the Teaching council to enhance graduates opportunities.

1.6 RESOURCE REQUIREMENTS

Validation Criterion: Are the resource requirements reasonable?

Overall Finding: Yes // Yes, subject to certain Requirements and/or Recommendations // No [*delete as appropriate*]

The Panel was assured on behalf of the President by the Head of School that appropriate resources in terms of staffing and facilities will be put in place when the programme is validated.

1.6.1 Recommendation: The teaching load should be balanced across a wide number of academic staff.

1.7 IMPACT ON THE INSTITUTE

Validation Criterion: Will the impact of the programme on the Institute be positive?

Overall Finding: Yes

The panel commends the department and proposers in the diversification of the offerings of the department in the development of this programme. The identification of the unique niche of Agri-Food development and application of biosciences will strengthen the portfolio of programmes offered by the Institute. The semester six placement of 30 credits with well-developed supporting documentation is to be commended as it is in line with National strategy.

2. Module-Level Findings

The Panel notes that 23 modules on the proposed programme are pre-approved modules which may be delivered across several CIT programmes.

The Panel notes there are 14 new draft modules. Prior to the validation panel meeting these new draft modules have not been the subject of internal or external scrutiny by the CIT module moderator or external reviewers.

In exercising its brief to consider the overall standard and appropriateness of modules, the Panel wishes to add the following findings, requirements and recommendations.

2.1 ALL MODULES

2.2.1 Requirement: Any revisions to Module Descriptors or Semester Schedules made to address the recommendations and requirements in this require sign-off from the CIT Module Moderator and the Registrar's Office prior to approval by the CIT Academic Council.

2.2.2 Requirement: The assessment breakdown across the module descriptors would be reviewed and revised where necessary to clarify the actual assessment deliverables and to ensure the spacing and timings of the assessments are appropriate.

2.2 Modules

2.2.1 Crop Biotechnology

Requirement: The module descriptor should be reviewed to clarify the workload description.

2.2.2 Modules Food Analytics and **Microbial Ecosystems**

Requirement: The learning outcomes of the modules should be reviewed.

2.2.3 Agri-Economics

Requirement: The indicative content should be revised to include topics of Environmental Policy & Regulations and Sustainability Policy.

2.2.4 Advanced Soil Science

Recommendation: The proposers should consider a title change for this module as the title does not accurately reflect the relevance of the module on the programme.

3. Other Findings

At the validation meeting the panel were very supportive of the programme due to the constructive engagement during the panel sessions. The panel supported and encouraged further development of the programme in line with discussions, requirements and recommendations made by the panel.

The panel wishes to commend the staff and management on their energy, teamwork and enthusiasm and dedication in putting together the programme proposal.

The additional documentation and module revisions have been reviewed and the updated submission meets all the requirements as set out previously. The approved semester schedules are shown in Appendix 3

4. Conclusion

Based on the above findings, the Panel has arrived at the following Conclusions:

- The Bachelor of Science in Agri-biosciences meets the required standards for an award in the Science field of study at Level 7 of the National Framework of Qualifications.
- The Bachelor of Science (Honours) in Agri-biosciences meets the required standards for an award in the Science field of study at Level 8 of the National Framework of Qualifications.
- The Programmes meet the criteria for validation of a new programme adopted by the Academic Council of Cork Institute of Technology.

The Panel therefore recommends that the two Programmes be validated for five academic years, or until the next programmatic review, whichever is soonest, subject to implementation of the Requirements above, and with due regard to the Recommendations made.

Implementation of Requirements and Recommendations
Requiring Registrar's Office Sign-Off:
1.4.1 Recommendation: The programme team will develop a document that outlines the themes of study of the programme and the progression of these running through the programme. The document will be available to the learners in September 2018.
1.5.1 Recommendation: An Industry Advisory Panel will be established. The panel will meet annually to discuss the programme.
1.5.2 Recommendation: The programme team will continue to review the programme content to ensure it is aligned with the Agricultural Science Association and the Teaching Council to enhance graduates opportunities.
1.6.1 Recommendation: The teaching load will be balanced across a wide number of staff members.
2.2.1 Requirement: Complete.
2.2.2 Requirement: Complete.
2.2.1 Requirement: Complete.
2.2.2 Requirement: Complete.
2.2.3 Requirement: Complete
2.2.4 Recommendation: The programme team will consider a title change for this module. The proposed change will be formulated and agreed in partnership with the Department of Accounting & Information Systems.

