

# WM991-30 Fundamentals of Automotive Research, Development and Management

**22/23**

**Department**

WMG

**Level**

Taught Postgraduate Level

**Module leader**

Valentina Donzella

**Credit value**

30

**Module duration**

1 week

**Assessment**

Multiple

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

Introductory module of the new "Smart Connected and Autonomous Vehicles" course. Content focusses on the motivations for the introduction of autonomy and intelligence in the automotive industry: safety, reduced human and economic losses, comfort, reduced environmental impact. The module introduces the overarching legislative and regulatory frameworks alongside organisational and strategic approaches of manufacturers in response to the problem. Furthermore, this module equips participants with fundamental knowledge of the automotive field, practical guidance on how to conduct an academically-sound and technically-sound research projects by exploring the key elements of good academic and research practice. It also provides a practical understanding of the major research methods and techniques used in technical project, project planning and business implications.

### Module aims

The module aims to equip students with the in-depth knowledge of the opportunities, challenges, trends and issues faced by the automotive industry. An understanding of the key drivers, players,

standards and road maps driving the industry along with the description of the key technical roles helping its transformation is explored. Methods pertaining to project management and operation strategies are applied to the specific context of the automotive industry maintaining academic and professional rigour.

## **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.

Introduction to the research process; Understanding and completing a literature review, focusing on the four key stages: searching, synthesising, evaluating and writing; Critical thinking; Project planning and management; Study skills to undertake a technical project; An introduction to the structure and form of an academic document and technical reports; Generating a Research Outline; key drivers, players, standards and road maps driving the industry; current opportunities, challenges, trends and issues faced by the automotive industry.

## **Learning outcomes**

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

- Critically evaluate real-world motivations and benefits for smart and automated transportation
- Understand and apply key critical thinking techniques and appropriate methods relevant to the academic writing process
- Demonstrate a critical understanding of project planning and operation strategies, risk and quality management and their application to the automotive context
- Generate independently a Research/Project Outline and Plan, including business implications

## **Interdisciplinary**

This module equips participants with practical guidance on how to conduct an academically-sound and technically-sound research project by exploring the key elements of good academic and research practice. It also provides a practical understanding of the major research methods and techniques used in project work along with the core concepts in developmental research and the related business aspects. Methods pertaining to project management and operation strategies are applied to the specific context of the automotive industry maintaining academic and professional rigour but are transverse to other disciplines.

## **Subject specific skills**

In the context of smart and automated transportation, students will develop the following specific skills:

Make appropriate use of academic and professional resources

Communicate ideas, principles and theories effectively in written form

Searching appropriate literary sources and databases for relevant information

Reading academic texts critically and effectively

Constructing and presenting bibliographies and references  
Developing an academic writing style  
Preparing and delivering presentations

## Transferable skills

Critical thinking: Recognise patterns, themes and key messages from sometimes confused and incomplete data		Make informed decisions on the value of a range of sources allowing an evidence-based conclusion based on this analysis				
Communication- Verbal: Communicate orally in a clear and sensitive manner which is appropriately varied according to different audiences		Written: Present arguments, knowledge and ideas, in a range of formats		Active listening: questioning, reflecting, summarising.		
Information literacy (research skills):		Critical awareness of how information is gathered, used, managed and synthesised.		Understanding of the relative value of different sources and the importance of provenance		The systematic collection, analysis and evaluation of information in the investigation of a topic.
Automation: Understands the benefits to the society, environment, automotive industry.						
Organisational awareness:		Understanding of business, government and third sector issues and priorities		Awareness of the responsibilities of organisations in society.		Understanding organisational norms of behaviour

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## Study

### Study time

Type	Required
Lectures	30 sessions of 1 hour (10%)
Project supervision	5 sessions of 1 hour (2%)
Other activity	145 hours (48%)
Assessment	122 hours (40%)
Total	302 hours

### Private study description

No private study requirements defined for this module.

### Other activity description

(15 hours) Group exercises and group presentations; Visit to facilities; guest lectures.

(130 hours) Under the direction of the project supervisor (hours highlighted above) the students will spend these hours as self-directed study to complete their literature review to be written as the final PMA (submitted 3-4 months after the end of the module)

## Costs

No further costs have been identified for this module.

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## Assessment

You do not need to pass all assessment components to pass the module.

### Assessment group A1

	<b>Weighting</b>	<b>Study time</b>
PMA	80%	80 hours
Critical literature review and project plan (submitted 34 weeks after the end of the module)		
Comparison of papers Academic writing and critical reading	10%	40 hours
In-module presentations (x2)	10%	2 hours

### Assessment group R1

	<b>Weighting</b>	<b>Study time</b>
PMA	100%	
Critical literature review and project plan		

## Feedback on assessment

Written detailed feedback on IMA and PMA (standard WMG format)

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## Availability

## Courses

This module is Core for:

- Year 1 of TESS-SP Short Programme