

## Liverpool John Moores University

Title: AUTOMOTIVE SYSTEM DESIGN  
Status: Definitive  
Code: **5507ICBTAE** (127069)  
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:** 66  
**Total Learning Hours:** 150  
**Private Study:** 84

### Delivery Options

Course typically offered: S2 and Non Std S2 (S2 for Jan)

Component	Contact Hours
Lecture	45
Off Site	6
Tutorial	15

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Practice	AS1	Presentation and discussion (offsite)	30	
Report	AS2	Coursework (2500 words)	70	

### Aims

*This unit aims at the technical and management aspects of vehicle systems design focusing a design of components and parts, design of the assembly process and related knowledge areas. In addition, it emphasizes of the design of engines and engine performance, design of other automotive systems and accessories. The unit also aims the strategic management function in automobile design and development*

*process and expected to use standard management tools in decision making in the design process.*

## **Learning Outcomes**

After completing the module the student should be able to:

- 1 Identify knowledge on customer requirements in automobiles aiming at different strata of the society.
- 2 Develop specifications through systematic product design and development approach on automobile systems including engines, drive systems, body and structures and other functional systems and features.
- 3 Apply strategic management tools such as PESTEL, SWOT in designing and developing automobiles.
- 4 Use design features such as weighted objectives methods and other scoring methods as a design initiative.

## **Learning Outcomes of Assessments**

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

Presentation and discussion	1			
Coursework (2500 words)	2	3	4	

## **Outline Syllabus**

*The customer expectation in vehicles in different usages and socio-economic sectors, development of vehicle specifications, including engine and transmission specifications, fuel systems and fuel economy, safety and other requirements such as maintainability and sustainability*

*Strategic decision making, PESTEL analysis, SWOT analysis and scoring methods, weighted objective methods and other qualitative and quantitative methods in decision making in design and development on automobiles including the decisions on value adding.*

*Technical aspects of engine, body and the construction and operation of other systems in automobiles, design features and innovations as per the market requirements, design and manufacturing feasibility.*

*Use of materials, manufacturing processes with the emphasis of design and manufacture in a multi criteria decision making approach.*

*Basics of Operations management concepts; forecasting, lean concepts, supply chain, location planning etc. in design and development approach.*

*Use of computational tools including CAD in design of automotive systems.*

## **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 design project.

Self-managed investigative study to analyse cases related strategic decision making in vehicle systems design and development.

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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