



Pearson BTEC Level 3 National Extended Diploma in Construction and the Built Environment

Unit 9: Management of a Construction Project

Level 3 – 60 GLH

Unit type: Internal

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Please read this handbook in conjunction with departmental and unit pages on Microsoft Office Teams (including the Programme Handbook)

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1 INTRODUCTION

1.1 Purpose of the Unit Handbook

This unit handbook aims to provide learners with an understanding of management principles and their application to the construction industry.

1.2 Introduction to the Unit

Managing and delivering a project to a client on time and within budget is key to modern construction. With so many variables and potential unforeseen challenges, the job of the site or project manager is interesting, demanding and exacting. A satisfactory and rewarding conclusion to a project requires them to have the techniques to plan, programme, budget and manage the workforce, as well as have the skills to control these techniques in many and varied situations. In this unit, you will examine the techniques needed to manage a project from start to completion. You will learn about the roles and responsibilities of the construction management team, which will include planning, forecasting, organising, buying, motivating and cost control. You will carry out planning and production control techniques and apply these skills to the design of building programmes. This unit will help you to progress to a higher-level construction programme, such as the Higher National in Construction, or to a degree in project management. Additionally, the content of this unit will support progression to careers in site or project management, or to other professional roles in construction, such as architecture, quantity surveying, building services engineering and structural engineering.

1.3 Unit Content

Learning aim A Understand the principles and application of management in construction

A1 Principles of management

Management principles and their application by the management team in the construction of low- to medium-rise buildings.

- Management style, methods and theories, to include Fayol, Maslow, McGregor.
- The roles, responsibilities and interaction of a construction project management team, to include the architect, quantity surveyor, construction manager, project manager,

structural engineer, services engineer, site manager, buyer, planner.

- Planning and forecasting a project's needs, requirements and resources.
- On-site, short-term management for projects in progress:

- o pre-construction

- o site preparation

- o construction phase

- o handover.

- Claiming interim payments.
- Managing cash flow.
- Order and delivery of materials.
- Labour requirements.
- Training needs.
- Plant requirements.
- Quality assurance and control.
- Workforce supervision.
- Health and safety requirements.
- Decision making.
- Managing unforeseen events.
- Handover schedule.
- Completion.

- Managing the organisation's viable options:

- o national and local government policies, trends

- o labour requirements, recruitment, investment in skills and training

- o subcontract or direct employment

- o site management structure:

- fully site based

- head office based functions and support

- o plant and equipment hire, lease or purchase.

- Organising, procuring, co-ordinating and controlling:

- o materials, plant and equipment delivered to site on time

- o site storage facilities

- o site distribution methods

- o workforce requirements.
- Motivating the workforce:
 - o incentives, including bonus payments
 - o awards and rewards
 - o job security, including contract renewal
 - o training.
- Communication with the design and management team, the workforce, suppliers:
 - o chains of command and management structures
 - o team and site meetings
 - o written forms of communication, their use and appropriateness, to include letters, architect's instructions, site instructions
 - o telecommunications, to include telephones, mobiles and site radios
 - o graphical and electronic forms of communication, e.g. emails, texts, instant messaging
 - o information technologies, to include building information modelling (BIM).

A2 Application of construction management techniques

Site management responsibilities and the techniques used to manage a project/site to ensure

an efficient build from commencement to completion, on programme and to budget.

- Standard planning techniques and how these are applied to control work on site:
 - o production and use of master programmes
 - o production and use of progress monitoring techniques:
 - Gantt charts, Critical Path Analysis, Line of Balance charts
 - o production of daily activity sheets
 - o production of site layout plan, to include access/exit points, materials storage, crane locations, site accommodation, temporary services, temporary site roads and hard standings
 - o production and monitoring of delivery schedules
 - o production of method statements and risk assessments for the various phases of construction work.
- The application of quality assurance and quality-control requirements:
 - o document control

- o drawing registers
- o use of the specification
- o site testing
- o offsite testing
- o site inspection
- o dimensional quality control.
- Compliance with statutory liaison, building regulations, project materials specification requirements:
 - o building regulation notices and inspection
 - o National House Building Council (NHBC) inspections and standards.
- Application of on-site sampling and material testing techniques.
- Supervision and inspection of the quality of outcomes produced by the workforce.
- Management of direct workforce:
 - o recruitment, training, competence requirements, including Construction Skills Certification Scheme (CSCS) requirements
 - o monitoring of equal opportunities
 - o leadership skills, including how to motivate individual and group members, creating productive team behaviours.
- Management of subcontractors:
 - o communication methods, to include language use to instruct, persuade, motivate, discipline
 - o checking of insurance and legal requirements and responsibility for compliance
 - o retention of payment practice and its use
 - o production of snagging lists of remedial works required.

Learning aim B : Understand purchasing and cost management techniques

B1 Application of purchasing methods

Use and application of purchasing techniques to facilitate the effective supply of materials to construction projects and the benefits and drawbacks of their use.

