Supporting Technical Education Teaching:

**Curriculum Resources**

Teaching Guide

Topic: Professional responsibilities, attitudes and behaviours

Version information

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| **Topic** | **Unit 14** Professional responsibilities, attitudes and behaviours |
| **Specification coverage** | **14.1** Professional conduct and responsibilities in the workplace,  **14.2** Continuous professional development (CPD) and professional recognition  **14.3** Human factors within engineering and manufacturing contexts |

This resource is part of a series of materials to support technical education teaching. The approach to developing the materials draws from research led by Professor Kevin Orr that sets out a model for understanding of technical education pedagogy.

The curriculum development begins with the knowledge that students are working to learn and apply. Teachers draw from their subject and industry expertise, and their knowledge of their students, to make decisions about the core concepts the curriculum will focus on, how they will sequence these concepts, and the activities that are selected to support students’ learning. The decisions behind the resources suggested in this topic are the result of choices made by the curriculum development team, which will be reviewed and improved by teachers’ decision-making and ongoing reflection in their own circumstances.

The materials also seek to support teachers in bringing classroom and industry closer together by providing assets that draw from authentic industry materials and using opportunities to capture workplace practice that can be shared with students.

HEALTH AND SAFETY

It is assumed that activities outlined in this Teaching Guide will be undertaken in suitable facilities or work areas and that good practices, appropriate use policies and procedures will be observed. Teachers should consult their employers’ risk assessments before use and consider whether any modification is necessary for the particular circumstances of their own class/institution.

Acknowledgements

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T Level Technical Qualification is a qualification approved by IfATE.

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Introduction

This document for teachers outlines both the topic area covered and the approach to using the suite of resources and assets for each lesson. Unless otherwise stated, definitions of key terms have been developed by the authoring team and reviewed in the context of the activities. Teachers may choose to revise definitions as necessary and should review the content in advance of delivery to ensure it is appropriate for learners.

# Topic purpose

Students are given the opportunity to complete activities which will cover the importance of personal and professional conduct, careers and development training and workplace design, and their implementation within the engineering sector. The inclusion of ‘real world’ industry case studies offers a unique approach to the topic with the opportunity to understand how personal and professional conduct, CPD and workplace design are supported in industry.

These resources have been designed to contextualise key areas of the Engineering & Manufacturing topics using industry examples and insight and providing engaging opportunities for industry context and practice. The activities can be adapted as appropriate for your students and circumstances.

This topic comprises of five resources in total and each is broken down into individual activities. Teachers may also want to adapt the suggested sequencing of concepts and activities as appropriate for their students and circumstances, but they have been written to be used in numerical order and follow the order of the breakdown of Unit 14 in the specification.

Each asset provides teacher flexibility on the depth covered in their lessons. There are estimated timings provided for each of the elements of each resource. Teachers can use these when planning and select individual elements to use in their lesson plans. Every resource can be adapted and extended to fit teachers’ own planning and the needs of their students and class sizes, but it is important to consider that some elements may take longer than the time shown. Each resource also includes a consolidation activity that can be used on its own or adapted into a lesson plenary by the teacher.

This bank of resources is organised by specification objectives and intended to supplement and add value to core content. They can be used alongside teachers' own material and/or material provided by City and Guilds (which can be found on the City and Guilds [Resources and Support Hub](https://www.cityandguilds.com/tlevels/resources)) and other published resources for this topic area.

The nature of these topics is that there is a rapidly evolving industry focus. Teachers should endeavour to keep up with industry changes where possible. The intention of these resources is to provide a solid background to industry in these areas. Maintaining a knowledge of and utilising continuous improvement methodologies is a requirement of the Engineering Council’s UK-SPEC contributing to Chartered Engineer status. There are also opportunities to build several essential skills that are developed during the course, including through the Employer Set Project (core skills), and general competencies for maths, English and digital.

