Module Descriptor for CNWY40090 in 2025/2026

Short Title	Long Title	Subject Area	College	School/Unit	Last Modified
Intro to Omic	Introduction to 'Omic' and Advanced Imaging Technologies	Conway Institute	Research Inst & Other Entities	UCD Conway Institute	25 Jul 2025

UCD Level	Credits (ECTS)	Semester/Trimester	Grade Scale	VLE Setup	Module Coordinator	Status
4 - Masters	5.0	Spring	Letter grades	Start of Trimester	Matthias Wilm	Active

Mode of Delivery	Internship Module	Module Type	Micro-credential Module	Active & Collab Learning Space
Online	No	Other	No	No

Overall Places	Core/Option	General Elective	First Year Elective	International	Open Learning
30	30	0	0	0	0

Purpose & Overarching Content

This course is designed to familiarise students with the principles, practice and application of the rapidly developing 'omic' and imaging technologies. It will comprise 10x3hr seminar-style sessions covering Proteomics - analysis techniques and visualisations, Metabolomics, Glycomics and Nutrigenomics, Clinical Applications in Proteomics, Genomics, including Single Cell Genomics, Imaging techniques in research and clinical diagnostics, including Ultrasound, Digital Pathology and Flow Cytometry.

Learning Outcomes

Indicative Learning Outcomes On completion of the course the students should:
- Proteomics: Will have seen how mass spectrometer are used to identify and quantify proteins and how this ability can be used in systems based biological research and clinical applications;
- Imaging for clinical diagnostics: Be familiar with the different imaging technologies used in clinics, their capabilities and limitations;
- Glycomics: Will be exposed to current techniques to analyse glycosilations on proteins, their representation in databases and which role glycosilations play in cancer biology. Finally, it will be demonstrated how glycosilations are characterised on pharmaceutical products.
- Metabolomics: Will learn about how metabolomic profiles are acquired and used in biological research
Clinical Applications in Proteomics: Will see how proteomic technologies are used in a clinical context
- Genomics: Will have seen the principals of genomics and its use in the identification of trait and disease;
- Flow cytometry: Be familiar with the concepts, the principles, practice and application of flow cytometry and cell sorting. Have a general understanding of sample preparation, the analysis and reanalysis of the data produced in a flow cytometer.
- Advanced Imaging technologies: Will have learned about the most recent advances in light and electron microscopic imaging and how it can be used in research to trace molecules in biological contexts.
- Advanced In Vivo Imaging: Will have learned what kind of imaging technologies are used in a clinical context
- Digital Pathology: Will have learned about the new tissue imaging techniques in histological pathology and its integration in clinical diagnosis

Approaches to Teaching and Learning

Presentation of all the techniques available in the Conway to conduct biological research

Student Effort Hours

Student Effort Type	Hours
Contact Time	
Seminar (or Webinar)	30
Total Contact Time	**30**
Specified Learning Activities	
Specified Learning Activities	40
Total Specified Learning Activities	**40**
Autonomous Student Learning	
Autonomous Student Learning	50
Total Autonomous Student Learning	**50**
Total	**120**

FTE Breakdown

School	FTE
S025 - School of Medicine	28
S123 - Fees,State & Research Activity	72

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Assessment Details

Assessment Type	Description	Timing	Open Book?	% of Final Grade	Component Scale	Must-Pass?	In-module Component Repeat Offered?
Quizzes/Short Exercises	The assessment consists of 2 assessments, each consisting of 10 multiple choice questions with 3 possible answers each. The questions are about subjects taught during the lectures.	Week 2, Week 4		70	Graded	Yes	Yes
Assignment(Including Essay)	Writing a short essay how the techniques presented in the module can be used in the student's own research project.	Week 4		10	Pass/Fail	No	No
Participation in Learning Activities	Presence during the lectures.	Week 1, Week 2, Week 3, Week 4		20	Pass/Fail	Yes	Yes
Total				**100**			

