Preparation Guide

Edition 202307

Content

1. Overview

EXIN BCS Requirements Engineering (RQE.EN)

Scope

Upon completion of the certification, candidates will be able to demonstrate a practical understanding of how to:

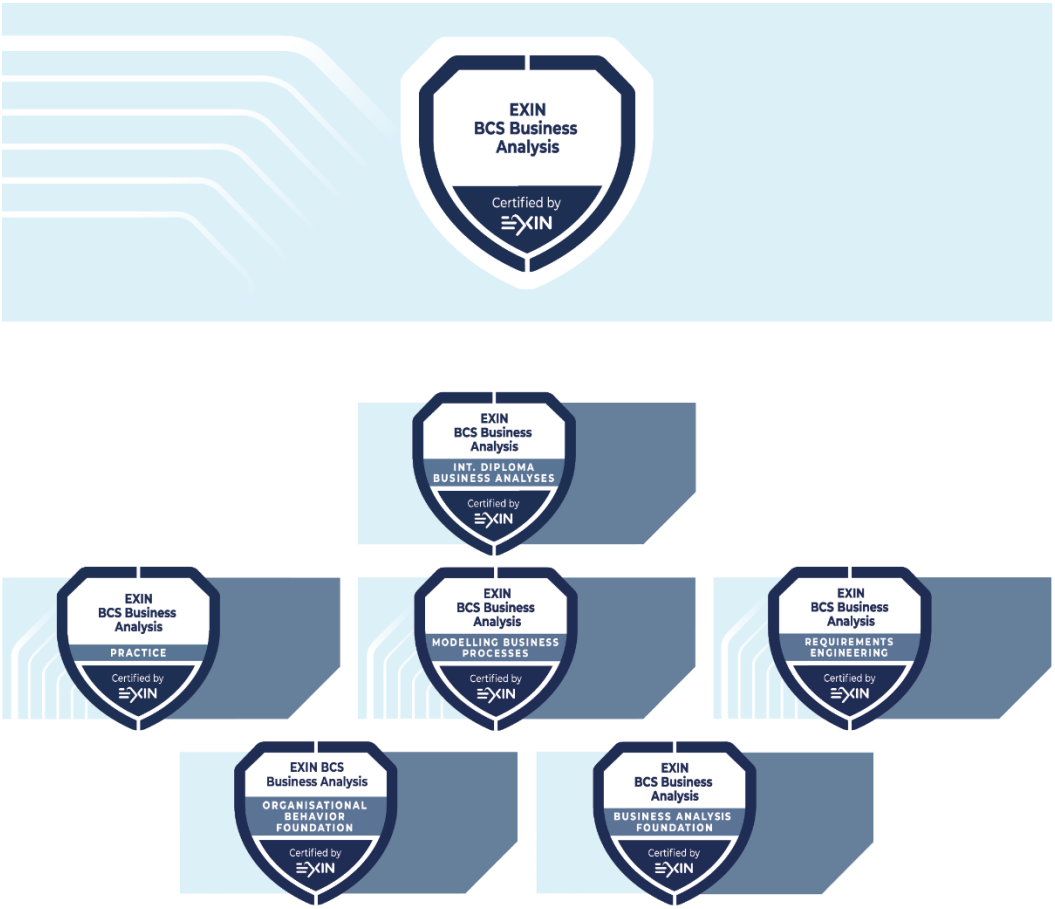
- collaborate with stakeholders to ensure requirements align with business objectives.
- elicit different types of requirements and the associated documentation.
- analyze and validate requirements.
- ensure and manage requirement quality and change.

Summary

The EXIN BCS Requirements certification is for candidates who want to develop or further their skills in the understanding and application of elicitation, analysis, and management of requirements. As the traditional business analyst role develops and grows into other areas, the need for Requirements Engineering skills has opened into the wider business and is now necessary in a variety of roles and teams. The learning in this certification is shaped to place emphasis on valuable business analysis skills rather than the business analyst role. Focusing on these skills should ensure alignment with business objectives and a fit-for-purpose solution.

