

**PROGRAMME SPECIFICATION**

for the award of

**BEng Motorsport Technology**

**Managed by the Faculty of Technology Design & Environment**

**Brooklands College**

|   |                |
|---|----------------|
| <b>Date approved:</b>                           | September 2015 |
| <b>Applies to students commencing study in:</b> | September 2020 |

**RECORD OF UPDATES**

| <b>Date amended</b> | <b>Nature of amendment</b>                          | <b>Reason for amendment</b>  |
|---------------------|---|--|
| <b>02/08/2017</b>   | <b>Update from old template</b>                     | <b>Required for updated template</b>                                   |
| <b>14/01/2019</b>   | <b>Change of course Award from BSc to BEng Hons</b> | <b>Required for major/minor changes of award type from BSc to BEng</b> |
| <b>15/09/2020</b>   | <b>Change of modules</b>                            | <b>To match already validated equivalent degree at Oxford Brookes</b>  |

Approved at Faculty Exec. 14<sup>th</sup> December 2019

## SECTION 1: GENERAL INFORMATION

|  |   |
|--|---|
| <b>Awarding body:</b>  | Oxford Brookes University   |
| <b>Teaching institution and location:</b>                          | Brooklands College, Weybridge, Surrey   |
| <b>Language of study:</b>  | English   |
| <b>Final award/s:</b>  | BEng (Honours)  |
| <b>Programme title:</b>  | Motorsport Technology   |
| <b>Interim exit awards and award titles available:</b>             | BEng Ordinary degree  |
| <b>Brookes course code:</b>  | BENGH-AG-C  |
| <b>UCAS code:</b>  | H331  |
| <b>JACS code:</b>  | H300  |
| <b>HECoS code:</b>   | 100206 (Motorsport)   |
| <b>Mode of delivery:</b><br>(Mode of Study given in brackets)      | Face to face/on-campus (full-time)<br>Face to face/on-campus (part-time)  |
| <b>Duration of study:</b>  | 1 year full time (max 4 years from first registering)<br>2 years part time (max 4 years from first registering)   |
| <b>Subject benchmark statement/s which apply to the programme:</b> | QAA Engineering benchmark (2019):<br><a href="https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-engineering.pdf?sfvrsn=1f2c881_4">https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-engineering.pdf?sfvrsn=1f2c881_4</a><br><br>Engineering Council UK-SPEC (third edition, 2014):<br><a href="http://www.engc.org.uk/ukspec.aspx">http://www.engc.org.uk/ukspec.aspx</a> |
| <b>Professional accreditation attached to the programme:</b>       | IMechE – Institution of Mechanical Engineers<br><a href="http://www.imeche.org/">http://www.imeche.org/</a>   |
| <b>Apprenticeship Standard:</b>                                    | N/A   |
| <b>University Regulations:</b>                                     | The programme conforms to the University Regulations for the year of entry as published/archived at:<br><a href="http://www.brookes.ac.uk/regulations/">http://www.brookes.ac.uk/regulations/</a>   |

## **SECTION 2: WHY STUDY THIS PROGRAMME?**

This course is a one year top-up programme designed to enable students from Foundation Degrees (Engineering) in an appropriate Engineering subject, or equivalent, to obtain a BEng (Hons) in Motorsport Technology.

It has been developed within the Oxford Brookes University Modular Course and has a large project element so that students can tailor their course to the needs of industry. In addition the part-time mode has been designed so that students can continue to work whilst studying for their degree.

The programme will utilise its facilities to provide students with the same opportunities as those on the same course offered at Oxford Brookes University. Cohort size will follow a similar pattern to that of the in-house FdEng course and will allow natural progression in a familiar environment to that of the previous course studied.

Local employers such as MCLAREN F1 will be contacted to ensure the programmes relevance to industry and that the facilities, software and equipment is to the correct standards.

Graduates from the course will have a range of skills and knowledge to help them progress into the workplace or onto a higher degree course.

The principal aim of this course is to provide an education in motorsport technology, producing graduates who have the necessary range of skills and depth of understanding to successfully pursue careers as engineers working in the industry.

A distinguishing feature of this Course is its practical and applied motorsport emphasis, which it derives from industries local to the College and the expertise of the staff. Graduates of the course should be able to work effectively in industry as part of design, development or research teams with the skills necessary to turn concepts into drawings and through to the manufacturing and assembly processes.

