

Module Code	ACCA7027
Title	Cloud Engineering Principles and Practice
Date	31/07/2020
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To enable students to critically evaluate cloud related systems, technologies, applications, software development process, administration techniques and principles
- To be able to implement, configure or work within a virtualised environment that can either be deployed to the cloud or implemented within the cloud computing providers platform

LEARNING OUTCOMES

Upon the successful completion of this module, the student should be able to:

- Critically evaluate the cloud computing related technologies and the applications of cloud services
- Implement virtual systems and/or applications that can be deployed to the cloud and demonstrate an understanding of the features of platforms provided by cloud computing providers

INDICATIVE CONTENT

- Containerization using Docker and Kubernetes, building and running images, Docker compose
- Big data. Principles of distributed file systems (Hadoop, AWS EFS), NoSQL e.g. Redis, AWS S3, MongoDB, AWS DynamoDB, Cassandra, CAP Theorem, etc.
- Infrastructure components of cloud computing provider platforms e.g. virtual networks, virtual machines (e.g. EC2 instances), containers (e.g. AWS ECS), gateways, etc.
- Availability and scalability e.g. Load balancing and scaling groups.
- Web service and microservice deployment, message and event queues e.g. RabbitMQ, Kafka, AWS Simple Queue Service
- Security of virtualized systems, authorization, firewalls, security groups, etc.

- Applications e.g. web servers, Node.js web services, IoT, etc.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

☐ Written exam
 ☒ Coursework
 ☐ Practical

Mode of assessment	Volume	Weighting
Portfolio	5,000 words equivalent Students will produce a portfolio of work appropriate to the nature of their area of study. Portfolio elements may include a selection of the following: • Written Report • Documented application of tools or processes • Administration of virtualized systems • Implementation of cloud computing related applications • Discussion or demonstration of cloud computing platform features or functionality • Demonstration of their work e.g. written or presentation	100%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	100%

INDICATIVE READING LIST

Module Code	ACCA7027	
Module Title	Cloud Engineering Principles and Practice	
Classification	Reading List entry	Electronic*
Essential	Kane, S.P., Matthias, K., (2018) Docker: Up & Running: Shipping Reliable Containers in Production, O'Reilly Media	☒
Essential	Laszewski, T., Arora, K., Farr, E., Zonooz, P., (2018) Cloud Native Architectures: Design high-availability and cost-effective applications for the cloud. Packt Publishing	☒
Essential	Perkins, L., Redmond, E., Wilson, J., (2018) Seven Databases in Seven Weeks: A Guide to Modern Databases and the NoSQL Movement, Second Edition. Pragmatic Bookshelf	☒
Further	Burns, B., Beda, J., Hightower, K., (2019) Kubernetes: Up and Running: Dive into the Future of Infrastructure, O'Reilly Media	☒
Further	Bradshaw, S., Brazil, E., Chodorow, K., (2019) MongoDB: The Definitive Guide: Powerful and Scalable Data Storage, O'Reilly Media	☒
Further	Sarkar, A., Shah, A., (2018) Learning AWS, Second Edition. Packt Publishing	☒

Further	Ganesan, K., Skaria, R., Vos, F., (2020) Hands-On Linux Administration on Azure: Develop, maintain, and automate applications on the Azure cloud platform. Packt Publishing	☒
Further	Morris, K., (2016) Infrastructure as Code: Managing Servers in the Cloud. O'Reilly Media	☒