UNIVERSITY OF EXETER

MODULE TITLE	Object-Oriented Programming	CREDIT VALUE	15
MODULE CODE	ECM1410	MODULE CONVENER	Dr Diogo Pacheco (Coordinator)

DURATION: TERM	1	2	3
DURATION: WEEKS	0	11 weeks	0

Number of Students Taking Module (anticipated)	245

DESCRIPTION - summary of the module content

This module will introduce you to object-oriented problem-solving methods and provide you with object-oriented (OO) techniques for the analysis, design and implementation of solutions. We will introduce you to these concepts, and you will develop skills with a new programming language. By the end of this module, you will be able to apply these skills to design and implement small applications.â€¨

Prerequisite module: ECM1400 or ECM1709 or equivalent

AIMS - intentions of the module

The module aims to provide you with a thorough grounding in the fundamentals of object-oriented design concepts, alongside the fundamentals of the Java programming language, and general object-orientated design concepts. It will also introduce you to widely used components of the unified modelling language (UML), teach you how to interpret and implement a Java program from these higher-level designs, along with the pari programming approach used in industry.

INTENDED LEARNING OUTCOMES (ILOs) (see assessment section below for how ILOs will be assessed)

On successful completion of this module, you should be able to:

Module Specific Skills and Knowledge:

1 demonstrate an appreciation of object-oriented modelling techniques;

2 interpret and modify program fragments in an object-oriented language;

3 follow an object-oriented development method to produce a design from a specification;

4 systematically test programs developed;

5 document software to accepted standards.

Discipline Specific Skills and Knowledge:

6 interpret a requirements specification;

7 systematically break down a problem into its components;

8 understand and choose between programming languages, and basic techniques.

Personal and Key Transferable / Employment Skills and Knowledge:

9 use technical manuals and books to interpret technical errors;

10 analyse a problem and synthesise a solution.

11 follow the pair-programming development approach used widely in industry.

SYLLABUS PLAN - summary of the structure and academic content of the module

The module syllabus is based on the three themes below, each individual topic listed being related to at least one of these themes:

- introduction to object-oriented concepts and fundamentals: classes, methods, attributes, procedural versus object-oriented programming, object state, scope, inheritance (single and multiple), polymorphism, object persistence;

- programming in the Java language: overview (compilation, intermediate and machine code, virtual machines), Java primitives, fundamental classes, conditionals, variables, statements, equivalence, passing by value, iteration, arrays as objects, assertions, exceptions, stack and heap, packages, shadowing versus overriding;

- design documentation tools: the unified modelling language (UML): UML Algorithms, UML class diagrams, UML advanced class diagrams, UML state machine diagrams, UML sequence diagrams, programming by contract, JavaDoc, annotations.

LEARNING AND TEACHING

LEARNING ACTIVITIES AND TEACHING METHODS (given in hours of study time)

Scheduled Learning & Teaching Activities	51.00	Guided Independent Study	99.00	Placement / Study Abroad	0.00

DETAILS OF LEARNING ACTIVITIES AND TEACHING METHODS

Category	Hours of study time	Description
Scheduled learning and teaching activities	22	Lectures
Scheduled learning and teaching activities	18	Workshops/tutorials
Scheduled learning and teaching activities	11	Surgeries
Guided independent study	54	Pair programming assessed work and formative tests
Guided independent study	45	Wider reading and exam preparation

ASSESSMENT

Form of Assessment	Size of Assessment (e.g. duration/length)	ILOs Assessed	Feedback Method
Weekly formative online tests (from week 2)	2 hours total	1, 2, 3, 6, 7, 8, 9	Mark available online, model answer discussion in surgeries

SUMMATIVE ASSESSMENT (% of credit)

Coursework	100	Written Exams	0	Practical Exams	0

DETAILS OF SUMMATIVE ASSESSMENT

Form of Assessment	% of Credit	Size of Assessment (e.g. duration/length)	ILOs Assessed	Feedback Method
1 x Continuous Assessment	100	80 hours	All	Comments directly on individual code, on individual feedback sheet.

DETAILS OF RE-ASSESSMENT (where required by referral or deferral)

Original Form of Assessment	Form of Re-assessment	ILOs Re-assessed	Time Scale for Re-reassessment
All above	Coursework (100%)	All	August Ref/Def period

RE-ASSESSMENT NOTES

Reassessment will be by coursework in the failed or deferred element only. For referred candidates, the module mark will be capped at 40%. For deferred candidates, the module mark will be uncapped.

RESOURCES

INDICATIVE LEARNING RESOURCES - The following list is offered as an indication of the type & level of information that you are expected to consult. Further guidance will be provided by the Module Convener

ELE: http://vle.exeter.ac.uk/
Reading list for this module:

Type	Author	Title	Edition	Publisher	Year	ISBN	Search
Set	Herbert Schildt	Java - The Complete Reference	9th	McGraw-Hill Education	2014	9780071808569	[Library]
Set	Herbert Schildt	Java: A Beginner's Guide	7th	McGraw-Hill Education	2018	9781259589317	[Library]
Set	Freeman, E & E, Sierra, K, Bates, B	Head First Design Patterns		O'Reilly Media	2004	978-0596007126	[Library]
Set	Bloch, Joshua	Effective Java: Programming Language Guide	2nd	Addison Wesley	2008	978-0321356680	[Library]
Set	Cay S. Horstmann	Core Java Volume I--Fundamentals	10th	Prentice Hall	2016	9780134177304	[Library]
Set	Miles, Russell, Hamilton, Kim	Learning UML 2.0		O'Reilly	2006	978-0596009823	[Library]
Set	Barnes, D, Kolling, M	Objects first with Java: a practical introduction using BlueJ	5th	Pearson	2012	978-0132835541	[Library]

CREDIT VALUE	15	ECTS VALUE	7.5

PRE-REQUISITE MODULES	ECM1400, ECM1709
CO-REQUISITE MODULES	

NQF LEVEL (FHEQ)	4	AVAILABLE AS DISTANCE LEARNING	No
ORIGIN DATE	Tuesday 10 July 2018	LAST REVISION DATE	Wednesday 08 February 2023

KEY WORDS SEARCH	Java; UML; object-oriented programming.