Context

The EXIN BCS Requirements Engineering certification is part of the EXIN BCS Business Analysis qualification program.



Target group

This qualification has been designed to provide valuable learning for those in roles such as business analyst, business architect, business systems analyst, data analyst, enterprise analyst, management consultant, process analyst, product manager, product owner, project manager, and systems analyst. This certification provides value for candidates in entry-level, associate and management level roles.

Requirements for certification

- Successful completion of the EXIN BCS Requirements Engineering exam.

Examination details

Examination type:	Multiple-choice questions
Number of questions:	40
Pass mark:	65% (26/40 questions)
Open book:	No
Notes:	No
Electronic equipment/aides permitted:	No
Exam duration:	60 minutes

The Rules and Regulations for EXIN's examinations apply to this exam.

Bloom level

The EXIN BCS Requirements Engineering certification tests candidates at Bloom levels 3 and 4 according to Bloom's revised taxonomy:

- Bloom level 3: Application – shows that candidates have the ability to make use of information in a context different from the one in which it was learned. This type of questions aims to demonstrate that the candidate is able to solve problems in new situations by applying acquired knowledge, facts, techniques and rules in a different, or new way. These questions usually contain a short scenario.
- Bloom level 4: Analysis – shows that candidates have the ability to break learned information into its parts to understand it. This Bloom level is mainly tested in the Practical Assignments. The Practical Assignments aim to demonstrate that the candidate is able to examine and break information into parts by identifying motives or causes, make inferences and find evidence to support generalizations.

Training

Candidates can choose to study for this exam from one of two ways: by either attending a training course provided by an EXIN accredited training organization, or by self-study. Accredited training is strongly recommended.

Contact hours

The recommended number of contact hours for this training course is 18. This includes group assignments, exam preparation and short breaks. This number of hours does not include lunch breaks, homework and the exam.

Indication study effort

84 hours (3 ECTS), depending on existing knowledge.

Training organization

You can find a list of our accredited training organizations at www.exin.com.

2. Exam requirements

The exam requirements are specified in the exam specifications. The following table lists the topics of the module (exam requirements) and the subtopics (exam specifications).

Exam requirements	Exam specifications	Weight
1. Define requirements approach and project scope		**5%**
	1.1 Define the term 'requirements'	
	1.2 Describe the requirements engineering framework	
	1.3 Explain factors to be considered in adapting the approach to requirements engineering	
	1.4 Describe the contents of a project initiation document (PID)/terms of reference (ToR)	
2. Elicit requirements		**15%**
	2.1 Explain different knowledge types	
	2.2 Identify a technique to articulate tacit knowledge	
	2.3 Explain the use, advantages, and disadvantages of the following elicitation techniques	
	2.4 Identify an appropriate technique to elicit requirements	
	2.5 Explain the suitability of elicitation techniques for agile and linear development approaches	
3. Record requirements (documentation)		**10%**
	3.1 Identify and describe the categories of requirement	
	3.2 Explain the importance of documentation	
	3.3 Identify the key documentation styles	
	3.4 Explain the characteristics documented for requirements in a requirements catalog	
	3.5 Explain the key underlying principles and standard format of a user story	
4. Build models and prototypes to represent the requirements		**20%**
	4.1 Explain the rationale for modelling the functional requirements (processing and data) of an information system	
	4.2 Describe the purpose of modelling in requirements engineering	
	4.3 Prepare a UML use case diagram	
	4.4 Prepare a UML class diagram	
	4.5 Explain the use of a CRUD matrix	
	4.6 Explain the use of prototyping to elaborate requirements	
5. Collaborate and communicate with stakeholders to clarify requirements		**7.5%**
	5.1 Describe the responsibilities of the actors (stakeholder roles) in requirements engineering	
	5.2 Describe the purpose of requirements validation	
	5.3 Describe the rationale for various approaches to requirements validation	
	5.4 Demonstrate how agile requirements are validated	
	5.5 Demonstrate how formal requirements are validated	

