



# **BCS Practitioner Certificate in Requirements Engineering Syllabus**

**Version 4.1  
September 2018**

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

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## Change History

This log provides a single point of reference, where a summary of any changes are recorded, to include the date of the amendment and a summary of the changes made.

Version Number	Changes Made
Version 4.1 March 2020	Addition of Trainer Criteria and Classroom Size ratios. Additional wording of clarification to the passmark.
Version 4.0 September 2018	Amended to closed book. Pass mark details amended post Angoff review. Required and recommended reading list confirmed.
Version 3.0 July 2017	Change History introduction updated; Standardisation of use of capitals; full stops added to end of every bullet/paragraph; 'Objectives' changed to 'Learning Objectives' throughout and formatting updated to achieve uniformity across the portfolio. Updated learning outcomes. Updated section headings and standard template text to align with other documents in the portfolio. Exam format updated to MCQ and open book.
Version 2.5 May 2017	Centralised exam pass mark clarified.
Version 2.4 December 2016	Strapline regarding regulated statement has been added.
Version 2.3 March 2015	Updated language requirements for extra time and use of dictionaries. Minor updates made to the commentary. Standardised the trainer requirements.
Version 2.2 September 2012	This is the first version of the extended RE syllabus. The version number is unchanged so that it is consistent with the existing RE syllabus. The syllabus has been extended to support the centralised RE examination. The original syllabus is defined in black and the extensions in red. A commentary has been added to aid candidates preparing for the centralised examination.

## Introduction

This certificate covers the range of concepts, approaches and techniques that are applicable to the Practitioner Certificate in Requirements Engineering. It is relevant to anyone working within a business or information systems domain, who requires an understanding of the nature, definition and use of good quality requirements.

## Levels of Knowledge / SFIA Levels

This syllabus will provide candidates with the levels of difficulty highlighted within the following table, enabling them to develop the skills to operate at the highlighted level of responsibility (as defined within the SFIA framework) within their workplace. The levels of knowledge and SFIA levels are further explained on the website [www.bcs.org/levels](http://www.bcs.org/levels).

Level	Levels of Knowledge	Levels of Skill and Responsibility (SFIA)
7		Set strategy, inspire and mobilise
6	Evaluate	Initiate and influence
5	Synthesise	Ensure and advise
4	Analyse	Enable
3	Apply	Apply
2	Understand	Assist
1	Remember	Follow

## Learning Outcomes

Candidates should be able to demonstrate knowledge and understanding and application of Requirements Engineering principles and techniques in the following areas:

1. The Requirements Engineering framework; the issues and rationale in a business context; the application of the framework.
2. The hierarchy of requirements.
3. Roles and responsibilities of key stakeholders in the Requirements Engineering framework.
4. Requirements elicitation.
5. Requirements modelling.
6. Requirements documentation.
7. Requirements analysis.
8. Requirements validation.
9. Requirements management.

## Course Format and Duration

Candidates can choose to study for this certificate from one of two ways: by either attending a training course provided by a BCS Accredited Training Organisation, or by self-study.

BCS recommends that for full coverage of the syllabus to be achieved, training courses leading to the certificate should normally run for a minimum of 18 hours over 3 days.

## Eligibility for the Examination

There are no pre-requisites for entry to the examination, although accredited training is strongly recommended.

## Examination Format and Duration

Type	Multiple choice*.
Duration	60 minutes*.
Supervised	Yes.
Open Book	No.
Pass Mark	25/40**
Calculators	Calculators cannot be used during this examination.
Delivery	Digital or Paper based, depending on exam provider.

\*If you are sitting an exam through a BCS Accredited Training Provider (ATO), please confirm with them the format of their exam and the amount of questions, which may differ.

\*\*Please check the format of the exam with your provider as the pass mark may vary.

## Additional Time

### For Candidates Requiring Reasonable Adjustments Due to a Disability

Please refer to the [reasonable adjustments policy](#) for 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 an allocated percentage of study time. The purpose of this is:

- 1) Guidance on the proportion of time allocated to each section 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.

## Trainer Criteria

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

Trainer to candidate ratio	1:16
Candidate to exam invigilator ratio	1:25

## Excerpts from BCS Books

Accredited Training Organisations may include excerpts from BCS books in course materials. To use excerpts from the books, a license from BCS is required, which can be obtained by contacting the Head of Publishing at BCS.

