

Module Title:	Programming (Elective2)
Language of Instruction:	English
Credits:	20
NFQ Level:	6
Module Delivered In	No Programmes
Teaching & Learning Strategies:	A mix of traditional lectures and programming practicals and projects that will enable the student to apply the problem solving skills necessary for games object oriented programming to develop complete programs. Also a tutorial where students can get help with areas of the course that they are having difficulty with.
Module Aim:	To provide the student with: 1. The problem solving skills necessary for object oriented games programming. 2. The basic concepts of object oriented programming. 3. The capability to develop complete games programs to a high standard

Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Utilise problem solving techniques to analyse a problem and develop a solution for it.
LO2	Produce maintainable programs with suitable documentation and standards;
LO3	Define and utilise the concepts of variables and data types.
LO4	Compare the necessary program control structures in their code.
LO5	Create programs to manipulate and use strings, arrays and introduce briefly other data structures suitable for gaming problems such as lists and queues. Use libraries.
LO6	Describe and apply object-oriented programming concepts.
LO7	Design a game including game description, class diagrams and research of complex areas of game.
LO8	Design, develop, test, and debug object-oriented games programs to a high standard.
LO9	Compare the efficiency of algorithms

Pre-requisite learning
Module Recommendations <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>
No recommendations listed
Incompatible Modules <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>
No incompatible modules listed
Co-requisite Modules
No Co-requisite modules listed
Requirements <i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>
No requirements listed

Module Content & Assessment

Indicative Content
1. Introduction to problem solving: algorithms & pseudocode; translating pseudocode into program code; Introduction to a relevant language; identifiers, keywords, comments.
2. Data types, variables, assignment statements, constants, arithmetic expressions and operators.
3. Program control constructs and their uses - sequence, iteration and selection, flow of control.
4. Strings: storage, string manipulation, string classes and methods.
5. Objects: classes, objects, methods, instance & local variables, scope, method parameters & return types, pass by value parameters, reference variables, access modifiers, object creation, object initialisation & constructors.
6. Arrays: concepts, declarations, creation, object arrays, sorting and searching arrays, 2-dimensional arrays.
7. Introduction to I/O: File handling concepts, file streams, reading & writing to files, formatting output, handling XML files.
8. Introduction to algorithms and memory implications: efficiency, complexity.
9. Game design including game description (genre, goals, progression etc), class diagrams and research of complex areas of game (including pseudocode).

Assessment Breakdown	%
Project	35.00%
Practical	30.00%
End of Module Formal Examination	35.00%

No Continuous Assessment

Project				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	A number of projects (2 or more) to be given throughout the year, to be done in the labs and on the students own time. At least one project to include 1D arrays, 2D arrays, multiple classes, file handling and XML.	1,2,3,4,5,6,7,8,9	35.00	Sem 1 End

Practical				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	A number of practical programming lab exercises and exams to be given. Some written lab exercises and written exams. The written exams should be similar format and standard to their final exam questions.	1,2,3,4,5,6,7,8,9	30.00	n/a

End of Module Formal Examination				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	The final examination will include questions on many aspects of the course.	1,2,3,4,5,6,7,8,9	35.00	End-of-Semester

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	30 Weeks per Stage	4.00
Laboratory	30 Weeks per Stage	4.00
Tutorial	30 Weeks per Stage	1.00
Estimated Learner Hours	30 Weeks per Stage	4.00
Total Hours		390.00

