Title:	Molecular Biotechnology APPROVED
Long Title:	Molecular Biotechnology

Module Code:	BIOT8001	**Duration:**	1 Semester

Credits:	5
NFQ Level:	Advanced
Field of Study:	Biotechnology
Valid From:	Semester 1 - 2017/18 (September 2017)
Module Delivered in	1 programme(s)
Next Review Date:	September 2022
Module Coordinator:	Brigid Lucey
Module Author:	JIM O MAHONY
Module Description:	A comprehensive analysis of the drug discovery process - from concept to production as evidenced by the modern biotechnology industry.

Learning Outcomes	
On successful completion of this module the learner will be able to:	
LO1	Describe the importance of molecular drug targets as part of the drug discovery process
LO2	List and describe the main bio-therapeutic products currently available
LO3	List and describe the molecular tools needed to generate monoclonal antibodies at a manufacturing scale
LO4	Synopsise and interpret key information from research papers relating to current and future topics relating to drug discovery and design such as protein and cell engineering
LO5	Perform applied laboratory tasks and produce high quality reports

Pre-requisite learning
Module Recommendations *This is prior learning (or a practical skill) that is strongly recommended before enrolment in this module. You may enrol in this module if you have not acquired the recommended learning but you will have considerable difficulty in passing (i.e. achieving the learning outcomes of) the module. While the prior learning is expressed as named CIT module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).*
It is recommended that the students will have a strong biological background and a genuine interest in biotechnology
Incompatible Modules *These are modules which have learning outcomes that are too similar to the learning outcomes of this module. You may not earn additional credit for the same learning and therefore you may not enrol in this module if you have successfully completed any modules in the incompatible list.*
No incompatible modules listed
Co-requisite Modules
No Co-requisite modules listed
Requirements *This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed. You may not enrol on this module if you have not acquired the learning specified in this section.*
No requirements listed

Module Content & Assessment

Indicative Content
Concept to production A comprehensive evaluation of the stages and logistical parameters underpinning new product development
Products and Companies A thorough review of the major companies currently involved in the bio-pharmaceutical sector, and an analysis of the main classes of manufactured products
Monoclonal antibody design and production A detailed analysis of the structure, design and production of monoclonal antibodies
Cell and Protein engineering A thorough analysis of how cells and proteins can be engineered as part of a modern drug discovery process for applications relating to cancer, inflammation and anti-infectives
Advanced techniques An overview of advanced techniques in use such as high throughput screening, cell engineering, modern spectroscopic methods, next generation sequencing, bioimaging, qPCR

Assessment Breakdown	%
Course Work	100.00%

Course Work

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Performance Evaluation	Applied laboratory tasks	5	50.0	Every Week
Short Answer Questions	Evaluation of course work material	1,2,3,4,5	50.0	Week 10

No End of Module Formal Examination

Reassessment Requirement
Repeat examination *Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.*

The institute reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time				
Workload Type	*Workload Description*	*Hours*	*Frequency*	*Average Weekly Learner Workload*
Lecture	class based instruction	2.0	Every Week	2.00
Lab	Practical component	2.0	Every Week	2.00
Independent & Directed Learning (Non-contact)	No Description	3.0	Every Week	3.00
			Total Hours	7.00
			Total Weekly Learner Workload	7.00
			Total Weekly Contact Hours	4.00

This module has no Part Time workload.

Module Resources

Recommended Book Resources

- **Daan Crommelin, *Pharmaceutical biotechnology* [ISBN: 978-0415285018]**
- **Ho, Rodney J 2012, *Biotechnology and Biopharmaceuticals : Transforming Proteins and Genes into Drugs*, 2 Ed., all, Wiley Blackwell [ISBN: 9781118179796]**

This module does not have any article/paper resources

Other Resources

- **website: *http://www.centerwatch.com***
  http://www.centerwatch.com
- **website: *https://www.scopus.com/home***
  https://www.scopus.com/home

Module Delivered in

Programme Code	Programme	Semester	Delivery
CR_SPHBI_8	Bachelor of Science (Honours) in Pharmaceutical Biotechnology	7	Mandatory