6. Analyze, prioritize and assure the quality of requirements		**20%**
	6.1 Explain the purpose of analyzing requirements	
	6.2 Apply the MoSCoW technique to prioritize requirements	
	6.3 Interpret individual requirements, applying filters and quality criteria	
	6.4 Identify the purposes of slicing requirements (agile/linear)	
	6.5 Identify techniques used to analyze business rules	
	6.6 Explain the importance of testability	
7. Conduct user analysis and profiling		**7.5%**
	7.1 Describe techniques used to analyze roles	
	7.2 Explain the purpose of a customer journey map	
8. Requirements management and traceability		**15%**
	8.1 Explain the rationale and the approach to achieving requirements traceability	
	8.2 Explain the rationale for requirements management	
	8.3 Define the elements of requirements management and the links between them	
	8.4 Explain the use of a change control process	
	8.5 Describe the elements of a version control process	
	8.6 Explain the use and advantages of different forms of traceability	
	Total	**100%**

Exam specifications

1 Define requirements approach and project scope

The candidate can…

1.1 define the term 'requirements'.

Indicative content

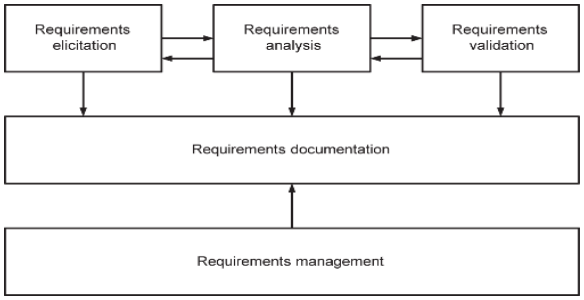
a. "A feature which business staff need a system (business or IT) to provide."

Guidance

Candidates should be able to provide a definition of the term "requirements" as per Business Analysis 4th Edition.

1.2 describe the requirements engineering framework.

Indicative content



Guidance

The requirements engineering framework, as shown, demonstrates the relationship between the typical stages of the requirements engineering process. The non-linear nature of this framework should be noted, allowing for flexibility in the order of completion of these stages, and repetition as required. Note that stakeholder engagement and consultation is necessary throughout this framework. This is explored further in topic 5.

1.3 explain factors to be considered in adapting the approach to requirements engineering.

Indicative content

a. Organizational standards
b. Project approach
c. Types of requirements
d. Nature of the solution

Guidance

The selected approach will vary, depending on a range of factors – candidates should have an understanding of how to identify and respond to these factors when planning their approach to requirements engineering in a given environment/own context.

1.4 describe the contents of a project initiation document (PID)/terms of reference (ToR).

Indicative content

a. OSCAR (Objectives, Scope, Constraints, Authority, Resources)
b. Rationale for aligning requirements with a business case and the objectives of the organization.

Guidance

The contents and use of the PID/ToR should be understood and how it is used to support the approach to requirements engineering, ensuring alignment with project and business objectives. Note that for the purpose of this preparation guide, the terms PID and ToR may be used interchangeably, as per the reference text.

2 Elicit requirements

The candidate can…

2.1 explain different knowledge types.

Indicative content

a. Tacit/non-tacit (explicit)
b. Individual/corporate

Guidance

The ability to categorize and elicit both tacit and explicit knowledge is integral to the requirements engineering process. Elicitation is concerned with purposefully extracting requirements from stakeholders, a process which requires different skills and techniques to simply gathering knowledge. Candidates should consider things such as individual skills, corporate culture and other factors which may not be explicitly communicated through all elicitation techniques.

2.2 identify a technique to articulate tacit knowledge.

Indicative content

a. Observe: observation, shadowing
b. Recount: storytelling, scenario analysis
c. Enact: prototyping, scenario role-play

Guidance

Certain techniques are more likely to be effective in the successful elicitation of tacit knowledge.

2.3 explain the use, advantages, and disadvantages of the following elicitation techniques.

