UNITED ARAB EMIRATES
MINISTRY OF EDUCATION

Trimester Planner
Term one for 2017/2018

Computer Science

Grade 10 General / Advanced

Week	Week No	Period	Chapter	Pages	Overview	Vocabulary	Assessment Focus
10 September 2017	1	1 & 2	N/A	N/A	Use this first week to ensure that all students have access to the Packet Tracer software; contact the service desk to install it if they do not. Complete the 'computing unplugged' activites for the first week. Ensure that all students know how important it is to bring their laptop to class; ask administration to contact parents of those students without laptops. Ensure all students can log into the LMS system; report any issues to the service desk.	Computing Networking LMS	Access the LMS Understand what computing and networking are
17 September 2017	2	1 & 2	1	1-45	Starter: Write the word 'network' on the board. What do students already know about a network? Discuss the features of a network as well as the	Network Internet	List the features of a network including a

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					advantages and disadvantages. Introduce a LAN v a WAN and the differences between these types of networks. Introduce the 'bit' as a size and complete Activity 12, ensuring students know what binary means. Ask students how fast their internet is. Discuss the phrase 'bandwidth' and the different speeds of wireless v wired. Introduce 'throughput' and how this comapres to bandwidth. Ask students if anyone knows what a server is and if anyone uses a games server. Then speak about the client-server model. Introduce some common servers (such as FTP, web, email, and file) and discuss the features of these. As a group, write on the board as many end devices the class can think of (Activity 19). You can skip the 'peer-peer' page as that is extension work. Explain to students every device needs an IP address, a unique address per computer, like your mobile phone number. We can test connectivity through computers using the ping command. You may show students the ping command. Expain that routers are moving your information around the different networks.	WAN LAN Binary Server Client Router	LAN and WAN List the advantages and disadvantages of a network Explain how traffic is moved around different networks (routers)

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					Students should complete Lab Activity 11to get used to Packet Tracer.		
24 September 2017	3	1 & 2	2	50-83	Starter: Ask students how many different types of wireless technology they can think of. Continue in the book to discover GPS, wifi, Bluetooth and NFC. Discuss possible uses for each. Introduce the key networking components. Ensure they know what a router, switch, server, printer, webcam network media and computer are. Drill down into the specifc network parts such as a network card (wireless and wired). Recap what an IP address is (introduced last week) and explain that an IP address has three main parts to get online (an IP address, a subnet mask and default gateway). IP addresses can be set as static or dynamic. Discuss in what situation you might use dynmaic and what situation you would use static. Complete Lab Activity 2.1to get the DHCP server and static IP using the ping command to test it. Starter: Ask students to list any networking and end devices they can remember. Introduce the word 'topology' and the logical and physical topologies (logical being a diagram showing the IP address and	IP Address Gateway Subnet Mask Topology	Task Sheet 1 List end devices and network devices Explain the different media types and the advantages and disadvantages of each Create an ethernet cable

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					physical showing the physical placement of devices). Look at the media that connects our devices and later discuss the topologies (layout) of the networks. Go through the list of network media and the features of each. If you have access to physical cable, show students how to create a cable.		
01 October 2017	4	1 & 2	3	84-107	Starter: Recap media types and network devices. Now go into more detail on what a switch does and what a router does. Discuss the need for rules on a network. Introduce the word 'protocol' and why they matter. Discuss some of the common protocols. This will lead into the TCP/IP model. Go through the TCP IP model and how this helps in the delivery of data on a network. Continue into the OSI model and why we have such models of computers. Starter: Can students still remember the order of the OSI model? Introduce another standard 'ethernet'. Explain that ethernet has an address scheme; on networking hardware (the NIC), this is the MAC Address. Complete Lab Activity 3.1 to find the MAC address of	Protocol OSI TCP / IP Ethernet	Task Sheet 2 Define the word 'protocol' and explain the need for protocols on a network List the layers of the OSI model

