

Molecules to Systems

Module Code:	PHA4008-C
Academic Year:	2018-19
Credit Rating:	30
School:	School of Pharmacy and Medical Sciences
Subject Area:	Pharmacy
FHEQ Level:	FHEQ Level 4

Pre-requisites:

Co-requisites:

Contact Hours

Type	Hours
Seminar	14
Practical classes and	18
Laboratory	11
Directed Study	257

Availability Periods

Occurrence	Location/Period
BDA	University of Bradford / Academic Year (Sept - May)

Module Aims

To introduce students to the structure, function, properties of biological membranes, microorganisms, human cells and tissues to understand their role in the functioning of the body both in health and disease.

Outline Syllabus

To start to explore and familiarise students with a systems-based approach looking at how molecular structures evolve into cells, tissues, organs and body systems by exploring:

- Fundamental structures and functions of main organic macromolecules.
- Structure, function and life-cycle of a cell.
- Structure and function of simple and compound glands.

- Structure and function of specialist cells and tissues.
- Membrane structure and the properties and functions of membrane lipids and proteins.
- The movement of ions and molecules across membranes.
- The effect and influence of chemical messengers on the activity of cells and organs.
- The effect of disease processes on cells and tissues.
- The characteristics of a range of micro-organisms and their role in infectious disease
- The modes of action of a range of antimicrobial agents and development of antibiotic resistance and strategies to combat resistance including antimicrobial stewardship.
- The structure and function of antibodies, the use of vaccines and the characteristics and role of the innate and specific immune system.

Module Learning Outcomes

On successful completion of this module, students will be able to...

- 1 Develop a core understanding of important macro-molecules in biological systems.
- 2 Understand and apply knowledge of cell and tissue structure and function to explain how the human body functions in health and disease.
- 3 Describe the biophysical, chemical and pharmacological principles of membrane structure and the properties and functions of membrane lipids and proteins to explain the movement of ions and molecules across membranes.
- 4 Apply these new physiological principles to explore how chemical messengers, such as hormones and neurotransmitters and drugs influence the activity of cells and organs.
- 5 Use the principles of the biology of microorganisms in health and disease to explain the aetiology of disease.
- 6 Identify preventative measures in the treatment of infectious disease.
- 7 Describe the concepts of antimicrobial action and stewardship.
- 8 Explain antibody development in biological systems and the role of vaccines.
- 9 Understand their role within the team.

Learning, Teaching and Assessment Strategy

Students will develop the knowledge, understanding and skills necessary to meet the learning outcomes of the module through the programme's instructional learning and teaching strategy; Team-Based Learning (TBL). By studying the core knowledge-based content of the module out of class through guided reading, supported by orientational lectures students will engage in group activities to ensure understanding and application of their developed knowledge. Activities will be based in a number of settings including classrooms and laboratories.

Resources for self-directed study will be provided for students. Self-directed study will include guided reading and completion of TBL Study Packs, preparation for RAPs, Application Exercise and laboratory/workshop sessions.

Students are assessed via a range of assessments, including both individual and team assessments. Students are assessed through a number of individual readiness assurance tests (iRAT) throughout the academic year. On completion of the iRAT assessment, students form their pre-assigned teams (5-7 students) and retake the assessment as a team (tRAT). Once all of the answers have been collated, students receive instant in-class feedback from the academic expert. In subsequent sessions, teams of students will apply their new knowledge to a number of formative and summative Application Exercises (AE), including role plays, problem solving and laboratory experiments and submission of reports. At the end of the academic year, summative assessment of learning outcomes is through an examination. To pass the module, students will need to demonstrate a pass standard of 40% in the module overall and must also achieve at least 40% in the exam.

Mode of Assessment

Type	Method	Description	Length	Weighting	Final Assess'
Referral	Examination - MCQ	Individual written exam [MUST PASS at 40%]	2 hours	70%	Yes
Summative	Examination - MCQ	Individual written exam [MUST PASS at 40%]	2 hours	70%	Yes
Formative	Examination - MCQ	Sample written exam	2 hours	%	No
Referral	Coursework	An individual summative reflection (instead of classroom tests)	0-1000 words	30%	No
Summative	Classroom test	Peer Review	1 hour	5%	No
Summative	Classroom test	Application Exercises / laboratory reports	3.5 hours	5%	No
Summative	Classroom test	Readiness Assurance Process (Individual Readiness Assurance Tests (iRATs) 15% and Team Readiness	3.5 hours	20%	No

		Assurance Tests (5%)			
Formative	Classroom test	Formative peer review	1 hour	%	No
Formative	Classroom test	Application Exercises / laboratory reports	3.5 hours	%	No
Formative	Classroom test	Readiness Assurance Process (RAP)	3.5 hours	%	No

Legacy Code (if applicable)

Reading List

To view Reading List, please go to [rebus:list](#).