- List of selected suppliers:
 - o area of operations
 - o previous performance

- o capacity to supply
- o reputation of supplier
- o stock levels
- o ability to meet changes in demand.
- Materials and subcontract enquiries:
 - o number of quotations required
 - o scheduling materials or extracts from bills of quantities
 - o use of correct or appropriate specifications
 - o receipt of and checking quotations
 - o gap analysis
 - o negotiating skills.
- Planning links:
 - o purchasing materials to meet the requirements of the construction programme
 - o items with long lead times that might impact on construction planning
 - o just-in-time deliveries to programme requirements when site storage is limited.
- Ethical purchasing and supply:
 - o purchasing policy
 - o sustainable and local sourcing
 - o minimising transportation
 - o use of sustainable materials
 - o fair trade agreements
 - o abuse of power
 - o avoidance of corruption
 - o social responsibility.
- Purchase orders:
 - o terms and conditions
 - o discounts
 - o timing of orders
 - o clarity of content.
- Benefits and drawbacks of serial and term contracts:
 - o annual supply contracts
 - o multiple project contracts

- o serial contracts.

B2 Cost management techniques

Recognition and knowledge of cost management techniques applied during a building project and an appreciation of how these assist the manager to plan and manage the budget.

- Analysis of interim claims, to include:

- o preliminary items

- o measured work by trade or element breakdown

- o nominated subcontract values

- o materials on site.

- Cost value comparisons, to include:

- o costs from management information systems

- o monthly valuations reconciled with project costs

- o profit and loss projections

- o cash flow forecasts.

- Managing costs:

- o selection and application of techniques available to break down, itemise and control the project cost, to include:

- unit costing

- element costing

- marginal costing

- variance analysis

- o selection and use of techniques to enable prices and budgets to be prepared and compared, to include:

- estimated costs

- variable costs

- target costs

- actual costs

- o identifying cost savings, to include:

- labour

- plant

- materials

- site set-up
- site management structure
- methodologies
- programme acceleration or deceleration.
- Preparing and examining elemental and project comparison costs.

Learning aim C: Develop a programme of activities for construction works

C1 Production control systems

Understand the need, and techniques, to plan and control a project on site, both in terms of physical and financial progress, and to be able to communicate this information to site and management teams.

- Production of programmes of activities:
 - o planning project organisation, to include:
 - method statements
 - site layout
 - site accommodation and storage
 - waste management
 - site traffic management
 - o use of Gantt charts, bar charts, linked bar charts to show and monitor progress of the construction project
 - o use of Critical Path Analysis, network analysis, Line of Balance, precedence diagrams, time change diagrams to show and monitor progress of the construction project:
 - manual and computer-based techniques on site.
- Measurement of progress:
 - o physical progress on site, to include:
 - regular comparison of planned progress of work on site with actual progress
 - methods to overcome the consequences of running ahead or behind project schedule
 - causes and effects of delays, the consequences of rescheduling, implementing overtime payments, extensions of time applications
 - o preparation of financial progress information, to include:
 - site returns
 - interim valuations and payments

- claims and variations
- reviewing events, predicted and unforeseen.

2 TEACHING AND LEARNING METHODS

Delivery will be through lectures, group workshops and tutorials. It is expected that learners undertake problem solving, further reading and research to support the guidance provided during taught sessions. Reading materials will be provided via the virtual learning environment (VLE) to support teaching but learners are encouraged to familiarise themselves with college library and online databases. Prior to each assessment, there will be series of formative feedback tutorial sessions/revision. These sessions will provide the opportunity for learners to receive constructive feedback on work/tasks prior to assessment.

3. LECTURE PROGRAMME

Week	Date	Lecture Duration (Hours)	Learning Aim	Session Aim
1	WC 02/09/2024	1.75	N/A	- Induction
2	WC 09/09/2024	1.75	LA A	- Unit introduction. - Management style, methods and theories.
3	WC 16/09/2024	1.75	LA A	- Construction project management team. - Compliance with statutory liaison.
4	WC 23/09/2024	1.75	LA A	- Resource requirements of a construction project. - Managing the organisation's viable options.
5	WC 30/09/2024	1.75	LA A	- Organising, procuring, co-ordinating and controlling. - Quality assurance and quality-control.
6	WC 07/10/2024	1.75	LA A	- Planning techniques - Motivating and communicating with workforce. - Managing direct workforce and subcontractor.
7	WC 14/10/2024	1.75	LA A	- Issue Assignment 1
8	WC 21/10/2024	1.75	LA A	- Student Support/Independent Study
	WC 28/10/2024			- STUDY REVIEW WEEK
9	WC 04/11/2024	1.75	LA A	- Student Support/Independent Study
10	WC 11/11/2024	1.75	LA A	- Submit Assignment 1

