

## Liverpool John Moores University

Title: APPROACHES TO DRUG DESIGN  
Status: Definitive  
Code: **7122PHASCI** (127519)  
Version Start Date: 01-08-2021

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

Team	Leader
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**Academic Level:** FHEQ7      **Credit Value:** 20      **Total Delivered Hours:** 42  
**Total Learning Hours:** 200      **Private Study:** 158

### Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	18
Practical	16
Workshop	6

**Grading Basis:** 50 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	EX1	Exam will comprise but not be limited to short answer questions and data interpretation/problem solving questions.	60	2
Report	CW1	The assignment will be based on an experimental project on drug design. Students will be individually assessed via a 2-page report (50% of assignment mark) and as a group via a	40	

Category	Short Description	Description	Weighting (%)	Exam Duration
		poster.		

## Aims

*To develop an integrated understanding of the principles underpinning drug discovery process and of the approaches and rationale of drug optimisation.*

## Learning Outcomes

After completing the module the student should be able to:

- 1 Display a systematic understanding of the processes and technologies employed in the discovery and the selection of hits and leads.
- 2 Critically evaluate the principles and rationale underpinning lead optimisation.
- 3 Synthesise and communicate the impact of experimental findings on the life and fate of a drug candidate.
- 4 Integrate and communicate the approaches for drug candidate selection in the context of successful drug development cases.

## Learning Outcomes of Assessments

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

Exam	1	4
Mini project	2	3

## Outline Syllabus

*Drug discovery process (including target identification, hit/lead identification, hit-to-lead development step).*

*Compound screening (including experimental and virtual techniques and considering compounds with synthetic and natural sources).*

*Drug design principles (Physical properties, structure-activity relationship).*

*Computer-aided Drug Design. Chemoinformatics including QSAR.*

*Lead optimisation (including synthetic strategies, computational techniques).*

*The discovery of biopharmaceutical drugs*

*Successful drug design case studies (examples could include, but are not limited to, antimicrobials and opioids).*

## Learning Activities

Lectures introducing each topic within the module coupled with on-line pre-reading and/or activities.

Practical sessions giving students hands-on experience of molecular design and

synthesis.

Computational sessions allowing experience of in silico design and prediction.

Workshops to support both the analysis of data generated during practical sessions and problem-solving skills relevant to drug design and discovery.

## **Notes**

Practical sessions will involve the synthesis of a library of antimicrobial drugs, their testing and the elaboration of structure activity relationships.

Exam will assess students understanding of the principles through data interpretation/problem solving questions