

## MODULE DESCRIPTOR

### Module Title

Advances in Pharmaceutical Science

Reference	PLM343	Version	1
Created	June 2023	SCQF Level	SCQF 11
Approved	June 2022	SCQF Points	15
Amended	August 2021	ECTS Points	7.5

### Aims of Module

To enable students to develop a critical and detailed understanding of the techniques pertinent to advanced drug delivery and the ability to evaluate the application of such systems 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 Demonstrate an advanced understanding of established and developing technologies for drug delivery.
- 3 Critically evaluate aspects of pharmacology pertinent to the development of personalised medicines.

### Indicative Module Content

Delivering modern medicines which are safe, painless, reliable, targeted and efficient. Topics include: Design and formulation of delivery systems for parenteral, oral, buccal, nasal, pulmonary, ocular and transdermal delivery; hydrogels as drug delivery systems; drug targeting and controlled release of therapeutic molecules, including peptides and proteins, from contemporary dosage forms such as controlled release matrix systems, amorphous solid dispersions, self-emulsifying drug delivery systems (SEDDS), lipidic and polymeric vesicles, nanoparticles, micelles and 3D-printed dosage forms; characterisation of biopharmaceuticals; pharmacogenomics; disease susceptibility; cell and gene therapy; immunotherapy; science of the practice of delivering biopharmaceuticals; personalised medicines; age related medicines; digital health.

### Module Delivery

Lectures (including delivery by external industrialists) and a series of small group tutorials on a specific area of advanced pharmaceutical science using a problem-based learning (PBL) approach.

**Indicative Student Workload**

	Full Time	Part Time
Contact Hours	30	N/A
Non-Contact Hours	120	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	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:	Practical Exam	Weighting:	100%	Outcomes Assessed:	1, 2, 3
Description:	A 20 minute individual presentation followed by 10 minutes of questions on a challenging problem in advanced drug delivery.				

**MODULE PERFORMANCE DESCRIPTOR****Explanatory Text**

Component 1 (CW1) comprises 100% of the module grade. To pass the module, a minimum of a grade D is required. Non-submission will result in an NS grade.

Module Grade	Minimum Requirements to achieve Module Grade:
<b>A</b>	A
<b>B</b>	B
<b>C</b>	C
<b>D</b>	D
<b>E</b>	E
<b>F</b>	F
<b>NS</b>	Non-submission of work by published deadline or non-attendance for examination

**Module Requirements**

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

**INDICATIVE BIBLIOGRAPHY**

- 1 Aulton, M.E. (ed.) Taylor, K. (2017). 'Aulton's pharmaceuticals - the design and manufacture of medicines', 5th edition, Churchill Livingstone.
- 2 Florence, A.T. (2010). 'An introduction to clinical pharmaceuticals', Pharmaceutical Press.
- 3 Ho, R.J.Y., Gibaldi, M. (2013). 'Biotechnology and biopharmaceuticals: transforming proteins and genes into drugs', 2nd edition, Wiley Blackwell.
- 4 Trent, R.J. (2012). 'Molecular medicine: genomics to personalised healthcare', 4th edition, Academic Press.
- 5 Greenstein, B., Brook, D.A. (2011). 'Biological therapeutics', Pharmaceutical Press.
- 6 Perrie, Y., Rades, T. (2012). 'Pharmaceuticals: drug delivery and targeting', 2nd edition, Fasttrack, Pharmaceutical Press.