



BCS Professional Certificate in Advanced Requirements Engineering Syllabus

**Version 2.0
September 2020**

This professional certification is not regulated by the following United Kingdom Regulators – Ofqual, Qualification in Wales CCEA or SQA.

BCS Professional Certificate in Advanced Requirements Engineering

Contents

Change History	4
Introduction	5
Target Audience.....	5
Levels of Knowledge / SFIA Levels	5
Learning Outcomes.....	6
Study Format and Duration	6
Eligibility for this Examination.....	6
Examination Format and Duration.....	6
Additional Time	7
Syllabus	9
1. The Enterprise Context (12.5%, K3).....	9
1.1. Enterprise Architecture	9
1.2. Business Architecture	9
1.3. Customer and user experience	9
2. The Business Analysis Service Portfolio (7.5%, K3).....	9
2.1. Service thinking and value propositions	9
2.2. The Business Analysis Service Framework (BASF).	9
2.3. Project, programme and portfolio management	9
2.4. Requirements governance	9
3. The Requirements Engineering Plan (15%, K4)	10
3.1. Programme Manager, Project Manager, Business Architect	10
3.2. Terms of reference for requirements engineering	10
3.3. Problem definition and problem statements	10
3.4. The Outcome Frame	10
3.5. Planning for requirements engineering	10
3.6. Estimating for requirements engineering	10
4. Engaging with Stakeholders (15%, K3)	10
4.1. Relevance of elicitation techniques:	10
4.2. Levels of listening	10
4.3. Listening barriers and behaviours	10
4.4. Assertiveness	10
5. The Requirements Taxonomy (15%, K3)	11
5.1. The hierarchy of requirements	11

5.2. The Business Use Case Diagram	11
5.3. Prioritisation techniques	11
5.4. Decomposition of requirements and priorities	11
5.5. Requirements traceability and re-use	11
6. Non-Functional Requirements: Customer Experience Requirements (15%, K4)	11
6.1. User role attributes and personas	11
6.2. Usability requirements	11
6.3. Accessibility requirements	12
6.4. Look and feel requirements	12
6.5. Visualisation techniques	12
7. Non-Functional Requirements: Service Quality Requirements (15%, K4)	12
7.1. Rationale for service quality requirements	12
7.2. Performance requirements	12
7.3. Backup and recovery requirements	12
7.4. Archiving and deletion requirements	12
7.5. Maintainability and reliability requirements	12
7.6. Security and access requirements	12
8. Acceptance and Approval of Requirements (5%, K2).....	13
8.1. Quality assurance for requirements engineering	13
8.2. Analysis and validation of requirements engineering outputs	13
8.3. Validation and the requirements engineering plan	13
8.4. Acceptance testing	13
Recommended Reading List.....	14
Further reading references.....	15

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 changes made. The purpose is to identify quickly what changes have been made.

Version Number	Changes Made
Version 2.0 September 2020	Syllabus refresh including structure, content and references.
Version 1.0 September 2016	Syllabus created.

Introduction

The BCS Professional Certificate in Advanced Requirements Engineering assesses competence with regard to the environment, context, planning, governance and execution of requirements engineering. This syllabus includes some topics that are introduced in the BCS Practitioner Certificate in Requirements Engineering. Their inclusion in this professional certification is to ensure there is complete coverage of the subjects that are fundamental to an understanding of requirements.

The examination leading to the BCS Professional Certificate in Advanced Requirements Engineering will assess candidates using complex multiple-choice questions that require a deeper level of understanding and a demonstrable ability to apply the concepts and techniques to a given scenario.

Target Audience

This certification is relevant for anyone wishing to extend their knowledge of the requirements engineering framework. This includes business architects, business analysts, project managers and business managers.

Levels of Knowledge / SFIA Levels

This course will provide candidates with the levels of difficulty / knowledge skill highlighted within the following table, enabling them to develop the skills to operate at the levels of responsibility indicated. The levels of knowledge and SFIA levels are explained in on the website www.bcs.org/levels.

Level	Levels of Knowledge	Levels of Skill and Responsibility (SFIA)
K7		Set strategy, inspire and mobilise
K6	Evaluate	Initiate and influence
K5	Synthesise	Ensure and advise
K4	Analyse	Enable
K3	Apply	Apply
K2	Understand	Assist
K1	Remember	Follow

Learning Outcomes

Candidate will be able to demonstrate understanding, application and analysis of requirements engineering in the following areas:

- 1 – The Enterprise Context
- 2 – The Business Analysis Service Portfolio
- 3 – The Requirements Engineering Plan
- 4 – Engagement with Stakeholders
- 5 – The Requirements Taxonomy
- 6 – Non-Functional Requirements: Customer Experience Requirements
- 7 – Non-Functional Requirements: Service Quality Requirements
- 8 – Acceptance and Approval of Requirements

Study Format and Duration

Candidates can study for this certificate in two ways:

- Attending an accredited training course. This will require a minimum of 18 hours of study over a minimum of three days.
- Self-study. Self-study resources include online learning and recommended reading (see syllabus Reading List).