11	WC 18/11/2024	1.75	LA B	- List of selected suppliers - Materials and subcontract enquiries - Benefits and drawbacks of serial and term contracts
12	WC 25/11/2024	1.75	LA B	- Planning links - Give feedback: Assignment 1
13	WC 02/12/2024	1.75	LA B	- Ethical purchasing and supply - Purchase orders
14	WC 09/12/2024	1.75	LA B	- Interim claims and cost value comparisons
15	WC 16/12/2024	1.75	LA B	- Managing costs (1)
HOLIDAY	WC 23/12/2024			
HOLIDAY	WC 30/12/2024			
16	WC 06/01/2025	1.75	LA B	- Managing costs (2)
17	WC 13/01/2025	1.75	LA B	- Issue Assignment 2
18	WC 20/01/2025	1.75	LA B	- Student Support/Independent Study
19	WC 27/01/2025	1.75	LA B	- Student Support/Independent Study
20	WC 03/02/2025	1.75	LA B	- Student Support/Independent Study
21	WC 10/02/2025	1.75	LA B	- Submit Assignment 2
22	WC 17/02/2025	1.75	LA C	- Production of programmes of activities (1) - Give feedback: Assignment 2
	WC 24/02/2025			- STUDY REVIEW WEEK

23	WC 03/03/2025	1.75	LA C	- Production of programmes of activities (2)
24	WC 10/03/2025	1.75	LA C	- Production of programmes of activities (3)
25	WC 17/03/2025	1.75	LA C	- Measurement of progress
26	WC 24/03/2025	1.75	LA C	- Issue Assignment 3
27	WC 31/03/2025	1.75	LA C	- Student Support/Independent Study
28	WC 07/04/2025	1.75	LA C	- Student Support/Independent Study
HOLIDAY	WC 14/04/2025			
HOLIDAY	WC 21/04/2025			
29	WC 28/04/2025	1.75	LA C	- Student Support/Independent Study
30	WC 05/05/2025	1.75	LA C	- Submit Assignment 3
31	WC 12/05/2025	1.75	LA C	- Give feedback: Assignment 3
32	WC 19/05/2025	1.75	LA C	- Give feedback: Assignment 3
	WC 26/05/2025			- STUDY REVIEW WEEK
33	WC 02/06/2025	1.75	LA A-C	- Student support for resubmissions
34	WC 09/06/2025	1.75	LA A-C	- Student support for resubmissions



4. ASSESSMENT SCHEDULE

4.1 Detailed Description of Assessment Scheme

The unit will comprise of three summative assessments.
 Summative assessment one 9.1 will cover learning aim A.
 Summative assessment two 9.2 will cover learning aim B.
 Summative assessment three 9.3 will cover learning aim C.

NB: There will be ample opportunities for assessment resubmissions. Resubmission dates will be communicated in due course.

4.2 Learning Aim and Assessment Criteria

Learning aim A: Understand the principles and application of management in construction

Pass	Merit	Distinction
A.P1 Explain the roles of the members of the construction management team and their individual responsibilities. A.P2 Explain the techniques applied by a site manager to manage the project.	A.M1 Discuss the roles of the members of the construction management team and how their individual responsibilities are applied. A.M2 Discuss the techniques applied by a site manager to manage the project.	A.D1 Evaluate the different roles of the construction management team, their responsibilities and the techniques applied by a site manager to manage the project.

Learning aim B: Understand purchasing and cost management techniques

Pass	Merit	Distinction
B.P3 Explain the methods used by construction companies to facilitate the supply of appropriate materials to site. B.P4 Explain the cost management techniques used to monitor and control the cost and profitability of construction projects.	B.M3 Assess the methods used to facilitate the cost-effective supply of appropriate materials to site. B.M4 Analyse the cost management techniques used to effectively monitor and control the cost and profitability of construction projects.	B.D2 Evaluate the methods used to facilitate the ethical supply of appropriate materials to site, meeting programme requirements, and how these impact on the cost management and profitability of construction projects.

Learning aim C: Develop a programme of activities for construction works

Pass	Merit	Distinction
C.P5 Produce a programme of activities with graphical representations for a given construction project. C.P6 Explain the methods used to monitor the progress of construction projects.	C.M5 Produce a detailed programme of activities, with graphical representations and appropriately detailed timings for a given construction project, and consider an appropriate method to monitor progress.	C.D3 Produce a comprehensive programme of activities, with graphical representations and highly detailed timings that show critical and non-critical elements for a given construction project, and consider the most appropriate method to monitor progress.

4.3 Marking Standards

The controlled assessments will be marked in accordance with the Pearson standards. It will also meet requirements set by the Regulated Qualifications Framework (RQF). Learners are expected to make reasonable attempts towards problem solving. A coherent, well-balanced and organised approach to tasks with clear notations and evidence will be rewarded.

5. LEARNING RESOURCES

The library offers services and resources needed for this unit. The following resources have been provided to assist your studies in this Unit:

- Access to specialist databases.
- Class notes and lecture slides.
- Library electronic services.
- Links to online journal articles.
- Open-access computers and printers.
- Reprographic services.
- Staff expertise and advice.
- Librarian and team of learning support staff.

Pearson BTEC National Construction Student Book. Authors: Simon Topliss, Mike Hurst, Simon Cummings. Sohrab Donyavi

If you have any queries about how to access any of these learning resources, please ask the Unit Leader.