## **SECTION 3: PROGRAMME LEARNING OUTCOMES**

On successful completion of the programme, graduates will demonstrate the following Brookes Attributes:

### **3.1 ACADEMIC LITERACY**

- 3.1.1: The application of basic IT, computing and mathematical tools, including physical relationships, that are fundamental to the design and modelling of motorsport engineering structures and components.
- 3.1.2: The ability to apply basic engineering principles and the ability to work with analytic techniques for problem modelling and simulation.
- 3.1.3: Creative participation in the “Engineering Design Process”, at both the conceptual and detail levels.
- 3.1.4: Knowledge of manufacturing processes and the application of computers to manufacturing of motorsport components and assemblies including disassembly.
- 3.1.5: An understanding of good engineering practice and the properties, behaviour, fabrication and use of relevant materials and components in the Motorsport Industry.
- 3.1.6: The ability to apply scientific and engineering principles to the solution of practical problems of Motorsport systems and processes, with an appreciation and basic understanding of the relevant theory and analysis
- 3.1.7: The ability to apply knowledge in order to analyse data and solve problems in a logical, practical and concise manner.

### **3.2 RESEARCH LITERACY**

- 3.2.1: The ability to learn independently and apply that skill in order to extend the subject knowledge base or apply acquired knowledge to novel situations in Motorsport Engineering.

### **3.3 CRITICAL SELF-AWARENESS AND PERSONAL LITERACY**

- 3.3.1: The ability to develop and use interpersonal communication, presentation and team working skills along with various other enterprise skills.
- 3.3.2: Organisational skills at both the personal level and in the areas of project management and the management of human resources.
- 3.3.3: The ability to communicate effectively using a range of personal presentation skills and techniques.
- 3.3.4: The ability to self-manage and organise their work including the ability to organise, use and present information in a clear, logical and concise manner.

### **3.4 DIGITAL AND INFORMATION LITERACY**

- 3.4.1: The use and management of information technology within a Motorsport design environment.
- 3.4.2: An understanding of a broad range of appropriate information technology skills and their application within a technical or commercial environment.
- 3.4.3: The ability to work with and use models that simulate the behaviour of the physical world from which performance can be reliably predicted.
- 3.4.4: The ability to communicate effectively using traditional graphical techniques, reports, presentations and IT tools.

### **3.5 ACTIVE CITIZENSHIP**

- 3.5.1: An understanding of critical factors in both the national and international Motorsport Technology business environment such as marketing skills and financial awareness.

## **PROGRAM LEARNING OUTCOMES MAPPING**

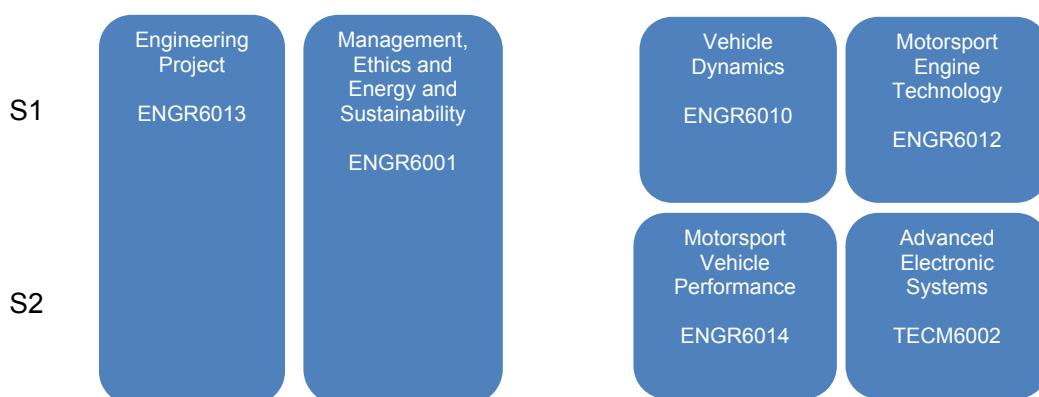
| <b>Program Learning Outcome</b>                      | <b>ENGR6001: Management, Ethics, Energy and Sustainability</b> | <b>ENGR6010: Vehicle Dynamics</b> | <b>ENGR6012: Motorsport Engine Technology</b> | <b>ENGR6013: Engineering Project</b> | <b>ENGR6014: Motorsport Vehicle Performance</b> | <b>TECM6002: Advanced Electronic Systems</b> |
|--|--|-----------------------------------|---|--------------------------------------|---|--|
| <b>Academic literacy</b>                             |  |                                   |   |                                      |   |  |
| 3.1.1  |  | ✓                                 | ✓   |                                      | ✓   |  |
| 3.1.2  |  | ✓                                 | ✓   | ✓                                    | ✓   |  |
| 3.1.3  |  |                                   |   | ✓                                    |   | ✓  |
| 3.1.4  | ✓  |                                   |   |                                      |   |  |
| 3.1.5  |  |                                   |   | ✓                                    |   |  |
| 3.1.6  |  | ✓                                 | ✓   | ✓                                    | ✓   | ✓  |
| 3.1.7  |  | ✓                                 | ✓   |                                      | ✓   |  |
| <b>Research literacy</b>                             |  |                                   |   |                                      |   |  |
| 3.2.1  | ✓  |                                   |   | ✓                                    | ✓   | ✓  |
| <b>Critical self-awareness and personal literacy</b> |  |                                   |   |                                      |   |  |
| 3.3.1  | ✓  | ✓                                 |   | ✓                                    |   | ✓  |
| 3.3.2  | ✓  |                                   |   | ✓                                    |   |  |
| 3.3.3  | ✓  |                                   |   | ✓                                    |   |  |
| 3.3.4  | ✓  | ✓                                 | ✓   | ✓                                    | ✓   | ✓  |
| <b>Digital and information literacy</b>              |  |                                   |   |                                      |   |  |
| 3.4.1  | ✓  | ✓                                 | ✓   | ✓                                    | ✓   | ✓  |
| 3.4.2  |  | ✓                                 |   | ✓                                    | ✓   |  |
| 3.4.3  |  | ✓                                 | ✓   | ✓                                    | ✓   |  |
| 3.4.4  | ✓  | ✓                                 | ✓   | ✓                                    | ✓   |  |
| <b>Active citizenship</b>                            |  |                                   |   |                                      |   |  |
| 3.5.1  | ✓  |                                   |   | ✓                                    |   |  |

