APPROVED

CHEO6006: Pharmaceutical Chemistry

Module Details

Module Code:	CHEO6006
Title:	Pharmaceutical Chemistry APPROVED
Long Title:	Pharmaceutical Chemistry
NFQ Level:	Fundamental
Valid From:	Semester 1 - 2019/20 (September 2019)
Duration:	1 Semester
Credits:	5
Field of Study:	4423 - Organic Chemistry
Module Delivered in:	3 programme(s)
Module Description:	This module introduces the learner to pharmaceutical agents. It applies fundamental chemical principles to pharmaceutical molecules and it highlights the link between pharmaceuticals and organic chemistry.

Learning Outcomes

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

#	Learning Outcome Description
LO1	Outline the mode of action of a range of pharmaceutical agents
LO2	Discuss the chemistry of nitrogen, selected natural products and pharmaceutical molecules
LO3	Apply fundamental chemistry to explain the physicochemical properties of pharmaceutical molecules
LO4	Describe the role of quality control in the manufacture of pharmaceuticals
LO5	Prepare and analyse pharmaceutical compounds and present a written report of work completed

Dependencies

Module Recommendations

Incompatible Modules

No incompatible modules listed

Co-requisite Modules

No Co-requisite modules listed

Requirements

Students will have completed the following level 6 modules: Chemical Principles, General Physical & Inorganic Chemistry, Organic Chemistry Fundamentals or other equivalent level chemistry modules

Indicative Content

Introduction to Pharmaceuticals
Classification and description of different groups of medicines and their mode of action

Nitrogen and Natural Product Chemistry
Amines and nitrogen-containing pharmaceutical molecules - reactions and synthesis; racemates; resolution of racemates; chemistry of amino acids, proteins, carbohydrates

Physicochemical Properties of Pharmaceutical Molecules
pKa values; ionization; drug-target interactions; solubility, salt formation, absorption; metabolism

Introduction to Quality Control of Pharmaceuticals
Active product ingredients (API); manufacture, formulation, sources of impurities, GMP, GLP

Practical Programme
Selected practicals in synthesis, extraction and analysis of pharmaceutical and natural product molecules

Module Content & Assessment

Assessment Breakdown	%
Coursework	50.00%
End of Module Formal Examination	50.00%

Assessments

Coursework

Assessment Type	Short Answer Questions	**% of Total Mark**	20
Timing	Week 6	**Learning Outcomes**	1,2,3

Assessment Description
In-class theory assessment

Assessment Type	Practical/Skills Evaluation	**% of Total Mark**	30
Timing	Every Week	**Learning Outcomes**	3,5

Assessment Description
Performance, reports and calculations assignments.

End of Module Formal Examination

Assessment Type	Formal Exam	**% of Total Mark**	50
Timing	End-of-Semester	**Learning Outcomes**	1,2,3,4,5

Assessment Description
End-of-Semester Final 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	Delivery of theory	Every Week	3.00	3
Lab	Contact	Synthesis and analysis of pharmaceutical and natural product molecules	Every Week	2.00	2
Independent & Directed Learning (Non-contact)	Non Contact	Personal study	Every Week	2.00	2
				Total Hours	7.00
				Total Weekly Learner Workload	7.00
				Total Weekly Contact Hours	5.00

Workload: Part Time					
Workload Type	*Contact Type*	*Workload Description*	*Frequency*	*Average Weekly Learner Workload*	*Hours*
Lecture	Contact	Delivery of Theory	Every Week	3.00	3
Lab	Contact	Synthesis and analysis of Pharmaceutical and natural product molecules	Every Week	2.00	2
Independent & Directed Learning (Non-contact)	Non Contact	Personal study	Every Week	2.00	2
				Total Hours	7.00
				Total Weekly Learner Workload	7.00
				Total Weekly Contact Hours	5.00

Module Resources

Recommended Book Resources

McMurray John E.. (2016), Organic Chemistry, 9th. Brooks Cole, [ISBN: 9781305080485].

Graham L. Patrick. (2017), An Introduction to Medicinal Chemistry, 6th. Oxford University Press, [ISBN: 9780198749691].

Supplementary Book Resources

Moynihan Humphrey, Crean Abina. (2009), Physicochemical Basis of Pharmaceuticals, Oxford University Press, [ISBN: 9780199232840].

Bettelheim Frederick A., Brown William H., Campbell Mary K., Farrell Shawn O., Torres Omar. (2016), Introduction to General, Organic And Biochemistry, 11th. Brooke's Cole, [ISBN: 9781285869759].

This module does not have any article/paper resources

This module does not have any other resources

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
CR_SCHEM_6	Higher Certificate in Science in Chemistry	-1	Mandatory