

## Unit 7: Business Management Techniques for Engineers

**Unit code:** R/601/1467

**QCF level:** 4

**Credit value:** 15

- **Aim**

This unit investigates the functions, structures and inter-relationships of an engineering business. Learners will apply the skills of costing, financial planning and control associated with engineered products or services.

- **Unit abstract**

In industry, engineers need to understand other factors which drive the business forward. The current financial state of the business will dictate what resources can be afforded to potential projects. Therefore, it is not always possible to select and use the latest technology. Most often, engineering solutions must also be business solutions which are constrained by budgets and time for example. To this end, engineering management requires understanding of business management techniques in order to advance business interests. This unit will provide the learner with the key knowledge and understanding of management skills required by engineering managers.

This unit is intended to give learners an appreciation of business organisations and the application of standard costing techniques, as well as an insight into the key functions underpinning financial planning and control. It also aims to expand learners' knowledge of managerial and supervisory techniques by introducing and applying the fundamental concepts of project planning and scheduling.

Learners will understand how to justify projects using financial tools such as profitability forecasts and contribution analysis. They will also be able to develop resource and project plans in the form of Gantt charts and with the use of software. They will be able to manage work activities using methods such as Just in Time (JIT) and Statistical Process Control (SPC).

- **Learning outcomes**

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

- 1 Know how to manage work activities to achieve organisational objectives
- 2 Be able to select and apply costing systems and techniques
- 3 Understand the key functions of financial planning and control
- 4 Be able to apply project planning and scheduling methods to an engineering project.

## Unit content

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### 1 Know how to manage work activities to achieve organisational objectives

*Engineering business functions:* organisational, management and operational structures in general engineering settings eg business planning, product/service development, design and production/delivery, quality assurance and control in relevant manufacturing, production, service or telecommunication industries

*Processes and functions:* business planning eg management, production/service planning, costing, financial planning; organisation eg mission, aims, objectives and culture

*Manage work activities:* product and service specifications and standards; quality, time and cost objectives eg just-in-time methods, value-added chains, statistical process control; working within organisational constraints and limitations

### 2 Be able to select and apply costing systems and techniques

*Costing systems:* systems eg job costing, process costing, contract costing; techniques eg absorption, marginal, activity-based

*Business performance:* measures and evaluation eg break-even point, safety margin, profitability forecast, contribution analysis, 'what if' analysis, limiting factors, scarce resources

### 3 Understand the key functions of financial planning and control

*Financial planning process:* short, medium and long-term plans; strategic plans; operational plans; financial objectives; organisational strategy

*Factors influencing decisions:* cash and working capital management eg credit control, pricing, cost reduction, expansion and contraction, company valuation, capital investment; budgetary planning eg fixed, flexible and zero-based systems, cost, allocation, revenue, capital, control, incremental budgeting

*Deviations:* variance calculations for sales and costs eg cash flow, causes of variance, budgetary slack, unrealistic target setting

### 4 Be able to apply project planning and scheduling methods to an engineering project

*Project resources and requirements:* human and physical resource planning techniques eg time and resource scheduling techniques, Gantt charts, critical-path analysis, computer software packages, work breakdown structure, precedence diagrams

## Learning outcomes and assessment criteria

Learning outcomes  On successful completion of this unit a learner will:	Assessment criteria for pass  The learner can:
LO1 Know how to manage work activities to achieve organisational objectives	1.1 define engineering business functions 1.2 outline the inter-relationships between the different processes and functions of an engineering organisation 1.3 organise work activities to meet specifications and standards
LO2 Be able to select and apply costing systems and techniques	2.1 create appropriate costing systems and techniques for specific engineering business functions 2.2 measure the impact of changing activity levels on engineering business performance
LO3 Understand the key functions of financial planning and control	3.1 explain the financial planning process in an engineering business 3.2 examine the factors influencing the decision-making process during financial planning 3.3 analyse standard costing techniques
LO4 Be able to apply project planning and scheduling methods to an engineering project	4.1 establish the project resources and requirements 4.2 produce a plan with appropriate time-scales for completing the project 4.3 plan the human resource requirement and costs associated with each stage of the project.

## Guidance

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### Links

This unit can be linked with *Unit 30: Quality Assurance and Management*.

### Essential requirements

Learners will need access to manual records and relevant computer software packages to enable realistic project planning, resource allocation and costing assignments.

### Employer engagement and vocational contexts

In estimating costs and approximating project completion times and human resource needs, it may be necessary to provide information from a 'given data source'. However, learners should be encouraged to research their own data requirements, ideally from local industrial attachments, work-placement or employer.