

delivery plan



TOPIC Drawings and diagrams

LEARNING OBJECTIVE Be able to interpret and use simple engineering drawings/circuit/network diagrams and sketches to communicate technical information

Topic information	Delivery methods	Guidance	Box content
<p>Overview to the work that will be undertaken in this unit.</p> <p>Explore why the ability to communicate effectively is an essential skill in all aspects of life.</p> <p>Explore why engineers need to be able to apply these skills to the conveying of technical information.</p> <p>Investigate the use of codes of practice to avoid any ambiguity in the interpretation of information being communicated.</p> <p>Appreciate the significance of portability of data between different manufacturing sites when operating in a global manufacturing scenario.</p> <p>Overview of the use of British and International Standards when preparing engineering drawings and circuit diagrams.</p> <p>Investigate specific British Standards relating to engineering drawing</p>	<p>The delivery methods for the whole unit will be mainly activity based. The case studies are short, give focused input about engineering communications and link to Unit 3: Engineering Project.</p> <p>The case studies involve role-play. Where the learner is asked, for example, to produce a report, the teacher/tutor should adopt the role of their manager.</p> <p>Teacher/tutor-led whole group discussion using a flip chart or interactive whiteboard.</p> <p>Before starting on the case studies, an introductory activity could be set around video footage with learners reviewing a programme about communication.</p>	<p>The TV Choice presentation (1998, 32 min). This video features only verbal presentation but will stimulate debate about communication and can be linked to the second learning outcome.</p> <p>Delivery will need to be supported by exemplars of engineering drawings, circuit and flow diagrams. To add credibility these should be sourced from the local companies investigated in some of the case study work for Unit 1: Business Systems for Technicians.</p> <p>There is synergy here with Unit 16: Engineering Drawing for Technicians and Unit 34: Electronic Circuit Manufacture.</p> <p>The choice of whether to look at drawings of mechanical components, electronic circuit diagrams or network flow diagrams will depend of the focus of the learning programme which is being delivered.</p> <p>The assessment guidance in the unit specification draws attention to the following:</p> <p>The use of 'drawings/circuit/network diagrams' in the criteria P1 and P2 is intended to indicate a choice that will depend on the focus of the learning programme in which this unit is being delivered. For example, a learner on a mechanical programme is likely to choose to interpret and produce engineering drawings, whilst a learner studying electrical/electronics is more likely to interpret and produce circuit diagrams.</p>	<p>Case study 1</p> <p>Case study 2</p> <p>Assignment 1</p>

delivery plan



practice, circuit diagrams and flow charts.

Obtaining information from engineering drawings and circuit diagrams.

Production of engineering drawings, circuit diagrams and freehand sketches to a standard acceptable in industry.

A teacher/tutor-led discussion should follow.

Pair work to investigate examples of different types of engineering communication.

Teacher/tutor-led discussion using a 'matching card' game. Two sets of cards - one with a selection of BS symbols, the other saying what they mean. Pair up the cards.

Pair work to identify and interpret features from drawings and circuit diagrams.

Individual working to prepare a flow diagram and associated sketches.

Individual working to review drawing standards and then apply them to the production of drawings/circuit diagrams and sketches relevant to the focus of the learning programme.

Drawings/diagrams can be produced using a CAD system; sketches should be hand drawn.

http://www.edexcel.org.uk/VirtualContent/103787/U2_Communication_for_technicians.pdf (Page 6, paragraph 4)

Case study 1 investigates 6 British Standards - where appropriate, others can be looked at if they relate specifically to the focus of the learning programme.

Case study 2 contains web links to examples of good practice and summarised information about drawing standards.

delivery plan



TOPIC **Communication skills**

LEARNING OBJECTIVE **Be able to use verbal and written communication skills in engineering settings**

Topic information	Delivery methods	Guidance	Box content
<p>Explore the reasons why engineers need to have good writing skills.</p> <p>Investigate and practice note taking and the keeping of written records in hard copy and 'e' form.</p> <p>Explore the reasons why engineers need to have good verbal communication skills and identify a strategy for achieving this requirement.</p>	<p>Teacher/tutor-led whole group discussion using a flip chart or interactive whiteboard.</p> <p>Individual discussion with teacher/tutor to agree the format of a logbook.</p> <p>Teacher/tutor-led whole group discussion using a flip chart or interactive whiteboard.</p> <p>Learners watch and discuss short extracts from video footage about making a sales pitch.</p> <p>Each learner makes a short oral presentation to a small audience and then receives feedback on how well they did.</p> <p>A teacher/tutor-led discussion should follow.</p>	<p>Support teacher/tutor discussion with exemplars of note taking and letter/report writing in an engineering setting.</p> <p>The difference between formal and informal styles of writing should be explained, particularly in the context of email communication.</p> <p>Link to Case study 6: Task 3 of this unit where there is a writing activity and also to Unit 3: Engineering Project Case study 1.</p> <p>Any of the programmes from the BBC TV - Dragon's Den series can be used but the teacher/tutor should be very selective and home in on products that only involve technology and presentations which illustrate the difference between a good and a bad pitch.</p> <p>Link to Unit 3: Engineering Project Case study 6 Task 2.</p>	<p>Case study 3</p> <p>Case study 4</p>