The content in the activities can be reinforced throughout the course to support students’ learning. For example, when discussing current and forthcoming industry placements, one objective can be for students to look for examples of professional and personal conduct in the workplace. Students can discuss the importance of CPD, equality, diversity, accessibility and inclusion policies and organisational structures with their supervisor and note this learning in their logbook. For example: [support.tlevels.gov.uk/hc/en-gb/articles/360015345420-Industry-placement-logbook-for-students](https://support.tlevels.gov.uk/hc/en-gb/articles/360015345420-Industry-placement-logbook-for-students)

# Industry importance

Understanding professional responsibilities, attitudes and behaviours in the Engineering & Manufacturing sector is fundamental to fostering progressive leadership, diversity of cultures, excellence, collaboration and creativity. These elements shape an industry that is ethical, innovative and resilient, ensuring its long-term growth and success.

Responsible leaders set the standard for integrity, accountability and adaptability. They create environments where employees are empowered, mentored and inspired to drive change.   
This in turn helps to strengthen decision making and problem solving, and enable industry advancement.

A strong grasp of professional responsibilities and behaviours helps to build diverse and inclusive workplace cultures. Respect, fairness and ethical conduct encourage equal opportunities, attracting a wide range of perspectives and experiences. This diversity fuels innovation, adaptability and stronger team dynamics.

Excellence is reinforced when professionals uphold high standards in safety, quality and continuous improvement. When engineers and manufacturers adhere to regulations, they reduce risks, enhance efficiency and create superior products and services.

Collaboration and creativity flourish when teams demonstrate professionalism through effective communication, mutual respect and open-mindedness. Innovation, streamlined operations and forward-thinking solutions prosper in a culture of trust and shared responsibility.

*“The products we make as engineers and technicians can really benefit people, making their lives easier in many ways. But we also need to remember that the same products, if made badly, can cause great harm. Whether that’s choosing the wrong materials to do the job, or manufacturing without the care it needs. Think about the cladding materials on the Grenfell tower, or the near catastrophe from the badly manufactured aeroplane door. It’s down to us as engineers and technicians to behave responsibly, not cut corners, and do a proper job. This is what we think of when we’re talking about ethics.*

*But we also need to think about the people we’re making products for. In the past, engineers have designed seatbelts without thinking about pregnant women. The designs could have caused serious harm to mothers and their unborn children. Products have not considered disabled people or the elderly. As engineers and technicians, we need to think about all people in society. We need to be inclusive. Having diverse teams helps, because people from different backgrounds bring different ideas to problem solving.”*

***Dr Rhys Morgan, Director, Education and Skills, Royal Academy of Engineering***

# Industry links

14.1 Professional conduct and responsibilities in the workplace

* Engineering Council: Guidance for Licensee Codes of Professional Conduct: [about-us/our-purpose-and-organisational-structure/governance/guidance-for-licensee-codes-of-professional-conduct/](https://www.engc.org.uk/about-us/our-purpose-and-organisational-structure/governance/guidance-for-licensee-codes-of-professional-conduct/)
* Royal Academy of Engineering: Statement of ethical principles:

<https://raeng.org.uk/media/k3hjbd35/statement-of-ethical-principles.pdf>

* Royal Academy of Engineering: Culture of continuous improvement essential to maintain ethical engineering practice:

<https://raeng.org.uk/ethics-audit>

* Institute for Civil Engineering ICE: Code of professional conduct: <https://www.ice.org.uk/download-centre/code-of-conduct>

14.2 Continuous professional development (CPD) and professional recognition

* Engineering Council: Continuing Professional Development (CPD): [https://www.engc.org.uk/professional-development/continuing-professional-development-cpd/](about:blank)
* Institution of Mechanical Engineers (IMechE): Continuing Professional Development (CPD):

<https://www.imeche.org/membership-registration/professional-development-and-cpd/continuing-professional-development-cpd>

* Cranfield University: Manufacturing and Materials CPD Courses:

<https://www.cranfield.ac.uk/courses/short/manufacturing/manufacturing-short-courses>

