e-Quals Unit Syllabus

Level 3 Requirements analysis and systems specification

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Unit 306 Requirements analysis and systems specification

Rationale

The aim of this unit is to enable candidates to develop the skills required to plan for, investigate and document customer requirements and produce a requirements definition for the implementation of an Information Technology solution.

The use of computerised tools for producing GANTT and Pert charts (project management software) and modelling diagrams (CASE tools, drawing packages with special symbols) **is preferred** but is not a mandatory requirement for the completion of this unit.

Learning outcomes

There are **five** outcomes to this unit. The candidate will be able to:

Plan for the identification of customer requirements

Establish customer requirements

Produce a logical design specification

Produce a physical design specification

Identify implementation and maintenance procedures

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full time or part time basis.

Connections with other qualifications

This unit contributes towards the knowledge and understanding required for the following qualifications:

Outcome	This award contributes to the knowledge and understanding of the following Areas of Occupational Competence in the City & Guilds NVQ for IT Professionals (4324)
1,2,5	306 Investigating and defining requirements 3
3,4	304 Data analysis and data structure design 3

Key Skills

This unit contributes towards the Key Skills in the following areas:

Communication	C3.2, C3.3
Application of Number	N1.1
Information technology	None
Working with others	None
Improving own learning	LP3.1, LP3.2, LP3.3
Problem solving	PS3.1, PS3.2, PS3.3

Assessment and grading

Assessment will be by means of a **set assignment** covering practical activities and underpinning knowledge.

Unit 306 Requirements analysis and system specification

Outcome 1 Plan for the identification of customer requirements

Practical skills

The candidate will be able to:

1 interpret project briefs to identify the scope and objectives of investigations and analyses

2 select investigative methods to extract the information to identify customer requirements

3 produce a plan for carrying out investigations and analyses using Pert or GANTT charts.

Underpinning knowledge

The candidate will be able to:

1 describe top down, bottom up and integrated approaches to systems development

2 describe the purpose of each stage in the system development life cycle:

- a initial study
- b analysis
- c design
- d implementation and maintenance

3 list the output documents of each stage of the system development cycle and outline their contents

4 describe the relative timescales for each stage in the system development life cycle

5 explain the importance of presentations/walkthroughs and approval/sign-off at each stage of the system development cycle as a requirement for quality assurance and to ensure that proposals meet customer requirements

6 explain the benefits and limitations of the following methodologies:

- a prototyping
- b structured systems analysis

7 describe the purpose and the main stages of a feasibility study

8 list the alternative solutions that should be considered during a feasibility study:

- a 'off the shelf'
- b bespoke
- c combination of 'off the shelf' and bespoke
- d upgrade of an existing IT system

9 describe the essential contents of a terms of reference document

10 list the investigative methods used for gathering information:

- a interviews
- b questionnaires
- c record inspection

d observations

11 explain the advantages of providing standardised, cross referenced documentation which uses consistent naming conventions

12 describe the uses, advantages and disadvantages of Pert and GANTT charts for planning.

Unit 306 Requirements analysis and system specification

Outcome 2 Establish customer requirements

Practical skills

The candidate will be able to:

1 carry out investigations to meet agreed plans

2 use investigative methods to obtain information on:

- a inputs
- b outputs
- c processes
- d user interfaces
- e frequency

3 interpret and draw document analysis grids

4 identify constraints

5 obtain approval/sign off.

Underpinning knowledge

The candidate will be able to:

1 describe the reasons and advantages and disadvantages of using observation as an analytical tool

2 describe the purposes and advantages and disadvantages of using questionnaires as an analytical tool

3 describe the generally accepted rules of good practice for drawing up questionnaires

4 describe the main purposes and advantages and disadvantages of interviewing as an analytical tool

5 describe the use of document analysis grids

6 describe the types of constraints that may be imposed on a system:

- a compatibility with existing systems
- b physical
- c timescale
- d regulatory
- e financial
- f reliability
- g performance.