APPENDIX 1 – Proposed Programme Outcomes for Bachelor of Science in Agri-biosciences

Programme Outcomes

Upon successful completion of this programme the graduate will be able to demonstrate... :

PO1	**Knowledge - Breadth**	
	(a)	A comprehensive knowledge of the theories, concepts and methods related to agri-biosciences
PO2	**Knowledge - Kind**	
	(a)	An ability to link the theoretical knowledge of subject areas related to agri-food production to the practical skills required to test, interpret and critically analyse data.
PO3	**Skill - Range**	
	(a)	The ability to gather information from a variety of sources, analyse and evaluate evidence and present a clear conclusion in written and oral forms.
PO4	**Skill - Selectivity**	
	(a)	Evaluate complex problems related to agri-food industries and exercise appropriate judgement in these situations.
PO5	**Competence - Context**	
	(a)	The ability to use practical and professional skills appropriate to the field of agri-biosciences.
PO6	**Competence - Role**	
	(a)	The ability to work ethically and autonomously as a member of a team and to supervise staff in a well-defined work setting.
PO7	**Competence - Learning to Learn**	
	(a)	The ability to identify and address learning needs at the professional and personal levels in the workplace.
PO8	**Competence - Insight**	
	(a)	The ability to analyse the context in which agri-food industries operate, and defend the need for high standards in professional practice

Proposed Programme Outcomes for Bachelor of Science (Honours) in Agri-biosciences

Programme Outcomes

Upon successful completion of this programme the graduate will be able to demonstrate... :

PO1	**Knowledge - Breadth**	
	(a)	A comprehensive knowledge of the theory, concepts and methods related to biosciences with particular relevance to the agri-food sector
PO2	**Knowledge - Kind**	
	(a)	The ability to link the theoretical knowledge of subject areas to the practical skills required to test, interpret and critically analyse data.
PO3	**Skill - Range**	
	(a)	A range of specialised skills relevant to animal science and the agri-food industries including analytical, IT and communication skills.
PO4	**Skill - Selectivity**	
	(a)	The ability to manage and evaluate complex problems related to agri-food industries and exercise appropriate judgement in such situations.
PO5	**Competence - Context**	
	(a)	The ability to use advanced research, analytical and problem-solving skills in a professional and accountable manner in a wide range of contexts within the areas of agri-food and biotechnology.
PO6	**Competence - Role**	
	(a)	The ability to work ethically and professionally as an individual or as a member of a multidisciplinary team, with the capacity for leadership and innovation.
PO7	**Competence - Learning to Learn**	
	(a)	The ability to evaluate, articulate and defend learning needs at the professional and personal level.
PO8	**Competence - Insight**	
	(a)	The ability to evaluate, articulate and defend the need for high ethical standards in professional practice.

Appendix 2 – Proposed Semester Schedule Bachelor of Science (Honours) in Agri-Biosciences

Semester Schedules

Stage 1 / Semester 1

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
CMOD6001	Creativity Innovation&Teamwork (Approved)	MARESE BERMINGHAM	Fundamental	5.0	3.00	0.00	100.0	0.0
MATH6056	Maths for Biological Sciences (Approved)	David Goulding	Fundamental	5.0	5.00	4.00	40.0	60.0
CHEM6011	Biological Chemistry 1 (Approved)	Donagh OMahony	Fundamental	5.0	4.00	0.00	100.0	0.0
BIOL6007	Biomolecules and Cells (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	0.00	100.0	0.0
No Code Yet	Animal & Plant Physiology (Draft)	BRENDAN O CONNELL	Fundamental	5.0	3.00	0.00	100.0	0.0
BIOL6003	Laboratory Operations (Approved)	BRENDAN O CONNELL	Fundamental	5.0	3.00	0.00	100.0	0.0