14.3 Human factors within engineering and manufacturing contexts

* The International Ergonomics Association: Principles and Guidelines for Human Factors/Ergonomics (HF/E) Design and Management of Work Systems:<https://iea.cc/wp-content/uploads/2021/06/Principles-and-Guidelines_June2021.pdf>
* Science Direct (scholarly article): Human factors and ergonomics in manufacturing in the industry 4.0 context – A scoping review: <https://www.sciencedirect.com/science/article/pii/S0160791X21000476>
* The Manufacturer (industry publication): The role of human factors in the future of manufacturing:

<https://www.themanufacturer.com/articles/the-role-of-human-factors-in-the-future-of-manufacturing>

# Prior learning

Students do not require any specific prior knowledge before studying the topic. Students studying GCSE Business Studies (or similar) might have met some of the content in these resources but it may have been generalised and not specific to engineering. Those who have studied technical programmes prior to beginning their course may have been introduced to department structures and some of the policies and procedures in workplace settings.

Students will also be able to use their experience of professional and personal conduct within the rules of their school/college and apply this to a workplace setting.

Students' base level of engineering and business knowledge may affect how much explanation is needed to make appropriate industry links. Drawing on the students' own experiences, including from their industry placements, will support this. Students' understanding and experience of the world of work will be varied, which may mean they find it challenging to apply the content to an industry environment. Engage in whole group discussions where appropriate and share your, and students', experiences to help to expose students to different experiences.

# Accessibility

The teaching materials have been designed to provide teachers with a flexible framework, including different approaches to activities, suggested consolidation activities to further embed knowledge, and adaptable study questions to assess learning. As with all resources, teachers will wish to consider the specific needs of their students when using the materials, including Special Educational Needs and Disabilities (SEND). Although content has been reviewed, accessibility in externally linked resources cannot be guaranteed.

