



<b>Title:</b>	Data Centre Virtualisation <b>APPROVED</b>
<b>Long Title:</b>	Data Centre Virtualisation
<b>Module Code:</b>	SOFT8019
<b>Duration:</b>	1 Semester
<b>Credits:</b>	5
<b>NFQ Level:</b>	Advanced
<b>Field of Study:</b>	Computer Software
<b>Valid From:</b>	Semester 1 - 2017/18 ( September 2017 )
<b>Module Delivered in</b>	<a href="#">2 programme(s)</a>
<b>Module Coordinator:</b>	Sean McSweeney
<b>Module Author:</b>	Eoin ORegan
<b>Module Description:</b>	This module explores the role of virtualisation in Information Technology (IT) enterprises, in the consolidation of modern data centres and in the evolution of cloud computing. Data centres consist of the infrastructure used by enterprises to house the computer, server and networking systems required to satisfy the company's IT requirements. Students will learn how to create, configure & manage a virtualised data centre.
<b>Learning Outcomes</b>	
<i>On successful completion of this module the learner will be able to:</i>	
LO1	Identify and describe the challenges and latest trends in data centre virtualisation.
LO2	Design and create a virtual data centre environment.
LO3	Discuss the requirements for implementing network access to storage in virtualised data centre environments.
LO4	Manage and troubleshoot a virtual data centre environment.
LO5	Evaluate the basics of securing the virtual data centre.
<b>Pre-requisite learning</b>	
<b>Incompatible Modules</b>	
<i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module. You may not earn additional credit for the same learning and therefore you may not enrol in this module if you have successfully completed any modules in the incompatible list.</i>	
No incompatible modules listed	
<b>Co-requisite Modules</b>	
No Co-requisite modules listed	
<b>Requirements</b>	
<i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed. You may not enrol on this module if you have not acquired the learning specified in this section.</i>	
No requirements listed	
<b>Co-requisites</b>	
No Co Requisites listed	

**Module Content & Assessment**

**Indicative Content**

**The Evolution and challenges of Data Centres**

The evolution of computing infrastructures and architectures from stand-alone servers to rack optimised blade servers, unified computing systems (UCS) & virtual data centre (VDC). How server, desktop & network virtualisation along with cloud computing reduce data centre footprint, environmental impact and power requirements by driving server consolidation.

**Data Centre Virtualisation**

Provision, monitoring and management of a virtual data centre and multiple enterprise-level virtual servers and virtual machines through software management interfaces.

**Networking and Storage in Enterprise Virtualised Environments**

Connectivity to storage area and IP networks from within virtualised environments using industry standard protocols. Network scalability with distributed switches.

**Managing Virtual Environments**

Monitoring, optimisation and troubleshooting; includes servers, storage, networking and virtual machines. Introduces concepts such as migration methodologies, high availability, redundancy and disaster recovery, scalability and scheduling.

**Security**

Securing the hypervisor, virtual machines and virtual network. Protecting the management environment.

**Assessment Breakdown**

%

Course Work

100.00%

**Course Work**

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Short Answer Questions	Assessment of students' understanding of challenges and trends in data centre virtualisation, and the requirements for implementing network access to storage in a virtualised data centre.	1,3	30.0	Week 6
Written Report	Lab report on a small scale data centre virtualisation project. This includes analysis, design and implementation.	2,3,5	30.0	Week 10
Practical/Skills Evaluation	Examination of students' ability to complete a series of virtualisation tasks, previously practised in the lab, and underpinning the theoretical material.	2,3,4,5	40.0	Week 12

No End of Module Formal Examination

**Reassessment Requirement**

**Coursework Only**

*This module is reassessed solely on the basis of re-submitted coursework. There is no repeat written examination.*

**The institute reserves the right to alter the nature and timings of assessment**

**Module Workload**

<b>Workload: Full Time</b>				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Lecture underpinning learning outcomes.	2.0	Every Week	2.00
Lab	Virtualisation labs.	2.0	Every Week	2.00
Independent & Directed Learning (Non-contact)	Student project work and study.	3.0	Every Week	3.00
Total Hours				7.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				4.00

<b>Workload: Part Time</b>				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Lecture underpinning learning outcomes.	2.0	Every Week	2.00
Lab	Virtualisation labs.	2.0	Every Week	2.00
Independent & Directed Learning (Non-contact)	Student project work and study.	3.0	Every Week	3.00
Total Hours				7.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				4.00

## Module Resources

### Recommended Book Resources

- Nick Marshall, Grant Orchard, Josh Atwell, Scott Lowe 2015, *Mastering VMware vSphere 6*, 1st Ed., Sybex [ISBN: 9781118925157]
- Scott Lowe, Forbes Guthrie 2013, *VMware vSphere Design*, 2nd Ed., Sybex [ISBN: 9781118407912]

### Supplementary Book Resources

- Mickey Iqbal 2010, *IT Virtualization Best Practices: A Lean, Green Virtualized Data Center Approach*, MC Press [ISBN: 9781583473542]
- Jason Kappel, Anthony Velte, Toby Velte 2009, *Microsoft Virtualization with Hyper-V: Manage Your Datacenter with Hyper-V, Virtual PC, Virtual Server, and Application Virtualization*, McGraw-Hill Education [ISBN: 9780071614030]

*This module does not have any article/paper resources*

### Other Resources

- Website: *VMware Inc*  
<http://www.vmware.com>
- Website: *Microsoft Inc*  
<https://www.microsoft.com/en-us/cloud-pl atform/virtualization>

**Module Delivered in**

<b>Programme Code</b>	<b>Programme</b>	<b>Semester</b>	<b>Delivery</b>
CR_KITMN_8	<a href="#"><u>Bachelor of Science (Honours) in IT Management</u></a>	5	Mandatory
CR_KITSP_7	<a href="#"><u>Bachelor of Science in Information Technology</u></a>	5	Mandatory