Stage 1 / Semester 2

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
BIOM6001	Microbes, Enzymes & Energy (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	0.00	100.0	0.0
No Code Yet	Intro. to Agri-Food (Draft)	BRENDAN O CONNELL	Fundamental	5.0	3.00	0.00	50.0	50.0
CHEM6009	Biological Chemistry 2 (Approved)	Donagh OMahony	Fundamental	5.0	4.00	0.00	50.0	50.0
STAT6013	Biostatistics and Probability (Approved)	David Goulding	Fundamental	5.0	4.00	4.00	40.0	60.0
PHYS6044	Heat and Light (Approved)	Donagh OMahony	Fundamental	5.0	4.00	4.00	100.0	0.0

Elective								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
BIOT6001	Introduction to Biotechnology (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	0.00	100.0	0.0
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0	50.0

Stage 2 / Semester 1

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
BIOM6006	Microbial Diversity (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	0.00	100.0	0.0
BIOL6024	Structural Biochemistry (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	0.00	100.0	0.0
BIOT6002	Immunoanalysis (Approved)	BRENDAN O CONNELL	Fundamental	5.0	3.00	0.00	40.0	60.0
AGRI6021	Soil Science (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	2.00	100.0	0.0
BIOT6008	Environmental Biotechnology (Approved)	BRENDAN O CONNELL	Fundamental	5.0	3.00	0.00	100.0	0.0

Elective								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
BIOT6012	Mammalian Biotechnology (Approved)	BRENDAN O CONNELL	Fundamental	5.0	3.00	0.00	30.0	70.0
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0	50.0

Stage 2 / Semester 2

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
BIOT6005	Introduction to Quality System (Approved)	BRENDAN O CONNELL	Fundamental	5.0	3.00	0.00	50.0	50.0
BIOT6013	Agri-Biotechnology (Approved)	BRENDAN O CONNELL	Fundamental	5.0	3.00	0.00	50.0	50.0
BIOM6007	Bacteriology (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	0.00	100.0	0.0
BIOL6017	Metabolic Biochemistry (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	0.00	100.0	0.0
BIOT7002	Bioanalytical Techniques (Approved)	BRENDAN O CONNELL	Intermediate	5.0	3.00	0.00	40.0	60.0

Elective								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
BIOT6011	Computational Biology (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	0.00	100.0	0.0
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0	50.0

Stage 3 / Semester 1

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
No Code Yet	Crop Biotechnology (Draft)	BRENDAN O CONNELL	Intermediate	5.0	4.00	0.00	100.0	0.0
GENE7002	Molecular Biology (Approved)	BRENDAN O CONNELL	Intermediate	5.0	4.00	0.00	100.0	0.0
FOOD7005	Food Quality Management (Approved)	BRENDAN O CONNELL	Intermediate	5.0	3.00	0.00	100.0	0.0
No Code Yet	Animal Nutrition (Draft)	BRENDAN O CONNELL	Intermediate	5.0	3.00	0.00	50.0	50.0
No Code Yet	Food Analytics (Draft)	BRENDAN O CONNELL	Intermediate	5.0	3.00	0.00	50.0	50.0

Elective								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
No Code Yet	Microbial Ecosystems (Draft)	BRENDAN O CONNELL	Intermediate	5.0	3.00	0.00	40.0	60.0
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0	50.0

Stage 3 / Semester 2

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
No Code Yet	Agri-Biosciences Placement (Draft)	BRENDAN O CONNELL	Intermediate	30.0	0.50	0.00	100.0	0.0

