

## Liverpool John Moores University

Title: Topics in Pharmaceutical Chemistry  
Status: Definitive  
Code: **6051CHACAP** (119151)  
Version Start Date: 01-08-2012

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

Team	Leader
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**Academic Level:** FHEQ6      **Credit Value:** 12.00      **Total Delivered Hours:** 28.00

**Total Learning Hours:** 120      **Private Study:** 92

### Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	24.000
Tutorial	4.000

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Test	Final test	In-class test of duration 1.5 hours	50.0	1.50
Essay	Assignment	Multi-topic written assignment covering three topics	35.0	4.00
Technology	CAL test	On-line test covering one topic	15.0	2.00

### Aims

*To present and illustrate molecular and biomolecular chemical reactions and processes associated with drug development and synthesis and pharmaceutical applications*

## Learning Outcomes

After completing the module the student should be able to:

- 1 apply the design principles and use of heterocycles in drug synthesis
- 2 discuss the use of organometallic complexes in the catalysis of selected organic transformations
- 3 rationalise the use of polymers in the delivery of drugs to patients
- 4 devise a multi-stage sequence for the chemical synthesis of an oligosaccharide

## Learning Outcomes of Assessments

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

In-class test	1	2	3	4
Multi-topic assignment	1	3	4	
On-line test	2			

## Outline Syllabus

- Modern drug synthesis: heterocyclic synthesis; drug design as a basis for biomolecular action. E.g. quinolines/quinolones*
- Organometallic synthesis and catalysis; catalytic hydrogenation and asymmetric hydrogenation. Example of the synthesis of L-DOPA.*
- Biodegradable Polymers for drug delivery. The synthesis of a selection of polymers currently used for drug delivery applications. A brief overview of polymer characterization. Chemical and physical properties of different polymers and how these influence the biomedical application.*
- Synthesis of Oligosaccharides : Review of methods for the introduction and removal of suitable protecting groups. The use of different strategies and coupling reactions for chemical synthesis of the oligosaccharides will be illustrated. Comparison with enzymic methods. Biological and pharmaceutical significance of synthetic oligosaccharides.*

## Learning Activities

Lectures and tutorials

## References

<b>Course Material</b>	Website
<b>Author</b>	Nicholls, B.S.

<b>Publishing Year</b>	2007
<b>Title</b>	ChemiCAL Virtual Lectures
<b>Subtitle</b>	Homogeneous Catalysis
<b>Edition</b>	
<b>Publisher</b>	LJMU Network
<b>ISBN</b>	

<b>Course Material</b>	Book
<b>Author</b>	Hill, A.F.
<b>Publishing Year</b>	2002
<b>Title</b>	Organotransition Metal Chemistry
<b>Subtitle</b>	Tutorial Chemistry Texts
<b>Edition</b>	1st
<b>Publisher</b>	Royal Society of Chemistry
<b>ISBN</b>	0-85404-622-4

<b>Course Material</b>	Book
<b>Author</b>	Patrick, G.L.
<b>Publishing Year</b>	2009
<b>Title</b>	An Introduction to Medicinal Chemistry
<b>Subtitle</b>	
<b>Edition</b>	4th
<b>Publisher</b>	Open University Press
<b>ISBN</b>	978-0-19-923447-9

<b>Course Material</b>	Book
<b>Author</b>	Chasin, M. and Langer, L.
<b>Publishing Year</b>	1990
<b>Title</b>	Biodegradable Polymers as Drug Delivery Systems
<b>Subtitle</b>	
<b>Edition</b>	
<b>Publisher</b>	Dekker
<b>ISBN</b>	978-0-82-478344-0

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## Notes

Optional module to offer chemical principles to the area of pharmaceutical sciences