ROBERT GORDON UNIVERSITY ABERDEEN

This Version is No Longer Current
The latest version of this module is available here

MODULE DESCRIPTOR

Module Title

Introduction to Digital Electronics and Microcontrollers

Reference	EN1513	Version	1
Created	March 2017	SCQF Level	SCQF 7
Approved	September 2017	SCQF Points	15
Amended		ECTS Points	7.5

Aims of Module

To provide the student with the ability to describe and utilize digital electronic devices, circuits and systems and to carry out analysis of simple digital circuits. To provide the student with the ability to describe, program and utilize simple microcontroller-based circuits.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

1	Describe digital electronic devices, systems and microcontrollers and explain their principles of operation.
2	Design and analyse basic digital circuits.
3	Write software for and construct simple interface-based microcontroller systems and observe, record and interpret their operation.
4	Construct digital electronic circuits and systems and observe, record and interpret measurements made on them.

Indicative Module Content

Introduction to digital electronics: Boolean algebra, truth tables and Karnaugh maps. Synthesis and analysis of basic combinatorial circuits. Sequential logic, flip-flops, registers and counters. Introduction to computer systems: binary number systems, computer types and application areas. System block diagram (CPU, memory, input/output, buses). Introduction to microcontroller software: edit-compile-execute cycle, syntax of a high-level language, input, process, output program operation, selection and repetition structures. Introduction to microcontroller interfacing: I/O ports types and their use.

Module Delivery

This module is taught using a structured programmed of lectures, tutorials and laboratory exercises supplemented by directed reading and student-centred learning.

Indicative Student Workload

	Full Time	Part Time
Contact Hours	60	60
Non-Contact Hours	90	90
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	150
Actual Placement hours for professional, statutory or regulatory body		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Coursework	Weighting:	50%	Outcomes Assessed:	1, 2
Description:	Assessed tutorials or quizzes under exam conditions.				

Component 2

Type:	Coursework	Weighting:	50%	Outcomes Assessed:	3, 4
Description:	A logbook of practical exercises and worksheets including observations, interpretations and analysis of work.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

The module grade is calculated as the weighted average of the component marks. To pass the module the student must achieve a minimum of a grade D and at least 35% in all components.

Module Grade	Minimum Requirements to achieve Module Grade:
A	70% - 100%
B	60% - 69%
C	50% - 59%
D	40% - 49%
E	35% - 39%
F	0% - 34%
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	None.
Corequisites for module	None.
Precluded Modules	None.

ADDITIONAL NOTES

An Indicative Bibliography will normally reference the latest edition of a text. In some cases, older editions are equally useful for students and therefore, those are the editions that may be stocked.

INDICATIVE BIBLIOGRAPHY

1	FLOYD, T.L., 2015. Digital Fundamentals. 11th ed. Harlow: Pearson.
2	STOREY, N., 2013. Electronics: a Systems Approach. 5th ed. Harlow: Pearson.