



# **BCS Higher Education Qualifications**

## **Diploma in IT**

### **Database Systems Syllabus**

Version 3.1

June 2019

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
V1		Released
V1.1	March 2015	Re-formatted with syllabus numbering – no change to content
V1.2	March 2016	No change to content
V2.0	Dec 2016	Regulated statement added
V3.1	Feb 2019	Minor update to syllabus detail and updated reading list

## 2. Rationale

This module provides candidates with the necessary knowledge and skills to understand the principles and practice of database systems development

## 3. Aims

- To introduce the theory of the relational model and relational programming languages
- To write data manipulation commands in SQL
- To write data definition commands in SQL
- To specify the functional and data requirements for a typical database application
- To produce detailed data models and their associated logical schemas
- To design the structure and functionality of a forms based user interface for a database application
- To be able to describe data distribution and data connectivity over a network

## 4. Objectives

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

- Draw and interpret data models
- Write simple and effective SQL statements
- Design appropriate user interfaces
- Produce working schemas

## 5. Prior Knowledge Expected

### Diploma in IT

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 twice 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	1.1	Theoretical concepts : Database design, Configuration and development techniques
2	2.1 2.2 2.3	Comparison of a data-centred approach with file-based approach. Relational and post-relational approaches Logical and physical data independence how it is achieved
3	3.1 3.2	Entity relationship diagrams and conceptual modelling. Relationship constraints and translation to relational model.
4	4.1 4.2 4.3	Functional Dependency theory and Normalisation. Relational modelling. Simple relational algebra programs. Features of relational algebra in SQL.
5	5.1	Standards and basic structure of SQL for data definition, views, updates, insertion and referential integrity constraints.
6	6.1 6.2	Concurrency, recovery and database integrity. Access controls, Granting Authorisation and Auditing the database

## 8. Recommended Reading List

Database Systems	ISBN 10	ISBN 13
<b>Primary Texts</b>		
• McFadden J.A., & Hoffer F.R.: Modern Database Management, Benjamin Cummins (11th Ed), 2012	0273779281	978-0273779285
• Silberschatz A., Korth H., and Sudarshan S. : Database System Concepts, McGraw-Hill (6th Ed), 2010	007352332	978-0073523323
• Clare Churcher : Beginning Database Design: From Novice to Professional, Apress, 2013	1590597699	9781590597699
• Thomas M. Connolly, Carolyn Begg : Database Systems: practical approach to design, implementation, and management, Pearson Education Limited, (6th Ed), 2015	1292061189	978-1292061184
<b>Other Texts</b>		
• John L. Viescas : SQL Queries for Mere Mortals: A Hands-On Guide to Data Manipulation in SQL, Addison Wesley, 2018	0134858336	978-0134858333

## 9. Contact Points

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