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South East Technological University

Module Descriptor

Networks Infrastructure (Computing and Mathematics)

Networks Infrastructure (A13003)

Short Title: Networks Infrastructure
Department: Computing and Mathematics
Credits: 5 **Level:** Introductory

Description of Module / Aims

This module will build on the students basic Computer Networks knowledge. This module will provide a student with an understanding of Routing and Switching and other essential services in the operation and management of a networking infrastructure. The practical element will cover the configuration and management of these services.

Programmes

		stage/semester/status
COMP-0660	BSc (Hons) in Applied Computing (International) (WD_KACCM_BI)	3 / 5 / M
COMP-0660	BSc (Hons) in Applied Computing (WD_KACCM_B)	2 / 4 / E
COMP-0660	BSc (Hons) in Applied Computing (WD_KCOMP_B)	2 / 4 / E
COMP-0660	BSc (Hons) in Computer Science (WD_KCMSC_B)	2 / 4 / E
COMP-0660	BSc in Applied Computing (WD_KCOMP_D)	2 / 4 / M
COMP-0660	BSc in Information Technology (WD_KINFT_D)	2 / 4 / M

Indicative Content

- Static Routing
- Dynamic Routing: Distance Vector Routing; Links State Routing; OSPF
- Switching: VLANs; Spanning Tree Protocol; Inter-VLAN Routing
- Network Design: Scalability; Redundancy; Load Balancing
- Network Management: SNMP; Monitoring; Performance
- Network Security: Securing Devices; Access Control Lists
- Virtual Networking

Learning Outcomes

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

1. Configure Static Routes and Dynamic Routing Protocols.
2. Troubleshoot Static Routes and Dynamic Routing Protocols.
3. Explain how routing and switching technologies work.
4. Discuss the main concepts in Network Design.
5. Discuss the main concepts in Network Management.
6. Discuss the main concepts in Network Security.
7. Determine, configure and troubleshoot Access Control Lists.
8. Apply best practices in the configuration and management of network infrastructure.

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	12
Practical	24	12
Independent Learning	87	111

Assessment Methods

	Weighting	Outcomes Assessed
Continuous Assessment	100%	
Assignment	40%	3,4,5,6,8
Practical	60%	1,2,7,8

Assessment Criteria

<40%: Unable to describe the basic functions and operation of dynamic routing protocols, static routes and switching technologies. Unable to configure basic networking infrastructure services.

40%–49%: Be able to describe the basic functions and operation of dynamic routing protocols, static routes and switching technologies. Be able to configure basic networking infrastructure services.

50%–59%: Be able to describe the main concepts in the management of a network infrastructure. Be able to design and apply best practice in the configuration and management of a network infrastructure.

60%–69%: In addition can integrate networking services and troubleshoot network problems.

70%–100%: All the above to an excellent level.

Essential Material(s)

- "Cisco Network Academy." https://www.netacad.com/. https://www.netacad.com/

Supplementary Material(s)

- Cisco, P. *Routing and Switching Essentials Companion Guide*. 1st. New York: Cisco Press, 2014.
- Kurose, J.F. and K.W. Ross. *Computer Networking: A Top-down Approach*. 6th. New York: Pearson, 2012.
- Tanenbaum, A.S. and D.J. Wetherall. *Computer Networks*. 5th ed.. New York: Pearson, 2010.

Requested Resources

- Computer Lab: Networks Lab