Indicative content

a. Interviews
b. Workshops
c. Observation
d. Shadowing
e. Storytelling
f. Scenario analysis
g. Scenario role-play
h. Prototyping
i. Document analysis

Guidance

Candidates should understand the benefits and drawbacks of each of these techniques, to be able to evaluate their effectiveness and suitability in a range of circumstances. Consider how these techniques have evolved within different organizational contexts to take account of online working and collaboration. Note that additional techniques exist, but candidates should expect to be tested only on those listed.

2.4 identify an appropriate technique to elicit requirements.

Indicative content

a. Project approach
b. Resources (time, documentation, technology)
c. Stakeholder expertise

Guidance

Appreciating that many factors can impact the effectiveness of an elicitation technique - such as those listed - candidates should be able to select a technique suitable to a particular circumstance.

2.5 explain the suitability of elicitation techniques for Agile and linear development approaches.

Indicative content

a. Iterative development

b. Linear development

Guidance

Different elicitation techniques can be considered more useful or suitable to either an agile or linear project approach as detailed in the reference text. Candidates will be asked to interpret a range of circumstances (including the project approach) to consider the (un)suitability of a given elicitation technique.

3 Record requirements (documentation)

The candidate can…

3.1 identify and describe the categories of requirement.

Indicative content

a. Business:

- General requirements
- Technical requirements

b. Solution:

- Functional requirements
- Non-functional requirements

Guidance

Requirements are categorized depending on whether they are related to a business objective, or the solution/product. Sub-categories can then be established. This categorization is useful when prioritizing requirements, selecting a documentation approach, ensuring alignment with business strategy etc.

3.2 explain the importance of documentation.

Indicative content

a. Ensures consistency

b. Enables communication

c. Provides a basis for validation

d. Supports product development

Guidance

Documentation should be used throughout requirements engineering. This can take many forms, considering the project approach and type of requirement. Documentation can be revisited/referred to at each stage of the process, as illustrated by in the requirements engineering framework. Robust documentation will capture the development of requirements from elicitation to implementation and ongoing management.

3.3 identify the key documentation styles.

Indicative content

a. Text based

b. Diagrammatic

Guidance

Candidates should understand that documentation styles can be categorized as either text based on diagrammatic, including but not limited to a requirements document, business process model, or requirements backlog. The style of documentation used will vary depending on the type of requirement, project approach, organizational norms etc.

3.4 explain the characteristics documented for requirements in a requirements catalog.

Indicative content

a. Source
b. Owner
c. Name
d. Business Area

Guidance

Information gathered that relates to an individual requirement is recorded in the requirements catalog. This document is useful in providing a level of organization and structure to the elicited requirements. Many characteristics may be recorded; a full list is available from the Business Analysis 4th Edition text. Candidates should expect to be assessed on any characteristic from the complete list within the reference text.

3.5 explain the key underlying principles and standard format of a user story.

Indicative content

a. Who? What? Why?
b. "As a {user role} I want {feature} so that I can {reason}."

Guidance

Creating user stories is a simple method of identifying the needs of a particular actor, from a system or solution. This is a standard format, easily used by all stakeholders to communicate their needs. For example, "As a cardholder, I want to be able to view my statement on demand, so that I can review my transactions".

4 Build models and prototypes to represent the requirements

The candidate can…

4.1 explain the rationale for modelling the functional requirements (processing and data) of an information system.

Indicative content

a. Conceptualizes the solution in its entirety
b. Helps to confirm requirements are in scope
c. Provides clarity

Guidance

Being able to visualize the solution using a model can help both the analyst and stakeholders to confirm the functional requirements are as intended, and to identify any errors.

4.2 describe the purpose of modelling in requirements engineering.

Indicative content

a. Generate questions in order to clarify a requirement and remove ambiguity
b. Define business rules
c. Cross-check requirements for consistency and completeness

Guidance

Modelling is used to provide a visual representation of the intended solution. Candidates should understand that models are used to provide clarity and ensure consistency of requirements, allowing the concept to be easily understood by others.

4.3 prepare a UML use case diagram.

