

Unit 44: Operational Management of Road Transport

Unit code:	F/600/8600
QCF Level 3:	BTEC National
Credit value:	10
Guided learning hours:	60

● Aim and purpose

This unit aims to enable learners to gain knowledge and understanding of operational route planning, security issues and operational risks associated with road transport. Learners will also gain an understanding of the legal operating requirements and the importance of health and safety requirements relating to road transport.

● Unit introduction

This unit has been designed to focus on the operational aspects of route planning, including legal, health, safety and security issues in freight transport work. Learners will investigate the legal, safety and operating requirements for vehicles, loads and individuals including the relevant legislation, regulations and codes of practice. They will also investigate security and safety issues including appropriate unit loads and using appropriate handling equipment.

Learners will examine safety risks to both loads and individuals, including organisational security procedures associated risks to security from outside sources and actions to be taken when a range of risks occur.

● Learning outcomes

On completion of this unit a learner should:

- 1 Understand route planning conventions of road transport
- 2 Know the operational scheduling and quality of service required for road transport
- 3 Know the legal, safety and operating requirements for road transport
- 4 Understand the security methods associated with road transport.

Unit content

1 Understand route planning conventions of road transport

Route planning: in an operations environment; reviewing relevant information eg route, schedule; identifying the effect the load might have on the selection of the route; obtaining and using relevant maps and information; identifying suitable major and minor roads; potential problems; alternative routes, estimating driving distances, potential average speeds, time required to achieve schedule; compliance with legal, safety and operating regulations eg highway codes, transport regulations, drivers' hours; determining most effective way to use driving time; appropriate stops with facilities for self, vehicle and load eg overnight, rests, refueling, changeovers, security requirements; communicating with relevant personnel

Delivery and collection of loads: information sources for obtaining loads; information on destination and schedules eg delivery point, collection point, collection time, delivery time, stops; problems that can occur in gaining information eg not knowing where to obtain information or what information is needed; special requirements for loading and unloading eg containers, liquids, materials (including hazardous materials), special requirements for timing the delivery or collection; assessing recent information that could affect achievement of the destination and schedule; compliance with legal, safety and operating regulations, drivers' hours

2 Know the operational scheduling and quality of service required for road transport

Staffing levels and schedules: for the delivery and collection of loads, planning staffing levels and preparing work schedules to cover all operational needs and take into account operational constraints eg with objectives, work targets, financial constraints, personnel available, security and safety; calculating staffing requirements, producing and presenting staffing plans, scheduling work; monitoring staffing levels and schedules; making adjustments eg allocation of responsibilities and tasks, hours of work, staffing levels; contingency planning

Quality of service: for the delivery and collection of loads; services provided by internal personnel, by external agencies; documentation required by organisations; methods used to advise when delays occur, dealing with dissatisfaction; evaluating quality of service provided by internal personnel, by external agencies; developing realistic and cost-effective improvements that could be made to quality of service; collecting and reporting information on quality of service provision – face to face, in writing; assessing information fairly and accurately; making evaluations consistent with weight of evidence; actions that can be taken if external agencies refuse to improve the quality of service eg if constrained by contracts, licences

3 Know the legal, safety and operating requirements for road transport

Legal, safety and operating requirements: organisational commitment; safe systems of work; safety of vehicles, loads and individuals; potential hazards eg collisions, movement of loads, falls, injuries sustained whilst loading and unloading; vetting and training of personnel; safety short cuts eg driving too fast, insecure loads, manually lifting excessive weights; training and supervision; manual lifting and handling; information on legal, safety and operating requirements that apply to driving vehicles eg highway codes, transport regulations, alcohol limits and drug restrictions, drivers' hours; loading and unloading eg load restrictions; carrying loads ie operator's licence requirements; using roads eg drivers' speed limits; types of problems that occur eg mechanical, climatic, environmental, infestation, contamination, incorrect packaging, fire; avoidance of damage or deterioration

Legislation and regulations: Health and Safety at Work Act 1974; Management of Health and Safety at Work Regulations COSHH 2002; Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995; Working Time Regulations 1999

