



BCS Level 3 IT Solutions Technician Digital IT Apprenticeship End-point Assessment Knowledge Unit

Methodologies and Principles Syllabus

**Version 1.0
February 2020**

BCS Level 3 IT Solutions Technician Digital IT Apprenticeship End-point Assessment Knowledge Unit – Methodologies and Principles

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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
V1.0 February 2020	Document created.

Introduction

This is the first unit of the four knowledge units required for the Level 3 IT Solutions Technician Apprenticeship and forms part of the end-point assessment. It covers the range of concepts, approaches and techniques that are applicable to IT solution methodologies and principles, for which apprentices are required to demonstrate their knowledge and understanding.

Objectives

Apprentices should be able to demonstrate knowledge and understanding of IT solution methodologies and principles. Key areas are:

1. Understands the stages within the overall solution lifecycle.
2. Understands the main principals, features, differences and benefits of Waterfall and Agile type methodologies and the function of service management frameworks.
3. Understands the aims and benefits of DevOps approaches; including the benefits of automation, the ideas behind continuous improvement and monitoring.
4. Understands the principles of Solution Architecture including the importance of re-use.
5. Understands why testing is necessary, the need for both functional and non-functional testing, the different types of testing available, including unit testing, integration testing, user acceptance testing and performance testing.

Evidence of lessons learnt in these key areas should be collected and reflected upon when the apprentice is compiling the portfolio as the apprentice could identify how the task might be done better / differently with knowledge subsequently gained.

Target Audience

The syllabus is relevant to anyone enrolled on the Level 3 IT Solutions Technician apprenticeship programme.

Eligibility for the Examination

Apprentices must be enrolled on the level 3 IT Solutions Technician Digital IT apprenticeship and have entered end-point assessment gateway. Level 2 English and Maths will need to be achieved, if not already, prior to taking the end-point assessment.

Format and Duration of the Examination

The format for the examination is a 30-minute multiple-choice examination consisting of 20 questions. The examination is closed book (no materials can be taken into the examination room). The pass mark is 13/20 (65%).

Additional Time for Apprentices Requiring Reasonable Adjustments Due to a Disability

Apprentices may request additional time if they require reasonable adjustments. Please refer to the [reasonable adjustments policy](#) for detailed information on how and when to apply.

Additional Time for Apprentices Whose Language is Not the Language of the Examination

If the examination is taken in a language that is not the apprentice's native / official language, then they are entitled to 25% extra time.

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

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 Solution Delivery Lifecycle (25%, K2)

In this topic, the apprentice will understand the stages within the overall solution lifecycle. The successful apprentice should be able to:

- 1.1 Explain the difference between:
 - solution delivery lifecycle;
 - software development lifecycle;
 - system delivery lifecycle.
- 1.2 Define the stages within the overall solution delivery lifecycle.
 - requirements gathering;
 - planning;
 - analysis;
 - design;
 - implementation;
 - maintenance.

2 Solution Delivery Methodologies and Service Management Frameworks (35%, K2)

In this topic area, the apprentice will understand the main principals, features, differences and benefits of Waterfall and Agile type methodologies and the function of service management frameworks. The successful apprentice should be able to:

- 2.1 Explain the main principals and features of a traditional sequential Waterfall methodology.
- 2.2 Explain the main principals and features of an evolving and iterative Agile methodology.
- 2.3 Summarise the differences and benefits of Waterfall and Agile type methodologies.
- 2.4 Describe the purpose of Waterfall and Agile methodologies and their use in IT solutions.
 - hardware only based solutions;
 - applications;
 - software development.

2.5 Explain the key processes of a service management framework.

- service delivery group processes;
 - capacity management;
 - service continuity and availability management;
 - service reporting;
 - service level management;
 - information security management;
 - budgeting and accounting for services;
- resolution processes;
 - incident and service request management;
 - problem management;
- control processes;
 - configuration management;
 - change management;
 - release and deployment management.

3 DevOps (10%, K2)

In this topic area, the apprentice will understand the aims and benefits of DevOps approaches; including the benefits of automation, the ideas behind continuous improvement and monitoring. The successful apprentice should be able to:

3.1 Summarise the aims of DevOps approaches.

3.2 Explain the benefits of the following DevOps approaches.

- automation;
- continuous improvement;
- monitoring.

4 Principles of Solution Architecture (15%, K2)

In this topic area, the apprentice will understand the principles of solution architecture including the importance of re-use. The successful apprentice should be able to:

4.1 Explain what a solution is and describe the main principles of solution architecture.

- solution definition;
- solution planning;
- solution development;
- solution testing;
- solution deployment.

4.2 Explain the importance of re-use.

5 Testing (15%, K2)

In this topic area, the apprentice will understand why testing is necessary, the need for both functional and non-functional testing, the different types of testing available, including unit testing, integration testing, user acceptance testing and performance testing. The successful apprentice should be able to:

- 5.1 Explain why testing is necessary.
- 5.2 Recognise the need for both functional and non-functional testing.
- 5.3 Describe the different types of testing available.
 - unit testing;
 - integration testing;
 - user acceptance testing;
 - performance testing.

Levels of Knowledge / SFIA Levels

This syllabus will provide apprentices 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 on the website www.bcs.org/levels. The levels of knowledge above will enable apprentices to develop the following levels of skill to be able to operate at the following levels of responsibility (as defined within the SFIA framework) within their workplace:

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

Question Weighting

Syllabus Area	Target Number of Questions
1. The Solution Delivery Lifecycle	5
2. Solution Delivery Methodologies and Service Management Frameworks	7
3. DevOps	2
4. Principles of Solution Architecture	3
5. Testing	3
Total	20 Questions

Format of Examination

Type	20 Question Multiple Choice.
Duration	30 minutes. An additional 25% will be allowed for apprentices sitting the examination in a language that is not their native / mother tongue.
Pre-requisites	Training from a BCS accredited training provider is strongly recommended but is not a pre-requisite.
Supervised	Yes.
Open Book	No.
Pass Mark	13/20 (65%).
Calculators	Calculators cannot be used during this examination.
Delivery	Online.

Trainer Criteria

Criteria	<ul style="list-style-type: none">▪ Have 10 days training experience or have a train the trainer qualification▪ Have a minimum of 3 years practical experience in the subject area
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Classroom Size

Trainer to Apprentice ratio	1:16
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Recommended Reading List

Title: [Software Developer](#)

Author: Jill Clarke

Publisher: BCS, The Chartered Institute for IT

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