TOPIC **Information**

LEARNING OBJECTIVE **Be able to obtain and use engineering information**

Topic information	Delivery methods	Guidance	Box content
<p>Explore the reasons why engineers use information sources when designing, manufacturing and testing products.</p> <p>Identify strategies for preventing 'information overload', the researching of relevant information and the filtering out of unwanted data.</p> <p>Using data to solve an engineering problem identified and solved in another unit of the National Programme.</p>	<p>Teacher/tutor-led whole group discussion using a flip chart or interactive whiteboard.</p> <p>Group exercise using a 'matching card' game. Two sets of cards - types of information and where to find it.</p> <p>Small group activity to find engineering data and also state from where it was sourced.</p> <p>Pair work to find a task from another unit where learners were asked to collect or researched data.</p> <p>Production of a brief report explaining how the data was used and the checks carried out to confirm its validity.</p>	<p>A simple exercise is to first give out a set of blank cards asking each learner to write down the name of a particular piece of engineering information which they need, e.g. the melting temperature of aluminium. The teacher/tutor then gives out another set of cards annotated with the names of data sources, e.g. physical properties of materials; the cards are then paired up.</p> <p>Highlight the importance of having a strategy for effective, time-managed searching and being able to confirm the validity of found data.</p> <p>The unit specification requires that information is researched from both paper-based and 'e' sources.</p> <p>For learners on a mechanical/manufacturing programme link to Unit 8: Engineering Design grading criterion P6.</p> <p>This can be any unit from the learner's programme of study. Here the learner needs to explain how the information was used and checked, rather than just providing a representation of data found.</p>	<p>Case study 5</p>

delivery plan



TOPIC **ICT**

LEARNING OBJECTIVE **Be able to use information and communication technology (ICT) to present information in engineering settings**

Topic information	Delivery methods	Guidance	Box content
<p>Explore the use of computer-based hardware and software systems in the sourcing, preparation and presentation of engineering information.</p> <p>Investigate how ICT is applicable to all aspects of a businesses operation.</p> <p>Using ICT to improve writing and presentation skills.</p>	<p>Teacher/tutor-led whole group discussion using a flip chart or interactive whiteboard.</p> <p>Each learner to carry out a self-appraisal of ICT proficiency using a checklist that tracks competence to an evidence source. Teacher/tutor to review results and identify areas which need improvement.</p> <p>Individual practice to develop the skill of formal and informal writing.</p> <p>Small group working to investigate the use of ICT when making a verbal presentation.</p>	<p>Many learners will be competent IT users; others will claim to be but their skills will probably be limited to the use of the computer.</p> <p>Reference should be made to industry standard hardware and software and the reasons why most engineering businesses use Microsoft products running on PC hardware. Where appropriate discuss the use of Apple Mac systems.</p> <p>Highlight the fact that the 'C' in 'ICT' means communication not Computer.</p> <p>Learners should be provided with exemplars of technical reports and PowerPoint presentations.</p> <p>Link to Case study 3, Task 2 of this unit and Unit 3: Engineering Project, Case study 6, Task 1.</p> <p>The emphasis here should be on the choice and use of the ICT system rather than on the content being presented.</p> <p>Link to Case study 4, Task 2 of this unit and to Unit 3: Engineering Project, Case study 6, Task 2.</p>	<p>Case study 6</p> <p>Assignment 2 (see note below)</p> <p>Assignment 3 (see note below)</p>

Note: Assignments 2 and 3 draw on evidence associated with the learner's engineering project and should be progressed in parallel with the project unit.



General guidance that applies to all learning outcomes:

Delivery of the case studies at an early stage of the learning programme will help learners communicate effectively in the other units of the programme. The unit assumes that the underpinning skills (e.g., ability to produce an engineering drawing/circuit/ network diagram, ability to use ICT) are in place and focuses on developing these skills to communicate information.

However, the assessment guidance in the unit specification draws attention to the following:

'Unit 3: Engineering Project could provide an excellent vehicle for an integrated approach to the assessment of this unit. The project work undertaken will require learners to use communication skills to interpret information, prepare sketches and drawings, give presentations, develop and use data sheets, produce technical reports and letters, etc. Other units within the programme could also be used to provide effective and relevant learning and formative or even summative assessment opportunities. However, using Unit 3: Engineering Project for assessment has the advantage of providing a structured focus for the work and a coherent source of relevant evidence.'

http://www.edexcel.org.uk/VirtualContent/103787/U2_Communication_for_technicians.pdf (Page 6, paragraph 3)