

Unit 9: Commercial Aspects of Organisations Employing Engineers

NQF Level 3: BTEC National

Guided learning hours: 60

Unit abstract

Engineers are employed in a range of organisations where their knowledge and skills are used to solve business needs and contribute to commercial success.

The organisations that employ engineers need to understand the areas in which their engineering expertise is deployed. This knowledge can help them plan their business effectively to secure competitive advantage. Engineering organisations also need to conduct themselves in a professional way and need to have a strong customer focus. Protecting what they do, invent, make or service is equally important for longer-term advantage and survival.

Companies need to operate their commercial activities in a competitive yet legal way. With infrastructure and engineering products and processes becoming increasingly complex, engineers need to integrate consideration of the environmental and social impacts with mainstream and commercial aspects of their work. It is therefore also important that organisations are able to deal with both local and national constraints and can demonstrate their commitment in these areas such as the gaining and use of kitemark systems.

This unit aims to place learners' studies in the context of engineering business planning, competitive commercial activities and the constraints placed upon engineering related organisations. It involves developing an understanding of the areas specific businesses operate in. The unit will also place the considerations of business planning and corporate expectations into a realistic context.

Any commercial process must generate sufficient income to sustain its operation. The income depends both on customer demand and on whether the products or services provided are able to make a profit or remain within budget. This unit will examine the commercial activities carried out by engineering organisations and the constraints that are placed on them inside a quality framework.

Learning outcomes

On completion of this unit a learner should:

- 1 Know about the business planning and corporate expectations of an engineering organisation
- 2 Know about competitive commercial activities
- 3 Know about local and national constraints
- 4 Know about the concepts of quality assurance and quality control.

Unit content

1 Know about the business planning and corporate expectations of an engineering organisation

Business planning considerations: methods of securing and managing resources, methods of recruiting and managing staff; financial; managing suppliers (supply chain management) and other interested stakeholders; influence of marketing and sales activities; building relationships with clients; aiming to establish competitiveness

Corporate expectation and customer focus: product or service range; customer considerations eg expectations, corporate image, reputation, effects on success; defined procedures; employer expectations eg rapport, positive attitudes, body language, dress code, clear communications, respect for individual differences and choices; ethical expectations eg accuracy and reliability of information used, honesty and integrity, respect for life, law and public good, responsible leadership, listening and informing

2 Know about competitive commercial activities

Tendering and contracting: terms (expressed, implied); warranties and conditions; implications of non-performance; documents eg estimates, quotations, contracts; promotion of equality and diversity

Intellectual rights: definition and purpose; intellectual property legislation and acts eg UK, international, Patents Act 1977, Copyright, Designs and Patents Act 1988 (parts V and VI), Patents Act 1949 (not consolidated), Patents Rules 1995; processes eg patenting, design registration, trademarking

Innovation: successful categories eg entrepreneurs, innovations, inventions; effects eg market competition, fashion; techniques eg systematic thinking, leadership, organisational behaviour, synergy between research and development (R&D) and product development, brainstorming; innovation and competitive advantage; possible deployment strategies eg technology brokers, outsourcing expertise, partners

3 Know about local and national constraints

Local impact: provision of employment eg employment levels, workforce skill levels, training requirements, local skills councils, impact of outsourcing; effects on the community eg emissions, access and egress of people and materials

Statutory controls: employment protection; equal opportunities; health and safety; environmental controls eg sustainability, environmental impact, use of renewable resources

Public issues: public concerns; public opinion and changes that have occurred; industry attempts to influence opinion; impact upon employment

Kitemark systems: eg codes of practice (industrial, professional, organisational), ISO9000, ISO14001, Investors in People (IiP), The Learning Organisation

4 Know about the concepts of quality assurance and quality control

Quality: definitions eg fitness for purpose, compliance with standards, satisfying customer needs and expectations with regard to costs, performance, appeal, reliability, durability, maintenance, safety and customer care

Quality assurance: quality assurance as a company-wide philosophy; total quality management; quality standards and accreditation

Quality control: methods eg inspection, sampling, testing, condition monitoring, planned maintenance; 'right first time' philosophy

Grading grid

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all of the learning outcomes for the unit. The criteria for a pass grade describes the level of achievement required to pass this unit.

Grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
P1 describe what should be considered when carrying out business planning	M1 explain the importance to support business planning of an engineering organisation getting tendering, contracting and innovation right	D1 evaluate the effects that local and national constraints have on competitive commercial activities.
P2 describe the corporate expectations of an engineering organisation with a customer focus	M2 explain how the concepts of quality assurance and quality control affect the application of business planning considerations and corporate expectations.	
P3 describe how an engineering organisation carries out tendering and contracting		
P4 describe the intellectual rights an engineering organisation should consider when operating in a competitive environment		
P5 explain how innovation can be used as a competitive commercial activity by an engineering organisation		

Grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
<p>P6 describe potential local impact, statutory controls and public issues that a given engineering organisation may find itself operating within</p> <p>P7 state and describe the kitemark systems found in a given engineering organisation</p> <p>P8 define the term 'quality' as applied to a product or service</p> <p>P9 distinguish between quality assurance and quality control.</p>		

Essential guidance for tutors

Delivery

Most of this unit involves a practical approach through the use of case study material or studying actual companies. Other areas of the unit rely on a good theoretical understanding of the different commercial aspects of engineering organisations.