Eligibility for the Examination

There are no pre-requisites for entry to the examination although attendance at an accredited training course is strongly recommended.

It is recommended that candidates have gained the 'BCS Practitioner Certificate in Requirements Engineering'.

Examination Format and Duration

Type	40 multiple choice questions
Duration	1 hour and 30 minutes.
Example Question	One of the stakeholders on a Human Resource (HR) project, Damon Miles, is a senior manager within HR. His view must be sought prior to changes taking place. His Director, Sheila Jenkins, has overall 'yes' or 'no' decision authority. How would Damon be classified on a RACI matrix? A. Accountable B. Responsible C. Informed D. Consulted ✓
Supervised	Yes
Open Book	No
Pass Mark	26/40 (65%)
Calculators	Calculators cannot be used during this examination
Delivery	Digital and paper-based examination

Additional Time

For Candidates Requiring Reasonable Adjustments Due to a Disability

Please refer to the [reasonable adjustments policy](#) for detailed information on how and when to apply.

For Candidates Whose Language is Not the Language of the Examination

If the examination is taken in a language that is not the candidate's native/official language, then they are entitled to:

- 25% extra time.
- Use their own paper language dictionary (whose purpose is translation between the examination language and another national language) during the examination. Electronic versions of dictionaries will not be allowed into the examination room.

Guidelines for Accredited Training Organisations

Each major subject heading in this syllabus is assigned a percentage weighting. The purpose of this is:

- 1) Guidance on the proportion of content allocated to each topic area of an accredited course.
- 2) Guidance on the proportion of questions in the exam.

Courses do not have to follow the same order as the syllabus and additional exercises may be included if they add value to the training course.

Question Weighting

Syllabus Area	Syllabus Weighting	Target number of questions
1 – The Enterprise Context	12.5%	5
2 – The Business Analysis Service Portfolio	7.5%	3
3 – The Requirements Engineering Plan	15%	6
4 – Engagement with Stakeholders	15%	6
5 – The Requirements Taxonomy	15%	6
6 – Non-Functional Requirements: Customer Experience Requirements	15%	6
7 – Non-Functional Requirements: Service Quality Requirements	15%	6
8 – Acceptance and Approval of Requirements	5%	2
Total	100%	40 Questions

Trainer Criteria

Criteria	<ul style="list-style-type: none">• Hold the BCS Professional Certificate in Advanced Requirements Engineering• Have a minimum of 2 years' training experience or 1 year with a recognised qualification• Have a minimum of 3 years' practical experience in the relevant subject area
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Classroom Size

Trainer to candidate ratio	1:16
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Excerpts from BCS Books

Accredited Training Organisations may include excerpts from BCS books in the course materials. If you wish to use excerpts from the books you will need a license from BCS to do this. If you are interested in taking out a licence to use BCS published material, you should contact the Head of Publishing at BCS outlining the material you wish to copy and the use to which it will be put.

Syllabus

For each top-level area of the syllabus a percentage and K level is identified. The percentage is the exam coverage of that area, and the K level identifies the maximum level of knowledge that may be examined for that area.

1. The Enterprise Context (12.5%, K3)

1.1. Enterprise Architecture

- 1.1.1. Explain the rationale for enterprise and business architecture.
- 1.1.2. Define the Enterprise Architecture domains
- 1.1.3. Explain the structure of the Zachman framework including: the columns (what, how, where, who, when, why) and the rows (contextual, conceptual, logical, physical, detailed, functioning).

1.2. Business Architecture

- 1.2.1. Apply the Business Model Canvas to business scenarios.
- 1.2.2. Identify and analyse capabilities.
- 1.2.3. Develop a value stream diagram
- 1.2.4. Explain the use of capabilities in enabling a value stream.

1.3. Customer and user experience

- 1.3.1. Define customer experience and user experience.
- 1.3.2. Distinguish customer experience from user experience.

2. The Business Analysis Service Portfolio (7.5%, K3)

2.1. Service thinking and value propositions

- 2.1.1. Define the principles of service thinking and value co-creation.
- 2.1.2. Explain the concept and attributes of a value proposition.

2.2. The Business Analysis Service Framework (BASF).

- 2.2.1. Define the services within the Business Analysis Service Framework (BASF).
- 2.2.2. Explain the context and use of the BASF in relation to the delivery of the requirements definition service.

