

# ES194-15 Engineering Business Management & Professional Skills

**26/27**

**Department**

School of Engineering

**Level**

Undergraduate Level 1

**Module leader**

Rinkal Desai

**Credit value**

15

**Module duration**

20 weeks

**Assessment**

20% coursework, 80% exam

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

ES194-15 Introduction to Engineering Business Management

[Module web page](#)

### Module aims

Most professional engineers apply their skills within a business organisation. A key objective of business is to be commercially successful. Hence it is important for engineers to appreciate the industrial and commercial environment in which businesses operate and recognise the requirements and constraints created by this environment, ultimately with a view to strategically managing the business to greater success.

The aim of this module is to provide the engineering student with an appreciation of some of the practical problems and issues involved in competitively managing an engineering business.

The module presents a systems view of the firm or business, consistent with many engineering models, where a collection of inputs are transformed into outputs which are valued by the customer. For the purposes of this module an engineering business is simply defined as a

business that employs at least one engineer. The business could deliver a product or a service, it could be any size from a single consulting engineer to a global corporation and it can take a variety of legal forms from sole trader to public limited company.

The students will gain an appreciation of issues such as Risk, how organisations deal with Risk Management, Equality, Diversity & Inclusion as well as issues around contemporary issues Security Risk in the engineering sector.

Whilst developing commercial awareness allowing students to understand industry and the labour market, this module will also introduce careers and continuing professional development (CPD). As a tool to ensure active participation in career development and management allowing students to develop skills and knowledge needed to prepare for their graduate careers.

## **Outline syllabus**

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Economics;

Development of economies; manufacturing based, service and knowledge based.

External economic influences on competitiveness including:

- Macroeconomics and its impact on business - economic activity, inflation, exchange rates and interest rates.
- Markets - nature & structure, perfect competition, imperfect competition, monopoly.
- Government – regulation / legislation, taxes / subsidies, industrial policy.
- Infrastructure - finance, transport network, business network (clusters), university-industry links.
- Internal competitiveness of the business in terms of price factors and non-price factors.

Structure of Industry;

Types of industry in terms of product, size, ownership, technology.

The changing face of industry - globalisation, consolidation; the knowledge base; information systems; e-commerce; regeneration; infrastructure.

The changing nature of business-to-business relationships and the impact of these on the nature of competition; joint ventures; partnering; alliances, supply chains and networks.

Different forms of business - sole trader, partnership, limited company, public limited company.

Introduction to business strategy and the role of functional strategies.

Ethics - an understanding of ethics associated with business and management activity.

Marketing;

Buyer behaviour - from that of the consumer/customer to the organisational purchasing role within the contractor or supplier.

The marketing mix - Product, Price, Place, Packaging and Promotion.

Marketing research and multi-media marketing. Sales forecasting techniques. Defining problems, collection of data, and analysis of findings. Development of e-commerce, electronic transference and its uses.

Marketing segmentation. Targeting and positioning. How can /should Contractors diversify?

Product Life Cycle and the importance to a company of having a balanced portfolio of products.  
Introduction to Management Accounting and Costing;  
Sources of finance for business and projects. Capital investment appraisal techniques.  
Estimating costs and profits for one-off projects such as new products; civil projects; constructions; engineering services. Estimation techniques. Sources of data. Break-even analysis.

Life cycle costing;

Estimating costs and profits in business. Costs for decision-making; nature of costs; marginal costing; throughput accounting. Allocation of overheads; standard costing, absorption costing; activity-based costing.

Managing costs – budgets and variance analysis.

EDI, Risk Management and & Security

Students will be encouraged to consider aspects of Equality, Diversity, Inclusion, as well as issues such as Security risks for modern engineering organisations and consider how this affects engineering practise.

CPD and Career Preparation;

Students will be encouraged to engage with self-learning and professional development through the exploration of career trajectories open to Engineers. How to set career objectives, define development goals and develop several of the skills required to successfully engage with careers activities such as developing a professional network and CV.

## Learning outcomes

By the end of the module, students should be able to:

- Demonstrate knowledge of the theories of management with particular emphasis on contemporary management concepts, practices, security risks and ethical implications. C8, M8, C11, M11, C14(D), M14(D), C15(D), M15(D)
- Evaluate the positioning of a business within its market and economic environment and construct recommendations for its strategic development and managing risk. C9, M9, C10(D), M10(D)
- Explain how contemporary issues such as Equality, Diversity & Inclusivity (EDI) are crucial for engineering practice. C11, M11
- Review and analyse the process and importance of management accounting and costing. C15, M15
- Demonstrate, plan and record self-learning and development as the foundation for career planning, lifelong learning and Continuous Professional Development (CPD). C18, M18

## Indicative reading list

[Reading lists can be found in Talis](#)

[Specific reading list for the module](#)

## Subject specific skills

Understand the impact of economic factors, market positioning, management accounting and costing on the competitive performance of a business.

