APPROVED

CHEO7004: BioPharmaChem Applications

Module Details

Module Code:	CHEO7004
Title:	BioPharmaChem Applications APPROVED
Long Title:	BioPharmaChem Applications
NFQ Level:	Intermediate
Valid From:	Semester 1 - 2019/20 (September 2019)
Duration:	1 Semester
Credits:	5
Field of Study:	4423 - Organic Chemistry
Module Delivered in:	2 programme(s)
Module Description:	This module presents topics in the history, development, production, applications, and biotechnology of pharmaceuticals.

Learning Outcomes

On successful completion of this module the learner will be able to:

#	Learning Outcome Description
LO1	Summarise the development of the modern pharmaceutical / biopharmaceutical industry and discuss the emergence of the associated regulations
LO2	Describe the main activities involved in developing new drug products using traditional and modern methods
LO3	Discuss the chemistry and action of selected pharmaceutical agents including their design and production
LO4	Evaluate the use of biotechnological methods for the production of biopharmaceuticals
LO5	Assess the key quality requirements for biopharmaceutical products

Dependencies

Module Recommendations

Incompatible Modules

No incompatible modules listed

Co-requisite Modules

No Co-requisite modules listed

Requirements

No requirements listed

Indicative Content

Pharmaceutical and Biopharmaceutical Industries
History and development of the global industries; the contribution of the industry to the Irish economy

Discovery and Development of Small Molecule Pharmaceuticals
Traditional and modern approaches; lead molecules and lead optimization studies, combinatorial methods, chemical process development; regulatory affairs

Chemistry of Small Molecule Pharmaceuticals
Development, synthesis, pharmacological action, structure-activity relationships and chemistry of selected pharmaceutical agents

Biotechnological Processes
Upstream and downstream processes - recombinant DNA, monoclonal antibody technology, cell culture systems, industrial fermentation, harvesting and purification methods, scale up issues

Quality Assurance for Biopharmaceuticals
Cleaning, sterilization and contamination control; sampling and testing activities; product stability; ICH guidelines

Module Content & Assessment

Assessment Breakdown	%
Coursework	100.00%

Assessments

Coursework

Assessment Type	Presentation	**% of Total Mark**	20
Timing	Week 3	**Learning Outcomes**	1
Assessment Description	Design, production and presentation of an e-poster on assigned pharmaceutical topic		
Assessment Type	Short Answer Questions	**% of Total Mark**	20
Timing	Week 4	**Learning Outcomes**	1,4
Assessment Description	Theory test - biotechnology of pharmaceuticals		
Assessment Type	Short Answer Questions	**% of Total Mark**	30
Timing	Week 8	**Learning Outcomes**	2,3
Assessment Description	Theory test - pharmaceuticals		
Assessment Type	Short Answer Questions	**% of Total Mark**	30
Timing	Week 8	**Learning Outcomes**	4,5
Assessment Description	Theory test - biotechnology		

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.

Module Workload

Workload: Full Time					
Workload Type	*Contact Type*	*Workload Description*	*Frequency*	*Average Weekly Learner Workload*	*Hours*
Lecture	Contact	Pharmaceutical Applications	Every Week	3.00	3
Independent & Directed Learning (Non-contact)	Non Contact	Personal study	Every Week	4.00	4
				Total Hours	7.00
				Total Weekly Learner Workload	7.00
				Total Weekly Contact Hours	3.00

This module has no Part Time workload.

Module Resources

Recommended Book Resources

Graham L. Patrick. (2017), An Introduction to Medicinal Chemistry, 6th. Oxford University Press, [ISBN: 9780191073915].

Gary Walsh. (2007), Pharmaceutical Biotechnology, Wiley & Sons, [ISBN: 9780470012444].

Gary Walsh. (2003), Biopharmaceuticals: Biochemistry and Biotechnology, J. Wiley, New York, [ISBN: 978-0-470-84327-7].

Supplementary Book Resources

H. P. Rang. (2006), Drug Discovery and Development, Churchill Livingstone, Elsevier, [ISBN: 0443064202].

Ege S.. (2004), Organic Chemistry, Structure and Reactivity, 5th. Houghton Mifflin, [ISBN: 0618318097].

Thomas G.. (2007), Medicinal Chemistry: An Introduction, Wiley & Sons Ltd, US, [ISBN: 978-0-470-02598-7].

This module does not have any article/paper resources

Other Resources

Website, International Conference on Harmonisation.
http://www.ich.org

Website, FDA Approved Drug Products,
https://www.accessdata.fda.gov/scripts/c der/daf/

Website, Cancer.net,
https://www.cancer.net/research-and-advo cacy/intro

Module Delivered in

Programme Code	Programme	Semester	Delivery
CR_SCHQA_8	**Bachelor of Science (Honours) in Analytical Chemistry with Quality Assurance**	-1	Mandatory
CR_SCHEM_7	**Bachelor of Science in Analytical and Pharmaceutical Chemistry**	-1	Mandatory