Indicative content

a. Elements required to create a case diagram:

- Actors
- Use cases
- System boundary
- Associations

Guidance

Use case diagrams are created to show interactions between system functions and actors. Candidates will be expected to complete diagrams within the assessment using given examples, including filling missing information, rectifying errors, and ensuring correct representation of all elements.

4.4 prepare a UML class diagram.

Indicative content

a. Elements used to create a class diagram that represent the data requirements:

- Classes
- Attributes
- Associations
- Multiplicities

b. Describe the business rules that are represented

Guidance

Class diagrams are used to model data and show the associations between "classes" – items of interest – in a system. Candidates will be expected to complete diagrams within the assessment using given examples, including filling missing information, rectifying errors, and ensuring correct representation of all elements.

4.5 explain the use of a CRUD matrix.

Indicative content

a. Create, read, update, delete

b. Comparing a function or event against data

c. Benefits to be derived from cross-referencing models

Guidance

Candidates should be able to explain how a CRUD matrix can be used in conjunction with the other models explored in this topic, to identify omissions or errors in data and/or models. A CRUD matrix shows which functions in a solution create, read, update or delete data.

4.6 explain the use of prototyping to elaborate requirements.

Indicative content

a. Visualization of requirements

b. Increase stakeholder understanding

c. Analysis and confirmation of requirements

Guidance

Prototyping can take many forms such as manual/hand drawn mock-ups, images of screens, genuine software development etc. The useful common feature and purpose of these prototypes is the creation of visual or physical example, with which stakeholders can interact and provide feedback on.

5 Collaborate and communicate with stakeholders to clarify requirements

The candidate can…

5.1 describe the responsibilities of the actors (stakeholder roles) in requirements engineering.

Indicative content

a. Actors – "Usually user roles [that] show the individual or group of individuals responsible for carrying out the work or interacting with a system. An actor may also be an IT system or time."

b. Stakeholders – "An individual, group of individuals or organization with an interest in the change."

Guidance

Multiple stakeholder roles exist as explored in the reference text. Candidates should expect to be tested on roles specifically associated with requirements engineering, including the project sponsor, product owner, the SMEs and business stakeholders.

5.2 describe the purpose of requirements validation.

Indicative content

a. Validation process

b. Review and agree requirements

Guidance

Candidates should be able to describe the use of requirements validation to ensure that the features and characteristics of the solution are met by the requirements. This process involves a review of the requirements with relevant stakeholders.

5.3 describe the rationale for various approaches to requirements validation.

Indicative content

a. Informal review

b. Formal review

Guidance

The approach to validation may vary depending on the project approach and the availability of stakeholders – for example, if a singular stakeholder is unable to attend a formal review, then an informal review may be conducted with that individual.

5.4 demonstrate how Agile requirements are validated.

Indicative content

a. Initiating the backlog

b. Maintaining the backlog

c. Prioritization

d. Defining acceptance criteria

Guidance

Candidates should be able to articulate the less formal validation processes typically associated with an Agile approach. For example, a straightforward outline of a requirement may be accepted as "valid" in order to be added to the backlog, prioritized for development and then elaborated over time.

5.5 demonstrate how formal requirements are validated.

Indicative content

a. Business requirements document (BRD)

b. Review group

Guidance

Candidates should be able to articulate more formal requirements validation which may align with a more linear methodology and/or organizational governance. This involves forming a review group where different perspectives on the requirements are considered as part of a formal review process.

6 Analyze, prioritize and assure the quality of requirements

The candidate can…

6.1 explain the purpose of analyzing requirements.

Indicative content

a. Ensure they are developed clearly
b. Well organized
c. Appropriately documented

Guidance

Candidates should be able to explain how requirements analysis is used to ensure the correctness and completeness of the requirements which have been elicited.

6.2 apply the MoSCoW technique to prioritize requirements.

Indicative content

a. Must have, Should have, Could have, Want to have (but won't have this time)

Guidance

The MoSCoW technique is used to categorize requirements by priority level. Application of this technique ensures features are developed and delivered in an order which supports the priority of the requirements. Candidates should expect to be tested on their ability to apply this technique to given requirements.

