DMX7303 Control of Robotics Manipulators

Level	7
Course Code	DMX7303
Course Title	Control of Robotics Manipulators
Credit value	3
Core/Optional	Core
Course Aim	Aim of this course is to provide an overview into robotic manipulation, dynamics and control and be able to design manipulators in-line with design requirements.
Course Learning Outcomes (CLO):	At the completion of this course student will be able to: CLO1: Explain the importance of robotics applications in industry CLO2: Formulate and develop kinematic models for robotic manipulators. CLO3: Formulate differential motion with regard to robotic manipulators. CLO4: Examine and assess dynamics and static forces in robotic manipulators. CLO5: Generate trajectories based on various tasks. CLO6: Design appropriate controllers for different control scenarios of robotic manipulators. CLO7: Propose suitable designs of robotic manipulators in-line with design requirements.
Content	**Outline Syllabus:** Unit 01: Introduction to robotics Unit 02: Kinematic modeling of manipulators Unit 03: Differential motion Unit 04: Dynamic analysis Unit 05: Trajectory planning Unit 06: Linear control of robotic manipulators Unit 07: Manipulator mechanism design **Case study:** 1. Kinematic Modelling 2. Dynamic Modelling 3. Mini project 4. Mathematical simulation of a robotic manipulator **Mini Project :** Mini project based on robotic modelling and design