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## MODULE DESCRIPTOR

### Module Title

Therapeutic Delivery

Reference	PH4130	Version	6
Created	September 2018	SCQF Level	SCQF 10
Approved	March 2013	SCQF Points	30
Amended	September 2018	ECTS Points	15

### Aims of Module

To develop an understanding of the techniques pertinent to advanced drug delivery, gene technology, pharmacogenomics and proteomics and the ability to evaluate their application to the improved design, delivery and efficacy of medicinal products.

### Learning Outcomes for Module

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

- 1 Critically evaluate the design, formulation and application of advanced drug delivery systems for the different routes of administering medicinal products.
- 2 Integrate knowledge of gene structure and function into the development and application of DNA and protein technologies, biopharmaceuticals and the delivery of personalised medicine.
- 3 Critically appraise and discuss current trends in the advancement of targeted molecular and biological therapies; including the methods by which markers of disease and drug targets may be identified.
- 4 Apply knowledge of established and novel drug delivery systems to investigate the development of emerging therapeutics and communicate this information.
- 5 Demonstrate knowledge and understanding of DNA separation techniques and gene cloning.

### Indicative Module Content

Delivering therapeutics in a way that is right for the patient; safe, painless, reliable, targeted and efficient. Topics include: Design and formulation of delivery systems for parenteral, oral, buccal, nasal, pulmonary, ocular and transdermal delivery; Drug targeting and controlled release of chemical molecules, peptides and proteins; Novel approaches to antimicrobial chemotherapy; Production of recombinant DNA and genetically engineered medicines; Principles and applications of gene therapy; Role of pharmacogenomics in the delivery of personalized medicine; Genomic and proteomic screening for disease diagnosis and identification of drug targets; Mechanism of action and use of immunotherapies.

### Module Delivery

Lectures (including delivery by external industrialists), coursework sessions (including laboratory based group mini-projects and workshops), tutorials, directed study, PCCAL, self-assessment (quizzes) and problem solving.

### Indicative Student Workload

	Full Time	Part Time
Contact Hours	65	N/A
Non-Contact Hours	235	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	300	N/A
<i>Actual Placement hours for professional, statutory or regulatory body</i>		

### ASSESSMENT PLAN

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

#### Component 1

Type: Examination  Weighting: 60%  Outcomes Assessed: 1, 2, 3, 5

Description: Component 1 is a 3 hour written exam.

#### Component 2

Type: Coursework  Weighting: 40%  Outcomes Assessed: 4

Description: Component 2 is an individual report (in a poster format) of a group project.

### MODULE PERFORMANCE DESCRIPTOR

#### Explanatory Text

To pass this module, the student MUST achieve a module Grade of Grade D or better and a minimum mark of 40% in C1 and C2.

Module Grade	Minimum Requirements to achieve Module Grade:
<b>A</b>	When 60% of the mark for C1 added to 40% of the mark for C2 is 70% or more.
<b>B</b>	When 60% of the mark for C1 added to 40% of the mark for C2 is 60-69%.
<b>C</b>	When 60% of the mark for C1 added to 40% of the mark for C2 is 50-59%.
<b>D</b>	When 60% of the mark for C1 added to 40% of the mark for C2 is 40-49%.
<b>E</b>	When 60% of the mark for C1 added to 40% of the mark for C2 is 35% or more but less than 40% in C1 and/or C2.
<b>F</b>	When 60% of the mark for C1 added to 40% of the mark for C2 is 35% or less.
<b>NS</b>	Non-submission of work by published deadline or non-attendance for examination

### Module Requirements

Prerequisites for Module	Successful completion of MPharm stage 2.
Corequisites for module	None.
Precluded Modules	None.

**INDICATIVE BIBLIOGRAPHY**

- 1 NELSON, D.L. and COX, M.M. Lehninger: Principles of Biochemistry. Current edition. New York, Worth Publishers. TURNER, P.C., MCLENNAN, A.G., BATES, A.D. and WHITE, M.R.H. Instant notes: Molecular Biology. Current edition. Oxford, Bios Scientific Publishers Ltd. ALLEN, L.V., POPOVICH, N.G. and ANSEL, H.C. Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems. Current edition. Philadelphia, Lippincott Williams & Wilkins. ARMSTRONG, N.A. and JAMES, K.C. Pharmaceutical Experimental Design and Interpretation. London, Taylor and Francis. AULTON, M.E., (ed.) Aulton's Pharmaceutics: The Design and Manufacture of Medicines. Current edition. London, Churchill Livingstone. SINKO, P.J. Martin's Physical Pharmacy and Pharmaceutical Sciences. Current edition. Lippincott Williams & Wilkins.
- 2 TURNER, P.C., MCLENNAN, A.G., BATES, A.D. and WHITE, M.R.H. Instant Notes: Molecular Biology. Current Edition. Oxford: Bios Scientific Publishers Limited.
- 3 ALLEN, L.V., POPOVICH, N.G. and ANSEL, H.C. Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems. Current edition. Philadelphia: Lippincott Williams & Wilkins.
- 4 ARMSTRONG, N.A. and JAMES, K.C. Pharmaceutical Experimental Design and Interpretation. London: Taylor and Francis.
- 5 AULTON, M.E., ed. Aulton's Pharmaceutics: The Design and Manufacture of Medicines. Current edition London: Churchill Livingstone.
- 6 SINKO, P.J. Martin's Physical Pharmacy and Pharmaceutical Sciences. Current edition. Lippincott Williams & Wilkins.