

Unit Title: Internet Systems Development	Unit Code: ISD
Level: 6	Learning Hours: 210
Learning Outcomes and Indicative Content:	
Candidates will be able to:	
<ol style="list-style-type: none"> 1. Consider the Internet and its associated technologies. <ol style="list-style-type: none"> 1.1 Explain what is meant by the term 'Internet' and evaluate the available technologies for accessing it. 1.2 Demonstrate an understanding of how the Internet Protocol (IP) provides a 'best effort' service to move packets from source to destination. 1.3 Describe the mechanism that ensures packets are delivered to the correct application at their destination. 1.4. Demonstrate an understanding of how the Transmission Control Protocol (TCP) provides a reliable service to applications. 1.5 Demonstrate an understanding of the Domain Name System (DNS). 1.6 Understand the concept of the Universal Resource Locator (URL). 2. Discuss and assess the World Wide Web in terms of its business benefits. <ol style="list-style-type: none"> 2.1 Explain what is meant by the term 'World Wide Web'. 2.2 Describe the role and functions of the HyperText Transfer Protocol (HTTP). 2.3 Explain what is meant by the terms 'intranet' and 'extranet'. 2.4 Discuss the business benefits that intranets and extranets can provide. 3. Assess the concepts and practice of other major Internet applications protocols. <ol style="list-style-type: none"> 3.1 Identify and explain the purpose of the major electronic mail application protocols. 3.2 Discuss the File Transfer Protocol (FTP). 3.3 Discuss the remote login application protocol (TELNET). 4. Develop web pages using the HyperText Markup Language (HTML) and Cascading Style Sheets (CSS). <ol style="list-style-type: none"> 4.1 Describe the main characteristics of Hypertext Mark Up Language (HTML), XHTML and XML. 4.2 Create reliable, static web pages using HTML. 4.3 Select the most appropriate image type for a given application. 4.4 Create 'forms' to collect user data for submission to a web-server. 4.5 Use CSS to format and structure web pages. 	

5. Develop interactive web pages using client-side scripting.

- 5.1 Demonstrate an understanding of the Document Object Model (DOM).
- 5.2 Construct functions to open and control windows.
- 5.3 Construct functions to manipulate pre-loaded images.
- 5.4 Construct functions to validate forms.

6. Critically compare the technologies associated with web servers.

- 6.1 Discuss the Common Gateway Interface (CGI) standard.
- 6.2 Discuss alternative approaches to creating dynamic web pages.
- 6.3 Compare and contrast the relative merits of JSP and ASP in developing web applications.
- 6.4 Identify issues of significance in selecting appropriate hosting and development strategies.
- 6.5 Describe the concept of a Java applet and understand how they are used within a web application.

7. Analyse and draw conclusions on web site design issues.

- 7.1 Discuss navigational guidelines.
- 7.2 Discuss international issues.
- 7.3 Discuss disability discrimination issues.
- 7.4 Discuss performance issues.

8. Make judgements on the security threats associated with the Internet and evaluate techniques designed to minimise them.

- 8.1 Discuss the methods used to steal or compromise private data and the damage that may result.
- 8.2 Discuss firewall technologies.
- 8.3 Compare and contrast symmetric and asymmetric encryption techniques.
- 8.4 Explain how encryption techniques can be used to provide data confidentiality, authentication and non-repudiation.
- 8.5 Describe a 'strong' authentication protocol and the context in which this should be used.

Assessment Criteria:

- Assessment method: written examination
- Length of examination: three hours
- Candidates should answer four questions from a choice of eight, each question carrying equal marks.

Recommended Reading

Castro E, *HTML, XHTML and CSS* (2006), Peachpit Press, ISBN 0321430840

Additional Reading

Bates CD, *Web Programming: Building Internet Applications* (2006), John Wiley and Sons Ltd, ISBN: 9780470017753

Zwicky E, Cooper S, *Building Internet Firewalls* (2000), O'Reilly, ISBN 1565928717

Web Resources

<http://computer.howstuffworks.com/internet-infrastructure.htm> – contains a series of introductory articles describing Internet technologies;
<http://www.webmonkey.com/webmonkey/index.html> – e-commerce tutorial;
<http://www.w3schools.com> – contains a wide range of programming tutorials and the basics of TCP/IP;
<http://www.w3.org> – standards, technical articles etc.;
<http://www.webstyleguide.com> – an overview of design guidelines;
http://www.cert.org/encyc_article/tocencyc.html – although a little dated, the article provides a concise description of internet security threats;
<http://williamstallings.com/Crypto/Crypto4e.html> – contains links concerning cryptography and general security;
<http://www.us-cert.gov/cas/tips/> – similar content to the previous site.

Note

The above list is not exhaustive; moreover, the very nature of the Web means that sites may change location and content.