

## Unit 9: Systems Analysis and Design

**Unit code:** K/601/1281

**QCF Level 4:** BTEC Higher National

**Credit value:** 15

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- **Aim**

To provide learners with the knowledge and skills needed to undertake a systems analysis investigation by following a recognised methodology.

- **Unit abstract**

The systems life cycle provides a comprehensive framework for initially capturing data and information through a feasibility study and the use of recognised fact-finding techniques. Learners will be encouraged to identify and consider a full set of stakeholder interests to be sure that the wider implications of any development are considered.

To provide perspective, learners will examine different life cycle models and appreciate their particular strengths and weaknesses and to which situations they are most appropriate. Theoretical understanding will be translated into practical skills through actual systems investigations and learners will become confident in the use of particular tools and techniques relevant to the methodology chosen. Although for practical purposes, it is likely that one particular methodology and related tools and techniques will be chosen for practical work, it is important that learners understand that others are available.

- **Learning outcomes**

**On successful completion of this unit a learner will:**

- 1 Understand different systems life cycles
- 2 Understand the importance of a feasibility study
- 3 Be able to perform a system investigation.

## Unit content

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### 1 Understand different systems life cycles

*Lifecycle models:* examples eg Systems Development Life Cycle (SDLC), Rapid Applications Design (RAD), Spiral, Agile, Dynamic Systems Design Methodology (DSDM), Waterfall and Prototyping

*Lifecycle procedure/stage:* lifecycle stages within different models; lifecycle stages examples eg (feasibility study, analysis, design, implementation, testing, review) or (analysis, design, implementation, maintenance, planning)

### 2 Understand the importance of a feasibility study

*Fact-finding techniques:* eg, interviews, observation, investigation of documentation, questionnaires, focus groups

*Feasibility criteria:* issues eg legal, social, economic, technical, timescales; organisational constraints

*Components:* purpose; structure; intended audience; outcomes

### 3 Be able to perform a systems investigation

*Identify requirements:* stakeholders; requirements identification; requirements specification eg scope, inputs, outputs, processes and process descriptors; consideration of alternate solutions; quality assurance required

*Constraints:* specific to activity eg costs, organisational policies, legacy systems, hardware platforms

*Report documentation:* structure eg background information, problem statements, data collection process and summary, recommendations, appendices

*Systems analysis terminology and tools:* data stores and entities; data flows; process representation techniques relationships – 1:1, 1:Many (1:M) and Many: Many (M:M)

*Investigation:* eg upgrading computer systems, designing new systems

*Techniques:* examples relevant to methodology chosen eg Context Diagrams, Data Flow Diagrams (DFDs), Entity Relationship Diagrams (ERDs); Business Systems Options (BSOs); Technical Systems Options (TSOs); quality considerations eg Total Quality Management (TQM)

## Learning outcomes and assessment criteria

<b>Learning outcomes</b> <b>On successful completion of this unit a learner will:</b>	<b>Assessment criteria for pass</b> <b>The learner can:</b>
LO1 Understand different systems life cycles	1.1 evaluate different systems lifecycle models 1.2 discuss the importance of following a procedural/staged lifecycle in a systems investigation
LO2 Understand the importance of a feasibility study	2.1 discuss the components of a feasibility report 2.2 assess the impact of different feasibility criteria on a systems investigation
LO3 Be able to perform a systems investigation	3.1 undertake a systems investigation to meet a business need 3.2 use appropriate systems analysis tools and techniques to carry out a systems investigation 3.3 create documentation to support a systems investigation 3.4 evaluate how user and systems requirements have been addressed.

## Guidance

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### Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

The learning outcomes associated with this unit are closely linked with:

Level 3	Level 4	Level 5
Unit 11: Systems Analysis and Design	Unit 1: Business Skills for e-Commerce	

This unit has links to the Level 4 and Level 5 National Occupational Standards for IT and Telecoms Professionals, particularly the areas of competence of:

- Systems Analysis.

### Essential requirements

Learners must have access to a range of systems environments, in addition to more traditional texts, journals and case studies. Learners must also keep up to date with current systems developments in the field.

Learners must be encouraged to investigate a range of systems analysis methodologies and practices. Realistic business scenarios must be chosen wherever possible to provide as wide a perspective as possible. It is important for learners to consider all stakeholders in any activity because failure to do so is often one of the reasons why new systems do not fulfil the stated requirements.

The feasibility study is one of the most important stages in the lifecycle. If data and information is not obtained from users about the existing environment, problems, or requirements for a new or revised system then the investigation will be flawed. Delivery must therefore reflect this and expose learners to a range of information collecting techniques and their appropriateness in certain environments. Learners must also be encouraged to use a good variety of information collecting devices.

### Resources

#### Books

Dennis A and Haley Wixom B – *Systems Analysis and Design* (John Wiley & Sons Ltd, 2009)  
ISBN-10: 0470400315

Lejk M and Deeks D – *An Introduction to System Analysis Techniques, 2nd Edition* (Addison Wesley, 2002) ISBN-10: 0201797135

#### Websites

[www.freetutes.com/systemanalysis/](http://www.freetutes.com/systemanalysis/)

**Employer engagement and vocational contexts**

To further enrich the content of this unit and to provide more of a vocational context it would be beneficial to bring in analysts or employers from organisations that have had exposure to systems analysis.

