

Liverpool John Moores University

Title: FERMENTATION TECHNOLOGY PRINCIPLES
Status: Definitive
Code: **7101BTBMOL** (124246)
Version Start Date: 01-08-2021

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

Team	Leader
Glyn Hobbs	Y

Academic Level: FHEQ7
Credit Value: 30
Total Delivered Hours: 63
Total Learning Hours: 300
Private Study: 237

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	22
Practical	36
Workshop	2

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam	Examination - essay questions	50	3
Report	Report	Practical Report	20	
Presentation	Present	Mini Project presentation	30	

Aims

To give an insight into Industrial, Microbiology and Biochemistry. This module will show how fundamental principles can be applied to industrial processes and will examine the wide range of microbial processes and products.

Learning Outcomes

After completing the module the student should be able to:

- 1 Design a fermentation process from strain selection and improvement to product recovery and purification.
- 2 Compare practical fermenters and appreciate the need for instrumentation and control.
- 3 Construct and operate small scale and pilot plant fermentation equipment.
- 4 Synthesise knowledge of the biochemistry of industrially important organisms and their products.

Learning Outcomes of Assessments

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

Exam	2	4	
Report	1	2	3
Presentation	1	2	3

Outline Syllabus

Characteristics of industrial microorganisms: biochemical diversity, overflow metabolism, enzyme production.

Isolation and improvement of organisms: isolation techniques, strain selection, improvement of organisms by

rational and random approaches, breeding programmes and protoplast fusion.

Fermentation Processes: media design, inocula development, fermenter or design, fermentation instrumentation and control and scale-up.

Analysis of process efficiency: batch, fed-batch and continuous culture.

Downstream Processing: harvesting, fermentation broth extraction and purification of products.

Microbial products: antibiotics, enzymes, single cell protein etc.

Learning Activities

Lectures, workshops, practicals

Notes

The module gives an insight into Industrial Microbiology and Biochemistry, showing how fundamental principles can be applied to industrial processes. A wide range of microbial processes will be examined and used to illustrate how complex products can be made economically from microorganisms.