Liverpool John Moores University

Title:	VEHICLE SAFETY ENGINEERING
Status:	Definitive
Code:	**5503ICBTAE** (127059)
Version Start Date:	01-08-2021
Owning School/Faculty:	Engineering
Teaching School/Faculty:	ICBT, Colombo

Team	Leader
Alison Cotgrave	Y

Academic Level:	FHEQ5	**Credit Value:**	15	**Total Delivered Hours:**	80
Total Learning Hours:	150	**Private Study:**	70		

Delivery Options
Course typically offered: Semester 1 and Summer

Component	Contact Hours
Lecture	45
Off Site	6
Practical	12
Tutorial	15

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Practice	AS1	Practical/Workshop	30	
Exam	AS2	Exam	70	2

Aims

This module aims to provide a comprehensive understanding of the principles and technology relating to advanced motor vehicle, road and driver safety features. Further this aims to incorporate safety into the overall design and manufacture systems in automotive engineering and incorporate into conceptual design and development of safety systems for automobiles

Learning Outcomes

After completing the module the student should be able to:

1	Evaluate the evolution of the concept of vehicle safety and demonstrate a thorough understanding of the technical aspects of vehicle and road safety.
2	Describe the safety considerations pertaining to infrastructure design.
3	Qualitatively and quantitatively assess vehicle safety systems.
4	Analyse and discuss the relevance of driver behaviour and attitudes towards road safety and discuss the social and economic impacts of road accidents.

Learning Outcomes of Assessments

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

Practical/Workshop	2	3
Exam	1	4

Outline Syllabus

Introduction to transmission systems.
Clutch operation
Manual transmission
Torque converter
Automatic and CV transmission

Introduction to suspension systems.

Introduction to steering systems.
Geometries related to steering system
Wheel alignment
Self-centering action

Introduction braking systems.
Hydraulic brake system
Power assisted braking

Advanced Vehicle Design & Safety Features, evolution of vehicle safety,

Vehicle body designs

Vehicle chassis design for occupant safety and protection; vehicle safety testing and rating standards; advanced active and passive safety features; vehicle ergonomics; driving assistance, anti-collision and parking aid systems; dual control vehicles and simulation for driver training.

Driver Behaviour; Effects of driver behaviour towards road safety; effectiveness of

driver training and testing programmes; advanced and specialist driver training schemes; driver training simulation techniques.

Accident Analysis; causes and consequences of road accidents; types and frequency of collision; social and economic impacts of road accidents.

Transport & Infrastructure Safety; Road safety considerations; road design and safety considerations; surface profiles; safety markings and signage; safety divisions and barriers; environmental considerations; future developments. Road safety strategies.

Learning Activities

Students will be supported in their learning, to achieve the above learning outcomes, in the following ways:

By a series of lectures and tutorials and through participation for a group project

Self-managed investigative study to analyse cases related to business and economics

A recommended resource list - indicating key reading, internet support and physical learning assistance, is provided to help enable students to undertake self-directed study.

Notes

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