4 Understand the security methods associated with road transport

Security methods: of vehicles, loads and individuals; use of appropriate unit loads; use of appropriate handling and storage equipment; secure environment; vetting and training of personnel; systems eg stop and search, vehicle seals, relevant documentation; security methods ie physical protection – sheeting, padlocks, door seals, alarm systems; mechanical and electrical devices; the need for security in road transport

Security risks: organisational security procedures; range of loads and associated security risks eg carrying armaments, valuables, people; security risks at a range of locations eg overnight parking, daytime parking, refueling whilst driving, loading and unloading, other risks eg theft of vehicle, theft of personal items, vandalism, arson

Assessment and grading criteria

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

Assessment and 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 explain the factors to be considered when developing a route plan [SM3]	M1 analyse how the effective use of vehicles and staff is considered in the development of a route plan	D1 evaluate how the effective use of vehicles and staff is considered in the development of a route plan
P2 describe the fundamental factors to be considered when planning and monitoring an operational activity [IE4]		
P3 describe how quality of service is incorporated into operational scheduling [CT6]	M2 explain how adjustments can be made to provide quality services to customers	
P4 describe the legal, safety and operating requirements for vehicles and loads [TW2]	M3 analyse the implications of the legal, safety and operating requirements for vehicles and loads.	
P5 identify the security requirements of vehicles, loads and individuals [IE1]		
P6 explain the security risks relating to vehicles and loads. [IE3]		D2 evaluate the security risks to vehicles and loads, giving recommendations for improvements and appropriate justifications.

PLTS: This summary references where applicable, in the square brackets, the elements of the personal, learning and thinking skills which are embedded in the assessment of this unit. By achieving the criteria, learners will have demonstrated effective application of the referenced elements of the skills.

Key	IE – independent enquirers CT – creative thinkers	RL – reflective learners TW – team workers	SM – self-managers EP – effective participators
------------	--	---	--

Essential guidance for tutors

Delivery

Tutors delivering this unit have opportunities to use a wide range of techniques. Lectures, discussions, seminar presentations, site visits, supervised practical activities, research using the internet and/or library resources, and the use of personal and/or industrial experience, are all suitable. Delivery should stimulate, motivate, educate and enthuse learners. Visiting expert speakers could add to the relevance of the subject.

Learners should be encouraged to read an appropriate range of documents and library/internet source material relating to the unit content. Overall delivery of the unit should be supported by the use of case studies and other industry-related documents.

The learning outcomes are linked and form a logical, consistent and progressive structure, starting with route planning and scheduling followed by legal, safety and operating requirements as well as security of vehicles, loads and individuals.

This unit creates opportunities for delivery to be based on practical activities rather than through a purely theoretical approach. The unit has been designed to develop learners' appreciation of the importance of freight transport operations. Group discussion and case studies should be used, as these will help learners to link the unit with their experiences. Tutors should be conscious of the depth of understanding needed at this level. They should provide adequate depth and breadth of theory to cover all the learning outcomes and content, whilst ensuring that they do not go into too much detail in any one area to the detriment of another. Guest speakers, who are directly involved across a range of establishments in the logistics industry, will support delivery by providing information on organisational policies and procedures and relevant business practices. Visitors will provide an excellent current industry perspective. Specialists in the area of health and safety legislation may also be useful sources of information for learners.

Visits to logistics businesses would be an advantage. The use of discussion groups and presentations will give learners an opportunity to bring the topic 'to life'. Real-life case studies should be used to illustrate all aspects of route planning and scheduling and the impact of problems or issues, which may cause hold ups in the systems or affect profitability.

Group activities are strongly recommended, but tutors will need to ensure that individual learners have equal experiential and assessment opportunities.

Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan demonstrates one way in planning the delivery and assessment of this unit.

