TOPIC **Unit 2: Communications for Technicians**

Materials will make reference to the following resources:

- TV Choice Ltd, PO Box 597, Bromley, Kent BR2 0YB: www.tvchoice.uk.com
- web links to a number of well-known businesses
- BTEC in a Box Unit 1: Business Systems for Technicians
- BTEC in a Box Unit 3: Engineering Project
- non-IT-based reference sources
- IT-based reference sources
- exemplars of technical reports
- exemplars of engineering drawings, circuit and network diagrams
- digital imaging equipment
- presentation software and multimedia facilities.

Note: whilst at the time of writing, the websites included within this material were appropriate for the intended activity, in the future these may not always hold the information expected.

TOPIC **Unit 2: Communications for Technicians**

Case study	Focus	Discussion points	Activities
1 **(Part LO1)**	**Engineering graphics and technical information** Engineers use different types of graphical technique to communicate ideas and information; when using them it is important to follow accepted codes of practice so that there is no ambiguity about the message being conveyed. Machining metal, assembling components or installing a network system are all expensive activities and it is crucial that the requirements of the designer are conveyed accurately to the shop floor.	■ Drawings, circuit diagrams and sketches. ■ What is a component feature? ■ Dimensions, tolerances and surface finish. ■ The relevance, to an engineer, of the quotation 'A picture is worth a thousand words'. ■ Processing instructions and operating procedures. ■ Using graphics to support written and verbal communication. ■ Technical illustration.	■ Find examples of graphical communication methods used in engineering. ■ Investigate the BSI website: http://www.bsi-global.com/ ■ Research and use the British Standards relating to engineering graphics. ■ Identify features in drawings and circuit diagrams. ■ Find out about packaging machines used in the food processing industry: http://www.packaging-technology.com/contractors/machinery/gallery.html http://www.intercaps.com/machine_videos.php ■ Investigate the use of sketching.

2 **(Part LO1)**	**Producing engineering graphics** Engineers involved with the production of engineering graphics must present their work so that it conforms to relevant British (BS) and international (ISO) standards. This is important because it will prevent any misinterpretation of the information which is being communicated, but does assume that the person reading the drawing or diagram is also familiar with the standards. This case study develops the skills required to produce drawings, diagrams and sketches to a standard acceptable for use in a manufacturing environment.	■ Drawing standards and templates. ■ First and third angle orthographic projection. ■ Detail and assembly drawings. ■ Symbols, abbreviations and convention. ■ Line types. ■ Dimension, tolerance and surface finish. ■ Plant layout and circuit diagrams. ■ Freehand sketching.	■ Investigate examples of good practice when producing: ■ engineering drawings of mechanical components: http://www.people.ex.ac.uk/mfelstea/pdf/edp.pdf ■ electronic circuits: http://ourworld.compuserve.com/homepages/G_KNOTT/elect21.htm ■ Produce engineering drawings and circuit diagrams which use symbols and conventions in line with BS. ■ Investigate reference material: http://www.roymech.co.uk/Useful_Tables/Drawing/Drawing.html http://www.roymech.co.uk/Useful_Tables/Drawing/Electical_Control_symbols.html http://www.roymech.co.uk/Useful_Tables/Drawing/Hyd_Pnue_symbols.html ■ Produce annotated sketches of engineering components. ■ Assignment 1.

3 **(Part LO2)**	**Writing techniques** The first contact that a customer may have with a business is by reading words, e.g. the company website, promotional literature, letters and emails. If the writing is badly presented, ambiguous or contains spelling and grammatical errors, it will be difficult to read, the customer will not be impressed and they may decide to take their business elsewhere. This case study highlights the need for good formal and informal written work and develops strategies for achieving this aim.	■ Write it down or you may forget. ■ Using notes, lists and diagrams. ■ Formal and informal writing styles. ■ Grammar and punctuation. ■ Clarity and ambiguity. ■ Proof-reading. ■ Using acronyms. ■ Mixing text and graphics.	■ Design the format of a logbook and tracking system. ■ Investigate writing skills and produce handwritten notes about a website: http://www.mindtools.com/CommSkll/WritingSkills.htm ■ Write a 600-word technical mini-report.
4 **(Part LO2)**	**Verbal communication** Effective verbal communication is a vital skill because it is important that everyone involved in a conversation has a clear understanding of what was said and agreed. The aim of this case study is to develop the listening and speaking skills needed to converse at all levels within an organisation. Formal and informal styles of communication are investigated.	■ Listening skills. ■ Taking notes. ■ Body language. ■ Using technical language appropriately. ■ Preparing for a presentation or an event. ■ Keeping an audience engaged. ■ Standing up under questioning.	■ Pair work involving listening, note taking and feedback. ■ Investigate ways to ensure accuracy when making transcripts. ■ Link to Unit 3: Engineering Project LO 4 Case study 6 Task 2 - prepare and make a verbal presentation supported by presentation graphics. ■ Review extracts from BBC Dragon's Den: http://search.bbc.co.uk/cgi-bin/search/results.pl?q=dragons+den&scope=all&tab=all&recipe=all&x=78&y=4 ■ Assignment 2.

5 **(LO3)**	**Obtaining and using engineering information** Engineers use information sources when designing, manufacturing and testing products. It is important to know how to search effectively for what is required and when data is found, to be able to establish that it is valid and correct. Much of the information used in engineering is in e-form and it is very easy to fall into the trap of information overload. A strategy is needed to be able to home in on what is really needed with irrelevant material filtered out.	■ Primary and secondary data. ■ Paper-based and e-based information. ■ Databases and data sheets. ■ Advanced internet searches. ■ Editing and information overload. ■ Manuals and catalogues. ■ Using other people's data.	■ Research engineering data held in paper and e-based sources. ■ Investigate obtaining data in an engineering company. ■ Unit 1: Business Systems for Technicians LO1, Case study 3 - Information flow in an engineering company. ■ Evaluation and the use of data in another unit of the National Programme.
6 **(LO4)**	**Information and communication technology** Getting accurate information to the right people is crucial if an engineering business is to survive in the global market place. To maintain synergy between the various departments, the flow and control of information must be carefully structured with full use being made of sophisticated ICT systems.	■ Hardware and software. ■ Using office suite software such as MS Office. ■ Preventing people from being overloaded with unnecessary information. ■ Data protection systems needed when an engineering company relies heavily on the use of ICT to conduct its business. ■ Effective use of the spell and grammar checkers in a word processing package. ■ The use of simulation software in the design process. ■ Process control using computer systems. ■ Internet and intranet systems. ■ Video conferencing.	■ Link to Unit 3: Engineering Project LO4, Case study 6 Tasks 1 and 2. ■ Link to Unit 2: Communications for Technicians LO2, Case study 3 Task 2. ■ Self-appraisal of competence in using ICT systems. ■ Produce a technical report using e-systems and email to another person. ■ Investigate the use of ICT when making a verbal presentation to a group of people. ■ Assignment 3.

unit overview

Assignment 1:	**Engineering graphics**
Assignment 2:	**Effective communication**
Assignment 3:	**Engineering information and ICT**

Note 1: these three assignments have been written to address the grading criteria combinations as suggested in pages 7 and 8 of the unit specification.

Note 2: where acronyms are not explained this is because they are in common usage or it will benefit the learner to look them up.