Carry Forward of Passed Components
No

Feedback Strategy

Feedback Strategies	Sequence of Feedback
- Online automated feedback	

Remediation Strategy

Remediation Type	Remediation Timing
In-Module Resit	Prior to relevant PEB

Module Equivalents

Module ID	Module Title
CNWY40040	Introduction to 'Omic' and Adv

Associated Staff

Name	Role
Mr Patrick Moran	Assistant Grader
Professor Lorraine Brennan	Tutor
Mr Mark Crowley	Module Assistant
Assoc Professor Kathleen Curran	Tutor
Professor Aurelie Fabre	Tutor
Dr Radka Fahey	Tutor
Dr Alfonso Fernández	Tutor
Dr Therese Herlihy	Tutor
Professor Brendan Loftus	Tutor
Mr George Moschos-Paipetis	Module Assistant
Ms Catherine Moss	Tutor
Professor Stephen Pennington	Tutor
Ms Elaine Quinn	Module Assistant
Dr Dimitri Scholz	Tutor

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Associated Majors

Programme	Major	Stage	Module Type
DRSCI001 - Doctor of Philosophy (Post 06)	X851 - PhD B&SB Prog CompSci FT	2	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X253 - Translational Med PhD FT	2	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X237 - Medicine PhD FT	2	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X434 - PublicHlthPhys&Sport Sc PhD PT	1	Option Module
DRSCI001 - Doctor of Philosophy (Post 06)	X853 - PhD B&SB Prog BBS FT	1	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X254 - Translational Med PhD PT	2	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X810 - PhD Infection Biology(SMMS) FT	2	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X811 - PhD Infection Biology(SMMS) PT	2	Option Module
DRSCI001 - Doctor of Philosophy (Post 06)	X861 - PhD B&SB Prog Physics FT	2	Option Module
DRSCI001 - Doctor of Philosophy (Post 06)	X855 - PhD B&SB Prog BES FT	1	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X859 - PhD B&SB Prog PHPSS FT	2	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X849 - PhD B&SB Prog Medicine FT	2	Option Module
MTMED001 - Master of Science-Medicine	X846 - MSc Experimental Physiology FT	1	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X254 - Translational Med PhD PT	1	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X859 - PhD B&SB Prog PHPSS FT	1	Option Module
DRSCI001 - Doctor of Philosophy (Post 06)	X861 - PhD B&SB Prog Physics FT	1	Option Module
DRSCI001 - Doctor of Philosophy (Post 06)	X855 - PhD B&SB Prog BES FT	2	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X246 - Bioinfor & Systems Biol PhD PT	2	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X245 - Bioinfor & Systems Biol PhD FT	1	Option Module
DRSCI001 - Doctor of Philosophy (Post 06)	X857 - PhD B&SB Prog Maths FT	1	Option Module
DRSCI001 - Doctor of Philosophy (Post 06)	X853 - PhD B&SB Prog BBS FT	2	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X810 - PhD Infection Biology(SMMS) FT	1	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X434 - PublicHlthPhys&Sport Sc PhD PT	2	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X237 - Medicine PhD FT	1	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X246 - Bioinfor & Systems Biol PhD PT	1	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X811 - PhD Infection Biology(SMMS) PT	1	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X245 - Bioinfor & Systems Biol PhD FT	2	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X253 - Translational Med PhD FT	1	Option Module
DRSCI001 - Doctor of Philosophy (Post 06)	X857 - PhD B&SB Prog Maths FT	2	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X433 - PublicHlthPhys&Sport Sc PhD FT	2	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X433 - PublicHlthPhys&Sport Sc PhD FT	1	Option Module
DRLSC001 - Doctor of Philosophy (Post 06)	X238 - Medicine PhD PT	1	Option Module
DRSCI001 - Doctor of Philosophy (Post 06)	X851 - PhD B&SB Prog CompSci FT	1	Option Module

For help with the information on this report, please email curriculum@ucd.ie