



Title:	Environ. Legislation & Stds APPROVED
Long Title:	Environmental Legislation and Standards
Module Code:	CHEM9001
Duration:	1 Semester
Credits:	10
NFQ Level:	Expert
Field of Study:	Chemistry
Valid From:	Semester 1 - 2021/22 (September 2021)
Module Delivered in	2 programme(s)
Module Coordinator:	Donagh OMahony
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Module Description:	This module focuses on the United Nations Sustainable Development Goals (SDGs).including legislation for Industrial Hygiene, Air, Water, Bathing water, Urban wastewater, Marine, Accident prevention/investigation and Dangerous Substances, along with protocols for the surveillance of identified Anthropogenic pollutants.
Learning Outcomes	
<i>On successful completion of this module the learner will be able to:</i>	
LO1	Examine the legal and regulatory requirements in relation to environmental limits, monitoring protocols and industrial hygiene and their relationship with the United Nations Sustainable Development Goals (SDGs)
LO2	Analyse the legal and regulatory frameworks in relation to method validation and the testing of environmental samples
LO3	Critically evaluate instrumental methodologies for the determination of environmental contaminants and pollutants
LO4	Design communication strategies to prepare oral and written review of environmental legislation/standards related content
LO5	Collaborate in teams and working groups to develop strategies to prepare protocols and review/analyse documents associated with environmental issues
LO6	Develop materials to disseminate environmental and regulatory matters via various media to enable effective messaging
LO7	Plan, facilitate and lead discussions that relate to selecting appropriate analytical techniques, for the detection, identification and quantitation of environmental contaminants and priority pollutants to be performed in accredited laboratories
Pre-requisite learning	
Module Recommendations	
<i>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).</i>	
Incompatible Modules	
<i>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.</i>	
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

Scientific Communication

Methods of organisation communication, Critical Thinking, design of experiment, the role of teams in project management.

Environmental Legislation

The United Nations Sustainable Development Goals (SDGs). The hierarchy of EU/Ireland legislation, The relationship between Directives, Acts and Statutory Instruments, and the role of IS/EN standards in legislative frameworks; Regulatory bodies - EPA, HSA, Government Dept. (DECC), Local Authorities, and their roles.

Industrial Hygiene

Health and Safety Law (Safety, Health and Welfare at Work Acts 2005 and 2010). Indoor monitoring of organics, inorganics and particulates.

Ambient Air, Water and Industrial Monitoring

Sampling strategies and standard methods of analysis of water and wastewater; EPA methods of analysis of priority pollutants.

Dangerous substances

Seveso-III-Directive (2012/18/EU) - prevention of major accidents involving dangerous substances

Accreditation

Laboratory accreditation for environmental analysis, Total Quality Management (TQM), Laboratory Information Management Systems (LIMS), ISO17025., QMS.

Assessment Breakdown

	%
Course Work	100.00%

Course Work

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Short Answer Questions	On-line knowledge check quizzes, comprising a variety of questions styles.	1,2,3	20.0	Week 8
Project	Project plan and supporting flow-diagram and Gantt chart for the Group project including individual Oral assessment.	1,2,3,4,5	10.0	Week 3
Project	Interim Report (Draft referenced text, tables and figures) for the Group project including individual Oral assessment	4,5,6,7	20.0	Week 7
Project	Team projects, the preparation of a book chapter, a report or a review at peer-review publication standard, following the study of an environmental issue or topic.	3,4,5,6,7	30.0	Week 11
Presentation	Individual and group multi-media powerpoint presentation of key concepts related to an environmental issue or topic.	2,3,4,5,6	20.0	Week 12

No End of Module Formal Examination

Reassessment Requirement

Coursework Only

This module is reassessed solely on the basis of re-submitted coursework. There is no repeat written examination.