Unit 306 Requirements analysis and system specification

Outcome 3 Produce a logical design specification

Practical skills

The candidate will be able to:

1 carry out analyses to meet agreed plans

2 identify logical functional requirements

3 identify logical data requirements

4 create a data dictionary

5 select and produce suitable diagrammatical representations for modelling eg Object modelling, Data Flow Diagrams (DFDs), Entity-relationship Diagram(ERDs), State Transition Diagrams (STDs)

6 extract information from decision tables/trees

7 draw decision tables/trees

8 specify capacity requirements

9 check for defects in the requirements definition

10 obtain approval/sign off.

Underpinning knowledge

The candidate will be able to:

1 state that functional requirements consist of inputs, processes and outputs

2 explain that a data dictionary defines for each individual data element

- a unique name
- b data types (numeric, character, date, logical)
- c format (currency, day/month/year)
- d description
- e range/domain
- f size

3 explain that a data dictionary defines for each data group its composition eg Aircraft Position = Latitude + Longitude + Height

4 describe the uses, advantages and disadvantages of:

- a Data Flow Diagram (DFD)
- b Entity-relationship Diagram (ERD)
- c State Transition Diagram (STD)

5 list the advantages of using a methodology

6 state that the diagrammatical representations used may be dependant on the type of system to be developed eg real-time

7 describe the uses, advantages and disadvantages of decision tables/trees

8 explain the need to make allowances for capacity requirements for processing, storage, access and future growth

9 describe the types of defect that can occur in a requirements definition:

- a inconsistencies
- b faults
- c duplications
- d omissions
- e additions
- f constraints not applied

10 describe the benefits of using CASE tools.

Unit 306 Requirements analysis and system specification

Outcome 4 Produce a physical design specification

Practical skills

The candidate will be able to:

1 carry out analyses to meet agreed plans

2 produce a hardware specification

3 produce a software specification

4 produce input and output data specifications

5 specify security measures

6 obtain approval/sign off.

Underpinning knowledge

The candidate will be able to:

1 describe the typical contents of a hardware specification:

- a memory size
- b storage devices
- c printer specifications
- d data capture equipment
- e communications equipment

2 describe the typical contents of a software specification:

- a outline program specifications
- b system flowcharts
- c computer run charts
- d file organisation and access method
- e screen, file and print layouts
- f error conditions and associated error messages

3 describe the typical contents of an input output data specification

- a document description and layout
- b input and output media
- c controls and validation

4 explain the purpose of validating input data

5 describe the purposes of system controls at the input, processing, storage and output stages

6 explain the need for security measures:

- a backup

b passwords

7 explain the need to plan training schedules for users

8 describe the advantages and disadvantages of different methods of system changeover:

a parallel running

b direct changeover

c phased

d pilot.

Unit 306 Requirements analysis and system specification

Outcome 5 Identify implementation and maintenance procedures

Underpinning knowledge

The candidate will be able to:

1 describe the main stages of system implementation:
   - a planning
   - b equipment installation
   - c preparation of test plans and test data
   - d design and creation of software
   - e training
   - f file conversion
   - g system changeover

2 describe the purpose and methods of testing new systems

3 describe training methods and techniques

4 describe methods used to convert manual files and the main problems associated with file conversion

5 describe the typical documentation provided on completion of implementation:
   - a detailed program specifications
   - b operating manuals for users
   - c security measures
   - d recovery procedures
   - e test plans, test data and test logs

6 explain the purpose of version control procedures when developing, amending and maintaining software and documentation

7 state that maintenance is the process of responding to a user request for change plus correction of errors.

Unit record sheet

Use this form to track your progress through this unit.

Tick the boxes when you have covered each outcome. When they are all ticked, you are ready to be assessed.

Outcome	✓	Date
1 **Plan for the identification of customer requirements**	☐	
2 **Establish customer requirements**	☐	
3 **Produce a logical design specification**	☐	
4 **Produce a physical design specification**	☐	
5 **Identify implementation and maintenance procedures**	☐	

Candidate Signature ..... **Date** .....

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