

Module Title:	Reverse Engineering and Malware Analysis
Language of Instruction:	English
Credits:	10
NFQ Level:	8
Module Delivered In	No Programmes
Teaching & Learning Strategies:	Learners will be expected to actively participate in class and work through assigned laboratory assessments throughout the year.
Module Aim:	To provide learners with a theoretical knowledge of, and practical skills with, Reverse Engineering and Malware Analysis.
Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Identify and Analyse Malware
LO2	Reverse Engineer a Software Application
LO3	Use Industry Standard Tools for Malware Analysis and Reverse Engineering
LO4	Understand the Techniques used in the Development of Malware
LO5	Understand the Potential Weaknesses in Software Systems
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

Fundamentals

Overview of Malware, Techniques used in Malware, Approaches to Reverse Engineering, Ethics

Tools

Disassemblers, Debuggers, Process System and Network Monitoring, Code Analysis

Techniques

Data Encoding, Obfuscating and De-obfuscating, DLL Injection, Function Hooking, Keylogging, HTTP Communication, Memory Overflow

Reverse Engineering

Unpacking Software, Behavioural Analysis, Code Analysis

Malware

Analyzing Office and PDF documents, Analyzing Web based Malware, Rootkit Analysis

Assessment Breakdown	%
Project	20.00%
Practical	20.00%
End of Module Formal Examination	60.00%

No Continuous Assessment

Project

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Project Work involving larger scale problem	1,2,3,4,5	20.00	End-of-Semester

Practical

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Practical Laboratory Work based on lectures	3,4,5	20.00	n/a

End of Module Formal Examination

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	Written paper covering Theory and Practice of Malware Analysis and Reverse Engineering	1,2,4,5	60.00	End-of-Semester

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

Module Workload

Workload: Full Time		
Workload Type	Frequency	Average Weekly Learner Workload
Lecture	30 Weeks per Stage	1.00
Independent Learning	30 Weeks per Stage	3.67
Laboratory	30 Weeks per Stage	2.00
Total Hours		200.00

