

<b>Module Title:</b>	Cloud Infrastructure Management
<b>Language of Instruction:</b>	English
<b>Credits:</b>	10
<b>NFQ Level:</b>	7
<b>Module Delivered In</b>	<a href="#">1 programme(s)</a>
<b>Teaching &amp; Learning Strategies:</b>	The module will generate skills based on the practical application of utilising public clouds, building private clouds, creating and managing microservices.
<b>Module Aim:</b>	This module explores options available to deliver infrastructure as a service (IaaS) in a cloud computing environment.
<b>Learning Outcomes</b>	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Explain cloud service and cloud deployment models.
LO2	Discuss and evaluate various virtualisation techniques and hypervisor technology.
LO3	Build, configure and manage a private cloud or container service
LO4	Configure and implement cloud technology to host applications.
<b>Pre-requisite learning</b>	
<b>Module Recommendations</b> <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>	
No recommendations listed	
<b>Incompatible Modules</b> <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</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.</i>	
Learners should have good knowledge of Operating Systems and be comfortable working in a command line environment (Linux and Windows).	

## Module Content & Assessment

Indicative Content
<b>Introduction to Cloud Computing</b> What is cloud computing and characteristics of cloud computing. Cloud Delivery and Deployment Models. Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS). Public, private, community and private clouds.
<b>Virtualisation and Containers</b> Introduction to the concept of virtualisation and hypervisors; role of a hypervisor; hypervisor versus containers.
<b>Public Cloud Basics</b> Security, identity management, technology (core products - compute, storage, network, databases). Billing and pricing models, TCO, Elasticity and service management. GDPR considerations regarding data and public clouds.
<b>Public Cloud Architecting</b> Design principles, migration to cloud, high availability, auto scaling, VPC, content distribution, monitoring and serverless architecture.
<b>Private Cloud</b> Examination and appraisal of contemporary private cloud technology. Scope, design, build and configure a private cloud environment.
<b>Cloud Bursting</b> Integration of onsite infrastructure with public cloud infrastructure.
<b>Containers</b> Examination and appraisal of contemporary container technology. Scope, design, build and configure a container infrastructure.
<b>Best Practices</b> Installation, configuration, deployment and management of a target environment, including HA, fault tolerance and DR.

Assessment Breakdown	%
Continuous Assessment	20.00%
Project	40.00%
End of Module Formal Examination	40.00%

Continuous Assessment				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Complete a number of short, in-class lab practicals as directed.	2,4	20.00	Week 6

Project				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Build, configure and manage a proof of concept system to host an application.	3,4	40.00	Week 11

No Practical

End of Module Formal Examination				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	Assessment to gauge learners comprehension of cloud computing and cloud infrastructures.	1,2	40.00	End-of-Semester

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

**Module Workload**

<b>Workload: Full Time</b>		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	12 Weeks per Stage	1.00
Laboratory	12 Weeks per Stage	4.00
Tutorial	12 Weeks per Stage	1.00
Independent Learning	15 Weeks per Stage	11.87
Total Hours		250.00

**Module Delivered In**

Programme Code	Programme	Semester	Delivery
CW_KWCCD_B	<a href="#">Bachelor of Science (Honours) in Creative Computing and Digital Innovation</a>	5	Mandatory