2.3. Project, programme and portfolio management

- 2.3.1. Define project, programme and portfolio management and explain the relationship between each.
- 2.3.2. Define the relationship between requirements engineering and project, programme and portfolio management.

2.4. Requirements governance

- 2.4.1. Explain the process of requirements governance using SIPOC (Supplier, Input, Process, Output, Customer).
- 2.4.2. Explain the relationship between IDEF0 controls and mechanisms in relation to requirements governance.

- 2.4.3. Explain requirements engineering within the context of an agile or iterative change delivery approach using a product backlog.
- 2.4.4. Explain requirements engineering within the context of a traditional or waterfall change delivery approach using a requirements catalogue or business requirements document.

3. The Requirements Engineering Plan (15%, K4)

- 3.1. Programme Manager, Project Manager, Business Architect
 - 3.1.1. Define the roles and responsibilities of the Programme Manager, Project Manager and Business Architect.
- 3.2. Terms of reference for requirements engineering
 - 3.2.1. Describe the content of a terms of reference for requirements engineering.
- 3.3. Problem definition and problem statements
 - 3.3.1. Evaluate a problem statement
- 3.4. The Outcome Frame
 - 3.4.1. Explain the Outcome Frame.
- 3.5. Planning for requirements engineering
 - 3.5.1. Illustrate an understanding of the importance of planning for requirements engineering.
 - 3.5.2. Analyse stakeholders using the RACI technique.
 - 3.5.3. Explain the relationship between requirements planning and requirements governance.
 - 3.5.4. Describe the content of a requirements engineering plan.
 - 3.5.5. Distinguish between linear and agile software development approaches.
- 3.6. Estimating for requirements engineering
 - 3.6.1. Describe the top down, bottom up and PERT approaches to estimation.

4. Engaging with Stakeholders (15%, K3)

- 4.1. Relevance of elicitation techniques:
 - 4.1.1. Analyse a given scenario using the cultural web
- 4.2. Levels of listening
 - 4.2.1. Apply the levels of listening to a given scenario.
- 4.3. Listening barriers and behaviours
 - 4.3.1. Identify listening barriers and behaviours.
 - 4.3.2. Apply listening barriers and behaviours to a given scenario.
 - 4.3.3. Explain questioning approaches.
- 4.4. Assertiveness
 - 4.4.1. Define assertiveness.

5. The Requirements Taxonomy (15%, K3)

5.1. The hierarchy of requirements

- 5.1.1. Explain the importance and application of the hierarchy of requirements.
- 5.1.2. Identify requirements that are Business Requirements (General and Technical).
- 5.1.3. Identify requirements that are Solution Requirements (Functional and Non-Functional)
- 5.1.4. Identify transition and user interface requirements
- 5.1.5. Explain the influence of business strategy on requirements.
- 5.1.6. Explain the influence of business ethos and core values on requirements.

5.2. The Business Use Case Diagram

- 5.2.1. Describe the Business Use Case Diagram.
- 5.2.2. Describe how the Business Use Case Diagram relates to requirements.
- 5.2.3. Explain the relationship between customer experience and requirements using the Business Use Case.

5.3. Prioritisation techniques

- 5.3.1. Apply MoSCoW and the Kano model to prioritise requirements.

5.4. Decomposition of requirements and priorities

- 5.4.1. Discuss the importance of decomposing requirements and their priorities.
- 5.4.2. Identify the difference between goal and functional decomposition.

5.5. Requirements traceability and re-use

- 5.5.1. Explain the rationale for requirements traceability and the approach to achieving traceability.
- 5.5.2. Describe the advantages of requirements reuse.
- 5.5.3. Explain the rationale for requirements patterns.

6. Non-Functional Requirements: Customer Experience Requirements (15%, K4)

6.1. User role attributes and personas

- 6.1.1. Identify the user role attributes for a given scenario.
- 6.1.2. Illustrate the use of the persona technique.
- 6.1.3. Apply user role analysis.

6.2. Usability requirements

- 6.2.1. Explain the components of usability requirements.
 - 6.2.1.1. Learnability.
 - 6.2.1.2. Satisfaction.
 - 6.2.1.3. Efficiency.
 - 6.2.1.4. Memorability.
 - 6.2.1.5. Errors or error protection.

- 6.3. Accessibility requirements
 - 6.3.1. Define the six steps of the AEGIS Open Accessibility Framework.
 - 6.3.2. Identify and apply the key principles of the Web Content Accessibility Guidelines (WCAG 2.1).
- 6.4. Look and feel requirements
 - 6.4.1. Define look and feel requirements.
- 6.5. Visualisation techniques
 - 6.5.1. Identify visualisation techniques to elicit non-functional requirements.

