DMX5210 Vehicle Dynamics and Design of Automotive Components

Level	Level 5
Course Code	DMX5210
Course Title	Vehicle Dynamics and Design of Automotive Components
Credit value	2
Core/Optional	Optional
Course Aim/s	Aim of this course is to provide tools necessary to analyse dynamic behaviour of automobiles and design of automotive components.
Course Learning Outcomes (CLO):	At the completion of this course student will be able to: CLO1: Develop mathematical models to predict the dynamic response of vehicles. CLO2: Apply vehicle design performance criteria to evaluate dynamic response of a vehicle. CLO3: Identify suitable materials for automotive components. CLO4: Design moving parts of IC engines. CLO5: Design Auxiliary system components of automobiles.
Content	**Outline Syllabus:** Unit 01: Session 01: Resistances faced by vehicle Session 02: Directional Stability of vehicles Session 03: Vehicle ride and handling Session 04: Steady state cornering Session 05: Steering Dynamics of front wheel steered vehicles Session 06: Aerodynamics on performance of vehicles Session 07: Driveline dynamics of vehicles Session 08: Wheel alignment parameters Session 09: Quarter car model Unit 02 Session 10:Crashworthiness Session 11: Automotive structural design for crash safety Session 12: Design of Engine Cylinders Session 13: Design of Crank Shafts Session 14: Design of Gears Session15: Design of Clutch Session 16: Design of brakes **Laboratory work:** 1. Determination of the dynamic response of steering understeer and over steer 2. Perform aerodynamic analysis of a vehicle using CFD software 3. Modeling of suspension system