Liverpool John Moores University

Title:	AUTOMOTIVE PRODUCT DESIGN
Status:	Definitive
Code:	**6009TECH** (105326)
Version Start Date:	01-08-2016
Owning School/Faculty:	Electronics and Electrical Engineering
Teaching School/Faculty:	Electronics and Electrical Engineering

Team	Leader
Adam Papworth	Y

Academic Level:	FHEQ6	**Credit Value:**	24	**Total Delivered Hours:**	112
Total Learning Hours:	240	**Private Study:**	128		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Practical	88

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	AS1	Group Design Exercise 1	20	
Essay	AS2	Group Design Exercise 2	30	
Essay	AS3	Group Design Exercise 3	50	

Aims

The aim of this module is to allow students combine their technical knowledge of automobile technology and creative design skills through the design and development of products for automotive applications.

Learning Outcomes

After completing the module the student should be able to:

1 Use modern design methodology to progress a design from a brief specification to a solution.
2 Apply design procedures as prescribed by BS7000 Design Management Systems.
3 Apply relevant design quality tools.
4 Use a range of advanced and computerised design tools for automotive design.
5 Incorporate human factors in vehicle design.
6 Use standard automotive components to design vehicle systems.

Learning Outcomes of Assessments

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

CW	1	4	5	6		
CW	1	2	3	4	5	6
CW	1	2	3	4	5	6

Outline Syllabus

Design Management (BS7000), planning, monitoring and control, design review, life cycle costing, cost drivers, design optimisation, case studies.

Design quality, QFD, design FMEA, value engineering, value analysis.

Design of vehicle form-shape, performance, loading, load path visualisation, manufacture, cost, materials, environment, recycling issues.
Automotive design analysis – hand calculations, modelling, computational tools, choice of techniques, dynamic considerations, energy efficiency.
Ergonomics-man/machine interface.
Vehicle power units- ic engines, electrical, hydraulic, pneumatic devices.
Performance- life, cost considerations, safety considerations, maintenance.
Use of British and American standards.
Design for vehicle manufacture and assembly, use of state of the art materials and processes.
Hybrid vehicle technology.

Learning Activities

The deliver of this module will be through lectures and practical design sessions on automotive components and applications, dulminating in a structured design week, in both semesters, where students will focus on the development of their design project. The Formula Student Competition could form the basis of many design projects.

Notes

This module allows students to explore and investigate some area of automotive product design that is of particular interest to the students. This will culminate in a structured design week, in both semesters, where students will focus on the development of their design project. This may be an element of the Formula Student project.