Learning outcomes and specification coverage

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| **Resource** | **Learning outcomes** | **Specification coverage** | **Skills and general competencies** | **Links to other specification content** |
| **1** | Students will be able to:   * understand the purpose of job descriptions; * explore professional expectations for conduct and behaviour in industry; * understand the need for organisational structures that provide a link between accountability and responsibility; * explore the interaction and communication between people in work; * consider the benefits of setting professional career targets for the future. | **14.1** Professional conduct and responsibilities in the workplace  **Conduct and responsibilities** – job description, behaviours required in the workplace, personal conduct (reputation, ethical responsibilities), levels of accountability in organisational structures (apprentice, operator, management, director)  **What do learners need to learn?**   * Purpose, function and typical content of job descriptions * How behaviour and personal conduct in the workplace influence interactions with people * How to seek advice and guidance where necessary * Expectations for reputation and ethical behaviour in the workplace * The main responsibilities of the different roles in an organisation and how they affect the business in terms of accountabilities and inter-dependencies | Skills:  Analysing and interpreting  Evaluating  Communication  General competencies:  English:  **EC2** Present information and ideas  **EC4** Summarise information/ideas  **EC5** Synthesise information  **EC6** Take part in/lead discussions  Digital:  **DC3** Communicate and collaborate | **13.1** Principles of commercial operations and markets.  **13.2** Business and commercial practices.  **13.3** Financial and economic concepts.  **17.2** Roles and responsibilities in projects. |
| **2** | Students will be able to:   * consider awareness of UK EDAI (equality, diversity, accessibility and inclusion) legal requirements; * explore how these are applied and recognised by UK industry; * consider how EDAI is established in a real-life case study; * understand why an individual's behaviour, in terms of EDAI, is so important in any organisation. | **14.1** Professional conduct and responsibilities in the workplace  **Conduct and responsibilities -** behaviours required in the workplace, personal conduct (reputation, ethical responsibilities), equality, diversity, accessibility and inclusion.  **What do learners need to learn?**   * How behaviour and personal conduct in the workplace influence interactions with people * Expectations for reputation and ethical behaviour in the workplace * The main duties of an organisation (and individuals) regarding equality, diversity, accessibility and inclusion | Skills:  Analysing and interpreting  Evaluating  Communication  General competencies:  English:  **EC2** Present information and ideas  **EC4** Summarise information/ideas  **EC5** Synthesise information  **EC6** Take part in/lead discussions  Digital:  **DC3** Communicate and collaborate | **17.2** Roles and responsibilities in projects.  **13.2** Business and commercial practices. |
| **3** | Students will be able to:   * explore the need for CPD in any organisation; * discuss how professional bodies are used to support both individuals and organisations; * explore real-life case studies, exploring professional development; * consider how personal development supports career development; * consider our own professional development and set targets for the future. | **14.2** Continuous professional development (CPD) and professional recognition  **CPD** – training courses, industry placement, academic study, events and seminars.  **What do learners need to learn?**   * What is CPD and how it motivates staff and improves performance. * Professional standards for engineering, as set out by the Engineering Council. | Skills:  Analysing and interpreting  Evaluating  Communication  General competencies:  English:  **EC2** Present information and ideas  **EC4** Summarise information/ideas  **EC5** Synthesise information  **EC6** Take part in/lead discussions  Digital:  **DC3** Communicate and collaborate | **17.1** Principles of project management.  **17.2** Roles and responsibilities in projects. |
| **4** | Students will be able to:   * explore the nature of human characteristics, how they affect performance in work and the difference between mental and physical characteristics; * consider how workplaces are designed to suit different workplace environments; * study a real-life case study, exploring the link between workplace design and performance; * look at human factors and human error, why they happen and ways to minimise their impact. | **14.3** Human factors within engineering and manufacturing contexts  **Human factors** – human characteristics (physical, mental), workplace design (considerations, assessment criteria), human error.  **What do learners need to learn?**   * How human characteristics, capabilities and limitations affect the company and production. * How the design of the workplace affects safety, comfort and productivity. * Causes of human error (insufficient training, fatigue, workload, stress) and methods to reduce these. | Skills:  Analysing and interpreting  Planning and preparation  Evaluating  Communication  General competencies:  English:  **EC2** Present information and ideas  **EC4** Summarise information/ideas  **EC5** Synthesise information  **EC6** Take part in/lead discussions  Digital:  **DC3** Communicate and collaborate | **12** Health and safety principles and coverage. |
| **5** | Students will be able to:   * consolidate understanding of key terms and concepts about professional responsibilities, attitudes and behaviours (covered in Resources 1 to 4); * determine the key characteristics for a range of questions; * analyse examples of short, medium and extended response exam-style questions; * learn how to achieve the highest marks in a range of question types. | **14.1** Professional conduct and responsibilities in the workplace  **14.2** Continuous professional development (CPD) and professional recognition  **14.3** Human factors within engineering and manufacturing contexts | Skills:  Analysing and interpreting  Planning and preparation  Evaluating  Communication  General competencies:  English:  **EC2** Present information and ideas  **EC4** Summarise information/ideas  **EC5** Synthesise information  **EC6** Take part in/lead discussions  Digital:  **DC3** Communicate and collaborate | **12** Health and safety principles and coverage**.**  **13.1** Principles of commercial operations and markets.  **13.2** Business and commercial practices.  **13.3** Financial and economic concepts.  **17.1** Principles of project management.  **17.2** Roles and responsibilities in projects. |

Resource guidance

# Resource 1: Professional conduct and responsibilities in the workplace

This resource has been developed to explain to a student, at an early stage in their career, why professional conduct is so important when starting out in a place of work. In addition, the resources explain the need for detailed job descriptions and how each role falls into an organisational structure, supporting responsibility and accountability.

Class activities explore ‘real-world’ case studies, exploring how organisations promote and support professional and personal conduct. Students are also asked to consider their own experiences of working with others and how behaviours impact business performance.

