PRIFYSGOL glyndŵr UNIVERSITY

MODULE SPECIFICATION FORM

Module Title:	**Motorsport Electronics and Systems**	Level:	**4**	Cedit Value:	**10**

Module code: (if known)	**ENG450**	Cost Centre:	**GAME**	JACS2 code:	**H330**

Semester(s) in which to be offered:	**1**	With effect from:	**July 2015**

Office use only: To be completed by AQSU:	Date approved: July 2015 Date revised: Version No: 1

Existing/New: **Existing**	Title of module being replaced (if any): N/A

Originating Academic area:	**Engineering and Applied Physics**	Module Leader:	**N. Burdon**

Module duration (total hours)	100	Status: core/option/elective (identify programme where appropriate):	**Free-standing 10-credit component comprising first half of ENG465 (Performance Car Systems).**
Scheduled learning and teaching hours	36		
Independent study hours	64		
Placement hours	0		

Percentage taught by Subjects other than originating Subject (please name other Subjects):	**0%**

Programme(s) in which to be offered: **Enginering European Programme** (Non Award Bearing)	Pre-requisites per programme (between levels):	**None**

Module Aims:

To develop an applied understanding of automotive electronics and control systems which are now integral to modern motor vehicles and, in particular, competitive high-performance vehicles.

Expected Learning Outcomes

Knowledge and Understanding:

At the completion of this module, the student should be able to:

1. Explain the role of electrical and electronic systems in a modern motor vehicle.
2. Demonstrate an understanding of sensor technology, signal conditioning and information technology relevant to automotive electrical and electronic systems.
3. Describe methods of performance data collection, organisation and analysis in a motorsport context. *(KS 5)*

Key skills for employability

1. Written, oral and media communication skills,
2. Leadership, team working and networking skills
3. Opportunity, creativity and problem solving skills
4. Information technology skills and digital literacy
5. Information management skills
6. Research skills
7. Intercultural and sustainability skills
8. Career management skills
9. Learning to learn (managing personal and professional development, self management)
10. Numeracy

Assessment:
Please indicate the type(s) of assessment (eg examination, oral, coursework, project) and the weighting of each (%). ***Details of indicative assessment should also be included****.*

Assessment is 100% in-course. The assessment is is by means of practical investigations presented as a single portfolio to cover all outcomes. (This corresponds to Assessement 2 of the 20 credit module ENG465)

For example, the use of specific computer-based data acquisition and analysis software, directly obtained from an operating vehicle, can be used to analyse the performance of an engine.

Assessment number (use as appropriate)	Learning Outcomes to be met	Type of assessment	Weighting	Duration (if exam)	Word count (if coursework)
Assessment One:	1, 2, 3	Portfolio	100%		1,500

Learning and Teaching Strategies:

The module will be presented to the students through lectures, tutorials, practical demonstrations and student-driven investigative work assisted by programmed access to computer based data analysis hardware and software.

Syllabus outline:

Electrical & electronic systems: An applied overview of modern vehicle electrical systems and electronic systems.
Management systems: Engine and vehicle management systems.
Sensors and signals: Functional consideration of measurement systems including sensors, signal conditioning and information technology and remote monitoring.
Data acquisition systems: Data collection, collation and analysis, data logging and interpretation.

Bibliography

Essential Reading
Parr, E.A. (2011) *Hydraulics & Pneumatics: A technician's and engineer's guide*, 3rd Edn., Butterworth-Heinemann Ltd.
Denton T (2004); *Automobile Electrical and Electronic Systems, 3rd Ed*; Butterworth-Heinemann Ltd

Recommended Reading
Bosch R, Gmbh (Author) (2004); *Automotive Electrics/Automotive Electronics, 4th Edn* (Bosch Handbooks (Rep)); Professional Engineering Publishing;
Gao Y, Gay S E, Emadi A, Ehsani M (2004);*Modern Electronic Hybrid Electric and Fuel Cell Vehicles: Fundamentals, Theory and Design*; CRC Press Inc.
Ribbens W B, Mansour N P (2003); *Understanding Automotive Electronics*; 6th Edn; Newnes
Martin V D (2000); *Automotive Electrical Systems*; Butterworth and Heineman