Topic and suggested assignments/activities and/assessment
Tutor explanation: introduction to the unit.
Tutor explanation/class discussion: what is route planning?
Tutor input: route planning – information needs.
Class exercise: group work on information sources and their use in route planning followed by short in-class presentations.
Tutor input: factors influencing route planning.
Class exercise: group work: planning a route for the given load type and scenario followed by short presentations to the class.
Tutor explanation/class discussion: delivery and collection of loads – procedures.
Learner activity: investigating possible problems followed by a brief group discussion – tutor to facilitate.
Class discussion: special requirements for loading/unloading.
Tutor explanation – case study: route planning.
Tutor input: staffing levels and schedules for delivery and collection of loads.
Tutor explanation/class discussion: calculating staffing requirements, planning/monitoring staffing.
Tutor explanation – documentation: staff/work schedules.
Tutor explanation/class discussion: what is meant by quality of service?
Tutor explanation/class discussion: making adjustments to ensure quality of service.
Learner activity: investigating into staffing levels and adjustment required for a given tutor brief followed by a brief group discussion – tutor to facilitate.
Learner activity: visit to a warehouse: learner to make notes on routing and scheduling procedures.
Preparation for assignment.
Assignment 1: Route Planning and Scheduling – covering P1, P2, P3, M1, M2 and D1
Tutor explanation/class discussion: what are legal, safety and operating requirements?
Tutor input: safe systems of work.
Class exercise: group work on safe systems of work followed by short presentations to the class.
Tutor input: potential hazards.
Class exercise: investigating possible problems followed by a brief group discussion – tutor to facilitate.
Tutor explanation/class discussion: driving vehicles – requirements.
Learner activity: investigating legal, safety and operating requirements for driving vehicles followed by a brief group discussion – tutor to facilitate.
Tutor explanation – relevant legislation.
Class exercise: group work on legislation followed by short presentations to the class.
Tutor input: security methods of vehicles, loads and individuals.
Tutor explanation/class discussion: potential security issues.
Learner activity: investigating into legislation and security issues followed by individual in-class presentation – tutor to facilitate.

Topic and suggested assignments/activities and/assessment

Preparation for assignment.

Assignment 2: Requirements and Methods – covering P4, P5, P6, M3 and D2

Review of unit delivery and assessment.

Assessment

Evidence for this unit may be gathered from a variety of sources, including well-planned investigative assignments, case studies or reports of practical assignments.

There are many suitable forms of assessment that could be used, and centres are encouraged to consider and adopt these where appropriate. Some examples are suggested below. However, these are not intended to be prescriptive or restrictive, and are provided as an illustration of the different forms of assessment evidence that would be acceptable.

Some criteria could be assessed directly by the tutor during practical activities. If this approach is used, suitable evidence from guided activities would be observation records or witness statements. Guidance on the use of these is provided on the Edexcel website.

Evidence for learning outcomes can be achieved through well-planned assignments and projects. These will usually be carried out individually but it is possible to introduce elements of teamwork into the collection or collation of data or in simulations of the planning process such as public consultation or inquiry. Where available, workplace evidence can be incorporated, provided that is appropriate and authenticated as the learner's own work. Integrative assignments will help to link this unit with other units. The volume of evidence required for each assessment should take into account the total number of assessments and the design of the overall teaching programme.

Formative assessments should be used throughout the unit, giving learners the opportunity to receive developmental and constructive guidance and feedback. This will allow them to gain an understanding of their personal achievement and the methods they can use to develop their learning.

Formative assessment should consider diverse sources of evidence. These may come from activity-based projects, observation and questioning, peer/tutor/logistics organisation witness testimony or personal statements. Group or individual planning and implementation documents are also an invaluable source of evidence.

The structure of the unit suggests that the grading criteria may be fully addressed by using two assignments. The first one will cover P1, P2, P3, M1, M2 and D1 and the second one will cover P4, P5, P6, M3 and D2.

To achieve a pass grade, learners must meet the six pass criteria listed in the grading grid.

For P1, learners must be able to explain the factors to be considered when developing a route plan. They should include information needs and availability/currency, availability of vehicles and staff and other contingent factors. Evidence for this criterion could be a report supported with suitable examples.

For P2, learners must be able to describe the fundamental factors to be considered in planning and monitoring an operational activity. These factors should include staffing levels and work schedules. Learners should be able to demonstrate understanding of operational needs and constraints. Suitable evidence approaches are the same as for P1.

For P3, learners must be able to describe how quality of service is incorporated into operational scheduling. This should include the services provided by both internal personnel and external agencies. Learners should be able to describe the importance of effective communication with the client, dealing with dissatisfaction, and the documentation involved in continuously improving the service. Suitable evidence approaches are the same as for P1.

For P4, learners must describe the legal, safety and operating requirements for vehicles and loads. Learners should, at first, outline the relevant legislation then describe in detail safe systems of work and the requirements for suitable evidence approaches are the same as for P1.

