

Liverpool John Moores University

Title: MOTORSPORT TECHNOLOGY
Status: Definitive
Code: **5011TECH** (105306)
Version Start Date: 01-08-2011

Owning School/Faculty: Engineering
Teaching School/Faculty: Engineering

Team	Leader
Keith Metcalfe	Y

Academic Level: FHEQ5 **Credit Value:** 12.00 **Total Delivered Hours:** 30.00
Total Learning Hours: 120 **Private Study:** 90

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	20.000
Practical	10.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	AS1	Vehicle set-up exercise	25.0	
Essay	AS2	Car body development exercise	30.0	
Essay	AS3	Engine performance laboratory	30.0	
Essay	AS4	Motorsport materials assignment	15.0	

Aims

The aim of this module is to develop the students understanding of automotive technology introduced in ENRCT1015 Investigating Automotive Technology, with an emphasis on applications in motor sport.

Learning Outcomes

After completing the module the student should be able to:

- 1 Identify and understand the principles of vehicle components that affect handling.
- 2 Understand the application of aerodynamic features added to a sports car.
- 3 Test, analyse and tune an engine for race conditions.
- 4 Identify a range of modern materials found in motor sport components and understand how they improve performance.

Learning Outcomes of Assessments

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

CW	1
CW	2
CW	3
CW	4

Outline Syllabus

Handling components: Springs; dampers; camber; braking systems; gearboxes; fuel systems. Performance suspension, design performance, modelling and testing; performance wheels, tyres and hubs, minimising rolling resistance.

Aerodynamics: Basic aerodynamic components such as airfoils, wings, slots, dams, spoilers and fairings are studied with basic fluid flow analysis and wind tunnels experiments to optimise racecar aerodynamics.

Engines: Adv engine design; performance, analysis and tuning; engine test rigs, advanced power train technology.

Data logging and Analysis:

Acquiring and recording qualitative and quantitative track data weights, fuel. Fuel consumption; tyres; tyre pressure; tyre temperature, track temperature and set up data; analysis of data to determine actions to improve vehicle performance.

Structures: Advance materials and design to resist high temperatures; minimise vehicle mass and improve stiffness, geometry, joints and joining, safety factors; collision and rolling.

Learning Activities

Students will attend lectures and practicals. They will also experience the vehicle set-up factors that affect vehicle performance during practical workshops.

References

Course Material	Book
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Author	Paul Haney, Jeff Braun
Publishing Year	1995
Title	Inside Racing Technology: Discussions of Racing Technical Topics
Subtitle	
Edition	
Publisher	Motorbooks Intl
ISBN	10: 0964641402

Course Material	Book
Author	John H. Glimmerveen
Publishing Year	2004
Title	Hands-on Race Car Engineer
Subtitle	
Edition	
Publisher	American Society for Testing & Materials
ISBN	10: 0768008980

Course Material	Book
Author	Alan Henry
Publishing Year	1993
Title	The Quest for Speed: Modern Racing Car Design and Technology
Subtitle	
Edition	
Publisher	J H Haynes & Co Ltd
ISBN	10: 1852604379

Notes

The lectures will be supported by practical, workshop based activities and laboratory experiments.