

2024 / 25

School of Science and Computing

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South East
Technological
University

Module Descriptor

Cloud Architecture (Computing and Mathematics)

Cloud Architecture (A26561)

Short Title: Cloud Architecture
Department: Computing and Mathematics
Credits: 10

Level: Postgraduate

Description of Module / Aims

This module will provide a comprehensive understanding of Cloud Architecture, including the design and deployment of secure, robust cloud infrastructure and applications.

Programmes

stage/semester/status		
Certificate in Cloud Architecture (WD_KCARC_MA)	/	/ M
COMP-0974 MSc in Computer Science (Enterprise Software Systems) (WD_KCESS_R)	1 / 0 /	E

Indicative Content

- Introduction: What is Cloud Computing?; leveraging cloud computing; cloud economics
- Cloud Infrastructure: Compute; Storage; Networking
- Scalability: Event-driven scaling; Load Balancing; Monitoring
- Cloud storage and databases SQL and NoSQL options; short and long term storage; performance, reliability, availability and cost
- Design for Highly Available, robust application deployment Account configuration; network configuration; security; application routing and geographic considerations
- Cloud Security Identity and Access Management; logging & monitoring; securing & encrypting data; authentication; key management; attack mitigation
- Serverless Architectures
- Cloud Architecture best practices Design principles; reliability; performance; cost optimisation; automation

Learning Outcomes

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

1. Demonstrate a mastery of the knowledge and skills related to the use of cloud-based platforms, storage and networking infrastructure.
2. Compare and contrast leading approaches to data storage in the cloud.
3. Propose and justify scalable, robust and cost-effective configurations for deploying software applications to the cloud, in ways that meet the varying requirements of such applications.
4. Evaluate emerging technologies and integrate this knowledge with recommended best practices to design and deploy cloud architecture solutions.
5. Implement secure practices for optimum cloud deployment and maintenance.

Learning and Teaching Methods

- Combination of lectures and guided practical exercises with cloud technologies.
- Self-directed learning.

Learning Modes

Learning Type	F/T Hours	P/T Hours
Lecture	24	24
Lab	24	24
Independent Learning	222	222

Assessment Methods

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

Assessment Criteria

- <40%: Unable to interpret and describe key concepts of the specific knowledge domains of cloud architecture.
- 40%–59%: Able to interpret, describe and discuss key concepts of the specific knowledge domains of cloud architecture. Able to discover and integrate related knowledge into cloud architectures.
- 60%–69%: Able to solve problems within the specific knowledge domains by experimenting with the appropriate skills and tools.
- 70%–100%: All the above to an excellent level. Be able to propose 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)

- "AWS." <https://aws.amazon.com/documentation/>

Supplementary Material(s)

- "AWS Cloud Best Practices." https://d0.awsstatic.com/whitepapers/AWS_Cloud_Best_Practices.pdf
- "AWS Well-Architected Framework." <https://aws.amazon.com/architecture/well-architected/>
- Baron, J. *AWS Certified Solutions Architect Official Study Guide: Associate Exam*. New York: Wiley, 2017.