



[Your Portal](#) [Your Course](#) [Email PM Voyager](#) [Search](#) [Help](#) [Logout](#)

[Learning Resources](#) [Support](#) [Social](#) [News & Info.](#) [Learning & Information Services](#)
[Technical Support](#)

Definitive Module Document (DMD)

[Back](#)

[Module Info](#) > DMD

Module Code:MAAD0029

Title of Module

Full Title: Automotive Body Materials & Manufacture

Short Title: Auto Body Matls

MODULE

MAAD0029 (A 05/6)

Automotive Body Mate...

- [Module Homepage](#)
- [Module News](#)
- [Module Information](#)
- [Teaching Resources](#)
- [Learning Resources](#)

Search Website

Version: 1

Credit Points: 15

Level / ECTS Level: M

First Offered: 26/9/2005 00-00-00

6. Home Department:

AAD

7. Departments(s) contributing to teaching:

9. Module Aims:

- be able to make appropriate choices of the materials and processes as part of the vehicle body design process

10a. Learning Outcomes: Knowledge and Understanding:

be able to identify and specify the principal materials and processes used in vehicle body manufacturing

- understand the properties and service requirements of automotive body materials and the reasons for their selection.

- have knowledge of developing materials and technologies for vehicle body manufacture

10b. Learning Outcomes: Skills and Attributes:

- be able to identify, assess and select materials and processes for a variety of automotive applications

- be able to evaluate the external influences on the vehicle body manufacturing process

- be able to effectively plan their work and communicate the resulting information, whether it be individual or group work

11. Module Content

11a Module Content:

This module aims to enable students to make appropriate choices of the materials and processes as part of the vehicle body design process.

It covers the materials and processes used to manufacture vehicle bodies. Apart from the conventional sheet steel monocoque design for high volume vehicle body manufacture, both low volume and future scenarios are considered (aluminium and polymer-composite designs, steel structures using recent processes such as tailored blanks, hydroforming, etc.).

11b. Further details on how the learning outcomes of the module will be achieved:

The intended learning outcomes are facilitated through a combination of approaches to learning and teaching, typically this will include lectures, tutorials, group work and a group assignment. These activities will be supported by the module team and by encouraging the students to access a variety of resources, eg StudyNet, electronic databases, relevant professional and academic text and cases and journals.

Current and future materials for automotive construction are discussed - steels, aluminium alloys and magnesium alloys (types, properties, applications, case studies). The development of engineering polymers and composites for automotive applications are introduced. Materials selection criteria and current climate with regard to steel, aluminium and polymers are discussed, enabling the student to choose the most appropriate material for the application.

Automotive forming methods are considered, initially those used for strip steels for high volume applications (pressing and stamping processes, and factors influencing formability). Formability tests and assessment techniques are also covered. Alternative forming technologies are introduced (hydroforming, tailored blanks, extrusion, die casting, moulding of plastics and composites, etc.), allowing an insight into future developments.

Joining methods are also covered, concentrating on the principal processes used in the high volume automotive industry (resistance spot welding, clinching, adhesive bonding, self-piercing riveting, etc.). Alternative and newer technologies are also considered (laser welding, adhesive bonding, pierce riveting, spot clinching, etc.- types, advantages and disadvantages, applications, etc.)

Corrosion and finishing of vehicle bodies is considered (corrosion concepts, corrosion protection methods, designing against corrosion, metallic and organic coating processes, product choice, assessment of the performance of coated steels, etc.). Developing coatings are also considered (in conversion coating processes, paint technology and trim). Implications of alternative materials on surface coating technology are discussed.

Recycling of both present and future automotive materials are considered, covering recycling methods, economic considerations, legislation, the implications of alternative materials on automotive recyclability, etc. Automotive design for the recycling of current and future material is introduced.

12. Language of Delivery:

English

13. Language of Assessment:

English

14. Assessment Details (Academic):

Coursework: 50

Exam: 50

Other:

Assessment Notes:

In-course assessments typically will consist of-

- Group case-study work (100%)

The successful candidates would be expected to pass the exam element and pass overall.

Each Assessment satisfies a selection of the learning outcomes.

15. Locations(s):

UH HATFIELD

16. Pre and Co-Requisite:

Pre-Requisite

Co-Req

Prohibited

17. Subject Board of Examiner/s:**18. Comments**

[Disclaimer](#)
[Terms and Conditions](#)

Copyright (C) 2006 University of Hertfordshire.