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					computers.		
08 October 2017	5	1 & 2	3	108-129	How do students think data travels along the wires? Introduce the phases of encapsulation and decapulation (like wrapping and unwrapping) of information. Explain that data on networks is known as packets. Complete Activity 3.7 as a class. Continue through pages 110-111, discussing the featues of a packet. This moves into how packets travel across a network. Complete Activity 3.9 as a class. Then, this leads into why we have a hierarchical design for networks. Discuss the three levels (access, distribution and core) and the features of each. Recap logical and physical addressing (IP and MAC). Lead into switches (page 125). Discuss the addressing table and how this ensures the right computers get the right messages; the switch is aware of which computers are connected to it. Finish by discussing a broadcast and explain that this will be looked at in more detail next week.	Broadcast Switch Packet Hierarchy	Explain how data travels across a network (packets) List the three layers in network design and the features of each
15 October 2017	6	1 & 2	3	129-149	Recap what a switch, MAC address table and broadcast are. Continue into 'broadcast domains' and explain how many broadcast domains can slow down a network. Networks are divided into parts for different reasons including security, location and logical reasons, such as limiting broadcasts.	Broadcast Domain Packets Network	Explain the advantages and disadvantages of multiple networks and

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					Explain routers are needed to 'route' traffic between different networks. If a computer wishes to communicate with a computer which has an IP address with a different network portion, it must pass through a router. Explain how the packets show this (page 132). Skip to page 144 to complete Lab Activity 3.4 which shows how to connect to a wireless network. Back to page 140. Explain that routers do not just send packets of information on; they also make decisons. There could be different paths to a network; a router will decide the best route based on which is fastest, or more reliable. Routers will not send local network traffic, which means broadcast domains are limited to the LAN that they were created on. For this reason, companies may decide to split up their network using routers. Read through the advantages and disadvantages of splitting up a network (page 143).	Address	a single network connection on a LAN

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22 October 2017	7	1 & 2	4	150-179	Starter: Do students remember what an IP address is and the features of one? What command was used to find the IP address of a computer? Complete Lab Activity 4.1. Discuss how IP addresses work; explain that they are a series of 32 binary digits (1s and 0s) and why we use decimal numbers instead of binary to display addresses. Teach students how to convert from the binary address to the denary address. Introduce the network and host's part of the IP address and that the private address is different than your public adresss. Broadcast and multicast transmisson (pages 165-168) can be skipped unless time allows. Recap static v dynamic IP addresses that was briefly touched on in earlier weeks. Discuss how these work, and the advantages of each. Introduce DHCP and go through the steps of DHCP. Complete Lab Activity 4.2 to set up DHCP on a wireless router. Discuss IPv6, why we have it, when it will be used, etc.	Binary Denary Octet	List the use cases for having static IP addresses and dynamic IP addresses

29 October 2017	8	1 & 2	5	185-193	Complete the lab activity which will be on Edushare, setting up a DHCP server. When students have this set up, explain the steps of DHCP again. Move to page 185 which discusses other network services. Discuss the client and server model and the types of network services that a server can offer. Continue to go through how a web page is requested. Complete Lab Activity 5.1	DHCP Handshake Request DHCP Pool DNS	Task Sheet 4 List the steps of requesting a web page Configure DHCP and DNS on a server to offer these network services
05 November 2017	9	1 & 2	5	194-201	Starter: Recap protocols. Can students list some? Why do we have protocols? Extend this to explain that protocols have 'port numbers'. These port numbers can be changed but some default ones are port 80 (http) and 443 (SSL). These port numbers allow the right application to get the right data. For example, if you are viewing a web page and speaking on Skype, you don't want this data getting mixed up.	Ports	Task Sheet 5 Explain what a 'port' is in networking and why we have them List some common ports
12 November 2017	10	1 & 2	6	207	Starter: What are the advantages of a wireless network v a wired network? List the different devices on a home network. Show the home router photo, and explain the WAN port v the LAN port. Speak about what servers are offered by this. The home router is DHCP, DNS,	SSID Hacker WEP WPA	Set up a home wireless router Explain the features of a home wireless

					router and an access point all in one. Discuss about the electromagnetic spectrum and the type of things that can affect a home wireless network. Discuss the settings on a home router (SSID, security, etc.) and complete the lab activity to set up a home wifi router. Discuss why hackers target networks and how you can protect yourself at home.		router
19 November 2017	11	1 & 2	N/A	N/A	Ensure all students have completed the portfolio of evidence for this term and that they understand the test specifications for the exam.		Exam
26 November 2017	12	1 & 2	N/A	N/A	Students to complete term projects.		Project

The true wealth of a nation lies in its youth…one that is equipped with education and knowledge and which provides the means for building the nation and strengthening its principles to achieve progress on all levels.

H.H. Sheikh Mohammed Bin Zayed Al Nahyan