Stage 4 / Semester 1

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
No Code Yet	Genomics & Bioinformatics (Draft)	BRENDAN O CONNELL	Advanced	5.0	3.00	0.00	30.0	70.0
No Code Yet	Crop Pathology (Draft)	BRENDAN O CONNELL	Advanced	5.0	3.00	0.00	100.0	0.0
FOOD8005	Food Regulation and Compliance (Approved)	BRENDAN O CONNELL	Advanced	5.0	3.00	0.00	100.0	0.0
XXXX	Immunology and Infection (Draft)	BRENDAN O CONNELL	Advanced	5.0	3.00	0.00	40.0	60.0
BIOT8011	Biosciences Literature Review (Approved)	BRENDAN O CONNELL	Advanced	5.0	1.25	0.00	100.0	0.0

Elective								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
BIOT8012	Biotechnology Management (Approved)	BRENDAN O CONNELL	Advanced	5.0	3.00	0.00	100.0	0.0
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0	50.0

Stage 4 / Semester 2

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
No Code Yet	Agri-Economics (Draft)	BRENDAN O CONNELL	Advanced	5.0	3.00	0.00	50.0	50.0
No Code Yet	Animal Reproduction (Draft)	BRENDAN O CONNELL	Advanced	5.0	3.00	0.00	40.0	60.0
XXXX	Agri-Food Sustainability (Draft)	BRENDAN O CONNELL	Advanced	5.0	3.00	0.00	40.0	60.0
No Code Yet	Biosciences Project (Draft)	BRENDAN O CONNELL	Advanced	10.0	1.00	0.00	100.0	0.0
AGRI8012	Advanced Soil Science (Approved)	BRENDAN O CONNELL	Advanced	5.0	3.00	1.00	100.0	0.0

Appendix 3 – Approved Semester Schedule Bachelor of Science (Honours) in Agri-Biosciences

Semester Schedules

Stage 1 / Semester 1

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
CMOD6001	Creativity Innovation&Teamwork (Approved)	MARESE BERMINGHAM	Fundamental	5.0	3.00	0.00	100.0	0.0
MATH6056	Maths for Biological Sciences (Approved)	David Goulding	Fundamental	5.0	5.00	4.00	40.0	60.0
CHEM6011	Biological Chemistry 1 (Approved)	Donagh OMahony	Fundamental	5.0	4.00	0.00	100.0	0.0
BIOL6007	Biomolecules and Cells (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	0.00	100.0	0.0
PHOL6007	Animal & Plant Physiology (Approved)	BRENDAN O CONNELL	Fundamental	5.0	3.00	0.00	100.0	0.0
BIOL6003	Laboratory Operations (Approved)	BRENDAN O CONNELL	Fundamental	5.0	3.00	0.00	100.0	0.0

Stage 1 / Semester 2

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
BIOM6001	Microbes, Enzymes & Energy (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	0.00	100.0	0.0
AGRI6025	Introduction to Agri-Food (Approved)	BRENDAN O CONNELL	Fundamental	5.0	3.00	0.00	50.0	50.0
CHEM6009	Biological Chemistry 2 (Approved)	Donagh OMahony	Fundamental	5.0	4.00	0.00	50.0	50.0
STAT6013	Biostatistics and Probability (Approved)	David Goulding	Fundamental	5.0	4.00	4.00	40.0	60.0
PHYS6044	Heat and Light (Approved)	Donagh OMahony	Fundamental	5.0	4.00	4.00	100.0	0.0

Elective								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
BIOT6001	Introduction to Biotechnology (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	0.00	100.0	0.0
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0	50.0

Stage 2 / Semester 1

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
BIOM6006	Microbial Diversity (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	0.00	100.0	0.0
BIOL6024	Structural Biochemistry (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	0.00	100.0	0.0
BIOT6002	Immunoanalysis (Approved)	BRENDAN O CONNELL	Fundamental	5.0	3.00	0.00	40.0	60.0
AGRI6021	Soil Science (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	2.00	100.0	0.0
BIOT6008	Environmental Biotechnology (Approved)	BRENDAN O CONNELL	Fundamental	5.0	3.00	0.00	100.0	0.0

