AS/A Level Applied Information and Communication Technology 9713
Unit 7: Computer Networks

Recommended Prior Knowledge
Students should be aware of the use of networks but not necessarily knowledge of the components. They should be familiar with the need for security measures from everyday experience.

Context
This unit would normally be taught after the AS units. It takes knowledge and understanding to a higher level than the requirements of 0418.

Outline
An outline of what is covered in this particular unit of the scheme of work.

- Network type
- Network security
- Electronic conferencing

AO	Learning outcomes	Suggested Teaching activities	Learning resources
7a	Network type	Students need to be able to discuss these topics in some detail showing good knowledge and understanding that differentiates between the types of network. These topics might be best presented by the teacher in a formal lesson or they can be set as a revision of 0418 topics for presentation to the class Hardware and software requirements need to be known for each type of network	Ref (1) has some background material on networks. The Cisco Network Academy book, First Year Guide, is an excellent source for details on networks. It goes into too much detail for this syllabus but some students might find it interesting. SP3 q5 raises this topic and offers the level of knowledge and understanding that could be required in future.
		LANs **Intranets** **Local email** **Business networks**	Definition of Intranet http://en.wikipedia.org/wiki/Intranet
		Students need to show understanding of how some of	Description of WLAN given on:

AO	Learning outcomes	Suggested Teaching activities	Learning resources
		the organisations in sections 5 and 6 use a WAN.	http://en.wikipedia.org/wiki/WLAN http://www.ts4b.co.uk/wireless_LAN.asp
		WLAN Use of : **Microwave** **Infrared** **Spread spectrum transmission**	Description of infrared http://www.microscope.co.uk/Article138738.htm Description of spread spectrum transmission: http://en.wikipedia.org/wiki/Frequency-hopping_spread_spectrum The limitations of these frequencies need to be explained by a teacher or discussed in a group activity.
		Used for: **Email** **Business networks** The uses of ICT described in sections 5 and 6 require a WLAN.	
		WANs Internet Extranets Email Virtual private network Video conferencing Business networks Telephone call centres Booking systems On-line shopping On-line banking Students need to explore these topics. They can be taught or each could be presented to the group by	http://en.wikipedia.org/wiki/Extranet http://en.wikipedia.org/wiki/Email http://en.wikipedia.org/wiki/Virtual_private_network http://en.wikipedia.org/wiki/Video_conferencing http://en.wikipedia.org/wiki/Call_centre http://en.wikipedia.org/wiki/Online_hotel_reservations http://en.wikipedia.org/wiki/Online_shop http://en.wikipedia.org/wiki/Online_banking

AO	Learning outcomes	Suggested Teaching activities	Learning resources
		students. The emphasis is on the WAN not on how they impact on society.	
7b	Network security	This section links closely with the previous one. Students must show understanding and knowledge of these two means of keeping information secure and ICT system safe from attack. A higher level of knowledge and understanding is required than in 0418. Students must be taught to provide sufficient level of detail. A class discussion would be suitable for this where students' answers can be evaluated against the standards set in the specimen paper. Students need to be able to describe each of these items listed below. Physical **Locked rooms** **Security guards** Software **Firewalls** **Digital certification** **Encryption** **Anti Virus software** **User ID** **Passwords** **Anti-spam** **Anti pop up software** **Physical security** **Anti-spyware software** **Authentication techniques** **Wired equivalent privacy of information**	SP3 q5 is one reference and this could be discussed using SP3 q3 http://en.wikipedia.org/wiki/Online_banking#Security http://en.wikipedia.org/wiki/Online_shopping#Security_issues http://en.wikipedia.org/wiki/Extranet#Security http://en.wikipedia.org/wiki/Transport_Layer_Security http://en.wikipedia.org/wiki/Computer_security

AO	Learning outcomes	Suggested Teaching activities	Learning resources
7c	Electronic conferencing	This is an important area for the use of ICT. If possible an attempt must be made to set up a video or audio conference to make students aware of the technical problems. Examples are offered in the resources section but locals ones should be used to demonstrate the way that ICT provides this service. Teachers and students should explore this section's contents by using a range of methods, such as quiz questions, research and group discussion, presentations for discussion. In a discussion the students will be expected to compare and evaluate the ICT system. **Video conferencing** **Phone conferencing** **Instant messaging** Used in: **Business conferences** **Linking schools** **Research meetings** For each include: **Advantages** **Disadvantages**	Ref (1) page 97 discusses a number of points. This site shows a positive side: http://www.kn.sbc.com/wired/vidconf/ideas.html The following sites are just some examples of video conferencing systems as used in Business and Government: http://www.avmachines.com/video-conferencing.htm http://www.tandberg.net/products/video_systems/index.jsp http://parliamentofindia.nic.in/vidcon.html provides clear guidance on the ICT systems http://www.global-leap.com/ will allow you to arrange a Video Conference worldwide http://www.revision-notes.co.uk/revision/955.html The above site can be also be used in several sections of the A2. CAL, Educational use of ICT, Information source are examples.