Course Code CNWY40140
Course Title: Emerging Omics Technologies
MODULE DESCRIPTOR

Title	Emerging Omics Technologies
Code	CNWY40140
Credits	2.5
Semester	2
Level	4
Co-ordinator	Dr. Giuliano Elia
Contributors	Introduction to glycomics: Prof. Pauline Rudd Glycomics methods and applications: Prof. Pauline Rudd Lipidomics: TBD Introduction to metabolomics: Prof. Lorraine Brennan Metabolomics applications: Prof. Lorraine Brennan
Module Places	Places will be limited to a maximum of 50
Module Dependencies	None

Indicative Module Descriptor

This module is designed for students who wish to understand principles, practice and applications of new "omics" technologies and their impact on modern biology, as well as to critically assess their applications to problems of clinical and commercial relevance. Metabolomics: The students will become familiar with metabolomic techniques and applications. An overview of the currently used techniques will be given and applications will focus on nutrition and toxicology. The module will be delivered in 5 stand-alone blocks, each one composed of 3hr seminar-style sessions (mornings) and 4hr practical exercises/dry sessions on study design (afternoons), covering:

- Introduction to glycomics: 1 Block
- Glycomics methods and applications: 1 Block
- Lipidomics: 1 Block
- Introduction to metabolomics: 1 Block
- Metabolomics applications: 1 Block

Indicative Learning Outcomes
On completion of the course the students should:

- Demonstrate knowledge of the biology of glycoproteins and their functional roles *(Block 1*).
- Have acquired understanding of methods for release of complex glycans from glycoproteins and their analysis *(Block 1and 2*).
- Demonstrate critical awareness of clinical and industrial applications of glycomics science (*Block 2).*
- Be familiar with the different techniques to study protein-protein interactions. (*Block 6)*
- Demonstrate understanding of lipidomics, lipid analysis techniques and their applications (*Block 3).*
- Understand the principles of metabolomics and related techniques and demonstrate knowledge of options available for different samples *(Block 4).*
- Have acquired an appreciation of the metabolomic data analysis strategies *(Block 4).*
- Be aware and demonstrate an understanding of applications of metabolomics *(Block 5).*

Workload:	50
Seminars	15
Specified activities	20 (practical exercises/dry sessions + evaluation session)
Autonomous Student learning	15

Assessment:	Type	%	timing
Course end evaluation session (4 hrs)	MCQs +Problem-based assessment	100	End of Block 5

Specified Activities:

- In the afternoons, students will be requested to carry out, under the supervision of the teacher and with the guidance of laboratory technicians, a practical exercise in each of the different subjects taught at morning or a dry session on study design for the different techniques. The student will be able to make the practical experience of the "fil rouge" that connects all the different steps of an experiment.
- Students will take part into a final evaluation session (4h), based on Multi-Choice Questions and Problem-based assessment.