

# WM9D7-15 Sustainable Automotive Research

21/22

**Department**

WMG

**Level**

Taught Postgraduate Level

**Module leader**

Neill Raath

**Credit value**

15

**Module duration**

5 days

**Assessment**

100% coursework

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

Introductory module for Sustainable Materials Engineering course. The content will focus on the motivations for pursuing a policy of creating automobiles in a sustainable manner, mainly stemming from the 2015 Paris Agreement. The module will also introduce the "target zero" emissions policy in terms of zero CO2 tailpipe emissions and zero CO2 materials and component production.

The module then introduces the overarching legislative and regulatory frameworks alongside organisational and strategic approaches of manufacturers in response to the problem.

### Module aims

The module aims to equip students with in-depth knowledge and understanding of the opportunities, challenges and issues faced by the automotive industry in relation to sustainable automotive production.

The module aims to allow the students to develop fundamental knowledge of conducting academically-sound and technically-sound research projects through exploring key elements of good academic and research practice. Good industrial research is also developed through

rigorous competitor strategy benchmarking.

## 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.

Project planning and management. Study skills to undertake a technical project. Understanding and completing a literature review. An introduction to the structure and form of an academic document and technical reports. Generating a research outline; taking into account key drivers for sustainability, players, standards and road maps driving the industry in terms of sustainability; 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 automotive production within the context of the current global climate challenge, with regards to the 2015 Paris Agreement.
- Evaluate and critically analyse the target of zero tailpipe emissions in terms of powertrain technology and its impact on vehicle engineering.
- Evaluate and critically analyse the target of zero CO<sub>2</sub>e materials and component production in terms of material provenance, circular economy, extended component life and recyclability & reusability.
- Systematically search, critique and evaluate academic literature appropriate to the subject matter
- Evaluate and critique strategies employed by automotive manufacturers for new product development to meet customer and legislative demands in terms of technology, materials and implementation strategy.

## Indicative reading list

Operations Strategy, N. Slack and M. Lewis. Pearson, 2017. ISBN: 9781292162492

Research methodology: a step-by-step guide for beginners, R. Kumar. SAGE, 2019. ISBN: 9781526449900

Evaluating research articles from start to finish, E.R. Girden and R. Kabacoff. SAGE, 2011. ISBN: 9781412974462

Research methods in education, L. Cohen, L. Manion and K. Morrison. Taylor & Francis Group, 2018. ISBN: 9781138209886

How To Research, L. Blaxter, C. Hughes and M. Tight. McGraw-Hill, 2010. ISBN: 9780335238699

## Subject specific skills

The module will develop the following subject specific skills: Effective searching of appropriate literary sources and databases for relevant information. Critical reading of academic texts.

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

## Transferable skills

Collaborative working, Critical thinking and analysis, Academic writing skills, Systematic collection, analysis and evaluation of information in the investigation of a topic, Compliance with legislation and codes, but be able to seek improvements, An understanding of technical governance and quality management.

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## Study

### Study time

Type	Required
Lectures	25 sessions of 1 hour (17%)
Seminars	3 sessions of 1 hour (2%)
Tutorials	2 sessions of 1 hour (1%)
Supervised practical classes	5 sessions of 1 hour (3%)
Online learning (independent)	20 sessions of 1 hour (13%)
Assessment	95 hours (63%)
Total	150 hours

### Private study description

No private study requirements defined for this 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 A

	Weighting	Study time	Eligible for self-certification
Assessment component			
Post-module Assessment	80%	90 hours	Yes (extension)

	<b>Weighting</b>	<b>Study time</b>	<b>Eligible for self-certification</b>
Critical literature review and project plan			

Reassessment component is the same

Assessment component

In-module Assessment	20%	5 hours	No
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Critical review of sustainability strategies and project management in the automotive industry.

Reassessment component is the same

## Feedback on assessment

Written feedback, of approximately 300 - 400 words, will be provided 4 weeks after the date of submission. The feedback will be focussed on the strengths and weaknesses of the work with regards to the module learning objectives and the post module assessment marking guidelines. Suggestions for improvement will also be provided.

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## Availability

There is currently no information about the courses for which this module is core or optional.