

BCS Higher Education Qualifications

Level 6 Web Engineering Syllabus

Version 3.0

December 2016

This is a United Kingdom government regulated qualification which is administered and approved by one or more of the following: Ofqual, Qualification in Wales 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
Version1.0	March 2014	Released
Version 2.0	March 2016	Re-formatted with syllabus numbering – no change to content
Version 3.0	Dec 2016	Regulation Statement Added

2. Rationale

This module is a progression route from the Diploma module Principles of Internet Technologies. There is a need for technical professionals who can develop and underpin content development for the Web and other emerging platforms.

Expanding and developing on material introduced in the Diploma module, this module couples in-depth understanding of a number of key Web technologies, alongside a more strategic and high level approach to the technological development of Web content. Whilst the core focus is on the Web, current development requires an appreciation of other emerging media and the understanding of core issues related to development, dissemination and deployment throughout these media.

3. Aims

- To develop a technical overview of the Web & emerging platforms
- To appreciate the mechanisms by which web content can be enriched to take account of contextual factors
- To identify, evaluate and apply appropriate technologies for Web development

4. Objectives

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

- Devise appropriate hosting and server strategies for Web sites in various application areas
- Create and use of methods of web-based user interaction
- Understand the use of basic metrics to assess software quality
- Create test approaches and strategies
- Evaluate and assess the security & privacy implications of web applications
- Compare and contrast encryption mechanisms
- Implement dynamic Web pages
- Use XML to enhance cross-application compatibility
- Apply and manipulate the DOM using client-side scripting languages
- Construct and reverse-engineer style sheets and XML documents
- Demonstrate an appreciation of the issues in storing and retrieving data
- Appreciate the social, ethical and legal considerations of the web
- Appreciate the uses and technical limitations of syndication, streaming and collaborative authoring technologies
- Demonstrate an appreciation of search and indexing algorithms

5. Prior Knowledge Expected

The learner must have achieved the Diploma in IT or have an appropriate exemption to be entered for the Professional Graduate 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 three 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 STRATEGIES FOR WEB DEVELOPMENT	1.1	Hosting strategies: Domain registration, free versus commercial hosting solutions
	1.2	Server/Database replication, backup and archiving, RAID, bandwidth, availability
2 PROGRAMMING FOR THE WEB	2.1	Interaction between browser and server: HTML forms, GET and POST data
	2.2	Limiting access with htaccess and htpasswd configuration files
	2.3	Developing dynamic content using JavaScript: manipulating the DOM using JavaScript
	2.4	Developing dynamic content using PHP (Note: The use of JSP, ASP or Perl is equally acceptable for this paper): Interfacing with a database (limited knowledge of SQL syntax is required to allow iterating over a data set)
	2.5	Validating user input (using simple pattern matching)
3 XML AND CSS	3.1	XML, XHTML 1.0 Transitional/Strict, XSLT, DTD, CSS (1 and 2)
	3.2	Well-formedness, validity
4 SECURITY & PRIVACY	4.1	Client, server and network risks, attacks, prevention and mitigation
	4.2	Integrity, authentication, non-repudiation
	4.3	Public & Private key encryption, On the fly encryption, hashes, the uses and limitations of RSA, DES and AES
	4.4	Digital Certificates, HTTPS, Steganography, Biometrics
	4.5	Phishing, Web profiling, Internet anonymity, Identity theft
5 QUALITY	5.1	Testing approaches and strategies
	5.2	ISO 9126 characteristics of quality
	5.3	Metrics
	5.4	Quality of service
	5.5	Standards & conformance: W3C, WAI, CSS
6 SOCIAL AND ETHICAL ISSUES	6.1	Social and ethical impact of technologies for controlling web access
	6.2	Social and commercial consequences of media convergence
	6.3	Social and economic effects of e-commerce
	6.4	Ethical and economic implications of accessibility policies and legislation
7 EMERGING TECHNOLOGIES AND PLATFORMS	7.1	Web services
	7.2	File sharing & distribution mechanisms: Traditional downloading/uploading, FTP, Bit torrent, P2P networks
	7.3	Streaming media, RSS, IRC, Wiki, Blog, Web Forum, Portals
	7.4	Wireless connectivity
	7.5	Online connectivity of PDAs, games consoles and mobile phones

8. Recommended Reading List

Module Name	ISBN 10	ISBN 13
Primary Texts		
• Bates, C., Web Programming: Building Internet Applications, John Wiley & Sons Inc (3rd Ed), 2006.	0470017759	978-0470017753
• Garfinkel, S., Spafford, G., Web Security, Privacy & Commerce, O'Reilly UK (2nd Ed), 2001.	0596000456	978-0596000455
• Ullman, L., PHP for the World Wide Web: Visual QuickStart Guide, (4 th Ed), 2011.	0321733452	978-0321733450
Other Texts		
• Schneier, B., Applied Cryptography: Protocols, Algorithms and Source Code in C, John Wiley & Sons Inc, 2nd Ed., 1995	0471117099	978-0471117094
• Schneier, B., Secrets and Lies: Digital Security in a Networked World, John Wiley & Sons Inc, 2004.	0471453803	978-0471453802
• Dana Moore et al, Professional Rich Internet Applications: AJAX and Beyond, Wrox (Wiley), 2007	0470082801	978-0470082805
Other Reading		
W3C Web Accessibility Initiative http://www.w3.org/WAI		
W3C Extensible Mark-up Language http://www.w3.org/XML		
W3C Platform for Internet Content Selection http://www.w3.org/PICS		
PHP: Hypertext Pre-processor http://www.php.net		
W3schools JavaScript Tutorial http://www.w3schools.com/is/		

9. Contact Points

Email:

Customer Service team via www.bcs.org/contact

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Overseas: +44 (0)1793 417424

Lines are open Monday to Friday, 08.15 a.m. to 5.45 p.m. UK time.

Website:

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