Ability to analyse the current positioning of a company within a competitive market using a range of models, tools and techniques.

Ability to determine the preferred position of a company within a competitive market and how it may manage its transition from the current situation to that goal position.

## **Transferable skills**

Use of analytical models, tools and techniques.

Use of Library Databases to retrieve subject specific information.

Communicate (written and oral; to technical and non-technical audiences).

Plan career and self-learning as the foundation for CPD.

Exercise initiative and personal responsibility, including time management.

Awareness of the nature of business and enterprise in the creation of economic and social value

Overcome difficulties by employing skills, knowledge and understanding in a flexible manner

Ability to formulate and operate within appropriate codes of conduct, when faced with an ethical issue

Appreciation of the global dimensions of engineering, commerce and communication

Be professional in their outlook, be effective communicators, and be able to exercise responsibility and sound management approaches.

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## **Study**

### **Study time**

<b>Type</b>	<b>Required</b>
Lectures	33 sessions of 1 hour (18%)
Tutorials	(0%)
Private study	117 hours (65%)
Assessment	30 hours (17%)
Total	180 hours

### **Private study description**

117 hours of guided independent learning

### **Costs**

No further costs have been identified for this module.

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# Assessment

You must pass all assessment components to pass the module.

## Assessment group DC

	Weighting	Study time	Eligible for self-certification
<b>Assessment component</b>			
Careers Portfolio	20%		Yes (extension)
Part A: Setting Career Goals			
Students are asked to identify their potential career trajectories and set out their interests, evaluating the impacts of any personal or external circumstances that may need to be considered.			
Part B: Self-reflective Analysis			
Students are asked to reflect on and analyse their current skills, personal strengths, and weaknesses in relation to their career objectives.			
Part C: Professional Development Objectives			
Students asked to complete five development objectives, the first of which is to complete a reflective analysis of the development of their CV.			
The remaining four development objectives should be chosen to support their career goals using their self-reflective analysis to create objectives that will move them forwards in their development and career exploration.			

Reassessment component is the same

**Assessment component**

Centrally-timetabled examination (On-campus)	80%	30 hours	No
Paper based multiple choice test.			

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- Students may use a calculator

Reassessment component is the same

## Feedback on assessment

Individual and cohort-level feedback on Portfolio  
Cohort level feedback on online examination  
Support through advice and feedback hours.

[Past exam papers for ES194](#)

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## Availability

### Post-requisite modules

If you pass this module, you can take:

- ES3K4-15 Managing Engineering Excellence

## Courses

This module is Core for:

- Year 1 of UESA-H335 BEng Automotive Engineering
- Year 1 of UESA-H161 BEng Biomedical Systems Engineering
- Year 1 of UESA-H216 BEng Civil Engineering
- Year 1 of UESA-H63W BEng Electronic Engineering
- Year 1 of UESA-H113 BEng Engineering
- Year 1 of UESA-HN15 BEng Engineering Business Management
- Year 1 of UESA-HH75 BEng Manufacturing and Mechanical Engineering
- Year 1 of UESA-H315 BEng Mechanical Engineering
- Year 1 of UESA-HH35 BEng Systems Engineering
- Year 1 of UESA-HN11 BSc Engineering and Business Studies
- Year 1 of UESA-H336 MEng Automotive Engineering
- Year 1 of UESA-H163 MEng Biomedical Systems Engineering
- Year 1 of UESA-H217 MEng Civil Engineering
- Year 1 of UESA-H63X MEng Electronic Engineering
- Year 1 of UESA-H114 MEng Engineering
- Year 1 of UESA-HH76 MEng Manufacturing and Mechanical Engineering
- UESA-H316 MEng Mechanical Engineering
  - Year 1 of H315 Mechanical Engineering BEng
  - Year 1 of H316 Mechanical Engineering MEng
- UESA-HH31 MEng Systems Engineering
  - Year 1 of HH31 Systems Engineering
  - Year 1 of HH35 Systems Engineering
- Year 1 of UESA-H605 Undergraduate Electrical and Electronic Engineering
- Year 1 of UESA-H606 Undergraduate Electrical and Electronic Engineering MEng