



BCS Higher Education Qualifications

Diploma in IT

Systems Analysis & Design Syllabus

Version 3.2

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 2015	Re-formatted with syllabus numbering – no change to content
Version 3.0	Dec 2016	Regulated statement added.
Version 3.1	Feb 2019	Corrections made.
Version 3.2	July 2020	Address changed

2. Rationale

Systems analysis and design are core, interlocking, elements of system development. Systems analysis is the process of turning a set of user requirements into a logical system specification. Systems design takes the logical specification and converts it into a set of designs that can be implemented to create a working application. There is a range of activities that are carried out during these processes. Traditional approaches have attempted to create carefully defined procedures that, if adhered to rigorously, should result in high quality applications. This approach is now challenged by more 'agile' approaches that stress the need to avoid overly bureaucratic, rigid, and costly development practices. Candidates need to be more familiar with the principles and applicability of both approaches.

3. Aims

- To provide an understanding of the role of systems analysis and design within various systems development lifecycles
- To develop an awareness of the different approaches that might be taken to systems analysis and design
- To understand the activities of the systems analyst and systems designer, and apply some current techniques

4. Objectives

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

- describe different lifecycle models and explain the contributions of systems analysis and design within them;
- discuss various approaches to systems analysis and design and explain their strengths and weaknesses;
- evaluate the tools and techniques of systems analysis and design that may be used in a given context;
- use appropriate methods and techniques to produce an analysis of a given scenario
- use appropriate methods and techniques to produce a system design for a given scenario
- provide suitable documentation for systems analysis and design activities,

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 The context of systems analysis and design	1.1	Systems development lifecycle and position of SAD within it;
	1.2	Role of business analysts, system analysts and system architects;
	1.3	The characteristics and purpose of systems analysis and design methods and methodologies (including agile approaches such as Atern/DSDM Dynamic Systems Design Method, and XP eXtreme Programming);
	1.4	Adaptation of methodologies to deal with the circumstances of a development or application environment, including adoption/adaptation of existing software solutions.
2 Requirements elicitation and business analysis	2.1	Stakeholder analysis
	2.2	Requirements gathering techniques
	2.3	Prioritization of requirements
	2.4	Categorization of requirements, including the difference between function and quality requirements
	2.5	Gap analysis
	2.6	Business case and feasibility studies
	2.7	Business activity modelling, including the use of data flow diagrams (DFDs).
	2.8	Use of prototyping, particularly as a method of requirements elicitation
3 System analysis techniques and tools	3.1	Use cases and scenarios
	3.2	Identification of events, actors and use cases
	3.3	Use case realisation
	3.4	Entity relationship modelling (ERM)
	3.5	Cross-referencing functions to data entities via Create/Delete/Update/Delete tables
	3.6	Activity diagrams
4 Logical data design	4.1	Conversion of ERM to a relational schema
	4.2	Normalisation and denormalisation
	4.3	Identification of validation rules and other database constraints
	4.4	Views
	4.5	Data migration issues, for example mapping between equivalent data items in new and old applications
5. Object oriented design	5.1	OO concepts: classes and objects; encapsulation, interfaces, inheritance, polymorphism, message passing
	5.2	Relating objects; associations and aggregations
	5.3	Static modelling, including UML class diagrams;
	5.4	Dynamic modelling: including UML interaction diagrams (e.g. sequence, communication/collaboration diagrams) UML statecharts
6 Interaction design	6.1	Usability issues – this includes both ease of use and fitness for business purpose
	6.2	Interface design

8. Recommended Reading List

Systems Analysis and Design	ISBN 10	ISBN 13
Primary Texts		
Bennett, S., McRobb, S., and Farmer, R. <i>Object-oriented systems analysis and design using UML</i> . McGraw-Hill (4 th Edition) 2010	0077125363	978-0077125363
Avison, D. and Fitzgerald, G. <i>Information systems development: methodologies, techniques and tools</i> . McGraw-Hill (4 th Edition) 2006, Chapters 1-3, 6,7,11,13,22,27,28 Sections 5.6, 12.1,12.7,12.9,21.1, 23.2, 23.3, 26.1	0077114175	978-0077114176
Maciaszek, L.A. <i>Requirements Analysis and System Design: developing information systems with UML</i> (3 rd Edition)	03211440366	978-0321440365
Paul. D., Cadle J., Yeates, D. (editors) <i>Business Analysis</i> . BCS 2010	1906124612	978-1906124618
Dennis, A., Wixom, B.H., Teagarten, D. <i>Systems analysis and design: an object-oriented approach with UML</i> . Wiley 5 th Edition 2015		978-1118804674

9. Contact Points

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