This unit provides opportunities for learners to use particular industrial case material, especially when learning about business planning, tendering and contracting and dealing with local and national constraints. Learners might have relevant practical experience and can be more motivated if they study an area they are familiar with. Industrial visits will help underpin the breadth of commercial aspects covered.

Learners would benefit from knowing about the different sectors, engineering functions and organisational types from *Unit 1: Business Systems for Technicians* before they start to look at business plans and corporate expectations. They should also know about the general aspects of customer focus and areas such as ethical expectations. Knowing how an organisation protects its designs, inventions etc will help learners realise the importance of correct tendering and contracting when reaching agreements with other businesses. Learning about the constraints that affect the organisation, including environmental and sustainability issues in engineering is also important before business planning can be finalised.

When dealing with clients and customers the organisation should be clear about its strategies on quality. This may mean that some centres will choose to deliver business planning towards the end of the unit. However, it could be delivered purely through a case study approach concurrently with any other part of the unit content.

Throughout the delivery of this unit typical templates such as business plans, tenders, patents etc could be used as discussion documents. There are many examples of successful and unsuccessful entrepreneurs that could be researched and innovations that have either become market leaders or have failed. Learners could be asked to present their findings about one of these to the rest of the group. Examples of any local engineering activities that have caused public issues to be raised could give learners an insight into knowing about typical constraints.

Note that the use of 'eg' in the content is to give an indication and illustration of the breadth and depth of the area or topic. As such, not all content that follows an 'eg' needs to be taught or assessed.

Assessment

Evidence of achievement can be collected from case studies, assignments and projects which should enable learners to explore business planning, commercial activities, local and national constraints and quality issues.

To achieve a pass, learners must demonstrate knowledge and understanding of business planning and the corporate expectations of an organisation with a customer focus. Learners should describe the intellectual rights an engineering organisation should consider and explain how innovation can gain competitive advantage. They should also have knowledge of local and national constraints that an organisation works within and be able to differentiate between quality assurance and quality control.

The unit could be assessed using four assignments. It may be best to leave the criteria associated with business planning until the end and therefore the first assignment could address the criteria associated with learning outcome 2. Written tasks could be given to ask learners about tendering and contracting (P3), intellectual rights (P4) and innovation (P5). The requirement for P3 should include terms, documentation and promotion of equality and diversity. The task for P4 should ensure that learners have an opportunity to demonstrate what they know about the appropriate legislation, acts and processes associated with innovation, as well as defining and describing the purpose of intellectual rights. A written task targeting P5 could ask learners to explain how innovation can be used by an engineering organisation. In doing this learners will need to show how success is based on the use of techniques and deployment strategies and the effect innovation has on competition.

A second assignment could be a set of written tasks to address criteria P6, P7 and D1. The local impact should be based around the provision of employment and effects on the community, whereas statutory controls cover employment protection, equal opportunities and health and safety as well as environmental controls. A written task is again suitable to address D1.

A third assignment could be a stand-alone assignment involving written tasks for each of P8 and P9.

The final assignment could cover the remaining criteria, namely P1, P2, M1 and M2. It is only after learners have tackled tasks that relate to learning outcomes 2, 3 and 4 that they will be able to relate business planning considerations and corporate expectations to tendering, contracting, innovation, quality assurance and quality control.

To achieve a merit learners must demonstrate that they are able to explain the importance to supporting business planning of an engineering organisation getting tendering, contracting and innovation right (M1). They should also know about the role quality concepts has and the implications on business planning considerations and corporate expectations (M2). As such, both these criteria may be best attempted in assignment four, as already suggested.

To achieve a distinction learners must show evaluation skills when looking at the effects local and national constraints have on competitive commercial activities (D1). This may be best attempted as a written task at the end of assignment three.

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

This unit supports many of the other units within the BTEC Nationals in Engineering. Although it does not directly contribute towards the knowledge and understanding of any Engineering National Occupational Standards, it does support a wide range of engineering leadership requirements. It also has particular links with *Unit 1: Business Systems for Technicians* and *Unit 3: Engineering Project*.

Essential resources

Learners will need access to relevant intellectual property legislation. A range of information and data on engineering organisations as identified within the content and criteria is also needed for learning and assessment.

Indicative reading for learners

Textbooks

Gibbs A – *Essentials of Patents* (Wiley and Sons, 2003) ISBN 0471250503

Marcousé I and Lines D – *Business Case Studies* (Longman, 2002) ISBN 0582406374

Key skills

Achievement of key skills is not a requirement of this qualification but it is encouraged. Suggestions of opportunities for the generation of Level 3 key skill evidence are given here. Staff should check that learners have produced all the evidence required by part B of the key skills specifications when assessing this evidence. Learners may need to develop additional evidence elsewhere to fully meet the requirements of the key skills specifications.

Communication Level 3	
When learners are:	They should be able to develop the following key skills evidence:
<ul style="list-style-type: none"> • describing how an engineering organisation carries out tendering and contracting • describing the intellectual rights an engineering organisation should consider when operating in a competitive environment • describing potential local impact, statutory controls and public issues that a given engineering organisation may find itself operating within • describing the kitemark systems found in a given engineering organisation • explaining how innovation can be used as a competitive commercial activity by an engineering organisation. 	<p>C3.2 Read and synthesise information from at least two documents about the same subject. Each document must be a minimum of 1000 words long.</p> <p>C3.3 Write two different types of documents, each one giving different information about complex subjects. One document must be at least 1000 words long.</p>