

## Liverpool John Moores University

Title: SYNTHETIC BIOLOGY AND BIOENGINEERING 2  
Status: Definitive  
Code: **6107BCBMOL** (126539)  
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:** FHEQ6      **Credit Value:** 20      **Total Delivered Hours:** 57  
**Total Learning Hours:** 200      **Private Study:** 143

### Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	25
Practical	15
Tutorial	5
Workshop	10

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	EXAM	Candidates will have a choice of questions presented in the examination	60	2
Report	REPORT	Report of practical and workshop activities	40	

### Aims

*To provide in-depth knowledge of current concepts and applications of synthetic biology and bioengineering with emphasis on tackling specific industrial, biomedical, and environmental challenges.*

## **Learning Outcomes**

After completing the module the student should be able to:

- 1 Critically discuss how synthetic biology principles are applied in aspects of biotechnology that require engineering of metabolic pathways.
- 2 Evaluate new developments in the field of synthetic biology via critical appraisal of the literature.
- 3 Design, model, and test a genetic circuit aimed at addressing an industrial, biomedical, or environmental problem.
- 4 Evaluate critically and use different methods for communicating scientific data tailored to academic and industrial audiences.

## **Learning Outcomes of Assessments**

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

Examination	2	3	4	
Report of Practicals Work	1	2	3	4

## **Outline Syllabus**

- 1) *Principles of metabolic pathway engineering*
- 2) *Microbial cell factories and cell-free synthetic systems*
- 3) *Minimal cells and synthetic genomes*
- 4) *Biomedical applications of synthetic biology and bioengineering*
- 5) *Environmental applications and sustainability*
- 6) *Ethical Issues in synthetic biology*

## **Learning Activities**

Lectures, Tutorials, Workshops, Practicals.

## **Notes**

This module will provide personal development planning support for level 6 students on the Biotechnology programme. As tutorials are within the module students will have small group teaching sessions and individual feedback on tutorial work.