## SECTION 4: CURRICULUM CONTENT & STRUCTURE

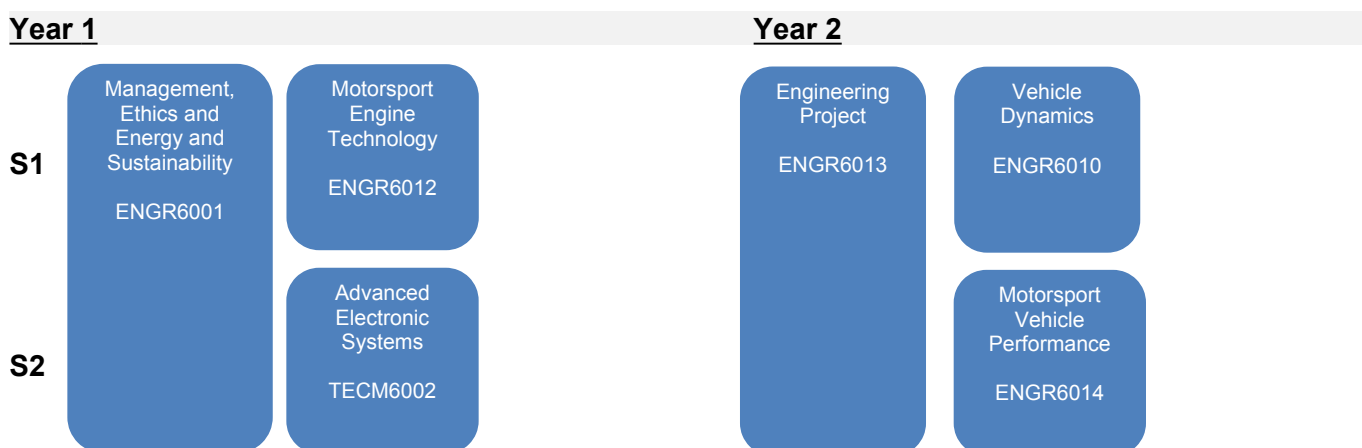
### 4.1 PROGRAMME STRUCTURE AND REQUIREMENTS:

| Code     | Module Title                                  | Credits | Level | Status     | Coursework (CW):<br>Exam ratio |
|----------|---|---------|-------|------------|--------------------------------|
| ENGR6001 | Management, Ethics, Energy and Sustainability | 30      | 6     | compulsory | 50% CW / 50% Exam              |
| ENGR6010 | Vehicle Dynamics                              | 15      | 6     | compulsory | 100% CW                        |
| ENGR6012 | Motorsport Engine Technology                  | 15      | 6     | compulsory | 30% CW / 70% Exam              |
| ENGR6013 | Engineering Project                           | 30      | 6     | compulsory | 100% CW                        |
| ENGR6014 | Motorsport Vehicle Performance                | 15      | 6     | compulsory | 100% CW                        |
| TECM6002 | Advanced Electronic Systems                   | 15      | 6     | compulsory | 100% CW                        |

The structure of the full-time course is shown by the following subject diagram:



The structure for the 2 years part-time course is shown by the following diagram:



### 4.2 PROGRESSION AND AWARD REQUIREMENTS

To qualify for a BEng in Motorsport Technology Ordinary Degree (without honours) a student must pass the equivalent of 90 modules credits from the modules listed in Section 4.1. A BEng (without Honours) is a non-classified degree.