## Preparation

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| **Resources provided** | * R1 Slide deck * R1 Activity 1 Worksheet * R1 Activity 1 Worksheet answers * R1 Activity 2 Worksheet * R1 Activity 2 Worksheet answers * R1 Activity 3 Worksheet * R1 Activity 4 Worksheet |
| **Equipment needed** | Whiteboard/Projector, Markers/Pens, Access to online search/videos |
| **Prior learning** | Students should have some experience of professional and personal conduct expectations from their work placement or work experience.  Students will have knowledge from the following units which can be applied to this topic:   * + Unit 12: Health and safety principles and coverage (including key legislation such as HASAWA, policies and training)   + Unit 13: Business, commercial and financial awareness (including business and commercial practices). |
| **Common misconceptions** | * Unlike education, where there are lots of rules about conduct, there aren’t any in business. * As a young starter employee, rudeness from other employees is expected and part of the job. |
| **Accessibility** | * Seek to ensure wide representation for any visiting speakers and case studies used. * Provide visual aids like diagrams and flowcharts for clearer understanding. * Include exemplar completed activities to support feedback to students. * Offer additional support or resources to students who may require extra help. * Allow for alternative assessment methods like presentations or written reports. * Basic animation is used in the slides in this lesson to improve cognitive load, stagger information or present instructions. Teachers may wish to remove this feature if it is unsuitable for students. |