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

Module Workload

Workload: Full Time				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Lectures on environmental legislation and analytical methodologies	2.0	Every Week	2.00
Tutorial	Application of Theory and principles, teamwork problem solving; facilitated workshops on assigned or chosen review; topic planning, research and development; sourced literature; reviewing of table, flow-diagram and figures generation; Group/Triad integration and group delegation of workload.	2.0	Every Week	2.00
Independent & Directed Learning (Non-contact)	Independent & Directed Learning (Non-contact); Group/Triad teamwork on the assigned or chosen review; bi-weekly summary reports on individually researched literature for oral presentation (5-10 mins incl. Q&A) during class time.	10.0	Every Week	10.00
Total Hours				14.00
Total Weekly Learner Workload				14.00
Total Weekly Contact Hours				4.00
Workload: Part Time				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Lectures on environmental legislation and analytical methodologies	2.0	Every Week	2.00
Tutorial	Application of Theory and principles, teamwork problem solving; facilitated workshops on assigned or chosen review; topic planning, research and development; sourced literature; reviewing of table, flow-diagram and figures generation; Group/Triad integration and group delegation of workload.	2.0	Every Week	2.00
Independent & Directed Learning (Non-contact)	Independent & Directed Learning (Non-contact); Group/Triad teamwork on the assigned or chosen review; bi-weekly summary reports on individually researched literature for oral presentation (5-10 mins incl. Q&A) during class time.	10.0	Every Week	10.00
Total Hours				14.00
Total Weekly Learner Workload				14.00
Total Weekly Contact Hours				4.00

Module Resources

Recommended Book Resources

- American Water Works Association 2017, *Standard Methods for the Examination of Water and Wastewater*, 23rd Ed., American Water Works Association [ISBN: 9780875532875]
- Wong, Yui-chung and Lewis, R.J. 2017, *Analysis of Food Toxins and Toxicants*, 1st Ed., Wiley-Blackwell Chichester, UK [ISBN: 9781118992685]
- Bryan M. Ham, Aihui MaHam 2015, *Analytical Chemistry: A Chemist and Laboratory Technician's Toolkit*, 23rd Ed., John Wiley & Sons, Inc. Chichester, UK [ISBN: 9781118714843]
- John Wright 2004, *Environmental Chemistry*, 22nd Ed., Taylor & Francis Ltd London United Kingdom [ISBN: 9780415226004]

Supplementary Book Resources

- Meriluoto, J., Spoof, L. and Codd, G.A 2017, *Handbook of Cyanobacterial Monitoring and Cyanotoxin Analysis*, 23rd Ed., Wiley Chichester, UK. [ISBN: 9781119068686]
- Petrisor & Ioana Gloria Vista & California & USA 2016, *Environmental Forensics Fundamentals*, 1st Ed., Taylor & Francis Inc [ISBN: 9781466571587]
- Morrison, R. and Murphy, B. 2005, *Environmental Forensics - Contaminant Specific Guide*, 1st Ed., Academic Press [ISBN: 9780125077514]

This module does not have any article/paper resources

Other Resources

- Website:: EPA
<https://www.epa.ie/>
- Website:: Irish Statutory Instrument
<http://www.irishstatutebook.ie/eli/statutory.html>
- Website:: The CAFE Programme & the Thematic Strategy on Air Pollution
<https://ec.europa.eu/environment/archives/cale>
- Website:: EU Law and Publications
<https://op.europa.eu/en/home>
- Website:: Water Framework Directive
https://ec.europa.eu/environment/water/water-framework/index_en.html
- Website:: Bathing Water Directive
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006L0007>
- Website:: Urban Waste Water Directive
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31991L0271>
- Website:: Marine Strategy Framework Directive
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0056>
- Website:: Seveso Directive
<https://ec.europa.eu/environment/seveso/legislation.htm>
- Website:: ISO17025
<https://www.iso.org/ISO-IEC-17025-testing-and-calibration-laboratories.html>

Module Delivered in

Programme Code	Programme	Semester	Delivery
CR_SASIV_9	<u>MSc in Analytical Sciences with Instrument Validation</u>	2	Mandatory
CR_SANIV_9	<u>Postgraduate Diploma in Analytical Sciences with Instrument Validation</u>	2	Mandatory