



# **BCS Higher Education Qualifications**

## **Diploma in IT**

### **Principles of Internet Technologies Syllabus**

Version 4.2

July 2020

This qualification is regulated by one or more of the following: Ofqual, Qualifications Wales, CCEA Regulation or SQA.

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## 1. Change History

Any changes made to the syllabus shall be clearly documented with a change history log. This shall include the latest version number, date of the amendment and the changes made. The purpose is to identify quickly what changes have been made.

Version Number	Date	Changes Made
Version 1.0		Released
Version 2.0	March 2016	Re-formatted with syllabus numbering – no change to content
Version 3.0	March 2016	Syllabus categories 1, 2, 3 and 4 updated to reflect modern developments.
Version 4.0	Dec 2016	Regulated statement added
Version 4.1	February 2019	Changes to booklist
Version 4.2	July 2020	Address changed

## 2. Rationale

The Internet has grown from the simple desire to network computers to a phenomenon which is leaving few aspects of our daily lives untouched. It offers an abundance of opportunities and technological developments are moving at an astounding rate.

Against this context of rapid change, this module examines the origins, technology and applications of the Internet as well as website development, performance and security issues.

## 3. Aims

- To Develop an understanding of the Internet and WWW

## 4. Objectives

Upon successful completion of this module, candidates will be able to demonstrate their competence in, and their ability to:

- Describe the evolution of the Internet.
- Understand the protocols and standards used throughout the Internet.
- Discuss a variety of Internet and WWW applications and related technologies.
- Evaluate the opportunities and threats created by interconnecting computers via the Internet

## 5. Prior Knowledge Expected

Candidates must have achieved the Certificate in IT or have an appropriate exemption to be entered for the Diploma in IT.

Candidates are required to become a member of BCS, The Chartered Institute for IT to sit and be awarded the qualifications. Candidates may apply for a four-year student membership that will support them throughout their studies.

## 6. Format and Duration of the Examination

The examination is a two-hour closed book examination (no materials can be taken into the examination room) based on the syllabus in this document.

Examinations are held once a year and are undertaken in normal examination conditions with one or more duly appointed invigilators.

The pass mark is 40%.

## 7. Syllabus Detail

Category	Ref	Content
1 THE INTERNET AND WWW	1.1	Evolution of the Internet, Growth of the World Wide Web and Big Data.
	1.2	Client-Server model.
	1.3	Architecture of the Intranet/Internet /Extranet.
	1.4	Access methods: dialup, ISDN, ADSL/2+, cable, LAN, WIFI, Mobile & Satellite.
	1.5	Proxy servers.
	1.6	Application areas: E-commerce, Education
	1.7	Entertainment such as games and gambling.
	1.8	Internet of Things (IoT).
	1.9	Search Engines, webbots, integrity of information, databases online.
2 PROCESS, STANDARDS AND PROTOCOLS	2.1	TCP/IP model
	2.2	TCP/IP fixed and dynamic IP addressing, IPv4 and IPv6.
	2.3	DNS and URLs.
	2.4	Email: email clients, server and gateways; SMTP, POP3, IMAP and Webmail.
	2.5	File transfer – FTP.
	2.6	Remote login – telnet. WWW – HTTP and HTTPS.
	2.7	Role of W3C
	2.8	Accessibility.
	2.9	Mobile and Ubiquitous computing, EDGE/3G/HSPA+/4G ,GPS, QR codes, RFID, location and context awareness.
3 WEBSITE DEVELOPMENT	3.1	Static and dynamic HTML.
	3.2	Fluency in at least one of the following client-side scripting languages: JavaScript or VBscript.
	3.3	DOM model, XML, CSS and XSL.
	3.4	Development tools: page and site authoring, delivery and maintenance tools.
	3.5	JavaScript frameworks and libraries.
	3.6	Mobile Web.
	3.7	Usability issues.
4 SECURITY AND PERFORMANCE	4.1	Security policies/ Privacy/ Identification/ Authentication /Access control.
	4.2	Hardware and software, Risk assessment, vulnerabilities.
	4.3	Threats and attack methods such as Viruses, Spam, Root kits, “phishing”, Firewalls – spyware plug-ins.
	4.4	Performance: speed, reliability, downtime, bandwidth. Use of network utility tools to discover performance issues.

## 8. Recommended Reading List

Module Name	ISBN 10	ISBN 13
<b>Primary Texts</b>		
• Presten Gralla and Michael Troller., How the Internet Works, Que, (8 <sup>th</sup> Edition), 2006.	0789736268	978-0789736260
• Perry J. et al, The Internet – Illustrated Introductory, Course Technology (3rd Ed)	0619109580	
<b>Other Texts</b>		
• McPeak, J, Beginning JavaScript (5 <sup>th</sup> Edition), Wrox, 2015	1118903331	978-1118903339
• Berners-Lee, T. et al, Weaving the Web, Harper Business, 2000.	006251587X	978-0062515872
• Hofstetter, F.T., Internet Literacy, McGraw Hill (4th Ed), 2005	0072260610	978-0072260618
• Julie C. Meloni and Jennifer Kyrnin, HTML, CSS, and Javascript All in One (3 <sup>rd</sup> Ed.), Sams (2018)	0672338084	978-0672338083
• Freeman, E. and Robson. E., Head First JavaScript Programming, O'Reilly, 2014	0596527748	978-0596527747
• Robbins, J., Learning Web Design (5 <sup>th</sup> edition), O'Reilly, 2018	1491960205	978-1491960202
• Anderson, P., Web 2.0 and Beyond: Principles and Technologies, Chapman & Hall/CRC Textbooks in Computing, 2012	1439828679	978-1439828670
• Bahga, A and Madiseti, V., Internet of Things: A Hands-On Approach, VPT, 2014	0996025510	978-0996025515
• Casad, J., Sams Teach Yourself TCP/IP in 24 Hours (5 <sup>th</sup> Ed), 2011.	0672335719	978-0672335716
<b>Other Reading</b>		
World Wide Web Consortium (W3C) <a href="http://www.w3.org">http://www.w3.org</a>		

## 9. Contact Points

### Email:

Customer Service team via <https://www.bcs.org/contact-us>

### Phone:

UK: 01793 417417

Overseas: +44 (0)1793 417417

Lines are open Monday to Friday, 08.15 a.m. to 5.15 p.m. UK time.

### Website:

[www.bcs.org/heq](http://www.bcs.org/heq)

### Post:

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