H8SDEV: Software Development

Module Code:	H8SDEV
Long Title	Software Development APPROVED
Title	Software Development
Module Level:	LEVEL 8
EQF Level:	6
EHEA Level:	First Cycle

Credits:	10

Module Coordinator:	Adriana Chis

Module Author:	Adriana Chis

Departments:	School of Computing

Specifications of the qualifications and experience required of staff	Master’s and/or PhD degree in computer science or cognate discipline. May also have industry experience.

Learning Outcomes

On successful completion of this module the learner will be able to:

#	Learning Outcome Description
LO1	Implement the core syntax and semantics of an object oriented programming language
LO2	Identify and utilise good principles of algorithm design and programming
LO3	Demonstrate a comprehensive range of specialised knowledge in Object Oriented programming
LO4	Apply theoretical concepts to a range of contexts and real-world problem domains
LO5	Develop responses (algorithms or classes) to well defined abstract problems
LO6	Apply effective debugging throughout the development process

Dependencies

Module Recommendations

No recommendations listed

Co-requisite Modules

No Co-requisite modules listed

Entry requirements	

H8SDEV: Software Development

Module Content & Assessment

Indicative Content

Introduction to Programming
• Types of programming languages • Introduction to object oriented programming languages • Programming environment • Problem solving approaches • Program correctness – types of errors (e.g. syntax, logic, and run-time errors)

Variables and Data Types
• Variables • Data Types • Arithmetic expressions • Constants

Object Oriented Programming Basics
• Declaring variables of class data types • Object creation • Message sending • Program components • Comments • Import statement • Class declaration • Method declaration • Input/Output

Instantiable Classes
• Declaring instantiable classes • Arguments/Data/Parameter passing • Return values • Access modifiers: public, private and protected • Instantiable classes and constructors • Overloading constructors • Variable Scope

Selection Statements
• The if statement • Boolean expressions and variables • Nested if statements • The switch statement

Repetition Statements
• The while statement • The do while statement • The for statement • Nested for statements • Counter-control loop statements • Sentinel-control loop statements

Characters and Strings
• Characters • Strings • Primitive versus reference types • StringBuffers • Passing objects as arguments to methods • Returning objects from methods

Arrays
• Array basics • Arrays of objects • Two-dimensional arrays • Passing arrays to methods, and returning arrays from methods

Inheritance and Polymorphism
• Declaring classes using inheritance • Overriding methods • Using classes with polymorphism • Inheritance and member accessibility • Inheritance and constructors • Abstract super classes and abstract methods • Interfaces

Assessment Breakdown	%
Coursework	50.00%
End of Module Assessment	50.00%

Assessments

Full Time

Coursework

Assessment Type:	Continuous Assessment	**% of total:**	30
Assessment Date:	n/a	**Outcome addressed:**	1,2,3,4,5,6
Non-Marked:	No		

Assessment Description:
Continuous assessments aim to evaluate students’ ability to integrate and apply new programming concepts with existing knowledge as the semester progresses. Students will be assessed both on their development skills and their ability to convey understanding of the programming concepts and programs which they have developed.

Assessment Type:	Project	**% of total:**	20
Assessment Date:	n/a	**Outcome addressed:**	3,4,5
Non-Marked:	No		

Assessment Description:
A practical project will be used to evaluate students’ ability to assess an outline and implement a programming solution to a new problem definition applying the necessary principles and concepts discussed in this module.

End of Module Assessment

Assessment Type:	Terminal Exam	**% of total:**	50
Assessment Date:	End-of-Semester	**Outcome addressed:**	1,2,3,4,5,6
Non-Marked:	No		

Assessment Description:
End-of-Semester Final Examination

No Workplace Assessment

Reassessment Requirement

Repeat examination
Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.

Reassessment Description
Reassessment of this module will be via repeat examination which evaluates all learning outcomes.

Module Workload

Module Target Workload Hours 0 Hours

Workload: Full Time

Workload Type	*Workload Description*	*Hours*	*Frequency*	*Average Weekly Learner Workload*
Lecture	No Description	24	Per Semester	2.00
Tutorial	No Description	24	Per Semester	2.00
Independent Learning	No Description	202	Per Semester	16.83
			Total Weekly Contact Hours	4.00

Workload: Online

Workload Type	*Workload Description*	*Hours*	*Frequency*	*Average Weekly Learner Workload*
Lecture	No Description	12	Per Semester	1.00
Tutorial	No Description	24	Per Semester	2.00
Directed Learning	No Description	12	Per Semester	1.00
Independent Learning	No Description	202	Per Semester	16.83
			Total Weekly Contact Hours	4.00

Workload: Part Time

Workload Type	*Workload Description*	*Hours*	*Frequency*	*Average Weekly Learner Workload*
Lecture	No Description	24	Per Semester	2.00
Tutorial	No Description	24	Per Semester	2.00
Independent Learning	No Description	202	Per Semester	16.83
			Total Weekly Contact Hours	4.00

Module Resources

Recommended Book Resources

Paul Deitel,Harvey Deitel. (2017), Java How to Program, Early Objects, 11th Edition. Pearson, p.1296, [ISBN: 9780134743356].

Supplementary Book Resources

Herbert Schildt. (2018), Java: The Complete Reference, 11th Edition. McGraw-Hill Education, p.1344, [ISBN: 1260440230].

Walter Savitch. (2017), Java: An Introduction to Problem Solving and Programming, 8th Edition. Pearson, [ISBN: 0134462033].

Wu, C.T. (2009), An Introduction to Object Oriented Programming with Java, 5th Edition. McGraw-Hill.

Bruce Eckel. (2006), Thinking in Java, 4th Edition. Pearson Education, p.1482, [ISBN: 0131872486].

This module does not have any article/paper resources

This module does not have any other resources

Discussion Note:	