## Activity guide

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| **Introduction**  SUGGESTED TIME:  15 minutes  RESOURCES:   * R1 Slide deck –  slides 2–4 | * Start by introducing the resource objectives using  slide 2. * Recap some of the key aspects from Unit 13 (Business, commercial and financial awareness) as these topics feed into Resource 1. * Show slide 3 and ask, or choose, students to offer a description of the terms’ meanings (this list can be adapted to suit the needs and experiences of the class):   + commercial priorities;   + supply and demand;   + competition;   + legal practices;   + policies and procedures;   + profit and loss. * Ensure students are confident in all these areas and expand on any areas they are unsure about. These are topics from Unit 13.1: Principles of commercial operations and markets. Make sure any misconceptions, such as how profit is calculated, the difference between suppliers and customers, and legal responsibilities of any organisation, are topics that students are confident with. * Display slide 4. Referring to the students’ own placement or work experiences (or online research, if required) ask students in small groups to produce a typical list of departments in an engineering business. These might include: sales/marketing, HR, finance/accounts, design/CAD, warehouse/workshop managers, etc. Examples are explored later in Activity 3. * If time allows, or to add challenge, ask groups to present this to the class as a branching diagram, feeding out from the Managing Director (or similar). |
| **Activity 1: Job descriptions**  SUGGESTED TIME:  20 minutes  RESOURCES:   * R1 Slide deck –  slides 5–8 * R1 Activity 1 Worksheet * R1 Activity 1 Worksheet answers | * Display slide 5 and ask ‘How important is to have an accurate job title’, 'What is the point of a job description?' and 'Why is it important?'. * Using slides 6 and 7, discuss the need for a job description and how it allows employees to understand their role. Ask students what they think would be in a job description for a car mechanic. * If it hasn't come up already, discuss the need for job descriptions and specifications when advertising and applying for jobs. Make sure to differentiate between the term’s description (the job) and specification (the person). * Show an example of a real engineering job using one of the following websites:   + <https://engineering-jobs.theiet.org>   + <https://uk.indeed.com/jobs?q=engineering> * Display slide 8 and hand out Activity 1 Worksheet. Ask students to describe the purpose and main responsibilities for two job roles, as well as the skills and qualifications that would be relevant to each. * Please note: Either choose the roles for the class before using the resource or allow students to choose. This could be done as a group activity and answers fed back to the class. Answers could be presented as a mind map or bullet points. Students can also see an example answer on Activity 1 Worksheet answers. * Students can use online research and the job sites listed above. * Come together to discuss their answers. Be prepared to explain any skills and qualifications that students mention that they are not aware of. If membership of external organisations is mentioned, tell students that these are explored in Resource 3. |
| **Activity 2: Personal conduct and behaviour, and company ethics**  SUGGESTED TIME:  15 mins  RESOURCES:   * R1 Slide deck –  slides 9–13 * R1 Activity 2 Worksheet * R1 Activity 2 Worksheet answers | * Show slide 9. In a quick-fire succession (students aren’t allowed to repeat answers), ask students to offer a rule about behaviour and conduct in their school or college. Try and group them on the board into topics, such as punctuality, respect, appearance, etc. * Show slides 10 and 11 and talk about the importance of personal conduct and behaviour and its impact on both individuals and the reputation of the business. * Show slide 12 and discuss with the students what we mean by the terms ‘values’ and ‘ethics’ in the context of business. You could summarise by explaining that values are strongly-held beliefs about what is important and ethics are rules or frameworks which guide behaviour. * Explain that they should look out for the topics covered in slides 10, 11 and 12 in the upcoming case study video on slide 13. * Hand out Activity 2 Worksheet and explain that students will use this to make notes during the case study video they will be watching about Ignys, reflecting on how the organisation promotes good practice in the workplace. Consider showing the students the video once before asking them to make notes. * This video (<https://vimeo.com/1096186970/e6db8d4e90>) is an example of an ethical company with an ethos that means they will not work on any project that causes harm, a question that many engineering companies must ask about their products. They have a clear set of conduct rules that focus on teamwork and taking responsibility when problems arise. This could be used as an example of promoting positive flexible working: hours can be flexible providing workloads are met. This video is useful for students who have heard different messages about flexible working and how organisations treat employees. * After viewing the video, hold a class discussion about the questions and the notes the students have made. * Students could also compare their notes with those on Activity 2 Worksheet answers. Note that Ignys’s company values can be found at: <https://ignys.com/live-it/> * Follow this with a discussion on similar examples students may have found if they have been on work experience/placement. |
| **Activity 3: Organisational structure and accountability**  SUGGESTED TIME:  15 minutes  RESOURCES:   * R1 Slide deck –  slides 14–16 * R1 Activity 3 Worksheet | * This activity links back to the discussion in the introduction and the different roles and departments that form the organisational structure of a business. * Show slide 14 and discuss a typical organisational structure. Discuss any of the roles that students are not familiar with. Also, ask students to suggest additional roles/departments which could be added to the diagram on the slide; these could be suggestions from their work placements/experience. Examples might include: web designers, factory floor staff, cleaners, apprentices, health & safety officers, training managers, etc. If time allows and students are finding examples difficult, they could be allowed to research examples quickly online. * Show slide 15 as an example of how a role fits within an organisational structure (the example can be changed before the lesson, if required). * Display slide 16 as an example and hand out Activity 3 Worksheet to students. Ask students to work in pairs and choose a role (e.g. apprentice engineer, machine operator, H&S officer, etc.) within an organisation (or provide, if required) and complete the mind map in a similar way to the example on slide 15, adding branches to the following points:   + What are they responsible for?   + Who are they responsible to?   + Are they responsible for other employees?   + Who will they be in regular contact with? * Discuss students’ answers and ask if the rest of the group agree. * Expand the discussion to include support in the workplace and link back to Activity 2: how can an established structure and culture of accountability help support any problems in the workplace? * If an explanation of culture is required, remind students that the culture of a workplace reflects the values and beliefs of its employees and leadership. * For example, offering direct support to those people they are responsible for (workshop manager for machine operators) and being able to seek advice from their managers or HR department. |
| **Activity 4: Self-review**  SUGGESTED TIME:  15 minutes  RESOURCES:   * R1 Slide deck – slides 17–19 * R1 Activity 4 Worksheet | * Show slide 17. This activity is designed to introduce self-reflection to students, and this is then built on throughout the course. Activity 4 Worksheet is not an official document, but it is an opportunity for students to think about their own conduct and behaviour in the workplace and set self-targets linked to many of the topics in these resources. * Display slide 18 and hand out Activity 4 Worksheet. Explain to students that these sorts of self-evaluation documents are commonplace in industry, especially when it comes to performance reviews and training. An example has been included in the first row to discuss with students. You could also provide students with an electronic version of this document which they can update on computers. * **Please note:** This document can be adapted before the class to meet the needs of students and include elements relevant to a particular school or college. * Ask students if they are ready to add some targets and how they might be achieved; these should be related to the content in this resource. * To round off the lesson, display slide 19 and recap the learning objectives met during this lesson. |
| **Follow-up/Consolidation** (to be completed outside of lesson)  SUGGESTED TIME:  5 minutes  RESOURCES:   * R1 Slide deck – slide 20 | * Display slide 20. * Ask the students to think about all the elements from this resource that impact on an employee in an engineering/manufacturing organisation. For example:   + behaviour with others;   + knowing their place in the organisational structure, etc. * Suggest they write a list of anything they are unsure of which they check with their teacher. |