For P5, learners must be able to identify the security requirements of vehicles, loads and individuals. Evidence for this criterion could be a report/presentation and/or oral questioning.

For P6, learners must be able to explain the security risks related to vehicles and loads. Learners should demonstrate an understanding of risks dependent upon the type of load and location, as well as other risks independent of these two factors. Evidence for this criterion could be a report/presentation and/or oral questioning.

To achieve a merit grade, learners must meet all of the pass grade criteria and the three merit grade criteria.

For M1, learners must analyse how the effective use of vehicles and staff is considered in the development of a route plan. This can be set as an extension to P1. Suitable evidence approaches are the same as for P1.

For M2, learners must explain how adjustments can be made to provide quality services to customers. These adjustments include staffing levels and work schedules. This can be set as an extension to P3. Suitable evidence approaches are the same as for P1.

For M3, learners must analyse the implications of the legal, safety and operating requirements for vehicles and loads. This can be set as an extension to P4. Suitable evidence approaches are the same as for P1.

To achieve a distinction grade, learners must meet all of the pass and merit grade criteria and two distinction grade criteria.

For D1, learners must be able to evaluate how the effective use of vehicles and staff is considered in the development of a route plan. The brief provided should give opportunities for learners to carry out such an evaluation. Learners should also include some real-world examples. This can be set as an extension to P1/M1. Examples of suitable evidence approaches are the same as for P1.

For D2, learners must be able to evaluate the security risks to vehicles and loads, making recommendations for improvements, with justifications. The brief provided should give learners opportunities to carry out such an evaluation. Learners should also include some real world examples. This can be set as an extension to P6. Suitable evidence approaches are the same as for P1.

Programme of suggested assignments

The table below shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the assessment and grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
P1, P2, P3, M1, M2, D1	Route Planning and Scheduling	<p>You have recently joined a national logistics organisation. Your manager has asked you to carry out research into route planning and scheduling to collect and deliver loads. The ultimate goal is to provide an excellent quality of service to the customer. Most of the goods are domestic appliances and other non-perishable items.</p> <p>However, your organisation is expanding to deal with food, drink and DIY type materials, including paints and a range of chemicals. The delivery and collection time may vary. You have also been asked to analyse/evaluate the systems and procedures, to cater for this expansion.</p>	<p>A portfolio/report containing an explanation/description of route planning and monitoring and how to ensure quality of service to the customer.</p> <p>For higher level achievement, an analysis and evaluation of the effective use of vehicles/staff and adjustments in the schedule to ensure quality of service will be included.</p>
P4, P5, P6, M3, D2	Requirements and Methods	<p>You have recently joined a national logistics organisation. Your first report was well received by management. Your manager has now asked you to carry out research into legal, safety and operational requirements for road transport, as well as security methods for vehicles, loads and individuals.</p>	<p>A portfolio/report containing an explanation/description of various requirements and security methods for road transport.</p> <p>For higher level achievement, an analysis and evaluation of the implications resulting from these requirements, and recommendations to improve security will be included.</p>

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

Achievement of the learning outcomes of this unit will contribute towards the skills, knowledge and understanding of several units of the National Occupational Standards for:

- Supply Chain Management
 - ◇ Unit S9: Plan the transportation of supplies
 - ◇ Unit M1: Develop operational relationships within the supply chain
 - ◇ Unit M2: Evaluate information on the supply chain
 - ◇ Unit M24: Select transportation methods for supplies.
 - ◇ Unit T1: Maintain operational relationships within the supply chain
 - ◇ Unit T21: Contribute to operational relationships within the supply chain
- Traffic Office
 - ◇ TO1: Contribute to the maintenance of a healthy, safe and productive working environment
 - ◇ TO2: Improve the customer relationship
 - ◇ TO4: Create effective working relationships
 - ◇ TO5: Investigate the suitability of collection or delivery points for loading and unloading
 - ◇ TO6: Routing and scheduling of loads
 - ◇ TO7: Allocate the resources for the transportation of loads
 - ◇ TO9: Manage the movement of loads
 - ◇ TO11: Contribute to the selection of personnel for activities
 - ◇ TO12: Contribute to the development of teams and individuals
- Logistics Operations Management
 - ◇ Unit LOG2: Promote and maintain health, safety, and security in logistics operations
 - ◇ Unit LOM2: Promote compliance of logistics operations with legislation, regulations, and organisational procedures
 - ◇ Unit LOM3: Schedule logistics operations to meet customer requirements
 - ◇ Unit LOM4: Optimise the use of logistics resources
 - ◇ Unit LOM5: Develop contingency plans for logistics operations
 - ◇ Unit LOM6: Utilise transport modes in logistics operations
 - ◇ Unit LOM8: Develop relationships with logistics customers
 - ◇ Unit LOM9: Improve the quality of logistics operations
 - ◇ Unit LOM10: Respond to contingencies during logistics operations
 - ◇ Unit MSC D5: Allocate and check work in your team.

