	ZETECH UNIVERSITY ACADEMIC DIVISION		
Title:	**COURSE OUTLINE TEMPLATE**	**Reference**	F-7-14
		Issue/Rev.	1/0

Unit Code:	*BIT 223*
Unit Title:	Data communication and Computer Networks
Program(s):	*BSCIT*
Lecturer Name:	*Mr. Mathenge Richard*
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Consultation time	Tuesdays & Fridays: 8:00- 11:00 am

UNIT PURPOSE/DESCRIPTION

The Huawei Certified Network Associate(HCIA) certification level validates the skills and knowledge of IP network engineers to implement and support small to medium sized enterprise networks. The HCIA certification provides a rich foundation of skills and knowledge foe establishment of such enterprise networks, along with the capability to implement services and features within existing enterprise networks, to effectively support true industry operations.

HCIA certification covers fundamental skills for TCP/IP, routing, switching and related IP network engineer technologies, together with Huawei data communications products, and skills for versatile routing platform (VRP) operation and management.

EXPECTED LEARNING OUTCOMES

Upon completion of the course, students will attain a broad range of learning outcomes, and will be able to:

- Configure device system parameters including device name, the system time, and the system time zone.
- Configure the console port idle timeout duration.
- Configure the login information.
- Enable and disable STP
- Change the STP mode that is used by a switch
- Change the bridge priority to control root bridge election
- Change the port priority to control election of the root port and designated port
- Change the port cost to control election of the root port and designated port
- Configure an edge port
- Configuration of a static route using an interface and an IP address as the next hop.
- Verification of static route operation.
- Implementation of the interconnection between a local and external network using a default route.
- Configuration of a backup static route on a router.
- Establishment of the FTP service.
- Configuration of FTP server parameters.

Data Communication and Computer Networks (Routing & Switching) COURSE OUTLINE

Week	Topic	Sub-topic
1	**Data Communication Network Basis**	Concepts related to communication and a data communication network. Information transfer process. Network devices of different types and their basic functions. Network types and topology types.

2	**Network Reference Model**	Data definition and transmission process. Concepts and advantages of the network reference model. Common standard protocols.
3	**Huawei VRP**	Understand VRP basics. Using the CLI. Basic CLI commands. **Assignment 1**
4	**Network Layer Protocols and IP Addressing**	Protocols at the network layer. Concepts and classification of IPv4 addresses and special IPv4 addresses. IP networks and subnets.
5	**IP Routing Basics**	Basic principles of routers. How routers select optimal routes. Contents of routing tables.
6		CAT 1
7	**OSPF Basics**	Classification of dynamic routing protocols. OSPF concepts and usage scenarios. Working mechanism of OSPF.
8	**Ethernet Switching Basics**	Basic concepts of an Ethernet network. MAC address types. Working process of a Layer 2 switch.
		Assignment 2
10	**VLAN Principles and Configuration**	Background of the VLAN technology. Different VLAN assignment modes. VLAN configuration methods
11	**STP Principles and Configuration** **Inter-VLAN Communication** **Eth-Trunk iStack and CSS**	Concepts and working mechanism of STP. STP vs RSTP and improvement of RSTP on STP. STP configurations. Implementing inter-VLAN communication. Link aggregation types. Link aggregation negotiation process in Link Aggregation Control Protocol (LACP) mode

12		**CAT 2**
13	**REVISION**	
14 & 15	**FINAL EXAMINATION**	

TEACHING/LEARNING METHODOLOGY

The course will be taught mainly through Labs, lectures, tutorials, group discussions and student presentations.

ASSESSMENT CRITERIA

Assessment Type	***Frequency***	***Percentage***
Assignment	*2*	*10%*
CATs	*2*	*20%*
Final Examination	*1*	*70%*
Total		*100%*

CORE TEXTS BOOKS

1. (2019, September 2). Online Learning. Retrieved from http://learning.huawei.com/en
2. (n.d.). Retrieved from https://ilearningx.huawei.com/portal/#/portal/ebg/51
3. (n.d.). Retrieved from https://support.huawei.com/learning/NavigationAction/createNavi?navId=_31&lang=en
4. (n.d.). Retrieved from https://support.huawei.com/learning/NavigationAction/createNavi?navId=_trainingsearch&lang=en

Approval for circulation by:

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HoD: Daniel Njeru **Signature: ……DN……..**