

2024 / 25

School of Science and Computing

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South East
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University

Module Descriptor

Cloud Computing 2 (Computing and Mathematics)

Cloud Computing 2 (A13426)

Short Title: Cloud Computing 2
Department: Computing and Mathematics
Credits: 5
Level: Advanced

Description of Module / Aims

This module will build on the material covered in the Cloud Computing 1 module to further explore the latest technologies in private Data Centers and Public Cloud Service providers. In particular Software Defined Networking environments and the automation and management of Cloud environments will be examined through practical lab exercises.

Programmes

stage/semester/status		
COMP-0653	BSc (Hons) in Applied Computing (International) (WD_KACCM_BI)	4 / 8 / M
COMP-0653	BSc (Hons) in Applied Computing (WD_KACCM_B)	4 / 8 / E
COMP-0653	BSc (Hons) in Applied Computing (WD_KCOMP_B)	4 / 8 / E
COMP-0653	BSc (Hons) in Computer Science (WD_KCMSC_B)	4 / 8 / E
COMP-0653	BSc (Hons) in Information Technology Management (WD_KITMA_B)	1 / 8 / E
COMP-0653	BSc (Hons) in Information Technology (WD_KINTE_B)	4 / 2 / E

Pre-Requisite(s)

- Cloud Computing 1

Indicative Content

- Software Defined Networking (SDN)
- Openflow
- Network Function Virtualisation (NFV)
- Application Delivery Controllers
- Performance Management : Load Balancing; Caching
- Infrastructure Orchestration : Ansible; Chef
- Containerisation: Docker
- Enabling Technologies for Internet of Things
- Big Data Infrastructure : Hadoop clusters

Learning Outcomes

On successful completion of this module, a student will be able to:

1. Evaluate the main technologies and concepts required to deliver virtualised services in Public and Private Cloud environments.
2. Set up program services for SDN Controllers.
3. Deploy and critically assess appropriate technologies in the provision of scalable, efficient and secure application communications.
4. Determine and evaluate Cloud based components in the provision of Cloud Application Services.
5. Design and implement solutions using automated infrastructure tools.

Learning and Teaching Methods

- The practical lab component will be delivered in one double lab session.
- Combination of lectures and computer-based practical and simulation exercises.
- Self-directed learning.

Learning Modes

Learning Type	F/T Hours	P/T Hours
Lecture	24	
Lab	24	
Independent Learning	87	

Assessment Methods

	Weighting	Outcomes Assessed
Continuous Assessment	100%	
Assignment	30%	2
Assignment	30%	3,5
Project	40%	1,3,4

Assessment Criteria

- <40%: Unable to interpret and describe key concepts of the specific knowledge domains of SDN, Infrastructure services and automation.
- 40%–49%: Be able to interpret and describe key concepts of the specific knowledge domains of SDN, Infrastructure services and automation.
- 50%–59%: Ability to discuss key concepts of the specific knowledge domains covered above and ability to discover and integrate related knowledge into cloud based application architectures.
- 60%–69%: Be able to solve problems within the specific knowledge domain(s) by experimenting with the appropriate skills and tools.
- 70%–100%: All the above to an excellent level. Be able to analyse and design solutions to a high standard for a range of both complex and unforeseen problems through the use and modification of appropriate skills and tools.

Essential Material(s)

- "Mininet." Mininet. <http://mininet.org/>

Supplementary Material(s)

- "Open Networking Foundation." <https://www.opennetworking.org/i>
- Goransson, P. and C. Black. *Software Defined Networks: A Comprehensive Approach*. New York: Morgan Kaufmann, 2014.
- Morris, K. *Infrastructure as Code: Managing Servers in the Cloud*. 1st. New York: O'Reilly Media, 2016.

Requested Resources

- Computer Lab: BYOD Lab