Essential resources

Learners will benefit from having access to logistics outlets and sufficient library and/or internet resources to allow them to research the current activities of logistics organisations.

Visits to and/or visiting speakers from logistics organisations will be helpful. Learners should have access to a learning resources centre with a good range of logistics trade journals, local and national newspapers and specialist periodicals.

Tutors will need to ensure that learners have up-to-date information regarding local and national logistics organisations.

Health, safety and welfare issues must be considered at all times and risk assessments should be undertaken for all site visits used in the delivery or assessment of the unit. Access to suitable development sites may require permission from the owner, especially if the learners need to visit the site for research.

Employer engagement and vocational contexts

The use of vocational contexts is essential in the delivery and assessment of this unit. Much of the work can be set in the context of case studies of local employers. All learning outcomes lend themselves well to investigating industrial practices.

Indicative reading for learners

Textbooks

Carter, Price and Emmett – *Stores and Distribution Management, 4th edition* (Liverpool Academic Press, 2004) ISBN 9781903500057

Hibbs J – *An Introduction to Transport Studies, 2nd edition* (Kogan Page, 1999) ISBN 9780749429461

Lowe D – *Pocket Guide to LGV Drivers' Hours and Tachograph Law, 3rd edition* (Kogan Page, 2006) ISBN 9780749445683

Lowe D – *Management of Dangerous Goods Safety Manual, 2nd edition* (Kogan Page, 2000) ISBN 9780749430214

Rushton A, Croucher P and Baker P – *The Handbook of Logistics and Distribution Management, 3rd edition* (Kogan Page 2006) ISBN 9780749446697

Journals

Commercial Motor (Reed)

Distribution (DMG)

Distribution Business (UK Transport Press)

Motor Transport (Reed)

Websites

The following may be useful:

www.berr.gov.uk

www.ciltuk.org.uk

europa.eu/index_en.htm

www.fta.co.uk

The Department for Business Innovation and Skills

The Chartered Institute of Logistics and Transport

Europa – The European Union online

Freight Transport Association

Delivery of personal, learning and thinking skills

The table below identifies the opportunities for personal, learning and thinking skills (PLTS) that have been included within the pass assessment criteria of this unit.

Skill	When learners are ...
Independent enquirers	evaluating security risks to vehicles and loads and justifying their recommendations for improvement explaining security risks to vehicles evaluating information relating to staff and vehicles, judging its value
Creative thinkers	making recommendations to improvement of security explaining how adjustments can be made to improve quality of service
Self-managers	analysing how staff and vehicles can be used effectively.

Although PLTS are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

Skill	When learners are ...
Team workers	working on and presenting joint research outcomes
Reflective learners	appraising and improving their own work reviewing progress and acting on the outcomes to improve quality of service.

● Functional Skills – Level 2

Skill	When learners are ...
ICT – Find and select information	
Select and use a variety of sources of information independently for a complex task	making adjustments in staff and work schedules
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	investigating routing and scheduling
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose including: <ul style="list-style-type: none"> • text and tables • images • numbers • records 	preparing reports and presenting results of their research
Bring together information to suit content and purpose	presenting the results of their investigations
Present information in ways that are fit for purpose and audience	presenting information using a variety of methods
English	
Speaking and listening – make a range of contributions to discussions and make effective presentations in a wide range of contexts	explaining security risks to vehicles, loads and individuals
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	making adjustments or acting on variations
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	explaining the factors to be considered while planning a route.