

# Biomechanics

## Module Information

2022.01, Approved

### Summary Information

Module Code	6506ICBTBE
Formal Module Title	Biomechanics
Owning School	Pharmacy & Biomolecular Sciences
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 6
Grading Schema	40

### Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

### Partner Teaching Institution

Institution Name
International College of Business and Technology

### Learning Methods

Learning Method Type	Hours
Lecture	30
Practical	6
Tutorial	9

### Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-PAR	PAR	January	12 Weeks

## Aims and Outcomes

Aims	The module provides an overview of the structure and function relationships in tissues and organs; application of stress and strain analysis to biological tissues; analysis of forces in human function and movement; energy and power in human activity; introduction to modelling viscoelasticity of tissues.
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**After completing the module the student should be able to:**

### Learning Outcomes

Code	Number	Description
MLO1	1	Compare the general characteristics, material properties, appropriate constitutive model, and adaptation potential for tissue and organs studied.
MLO2	2	Justify relationships between structure and function in tissues and the implications/ importance of these relationships.
MLO3	3	Select the appropriate viscoelasticity model for the mechanical behaviour of a given biological tissue.
MLO4	4	Analyse the forces at skeletal joints and the stresses and strains in biological tissues, given the loading conditions and material properties.

## Module Content

Outline Syllabus	General characteristics, material properties, appropriate constitutive model, and adaptation potential for tissue and organs studied Musculoskeletal anatomy, basic statics and joint mechanics (elbow, shoulder, spine, hip, knee, ankle) Relationships between structure and function in tissues and the implications/ importance of these relationships Structure and function of tissues: liver, heart, lung, kidney tissues, fluid mechanics and modelling of blood flow through vessels Appropriate viscoelasticity model for the mechanical behaviour of a given biological tissue Introduction to viscoelasticity and comprehensive review, creep and stress behaviour Stresses and strains in biological tissues, given the loading conditions and material properties Stress and strains in various biological tissues, creep and stress relaxation behaviour for a basic viscoelastic material model Linear and angular kinematics Basic dynamics to human motion: review of linear and angular kinematics; kinetic equations of motion; work & energy methods; momentum methods. Application of biomechanics Application of biomechanics in physical education, sport medicine & rehabilitation.
Module Overview	
Additional Information	This module is part of the Level 6 of the BEng(Hons) in Biomedical Engineering

## Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Exam	Examination	70	2	MLO1, MLO2, MLO3
Report	Simulation	30	0	MLO4

## Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Katie Evans	Yes	N/A

**Partner Module Team**

Contact Name	Applies to all offerings	Offerings
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