# Syllabus

## Learning Objectives

### 1. Introduction to Requirements Engineering 5%

Candidates will be able to:

- 1.1 Define the term 'requirements' and the characteristics of a requirement.
- 1.2 Explain the rationale for Requirements Engineering and the application of the Requirements Engineering framework.
- 1.3 Explain the rationale of requirements planning and estimating.
- 1.4 Describe the elements that should be considered as the contents of a project initiation document, terms of reference or project charter:
  - 1.4.1 Business objectives.
  - 1.4.2 Project objectives.
  - 1.4.3 Scope.
  - 1.4.4 Constraints (budget, timescale, standards).
  - 1.4.5 Authority or sponsor.
  - 1.4.6 Resources.
  - 1.4.7 Assumptions.

### 2 Hierarchy of Requirements 10%

Candidates will be able to:

- 2.1 Show understanding of the rationale for the requirements hierarchy and describe how it is applied in Requirements Engineering.
- 2.2 Explain the categories within the hierarchy:
  - 2.2.1 Business policy (general) requirements.
  - 2.2.2 Technical policy requirements.
  - 2.2.3 Functional requirements.
  - 2.2.4 Non-functional requirements.

### 3 Stakeholders in the Requirements Process 5%

Candidates will be able to:

- 3.1 Define the term stakeholder.
- 3.2 Explain the key roles of the following **project** stakeholders during Requirements Engineering:
  - 3.2.1 Project Manager.
  - 3.2.2 Developer.
  - 3.2.3 Tester.
  - 3.2.4 Solution Architect.
- 3.3 Explain the key roles of the following **business** stakeholders during Requirements Engineering:
  - 3.3.1 Project Sponsor.
  - 3.3.2 Subject Matter Expert.
  - 3.3.3 End User.
  - 3.3.4 Business Manager.
- 3.4 Interpret a given scenario, identify stakeholders and describe their contribution to Requirements Engineering.

### 4 Requirements Elicitation 20%

Candidates will be able to:

- 4.1 Explain different knowledge types:
  - 4.1.1 Tacit / Non-tacit (explicit).
  - 4.1.2 Individual / Corporate.
- 4.2 Interpret a given scenario to identify different knowledge types.
- 4.3 Interpret a given scenario to identify relevant elicitation techniques from the following list:
  - 4.3.1 Interviews.
  - 4.3.2 Workshops.
  - 4.3.3 Observation.
  - 4.3.4 Focus groups.
  - 4.3.5 Prototyping.
  - 4.3.6 Scenario analysis.
  - 4.3.7 Document analysis.
  - 4.3.8 Surveys.
  - 4.3.9 Record searching.
  - 4.3.10 Special purpose records.
  - 4.3.11 Activity sampling.



- 4.4 Describe the principles and application of the elicitation techniques (listed in 4.3).
- 4.5 List the advantages and disadvantages of the elicitation techniques (listed in 4.3).
- 4.6 Discuss the suitability of the elicitation techniques (listed in 4.3) for Agile and linear development approaches.

## 5 Use of Models in Requirements Engineering 10%

Candidates will be able to:

- 5.1 Explain the rationale for modelling the functional requirements (processing and data) of an information system and describe how models help the analyst to:
  - 5.1.1 Generate questions in order to clarify a requirement and remove ambiguity.
  - 5.1.2 Define business rules.
  - 5.1.3 Cross-check requirements for consistency and completeness.
- 5.2 Interpret a given scenario to develop a context diagram.
- 5.3 Interpret a given scenario to identify the different types of event that can initiate processing (external, time based, internal).
- 5.4 Understand how to construct a UML use case diagram for a given scenario to represent the functional requirements for an information system, including the following notational elements:
  - 5.4.1 System boundary.
  - 5.4.2 Actors (user role, another system and time).
  - 5.4.3 Use cases.
  - 5.4.4 Communication relationships (associations) between actors and use cases.
  - It should be noted that there is no requirement to understand include and extend constructs.
- 5.5 Interpret a UML Class diagram (comprising of classes, attributes, associations and multiplicities) that represents the data requirements for a given scenario, and describe the business rules that are represented.
  - It should be noted that there is no requirement to understand operations, association classes, generalisation (and associated concepts of inheritance and polymorphism), aggregation and composition.
- 5.6 Explain the benefits to be derived from cross-referencing models and illustrate how this can be achieved by using a CRUD matrix (of function or event against data).

## **6 Requirements Documentation 15%**

Candidates will be able to:

- 6.1** Explain the rationale for creating a requirements document and for documenting requirements at different levels of definition, relating to:
  - 6.1.1 The nature of the solution.
  - 6.1.2 The level of priority.
  - 6.1.3 The delivery approach.
  
