Module Title:	Cloud Infrastructure Management
Language of Instruction:	English

Credits:	10

NFQ Level:	7

Module Delivered In	No Programmes

Teaching & Learning Strategies:	The module will generate skills based on the practical application of utilising public clouds, building private clouds, creating and managing microservices.

Module Aim:	This module explores options available to deliver infrastructure as a service (IaaS) in a cloud computing environment.

Learning Outcomes	
On successful completion of this module the learner should be able to:	
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.

Pre-requisite learning
Module Recommendations   *This is prior learning (or a practical skill) that is recommended before enrolment in this module.*
No recommendations listed
Incompatible Modules   *These are modules which have learning outcomes that are too similar to the learning outcomes of this module.*
No incompatible modules listed
Co-requisite Modules
No Co-requisite modules listed
Requirements   *This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.*
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
Introduction to Cloud Computing 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.
Virtualisation and Containers Introduction to the concept of virtualisation and hypervisors; role of a hypervisor; hypervisor versus containers.
Public Cloud Basics 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.
Public Cloud Architecting Design principles, migration to cloud, high availability, auto scaling, VPC, content distribution, monitoring and serverless architecture.
Private Cloud Examination and appraisal of contemporary private cloud technology. Scope, design, build and configure a private cloud environment.
Cloud Bursting Integration of onsite infrastructure with public cloud infrastructure.
Containers Examination and appraisal of contemporary container technology. Scope, design, build and configure a container infrastructure.
Best Practices Installation, configuration, deployment and management of a target environment, including HA, fault tolerance and DR.

Assessment Breakdown	%
Continuous Assessment	30.00%
Project	30.00%
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, supported by a reflective element documenting the learner's expiences.	2,4	30.00	Week 10

Project				
Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Project	Build, configure and manage a proof of concept private cloud or container service to host an application.	3,4	30.00	Week 19

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

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Laboratory	20 Weeks per Stage	3.00
Independent Learning	20 Weeks per Stage	3.00
	Total Hours	120.00