6.3 interpret individual requirements, applying filters and quality criteria.

Indicative content

a. INVEST
b. Quality Criteria including clear, concise, consistent, relevant
c. Filters including checking for duplication, unravelling multiple requirements, evaluating feasibility

Guidance

Requirements should be quality checked to minimize errors such as duplication, multiple requirements, or inconsistencies. Candidates should be able to use the filters and quality criteria listed, as listed in the Business Analysis 4th Edition text, to interpret the characteristics and quality of the requirements.

6.4 identify the purposes of slicing requirements (Agile/linear).

Indicative content

a. Allowing work to commence and/or progress
b. Elaborating only as required
c. Incremental development
d. Linear development

Guidance

As the requirements engineering framework is non-linear, there can be the need for elicitation, elaboration etc. to be completed over time. Through the use of slicing (focusing on sections of requirements, rather than requirements as a whole) requirements analysis can begin on high priority requirements, while some elicitation work is still ongoing.

6.5 identify techniques used to analyze business rules.

Indicative content

a. Constraints
- Action governance
- Data constraints

b. Operational guidance
- Decision conditions
- calculations

c. Data models
d. CRUD matrices
e. Activity diagrams
f. Business process models

Guidance

Business rules must be considered to ensure that the requirements – and therefore the solution – align with the business objectives, ways of working and any legal or regulatory conditions which must be adhered to. Candidates should be able to identify a range of techniques used to analyze both operational guidance and constraints.

6.6 explain the importance of testability.

Indicative content

a. "Has the requirement been delivered as intended?"
b. Functional requirements and related non-functional requirements

Guidance

The mark of testability is the ability to provide a firm yes or no response to this question. Candidates should be able to articulate the need for testability to ensure that requirements have been delivered as intended.

7 Conduct user analysis and profiling

The candidate can…

7.1 describe techniques used to analyze roles.

Indicative content

a. User role analysis
b. Personas

Guidance

User analysis helps the analyst to understand how a given party will interact with the solution, which is further supported by the creation of personas. A persona provides a more detailed example of a specific user (to explore particular demographics, needs and wants, limitations, accessibility etc.). This helps to further validate/support the need for specific requirements to be met and to help define the workings of the solution.

7.2 explain the purpose of a customer journey map.

Indicative content

a. How to use a customer journey map.
b. Elements to be considered in its creation.

Guidance

Customer journey maps should be used to demonstrate the points of contact between a given user and the business/process. They are generally used in conjunction with a persona to fully explore the needs and behaviors of specific users, rather than the generic "user". Following the journey of the persona(s) helps to ensure the requirements are met in the final solution. Candidates should consider elements such as role, persona, and touchpoints. A full list is provided within the Business Analysis 4th Edition text.

8 Requirements management and traceability

The candidate can…

8.1 explain the rationale and the approach to achieving requirements traceability.

Indicative content

a. Establish the origin and ownership of each requirement

Guidance

Candidates should be able to articulate why traceability is necessary within a project and within requirements engineering. For example, to ensure alignment with business objectives or to track the origins of a feature.

8.2 explain the rationale for requirements management.

Indicative content

a. Business change
b. Traceability
c. Ownership
d. Origins

Guidance

The robust management of requirements is necessary to ensure ongoing traceability – this is particularly useful in times of problem solving or business change. Good requirements management will allow the origins and ownership of any requirement to be explored if challenged and can assist with future planning.

8.3 define the elements of requirements management and the links between them.

Indicative content

a. Identification
b. Cross-referencing
c. Origin and ownership
d. Software support
e. Change control
f. Configuration management

Guidance

Candidates should explore each element of requirements management as listed, and the relationship between these elements. For example, the relationship between cross-referencing and change control, where any change made to a single requirement may impact on other requirements.

8.4 explain the use of a change control process.

Indicative content

a. Document, analyze, consult, decide
b. Implement or reject

Guidance

Change control is a vital element of requirements management, the purpose of which is to create a robust audit trail of any changes made to requirements and ensure that any changes made are justified.