### **4.3 PROFESSIONAL REQUIREMENTS**

In addition to the requirement that the learning outcomes meet the graduate attributes of the university, they must also meet the requirements of UK-SPEC, as a requirement of the accrediting bodies.

All modules are compulsory and must be passed for accreditation. In order to demonstrate that they have met the learning outcomes required by the accrediting bodies, students must earn a minimum mark of 30% in both coursework and exam components.

# **SECTION 5: TEACHING AND ASSESSMENT**

## **COURSE DESIGN AND STRUCTURE**

A fundamental philosophy guiding the design of the course is that teaching and learning takes place among a community of students and lecturers together seeking to pass on the principles, skills and knowledge associated with the profession of engineering. In this vein every effort is made to integrate subject material and show its use, effect and application across the course.

The course is broadly divided into 'synthesis' modules and 'analysis' modules. 'Synthesis' is experienced in the two double modules ENGR6013 and ENGR6001. In ENGR6013 (Engineering Project) students undertake a major engineering investigation into a topic of their choice, which is focused on a Motorsport Engineering-related problem. Whatever area is studied the project is a culmination of students' studies where they bring knowledge and understanding gained elsewhere to solve a major topic of interest to them. The second 'synthesis' module, ENGR6001, develops the areas of Project Management, Ethics, Energy, Product and Sustainability, teaching students to be able to produce solutions to problems in these areas.

The remaining four modules offer topics in the 'analysis' area. These four modules are carefully selected for students studying towards Incorporated Engineer status in Motorsport Engineering, with a focus on Motorsport technology so that students can specialise in this area.

## **CONTACT TIME AND STUDENT EFFORT**

Each single undergraduate module is 150 hours of effort. Modules typically consist of 36 hours contact time and are delivered using a mixture of lectures, tutorial/seminar sessions and laboratories. A student can expect to undertake approximately 114 hours of independent work per single module. In any given week a student's contact time may vary because of scheduled laboratory sets. The use and distribution of laboratory work varies significantly between modules and module levels on the programme and is allocated as appropriate by the subject specialist in each area.

Self-study typically consists of solving tutorial problems, writing laboratory reports or group meetings. The strategy for assessment of the learning outcomes is described in each module syllabus where the balance between analytic, design and creative skills as well as personal development and professional skills is outlined.

The assessment strategy is guided by "Brookes Assessment Compact" and details may be found at: <http://www.brookes.ac.uk/aske/brookes--assessment-compact/>

Module assessment has been designed with a division between examination and coursework that suits the subject and the module learning outcomes. All assessment is designed to be aligned with module learning outcomes and the combination of learning outcomes and individual modules combines to provide the graduate attributes for the subject.

Typically, undergraduate examinations last two hours. Coursework assignments are wide-ranging and invariably challenging, making use of strategies such as:

1. Poster presentations and Oral presentations
2. Reports, Essays and other Descriptive Explanation
3. Short automotive-based design studies and feasibility studies
4. Problem sheets
5. Class tests
6. Written submissions of laboratory work and practical assessment of laboratory skills
7. Detailed reports of extended laboratory exercises (mini-projects)



## **SECTION 6: ADMISSION TO THE PROGRAMME**

### **6.1 ENTRY REQUIREMENTS**

Entry onto the top-up year requires successful completion of a Foundation Degree in Engineering at one of Oxford Brookes' partner colleges, which must include Mathematics at Level 5. Foundation Degrees from other Universities or Colleges may be admitted if their modules are equivalent and considered of a suitable standard.

Other qualifications, such as HND, deemed equivalent by the University will be considered on a case-by-case basis.

### **ENGLISH LANGUAGE REQUIREMENTS**

Applicants whose first language is not English must also demonstrate that their level of English is acceptable, by achieving a score in a recognised test such as British Council IELTS (normally minimum Level 6.0 overall with a minimum of 6.0 in reading and writing, 5.5 in listening and speaking).

The University's English language requirements can be found at <http://www.brookes.ac.uk/international/how-to-apply/undergraduate/undergraduate-entry-requirements/>

### **6.2 DBS AND OTHER PRE-COURSE CHECKS REQUIRED**

N/A

### **6.3 JOB ROLE/EMPLOYER PROFILE (DEGREE AND HIGHER APPRENTICESHIPS)**

N/A

## **SECTION 7: PREPARATION FOR EMPLOYMENT**

The College has developed close links with many employers through work experience placements. In addition the School of Engineering Computing and Mathematics (ECM) has run successful employer events such as industrial training and promotional enterprises. Throughout the year the School may have visiting speakers as part of an "Industrial Lecture Series" to which students are invited to attend.

Brooklands College has a Careers Service for anyone who wants advice on identifying and creating a career plan that is right for you. To book a one to one appointment please email: [careers@brooklands.ac.uk](mailto:careers@brooklands.ac.uk)