MEDI09004
Advanced Clinical Chemistry

Full Title	Advanced Clinical Chemistry		
Status	Uploaded to Banner	**Start Term**	2021
NFQ Level	09	**ECTS Credits**	10
Module Code	MEDI09004	**Duration**	Stage - (26 Weeks)
Grading Mode	Numeric	**Failed Element**	No
Department	Analytical, Bio & Med Sci		
Module Author	Mary McGrath		
Co Authors	Brian Moran, Eugene McCarthy		

Module Description

This module will equip students with an up to date and in-depth understanding of the biochemical consequences of common clinical disorders and the role of the clinical chemistry laboratory in supporting patient care. The module will include the development of new methodologies and biomarkers for use in clinical laboratories to support patient's diagnosis, monitoring, prognosis and screening.

	Learning Outcomes ***On completion of this module the learner will/should be able to:***
1.	Critically review the relationship between normal physiological function and pathological changes that occur in the various clinical conditions.
2.	Assess advances in the understanding of pathological processes and the part played by the clinical chemistry laboratory.
3.	Appraise current and new analytical methods for relevant analytes in the Clinical Chemistry Laboratory.
4.	Critically evaluate current and emerging practices employed within clinical chemistry laboratories.
5.	Discuss the significance of clinical chemistry laboratory results taking into account clinical information, pre-analytical and analytical issues.

Indicative Syllabus

Physiological and biochemical abnormalities and consequent pathological changes in diseases of the following organ systems:

Liver, Pancreas, Gastro Intestinal Tract, Heart, Renal System and the Endocrine System.

The laboratory investigation and interpretation of biochemical alterations in disorders of:

Lipid metabolism, Carbohydrate metabolism, Protein metabolism, Water, electrolyte and gases, Hormone and endocrine systems, Vitamin and trace element metabolism.

Role of the Clinical Chemistry Laboratory in:

Toxicology and Therapeutic Drug Monitoring

Inherited Metabolic Disorders

Biochemistry at the extremes of life

Clinical Chemistry in malignancy

Calcium, Vitamin D and Bone Disorders

Laboratory Operation:

Current trends in automation and near patient testing

Analytical test development and validation

Teaching and Learning Strategy

This module will be delivered online with a mixture of synchronous and asynchronous lectures. Topics will be supported by case studies, guest lectures and workshops. Learners are expected to engage in active and independent learning. The interactive VLE forum (Moodle) will be used to provide students with the opportunity for peer collaboration, group discussion and communication with the module team.

Assessment Strategy

This module will be assessed via continuous assessment (100%) which will be composed of case study (40%), a research led critical review written assignment (30%) and a presentation (30%). CA will be a combination of independent and group work designed to develop students' research abilities and critical thinking. The assessment strategy for this module may include shared assessments with other modules. The modules that are co-assessed may vary from year to year but will be designed to reduce the assessment burden on the student while ensuring that learning outcomes are achieved across the programme. Students will gain experience in critical analysis, literature searches and presentations.

Repeat Assessment Strategies

In accordance with GMIT Code of Practice No.3 for 100% continuous assessment modules. The repeat assessment type will be linked to the achievement of particular learning outcomes and will be appropriate to allow the demonstration of the achievement of these outcomes.

Indicative Coursework and Continuous Assessment:		**100 %**		
Form	***Title***	***Percent***	***Week (Indicative)***	***Learning Outcomes***
Assessment	Presentation	30 %	TBA	1,2,3,4,5
Assignment	Critical Review	30 %	TBA	2,3,4,5
Assignment	Case Study	40 %	TBA	1,2,4,5

Part Time Delivery Mode Average Weekly Workload:			**3.00 Hours**		
Type	***Description***	***Location***	***Hours***	***Frequency***	***Weekly Avg***
Online Learning	Lecture	Online	2.5	Weekly	2.50
Tutorial	Tutorial	Online	1	Fortnightly	0.50

Required Reading Book List

Marshall, J., Lapsley, M., Day, P., (2016). *Clinical Chemistry*. Elsevier.
ISBN 0723438811 ISBN-13 9780723438816

Ahmed, N., (2016). *Clinical Biochemistry*. Oxford University Press.
ISBN 9780199674442 ISBN-13 0199674442

Rifai, N., Horvath, A., Wittwer, C., (2017). *Tietz Textbook of Clinical Chemistry and Molecular Diagnostics*. Saunders.
ISBN 0323359213 ISBN-13 9780323359214

Journal Resources

Clinical Chemistry

Clinica Chimica Acta

Annals of Clinical Biochemistry

Clinical Chemistry and Laboratory Medicine

Clinical Biochemistry

Critical Reviews in Clinical Laboratory Sciences

Online Resources

AACC - https://www.aacc.org/science-and-research/clinical-chemistry

https://clsi.org/

Programme Membership
GA_SCMLG_V09 202100 Master of Science in Medical Science GA_SCMLG_N09 202100 Certificate in Medical Science