# BCS Higher Education Qualifications

# Diploma in IT

# Principles of Internet Technologies Syllabus

Version 4.1

June 2019

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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 |

# 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 |
|---|---|---|
| **Primary Texts** | | |
| • Presten Gralla and Michael Troller., How the Internet Works, Que, (8th Edition), 2006. | 0789736268 | 978-0789736260 |
| • Perry J. et al, The Internet – Illustrated Introductory, Course Technology (3rd Ed) | 0619109580 | |
| **Other Texts** | | |
| • McPeak, J, Beginning JavaScript (5th 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 Kyyrnin, HTML, CSS, and Javascript All in One (3rd 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 (5th 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 Madisetti, V., Internet of Things: A Hands-On Approach, VPT, 2014 | 0996025510 | 978-0996025515 |
| • Casad, J., Sams Teach Yourself TCP/IP in 24 Hours (5th Ed), 2011. | 0672335719 | 978-0672335716 |
| **Other Reading** | | |
| World Wide Web Consortium (W3C) http://www.w3.org | | |

## 9. Contact Points

**Email:**
Customer Service team via https://www.bcs.org/contact-us

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

**Website:**
www.bcs.org/heq

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Swindon SN2 1FA, United Kingdom