8.5 describe the elements of a version control process.

Indicative content

a. Allocate an identifier
b. Allocate a version number
c. Version number updated to reflect changes

Guidance

Version control ensures that any movement from draft to baselined requirements, and any movement within those, is recorded through the allocation of a unique identifier and the allocation/update of a version number. This ensures that any movement in requirements is clearly recorded, and version numbers can be used for comparison and to ensure all parties are working with the correct version

8.6 explain the use and advantages of different forms of traceability.

Indicative content

a. Horizontal; forwards and backwards

b. Vertical

Guidance

Traceability is the means of being able to track the development of a requirement – either forwards or backwards throughout the development cycle (why does it exist, or what became of it?), or vertically, to confirm alignment with overall business strategy. Candidates should be able to define both forms of traceability including when and why they are required.

3. Levels of knowledge / SFIA levels

This award provides candidates with the level of knowledge highlighted within the table, enabling candidates to develop the skills to operate successfully at the levels of responsibility indicated.

Level	Levels of knowledge	Levels of skill and responsibility (SFIAplus)
K7		Set strategy, inspire and mobilize
K6	Evaluate	Initiate and influence
K5	Synthesize	Ensure and advise
K4	Analyze	Enable
K3	Apply	Apply
K2	Understand	Assist
K1	Remember	Follow

SFIA plus

This syllabus has been linked to the SFIA knowledge skills and behaviors required at level 4 for an individual working in requirements definition and management.

KSB04	Identifying gaps in the available information required to understand a problem or situation and devising a means of resolving them.
KSB12	Understanding commercial considerations and ensuring alignment with them when making decisions or recommending actions.
KSB22	Establishing relationships, contributing to an open culture, and maintaining contacts with people from a variety of backgrounds and disciplines. Effective, approachable, and sensitive communicator in different communities and cultures. Ability to adapt style and approach to meet the needs of different audiences.
KSC04	Applying techniques which help investigating, analyzing, modelling, and recording a business area or system of interest. Example, but not limited to business environment analysis and process modelling.
KSC09	Using tools (manual or automated) to record the structure, relationships, and use of information within an organization. Examples, but not limited to class diagram and relational data model.
KSC84	Understanding and application of different development approaches e.g., iterative/ incremental methodologies (Agile, XP, TDD, SCRUM) or traditional sequential methodologies (Waterfall or V-Model) and their energy and resource footprints. Irrespective of development methodology a DevOps approach may also be taken where development and operational staff work collaboratively.
KSD04	The selection and application of information elicitation methods, tools and techniques which are appropriate to the information required and the sources available. Examples, but not limited to: focus groups and surveys/questionnaires.

Further detail around the SFIA Levels can be found at www.bcs.org/levels.

4. e-CF Mapping

All e-Competence Framework competences related to the EXIN BCS Modelling Business Processes certification can be found below. Also indicated is the level of the competence and whether the competence is covered entirely, partially or superficially. For more information about the e-CF, please visit https://itprofessionalism.org/ or contact EXIN. The mapping of this exam against the e-Competence Framework.

e-Competence Level		1	2	3	4	5
A.4.	Product / Service Planning					
A.10.	User Experience					
D.11.	Needs Identification					
E.2.	Project and Portfolio Management					
E.4.	Relationship Management					

5. Literature

Exam literature

The knowledge required for the exam is covered in the following literature:

A. Debra Paul and James Cadle
Business Analysis
BCS (4th edition, July 2020)
ISBN: 978-1-78017-510-2
https://shop.bcs.org/store/221/detail/workgroup?id=3-221-9781780175102

Additional literature

B. James Cadle, Debra Paul and Paul Turner
Business Analysis Techniques: 99 Essential Tools for Success
BCS (September 2014)
ISBN: 978-1-78017-273-6

C. Lynda Girvan, Debra Paul
Agile and Business Analysis
BCS (February 2017)
ISBN: 978-1-78017-322-1

Comment

Additional literature is for reference and depth of knowledge only.

Contact EXIN

www.exin.com