Elective								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
BIOT6012	Mammalian Biotechnology (Approved)	BRENDAN O CONNELL	Fundamental	5.0	3.00	0.00	30.0	70.0
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0	50.0

Stage 2 / Semester 2

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
BIOT6005	Introduction to Quality System (Approved)	BRENDAN O CONNELL	Fundamental	5.0	3.00	0.00	50.0	50.0
BIOT6013	Agri-Biotechnology (Approved)	BRENDAN O CONNELL	Fundamental	5.0	3.00	0.00	50.0	50.0
BIOM6007	Bacteriology (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	0.00	100.0	0.0
BIOL6017	Metabolic Biochemistry (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	0.00	100.0	0.0
BIOT7002	Bioanalytical Techniques (Approved)	BRENDAN O CONNELL	Intermediate	5.0	3.00	0.00	40.0	60.0

Elective								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
BIOT6011	Computational Biology (Approved)	BRENDAN O CONNELL	Fundamental	5.0	4.00	0.00	100.0	0.0
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0	50.0

Stage 3 / Semester 1

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
BIOT7015	Crop Biotechnology (Approved)	BRENDAN O CONNELL	Intermediate	5.0	4.00	0.00	100.0	0.0
GENE7002	Molecular Biology (Approved)	BRENDAN O CONNELL	Intermediate	5.0	4.00	0.00	100.0	0.0
FOOD7005	Food Quality Management (Approved)	BRENDAN O CONNELL	Intermediate	5.0	3.00	0.00	100.0	0.0
BIOL7030	Animal Nutrition (Approved)	BRENDAN O CONNELL	Intermediate	5.0	3.00	0.00	50.0	50.0
FOOD7006	Food Analytics (Approved)	BRENDAN O CONNELL	Intermediate	5.0	3.00	0.00	50.0	50.0

Elective								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
BIOM7009	Microbial Ecosystems (Approved)	BRENDAN O CONNELL	Intermediate	5.0	3.00	0.00	40.0	60.0
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0	50.0

Stage 3 / Semester 2

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
PLAC7019	Agri-Biosciences Placement (Approved)	BRENDAN O CONNELL	Intermediate	30.0	0.50	0.00	100.0	0.0

Stage 4 / Semester 1

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
BIOT8017	Genomics & Bioinformatics (Approved)	BRENDAN O CONNELL	Advanced	5.0	3.00	0.00	30.0	70.0
AGRI8013	Crop Pathology (Approved)	BRENDAN O CONNELL	Advanced	5.0	4.00	0.00	100.0	0.0
FOOD8005	Food Regulation and Compliance (Approved)	BRENDAN O CONNELL	Advanced	5.0	3.00	0.00	100.0	0.0
BIOL8027	Immunology and Infection (Approved)	BRENDAN O CONNELL	Advanced	5.0	3.00	0.00	40.0	60.0
BIOT8011	Biosciences Literature Review (Approved)	BRENDAN O CONNELL	Advanced	5.0	1.25	0.00	100.0	0.0
Elective								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
BIOT8012	Biotechnology Management (Approved)	BRENDAN O CONNELL	Advanced	5.0	3.00	0.00	100.0	0.0
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0	50.0

Stage 4 / Semester 2

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Contact Hours**	**PT Contact Hours**	**Course Work**	**Formal Exam**
AGRI8014	Agri-Economics (Approved)	BRENDAN O CONNELL	Advanced	5.0	3.00	0.00	50.0	50.0
BIOL8028	Animal Reproduction (Approved)	BRENDAN O CONNELL	Advanced	5.0	3.00	0.00	40.0	60.0
AGRI8015	Agri-Food Sustainability (Approved)	BRENDAN O CONNELL	Advanced	5.0	3.00	0.00	40.0	60.0
BIOT8018	Biosciences Project (Approved)	BRENDAN O CONNELL	Advanced	10.0	1.00	0.00	100.0	0.0
AGRI8012	Advanced Soil Science (Approved)	BRENDAN O CONNELL	Advanced	5.0	3.00	1.00	100.0	0.0