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MODULE DESCRIPTOR

Module Title

Object Oriented Software Development

Reference	EN3543	Version	6
Created	August 2021	SCQF Level	SCQF 9
Approved	December 2009	SCQF Points	15
Amended	August 2021	ECTS Points	7.5

Aims of Module

To provide the student with the skills and knowledge necessary to manage software projects and to develop software systems using an object-oriented approach.

Learning Outcomes for Module

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

1	Design, implement and test software using an object-oriented approach.
2	Utilise appropriate rapid application development tools in the development of a software solution.
3	Design, implement and test software using appropriate data structures.
4	Design and implement a graphical user interface.

Indicative Module Content

Project Administration: size, time and cost considerations of a software project. Project planning, life cycle. Project control: progress monitoring, revision control. Project maintenance. Object-oriented Design: objects, object classes, inheritance. Design representation, UML. Object-oriented Programming: classes, private, protected and public data and member functions. Constructors and destructors. Overloading, derived classes, virtual functions. Software Development for graphical user interfaces: Class frameworks, rapid application development tools, user interface design, widgets, event handling. Review of Programming Languages: review of the features of current programming languages which are applicable to electronic engineering applications. Case studies. Data Structures: linked lists, doubly-linked lists, queues, trees, stacks, standard template library.

Module Delivery

The module is taught using a structured programme of lectures, tutorials, laboratories and student-centred learning.

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Indicative Student Workload	Full Time	Part Time
Contact Hours	36	N/A
Non-Contact Hours	114	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	N/A
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:	30%	Outcomes Assessed:	1
Description:	Coursework.				

Component 2

Type:	Coursework	Weighting:	70%	Outcomes Assessed:	2, 3, 4
Description:	Coursework.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

The module has 2 components and to gain an overall pass a minimum D grade must be achieved in each component. The component weighting is as follows: C1 is worth 30% and C2 is worth 70%.

Coursework:

	Coursework: A	B	C	D	E	F	NS
A	A	A	B	B	E	E	
B	B	B	B	C	E	E	
C	B	C	C	C	E	E	
D	C	C	D	D	E	E	
E	E	E	E	E	E	F	
F	F	F	F	F	F	F	

NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	EN2541 Computer Engineering or equivalent.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

1	SUMMERFIELD, M., 2010. Programming in Python 3. 2nd ed. Addison Wesley.
2	KALB, I., 2018, Learn to Program with Python 3, Apress
3	SUNDRES, J., 2020, Introduction to Scientific Programming with Python, Springer Open
4	NAGAR, S., 2017, Introduction to Python for Engineers and Scientists, Apress
5	DONALDSON, T., 2013, Python: Visual QuickStart Guide, 3rd Ed, Peachpit Press
6	SHOVIC, J.C., 2021, Python All-In-One For Dummies, 2nd ed. For Dummies