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# Resource 2: Equality, diversity, accessibility and inclusion

This resource has been developed to explain to a student, at an early stage in their career, why their conduct is important and what the general professional expectations are for behaviours in industry. In addition, the resources explain how embracing equality, diversity, accessibility and inclusion benefits organisations and how they must also comply with mandatory UK legislation.

Class activities explore ‘real-world’ examples of individuals considering equality, diversity, accessibility and inclusion from the perspectives of professional bodies, employers and employees. Students are also asked to consider their own experiences of working with others and how behaviours impact business performance.

## Preparation

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| **Resources provided** | * R2 Slide deck * R2 Activity 1 Worksheet * R2 Activity 1 Worksheet answers * R2 Activity 2 Worksheet * R2 Activity 2 Worksheet answers |
| **Equipment needed** | Whiteboard/Projector, Markers/Pens, Access to online search/videos |
| **Prior learning** | Students should have some experience of EDAI from work placement or work experience, in the form of training or induction material. They will also be familiar with EDAI guidance in their own school or college.  Students will have knowledge of how important regulations are (e.g. Health and Safety, British Standards) and how they are disseminated through any organisation. |
| **Common misconceptions** | * That equality, diversity, accessibility and inclusion rules only apply to offices and modern public-facing companies; they don't apply to every type of organisation or the factory floor. * That equality, diversity, accessibility and inclusion rules only apply to gender and race. |
| **Accessibility** | * Seek to ensure wide representation for any visiting speakers and case studies used. * Provide visual aids like diagrams and flowcharts for clearer understanding. * Include exemplar completed activities to support feedback to students. * Offer additional support or resources to students who may require extra help. * Allow for alternative assessment methods like presentations or written reports. * Basic animation is used in the slides in this lesson to improve cognitive load, stagger information or present instructions. Teachers may wish to remove this feature if it is unsuitable for students. |

