# MODULE SPECIFICATION

| Part 1: Information | | | |
|---|---|---|---|
| Module Title | Drives and Motion | | |
| Module Code | UFMFJ8-15-2 | Level | Level 5 |
| For implementation from | 2019-20 | | |
| UWE Credit Rating | 15 | ECTS Credit Rating | 7.5 |
| Faculty | Faculty of Environment & Technology | Field | Engineering, Design and Mathematics |
| Department | FET Dept of Engin Design & Mathematics | | |
| Module type: | Standard | | |
| Pre-requisites | Electrical and Electronic Principles B 2019-20, Practical Electronics 2019-20 | | |
| Excluded Combinations | None | | |
| Co- requisites | None | | |
| Module Entry requirements | None | | |

## Part 2: Description

**Educational Aims:** In addition to the learning outcomes the educational experience may develop through practise but not formally discretely assess self-management skills and working with others.

**Outline Syllabus:** The syllabus includes:

Concept of Electrical Drives,

Dynamics of Electrical Drives

Modern Electrical Drives

Modulation Techniques for Power Electronic Converters

Current Control of Loads

Drive Principles

Characteristics of AC and DC Motors

Stepper Motors

Starting of AC and DC Motors

Electrical Braking

Commonly used concepts of Modelling and Control of AC and DC Motors

Control of Induction and Synchronous Machine Drives

Switched Reluctance Drive Systems

**Teaching and Learning Methods:** Concepts and the scope of a particular topic will be introduced in lectures, supported by directed reading and simulation laboratory based work. The labs sessions will enhance the understanding of students of real-world applications of the material delivered in the module. The students will learn through applying a variety of analysis methods, mathematical and simulation tools to design drive systems.

Relevant ethical issues will be highlighted and students will be encouraged to consider these further through directed reading.

In addition to 36 hours of scheduled contact, students will be expected to spend (typically) 114 hours in independent study, preparation for classes, assimilation of knowledge, skills development and completion of assessments.

Scheduled learning includes lecture and practical classes.

Independent learning includes hours engaged with essential reading, assignment preparation and completion, etc. These sessions constitute an average time per level.

Contact Hours:

Scheduled contact = 36 hours

Scheduled contact will take the form of whole group lectures and lab-based practical sessions.

**Part 3: Assessment**

The assessment consists of an end of module examination and an individual assignment.

The strategy has been chosen to ensure that fundamental engineering principles are assessed under controlled conditions, while a more open ended research based assignment is used to encourage wider engagement and reflection on this topic.

The assignment task involves research, design and evaluation and so takes a student through the design process and integrates the skills of an electronic engineer. Students are required to test their designs and communicate the findings of their research in a written report.

| First Sit Components | **Final Assessment** | **Element weighting** | **Description** |
|---|---|---|---|
| Report - Component B | | 50 % | Report |
| Examination - Component A | ✓ | 50 % | Examination (3 hours) |

| Resit Components | Final Assessment | Element weighting | Description |
|---|---|---|---|
| Report - Component B | | 50 % | Report |
| Examination - Component A | ✓ | 50 % | Examination (3 hours) |

**Part 4: Teaching and Learning Methods**

Learning Outcomes

On successful completion of this module students will achieve the following learning outcomes:

| Module Learning Outcomes | Reference |
|---|---|
| Apply engineering principles to design and control of electrical motors drives | MO1 |
| Design principles of power conversion techniques in drive systems | MO2 |
| Design of modern control using microprocessor in drive systems | MO3 |
| Develop and implement a simulation model of electrical machines | MO4 |
| Describe, analyse and critically evaluate the commonly used modulation techniques employed in drives systems | MO5 |
| Evaluate the performance of electrical motors drives | MO6 |

Contact Hours

| | |
|---|---|
| **Independent Study Hours:** | |
| Independent study/self-guided study | 114 |
| **Total Independent Study Hours:** | 114 |
| **Scheduled Learning and Teaching Hours:** | |
| Face-to-face learning | 36 |
| **Total Scheduled Learning and Teaching Hours:** | 36 |
| **Hours to be allocated** | 150 |
| **Allocated Hours** | 150 |

Reading List

*The reading list for this module can be accessed via the following link:*

https://uwe.rl.talis.com/index.html

| **Part 5: Contributes Towards** |
| --- |
| This module contributes towards the following programmes of study:<br><br>Electrical and Electronic Engineering [Sep][SW][Northshore][5yrs] MEng 2018-19<br>Electrical and Electronic Engineering [Sep][SW][Frenchay][5yrs] MEng 2018-19 |