- 6.2** Understand how to construct requirements documentation for a given scenario, using the following specified styles:
  - 6.2.1 User story.
  - 6.2.2 Use case.
  - 6.2.3 Requirements list.
  - 6.2.4 Requirements catalogue.
  
- 6.3** Describe a requirement in terms of its characteristics or attributes and explain why each of the following may be needed:
  - 6.3.1 Identifier.
  - 6.3.2 Name.
  - 6.3.3 Description.
  - 6.3.4 Source.
  - 6.3.5 Owner.
  - 6.3.6 Author.
  - 6.3.7 Type (general, technical, functional, non-functional).
  - 6.3.8 Priority.
  - 6.3.9 Business area.
  - 6.3.10 Stakeholders.
  - 6.3.11 Associated non-functional requirements.
  - 6.3.12 Acceptance criteria.
  - 6.3.13 Related requirements.
  - 6.3.14 Related documents.
  - 6.3.15 Comments.
  - 6.3.16 Rationale.
  - 6.3.17 Resolution.
  - 6.3.18 Version history.
  
- 6.4** Describe the structure and contents of the requirements document:
  - 6.4.1 Introduction and background.
  - 6.4.2 Business process models.
  - 6.4.3 Function model (use case diagram) of defined requirements.
  - 6.4.4 Data model (class model) of defined requirements.
  - 6.4.5 Requirements (defined using the selected documentation style).
  - 6.4.6 Glossary.

## **7 Requirements Analysis 20%**

Candidates will be able to:

- 7.1** Explain the rationale for prioritising requirements, using the MoSCoW prioritisation technique.
- 7.2** Interpret a given scenario and apply the MoSCoW prioritisation technique.
- 7.3** Examine individual requirements; apply filters and quality criteria to assess that they are well defined.
- 7.4** Use requirements for a given scenario to check for technical, business and financial feasibility.
- 7.5** Assign a requirement type to an individual requirement.
- 7.6** Organise the requirements for a given scenario by requirement type and functional area.
- 7.7** Within a given requirement set:
  - 7.7.1** Identify and resolve duplicate requirements.
  - 7.7.2** Identify and reconcile overlapping requirements.
  - 7.7.3** Identify conflicting requirements and explain how requirements negotiation could be applied to resolve these conflicts.
  - 7.7.4** Identify ambiguous requirements and aspects to be defined to remove ambiguity.
- 7.8** Explain the use of prototyping to elaborate requirements.

## **8 Requirements Validation 5%**

Candidates will be able to:

- 8.1** Describe the rationale for the following approaches to requirements validation:
  - 8.1.1** Informal reviews.
  - 8.1.2** Formal reviews:
    - 8.1.2.1** Structured walkthrough.
    - 8.1.2.2** Prototype reviews.
- 8.2** Explain the steps to be followed in the validation process for requirements artefacts:
  - 8.2.1** Plan review.
  - 8.2.2** Conduct review of artefacts.
  - 8.2.3** Collect comments.
  - 8.2.4** Undertake actions.
  - 8.2.5** Revise artefacts.
  - 8.2.6** Obtain approval.

## **9 Requirements Management 10%**

Candidates will be able to:

- 9.1** Explain the rationale for requirements management.
- 9.2** Define the elements of requirements management and the links between them.
- 9.3** Explain the structure and elements of a change control process.
- 9.4** Explain the structure and elements of version control.
- 9.5** Define two forms of traceability and how projects benefit from each of them:
  - 9.5.1 Horizontal (forwards from origin to delivery and backwards from delivery to origin).
  - 9.5.2 Vertical (to business objectives).
- 9.6** Explain the rationale and the approach to achieving requirements traceability.

## Required Reading List

**Title:** Business Analysis (3rd Edition)

**Author:** Debra Paul, Donald Yeates and James Cadle

**Publisher:** BCS Learning and Development

**Publication Date:** September 2014

**ISBN:** 978-1-78017-278-1

**URL:** <http://shop.bcs.org>

## Recommended Reading List

**Title:** Business Analysis Techniques: 99 Essential Tools for Success

**Author:** James Cadle, Debra Paul and Paul Turner

**Publisher:** BCS

**Publication Date:** September 2014

**ISBN:** 9781780172736

**Title:** Agile and Business Analysis

**Author:** Lynda Girvan, Debra Paul

**Publisher:** BCS

**Publication Date:** February 2017

**ISBN:** 9781780173221