APPROVED

CHEM6005: Industrial Chemistry

Module Details

Module Code:	CHEM6005
Title:	Industrial Chemistry APPROVED
Long Title:	Industrial Chemistry
NFQ Level:	Fundamental
Valid From:	Semester 1 - 2019/20 (September 2019)
Duration:	1 Semester
Credits:	5
Field of Study:	4421 - Chemistry
Module Delivered in:	3 programme(s)
Module Description:	This module introduces the student to a variety of topics associated with the industrial scale production of chemicals

Learning Outcomes

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

#	Learning Outcome Description
LO1	Describe the chemical industry and identify the distinguishing features of its component parts
LO2	Explain the importance and roles of route selection, process economics and process optimisation in chemical processing
LO3	Describe the industrial production of a number of important organic and inorganic chemicals
LO4	Evaluate environmental issues pertaining to the chemical industry

Dependencies

Module Recommendations

Incompatible Modules

No incompatible modules listed

Co-requisite Modules

No Co-requisite modules listed

Requirements

No requirements listed

Indicative Content

The Chemical Industry
The Irish Chemical industry, fine chemical and bulk chemical production, research and development, pilot manufacturing, product development.

Route selection
Sources of raw materials, crude ion refinement, isolation and processing of products from oil, important industrial organic chemical processes, reaction suitability, reaction thermodynamics, equilibria and kinetics, costings, safety, and environment.

Process Optimisation,
Scale-up, schematic process flow diagrams, mass balancing and energy balancing, optimisation of reactor conditions, process unit operations, industrial separations.

Inorganic Chemical Production.
Selected important inorganic chemicals e.g. sodium hydroxide, chlorine, ammonia, urea, mineral acids, etc.

The Chemical Industry and the Environment
Environmental impact of chemical production, waste and waste minimisation, effluent treatment, water treatment, assuring air quality.

Module Content & Assessment

Assessment Breakdown	%
Coursework	100.00%

Assessments

Coursework

Assessment Type	Short Answer Questions	**% of Total Mark**	40
Timing	Week 6	**Learning Outcomes**	1,2,4
Assessment Description	Theory assessment		
Assessment Type	Short Answer Questions	**% of Total Mark**	40
Timing	Week 12	**Learning Outcomes**	1,3,4
Assessment Description	Theory assessment		
Assessment Type	Written Report	**% of Total Mark**	20
Timing	Week 10	**Learning Outcomes**	1,3
Assessment Description	Report on industrial visit, for submission 2 weeks after visit		

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	Industrial Chemistry	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

Workload: Part Time					
Workload Type	*Contact Type*	*Workload Description*	*Frequency*	*Average Weekly Learner Workload*	*Hours*
Lecture	Contact	Industrial Chemistry	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

Module Resources

Recommended Book Resources

H.A. Wittcoff, B.G. Reuben, J.S. Plotkin. (2014), Industrial organic chemicals, 3rd. Wiley-Interscience, [ISBN: 9780470537435].

C. A. Heaton. (2013), An introduction to industrial chemistry, 3rd. Chapman and Hall, Glascow, U.K., [ISBN: 9780751402728].

Supplementary Book Resources

M. Lancaster,. (2016), Green Chemistry: An introductory text, 3rd. Royal Society of Chemistry, [ISBN: 9781782622949].

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_SESST_8	Bachelor of Science (Honours) in Environmental Science and Sustainable Technology	-1	Elective
CR_SCHEM_7	Bachelor of Science in Analytical and Pharmaceutical Chemistry	-1	Mandatory
CR_SCHEM_6	Higher Certificate in Science in Chemistry	-1	Mandatory