

## Medical Robotics

### Module Information

2022.01, Approved

#### Summary Information

Module Code	6504ICBTBE
Formal Module Title	Medical Robotics
Owning School	Pharmacy & Biomolecular Sciences
Career	Undergraduate
Credits	10
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
Tutorial	9

#### Module Offering(s)

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

## Aims and Outcomes

Aims	To provide relevant knowledge in the field of medical robotics, both in terms of the contemporary use of surgical robots and the mathematical and computational theory behind them.
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**After completing the module the student should be able to:**

### Learning Outcomes

Code	Number	Description
MLO1	1	Analyse and identify different types of medical robots and their potential applications.
MLO2	2	Ability to apply concepts in kinematics, dynamics, and control relevant to medical robotics.
MLO3	3	Develop the analytical skills necessary to design and implement robotic assistance for both minimally invasive surgery.
MLO4	4	Analyse various roles that robotics can play in healthcare.

## Module Content

Outline Syllabus	Introduction to Medical Robotics Definitions; clinical background; evolution and history of medical robotics and applications. Kinematics of medical robots Segments of surgical manipulator; surgical tool positioning and joint position computation in surgical manipulators; computation of surgical manipulator tool point velocities and accelerations; surgical robot manipulator trajectory planning. Sensors and actuation of medical robots Sensors types in medical robots; actuation technologies utilized; robot control strategies used in medical robotic systems. Designing of medical robots Design considerations for medical robots; robot-assisted surgical systems and devices; function and advantages/ disadvantages of robot-assisted surgical systems; design features of current and future generations of medical robotic devices; safety standards of medical robotic systems
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, MLO3, MLO4
Report	Coursework Assignment	30	0	MLO2

## 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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