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MODULE DESCRIPTOR

Module Title

Foundations in Medicine Design

Reference	PH1136	Version	2
Created	September 2018	SCQF Level	SCQF 7
Approved	July 2017	SCQF Points	30
Amended	September 2018	ECTS Points	15

Aims of Module

To provide an introduction to physicochemical properties relevant to pharmaceutics in the context of drug design and dosage forms.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

1	Demonstrate an understanding of the basic physicochemical properties of pharmaceutical materials and apply mathematical expressions in relation to chemical and pharmaceutical systems.
2	Show understanding of the techniques used to generate qualitative and quantitative experimental data and demonstrate data analysis and handling.
3	Demonstrate basic laboratory skills.

Indicative Module Content

The application of physicochemical principles in a quantitative way to engage with practical pharmaceutical issues such as medicine formulation, design, manufacture and delivery to the patient. Topics will include: Thermodynamics-energetics: processes of change such as drug dissolution or transfer of drugs across membranes. Drug solubility-concentrations; ideal and non-ideal solutions; colligative properties; colloids, solutions and dissolution rates. Physical properties of drugs and excipients-gases (aerosols), liquids, crystalline and amorphous solids. Ionisation of drugs in solution-equilibrium constants; acids, bases and salts; pH; buffer solutions; partitioning. Preformulation-the importance of determining drug and excipient properties and compatibilities prior to their formulation into a medicine. Surface activity and surfactants-the role of surfactants in medicines and adsorption in pharmaceutical products. Rheological flow characteristics (performance) of liquids and semi-solids. Drug stability and degradation-reaction kinetics, rate constants;effect of environmental factors; shelf-life.

Module Delivery

This is a lecture based module supplemented with formative quizzes, tutorials, practical laboratory classes and guided reading.

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Indicative Student Workload	Full Time	Part Time
Contact Hours	107	N/A
Non-Contact Hours	193	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	300	N/A
Actual Placement hours for professional, statutory or regulatory body		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Examination	Weighting:	100%	Outcomes Assessed:	1
Description:	Closed book written examination				

Component 2

Type:	Coursework	Weighting:	0%	Outcomes Assessed:	2
Description:	Completion of the coursework content.				

Component 3

Type:	Practical Exam	Weighting:	0%	Outcomes Assessed:	3
Description:	Laboratory skills competency test.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

To pass this module, the student MUST achieve a module Grade of Grade D or better.

Module Grade	Minimum Requirements to achieve Module Grade:
A	When the mark for C1 is 70% or more and a Pass in C2 and C3.
B	When the mark for C1 is 60-69% and a Pass in C2 and C3.
C	When the mark for C1 is 50-59% and a Pass in C2 and C3.
D	When the mark for C1 is 40-49% and a Pass in C2 and C3.
E	When the mark for C1 is 35-39% and a Pass in C2 and C3.
F	When the mark for C1 is less than 35% and/or an unsuccessful attempt (i.e. Fail) in C2 and/or C3.
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	None, in addition to course requirements.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

1	DENTON, P. and ROSTRON, C. *Pharmaceutics: the science of medicine design.* Current Edition. Oxford University Press.
2	FLORENCE, A.T. and ATTWOOD, D. *Physicochemical Principles of Pharmacy.* Current Edition. London: Pharmaceutical Press.
3	AULTON, M.E. ed. *Aulton's Pharmaceutics: The Design and Manufacture of Medicines.* Current Edition. Edinburgh: Churchill Livingstone.
4	CAIRNS, D. *Essentials of Pharmaceutical Chemistry.* Current Edition. London: Pharmaceutical Press.
5	ATTWOOD, D. and FLORENCE, A.T. *Physical Pharmacy.* Current Edition. London: Pharmaceutical Press. (Fasttrack)
6	GAISFORD, S. and SAUNDERS, M. *Essentials of Pharmaceutical Preformulation.* Current Edition. Wiley-Blackwell.