

ES2D3-15 Motor Vehicle Technology

24/25

Department

School of Engineering

Level

Undergraduate Level 2

Module leader

Jonathan Saul

Credit value

15

Module duration

11 weeks

Assessment

40% coursework, 60% exam

Study location

University of Warwick main campus, Coventry

Description

Introductory description

ES2D3-15 Motor Vehicle Technology

[Module web page](#)

Module aims

To provide an understanding of the core concepts of motor vehicle technology.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

The module will introduce different vehicle classifications, including passenger vehicles, heavy-duty vehicles and motorcycles, and the associated structures. This will include an overview of the materials and subsequent manufacturing process utilised in vehicle structure, along with understanding the design process of components and structures.

Different propulsion units and drivetrains will be explored with special consideration for "Net Carbon Neutral" solutions mostly including, but not limited to, Pure Electric Vehicles. This includes the propulsion units, energy storage devices, power electronics and final drives, and associating

these systems to the different vehicle classifications and layouts.

Vehicle chassis systems include braking and steering, which are currently largely electro-mechanical systems, will be assessed, along with an overview of design considerations and the associated regulations for each of the systems.

Vehicles conform to certain safety requirements, both through mandatory regulations and optionally through standards (such as NCAP). Driver, passenger and pedestrian safety will be explored along with system and sub-system functional safety.

Learning outcomes

By the end of the module, students should be able to:

- Demonstrate improved skills of research and information gathering (C4, M4)
- Function effectively as a member or leader of a team (C16,M16)
- Evaluate modern motor vehicle life-cycles with the drive for Net Carbon Neutral solutions (C7,M7)
- Demonstrate and apply knowledge of motor vehicle systems and subsystems, including chassis, propulsion, powertrain and safety (C1, M1, C4, M4, C5, M5)
- Evaluate modern vehicle regulations and legislation (C1,M1,C4,M4,C5,M5,C13,C13)
- Demonstrate and apply knowledge of managing risks associated with electrical and/or electronic systems [ISO26262] (C8,M8)

Indicative reading list

"Fundamentals of Motor Vehicle Technology Book 1 Sixth Edition"

Authors: Alma Hilier & Nelson Thornes

Publisher: Nelson Thornes; 2 edition (17 Mar 2012)

ISBN-10: 1408515180 ISBN-13: 978-1408515181

"Fundamentals of Motorsport Engineering",

Author: Josh Smith

Publisher: Nelson Thornes (26 April 2013)

ISBN-10: 1408518082 ISBN-13: 978-1408518083

Subject specific skills

Knowledge and understanding of the need for a high level of professional and ethical conduct in engineering and the use of technical literature, other information sources including appropriate codes of practice and industry standards.

Transferable skills

Be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.

Communicate (written and oral; to technical and non-technical audiences) and work with others

Exercise initiative and personal responsibility, including time management, which may be as a team member or leader

Study

Study time

Type	Required
Lectures	28 sessions of 1 hour (19%)
Seminars	1 session of 2 hours (1%)
External visits	5 sessions of 1 hour (3%)
Other activity	2 hours (1%)
Private study	113 hours (75%)
Total	150 hours

Private study description

Self-study 113 hrs

Other activity description

2 x 1 hr revision class

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group D3

	Weighting	Study time
Group Written Report (15 pages)	40%	
Group Written Report, Including peer assessment		
Online Examination	60%	
Online examination: No Answerbook required		
Students may use a calculator		
Engineering Data Book 8th Edition		

Feedback on assessment

Formative and summative feedback provided via marksheets for assessed coursework.
Cohort level exam feedback provided via examiner's report for examination papers.

[Past exam papers for ES2D3](#)

Availability

Courses

This module is Core for:

- Year 2 of UESA-H335 BEng Automotive Engineering
- Year 2 of UESA-H336 MEng Automotive Engineering

This module is Optional for:

- Year 2 of UESA-H315 BEng Mechanical Engineering
- Year 2 of UESA-H605 Undergraduate Electrical and Electronic Engineering

This module is Option list A for:

- Year 2 of UESA-H63W BEng Electronic Engineering
- Year 2 of UESA-H113 BEng Engineering
- Year 2 of UESA-HN15 BEng Engineering Business Management
- Year 2 of UESA-HH35 BEng Systems Engineering
- UESA-H112 BSc Engineering
 - Year 2 of H112 Engineering
 - Year 2 of H112 Engineering
- Year 2 of UESA-HN11 BSc Engineering and Business Studies
- Year 2 of UESA-H63X MEng Electronic Engineering
- Year 2 of UESA-H114 MEng Engineering
- Year 2 of UESA-H316 MEng Mechanical Engineering
- UESA-HH31 MEng Systems Engineering
 - Year 2 of HH31 Systems Engineering
 - Year 2 of HH35 Systems Engineering
- Year 2 of UESA-H605 Undergraduate Electrical and Electronic Engineering
- Year 2 of UESA-H606 Undergraduate Electrical and Electronic Engineering MEng