7. Non-Functional Requirements: Service Quality Requirements (15%, K4)

- 7.1. Rationale for service quality requirements
 - 7.1.1. Explain the rationale for service quality requirements.
- 7.2. Performance requirements
 - 7.2.1. Define the elements of performance:
 - 7.2.1.1. Speed of response.
 - 7.2.1.2. Scalability.
 - 7.2.1.3. Longevity.
 - 7.2.1.4. Availability.
 - 7.2.1.5. Capacity.
 - 7.2.1.6. Accuracy.
- 7.3. Backup and recovery requirements
 - 7.3.1. Describe the relationship between business risk, business continuity, and backup and recovery strategy.
- 7.4. Archiving and deletion requirements
 - 7.4.1. Describe the impact of legislation and compliance on archiving and deletion requirements.
- 7.5. Maintainability and reliability requirements
 - 7.5.1. Analyse a given situation to identify maintainability and reliability requirements.
 - 7.5.2. Describe the relationship between maintainability and reliability requirements.
- 7.6. Security and access requirements
 - 7.6.1. Explain access permission requirements and techniques to elicit and document them.
 - 7.6.2. Explain security requirements and techniques to elicit them.
 - 7.6.3. Explain and apply the misuse case approach.

8. Acceptance and Approval of Requirements (5%, K2)

8.1. Quality assurance for requirements engineering

8.1.1. Explain requirements quality assurance.

8.1.2. Distinguish between quality assurance and quality control

8.2. Analysis and validation of requirements engineering outputs

8.2.1. Explain the importance of requirements analysis.

8.2.2. Explain the importance of requirements validation.

8.3. Validation and the requirements engineering plan

8.3.1. Describe the relationship between requirements planning and requirements quality.

8.4. Acceptance testing

8.4.1. Describe the relationship between requirements and the v-model.

8.4.2. Apply the 'given', 'when', 'then' extension to a user story.

Recommended Reading List

Title [Business Analysis 4th Edition](#)
Author Debra Paul and James Cadle
Publisher BCS
Publication Date July 2020
ISBN 9781780172774

Title [Value Proposition Design](#)
Author Alexander Osterwalder, Yves Pigneur, Greg Bernarda and Alan Smith
Publication Date August 2014
Publisher John Wiley and Sons
ISBN 978 111896805

Title [Project Management \(Fourth Edition\)](#)
Author Harvey Maylor
Publication Date May 2010
Publisher Pearson Education Limited
ISBN 9780273704324

Title [BABOK v3 A Guide to the Business Analysis Body of Knowledge](#)
Author IIBA (International Institute of Business Analysis)
Publication Date 2015
Publisher International Institute of Business Analysis
ISBN 9781927584033

Title [Agile and Business Analysis: Practical Guidance for IT Professionals](#)
Author Lynda Girvan, Debra Paul
Publication Date December 2016
Publisher BCS
ISBN 9781780173221

Title [A Project Guide to UX Design: For User Experience Designers in the Field or in the Making, 2nd Edition](#)
Author Russ Under and Carolyn Chandler
Publication Date March 2012
Publisher New Riders
ISBN 9780321815385

Title [User Stories Applied: For Agile Software Development](#)
Author Mike Cohn
Publication Date March 2004
Publisher Addison Wesley
ISBN 978 0321205681

Title [Writing Effective Use Cases: The Agile Software Development Series](#)
Author Alistair Cockburn
Publication Date October 2000
Publisher Addison Wesley
ISBN 978 0201702255

Title [The Coaching Manual: The Definitive Guide to the Process, Principles and Skills of Personal Coaching](#)

Author Julie Starr

Publication Date January 2016

Publisher Pearson Education Limited

ISBN 9781292084978

Title [The Concise Definition of The Zachman Framework](#)

Author John A. Zachman

Publication Date 2008

Publisher Zachman International, Inc

URL www.zachman.com

Title [Software Requirements \(Third Edition\)](#)

Author Karl Wiegers and Joy Beatty

Publication Date August 2013

Publisher Microsoft Press

ISBN 9780735679665

Further reading references

Title [Mastering the Requirements Process](#)

Author Suzanne and James Robertson

Publication Date August 2012

Publisher Addison Wesley

ISBN 978 0321815743

Title [The Human Touch](#)

Author Philippa Thomas, Debra Paul and James Cadle.

Publication Date September 2012

Publisher BCS

ISBN 9781906124915

Title [A Management Framework for Project, Program and Portfolio Integration](#)

Author R. Max Wideman

Publication Date July 2006

Publisher Trafford Publishing

ISBN 9781412027861

Title [Managing Successful Programmes](#)

Author Rod Sowden

Publication Date August 2011

Publisher Stationery Office

ISBN 978113313273