Liverpool John Moores University

Title:	FORMULATION AND DRUG DELIVERY
Status:	Definitive
Code:	**7006PHASCI** (120450)
Version Start Date:	01-08-2014

Owning School/Faculty: Pharmacy & Biomolecular Sciences
Teaching School/Faculty: Pharmacy & Biomolecular Sciences

Team	Leader
Gillian Hutcheon	Y
Imran Saleem	
Matthew Roberts	
Elsie Gaskell	

Academic Level:	FHEQ7	**Credit Value:**	30.00	**Total Delivered Hours:**	60.00
Total Learning Hours:	300	**Private Study:**	240		

Delivery Options
Course typically offered: Semester 2

Component	Contact Hours
Lecture	24.000
Practical	18.000
Workshop	15.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	CW1		40.0	
Exam	EX1		60.0	3.00

Aims

To understand the principles of pharmaceutical formulation and advanced drug delivery methods.

Learning Outcomes

After completing the module the student should be able to:

1   Demonstrate expertise in applying the principles of pharmaceutical formulation in the design of advanced drug delivery systems
2   Formulate and evaluate a pharmaceutical delivery system.
3   Display mastery of interpreting complex information and data in the evaluation of advanced drug systems

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Mini project	1	2	3
exam	1	3	

Outline Syllabus

Introduction to the basic components of formulation, delivery systems (liposomes, particles, tablets, capsules, creams etc.)and routes of delivery (oral, buccal, parenteral, pulmonary, nasal, topical, transdermal).

Immediate and modified release systems: excipients and polymers; immediate release formulations; modified release formulations; Oral and buccal delivery; Liposomes, fast disintegrating tablets and enteric coatings etc; Paediatric delivery.

Nanoformulation: Nanomedicines; biodegradable polymers; polymeric micro/nanoparticles; parenteral and pulmonary delivery; targeted delivery; cancer therapy.

Challenges in Biopharmaceutical delivery: proteins, vaccines, genes; Biomolecule stability, bioavailability and first pass metabolism; solutions, nanoparticles and lipid carriers; Routes of delivery; insulin and vaccine delivery.

Special topics and future developments supported by recent literature. For example; clays for drug delivery, wound healing, nanoparticles for medical diagnosis.

*Mini-project: Group project to design, produce and evaluate a delivery system
For an assigned API.*

Learning Activities

Lectures covering each topic within the module
Practical sessions giving students first-hand experience of relevant formulation principles
Workshops to support reviews of current literature, experimental design and analysis

of data generated during practical sessions

References

Course Material	Book
Author	Edited by Clive G. Wilson & Patrick J. Crowley.
Publishing Year	2011
Title	Advances in Delivery Science and technology
Subtitle	Controlled release in Oral Drug Delivery
Edition	
Publisher	Springer
ISBN	978-1-4614-1003-4

Course Material	Book
Author	Edited by Juergen Siepmann, Ronald A Siegel & Michael J. Rathbone
Publishing Year	2012
Title	Fundamentals and Applications of Controlled Release Drug Delivery
Subtitle	
Edition	
Publisher	Springer Verlag
ISBN	9781461408802

Course Material	Book
Author	Edited by lene Jorgensen & Hanne Morck Nielsen
Publishing Year	2009
Title	Delivery Technologies for Biopharmaceuticals. Peptides, proteins, Nucleic acids and vaccines
Subtitle	
Edition	
Publisher	
ISBN	978-0-470-72338-8

Notes

Practical sessions will involve students developing hands-on experience of formulating, producing and evaluating advanced drug delivery systems such as liposomes, micro/nano particles, clays and polymeric films.
Exam will assess students understanding of the principles through data interpretation and problem solving questions