## Activity guide

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| **Introduction**  SUGGESTED TIME:  10 minutes  RESOURCES:   * R2 Slide deck –  slides 2–3 | * Start by introducing the resource objectives using  slide 2. Reinforce the acronym EDAI and what it stands for. * Show slide 3 and discuss what students understand by the terms equality, diversity, accessibility and inclusion, and why related rules exist around them. * An icebreaker activity could be used, such as writing the four terms on the board and asking students to provide a definition for each one. * Draw out the following definitions during discussions, making sure students are aware of their differences and do not use them interchangeably.   + Equality: ensuring everyone is treated fairly and no individual or group is treated less favourably because of a protected characteristic.   + Diversity: recognising and respecting each other’s differences.   + Accessibility: the design of facilities, technology and services so that they can be used independently by anyone.   + Inclusion: making sure everyone feels welcome, respected and valued. * Make sure all students understand each term and clarify any confusion or misconception. |
| **Activity 1: Summarising legislation**  SUGGESTED TIME:  25 minutes  RESOURCES:   * R2 Slide deck –  slides 4–6 * R2 Activity 1 Worksheet * R2 Activity 1 Worksheet answers | * Display slide 4 and hand out Activity 1 Worksheet and explain that students are going to conduct independent research to answer the following:   + Name the UK Act that relates to equality, diversity, accessibility and inclusion and summarise its purpose.   + What are the key protected characteristics defined in this Act?   + In what ways can organisations embed this legislation? * Students could be divided into groups or pairs to research all three questions, or you could allocate a specific question to each group, ensuring all the questions are covered. * This is an opportunity for students to ask an artificial intelligence (AI) website for a summary. Stress that they must consider the validity of their findings and make sure to follow the source links provided to see where content is from and to check it is accurate. Remind students that they need to summarise any findings in their own words when they are completing Activity 1 Worksheet. * The groups of students should share their research findings in a whole class discussion. They can do this either verbally or by producing a brief slideshow based on their notes. They can also check their findings against Activity 1 Worksheet answers. * Display slide 5 which summarises the overall aim of EDAI as a philosophy. Then show slide 6 which outlines the basic principles behind UK laws relating to equality, diversity, accessibility and inclusion and a summary of the UK Equality Act 2010. * More information about the UK Equality Act 2010 can be found here - <https://www.equalityhumanrights.com/equality/equality-act-2010> and the legislation itself can be found here <https://www.legislation.gov.uk/ukpga/2010/15/contents> * Tell students that they will be able to refer to their notes in the next activity which focuses on a case study. |
| **Activity 2: Case study: Compliance and benefits**  SUGGESTED TIME:  25 minutes  RESOURCES:   * R2 Slide deck –  slides 7–9 * R2 Activity 2 Worksheet * R2 Activity 2 Worksheet answers | * Show slide 7 and explain to students that they are about to watch a video from the perspective of a real business. * Explain that the video reinforces the legal obligations for UK organisations but also demonstrates how businesses benefit from embracing equality, diversity, accessibility and inclusion values from both a human resources and a customer perspective. * Prior to viewing the video, hand out a copy of Activity 2 Worksheet to each student. Explain that the students will use the questions in Activity 2 Worksheet to make notes while they are watching the video. * Display slide 8 and access the video about Ignys and EDAI via the link (<https://vimeo.com/1096186706/1ddd4f96e6>). Explain that Ignys uses the term ‘EDI’, which is commonly used in the workplace, with accessibility implied. Students may also come across the term ‘DEI’. * This video explains how a modern organisation tackles EDAI head on and actively creates a wide and inclusive atmosphere in the workplace. This is a good example for students to see and discuss how important it is to allow employees to have equitable opportunities, including a female employee describing their engineering career working primarily with males. * The video also mentions the Equality Act and how the business tries to go beyond it and how it is a major part of their recruitment. * After viewing, discuss the notes made by students on their worksheets in relation to the questions. Students can also use Activity 2 Worksheet answers to see an example answer. * If time is available, ask students to research another organisation using the questions on slide 9 and compare that approach to Ignys. Discuss as a class the similarities and differences. * Network Rail could be used as an example here - <https://www.networkrail.co.uk/who-we-are/equity-diversity-and-inclusion/> |
| **Activity 3: Workplace issues**  SUGGESTED TIME:  15 minutes  RESOURCES:   * R2 Slide deck –  slides 10–13 | * Display slide 10 and ask students the following question: ‘What sorts of issues linked to EDAI arise in the workplace?’ Make a note of the examples on the board and then ask how these could be grouped together. * Show slide 11 and explain that many problems and disputes in the workplace arise from:   + team members believing they are being treated unfairly   + consideration of family circumstances   + communication problems, misinterpretation or misunderstandings   + failure to meet equality rules   + unethical behaviour. * Explain that serious problems can impact on the reputation of the organisation and this can reduce productivity. * Stress that organisations have an obligation to put grievance procedures in place to help resolve any disputes and EDAI should be always considered. * Show slide 12. In small groups, students should put together a list of good-practice rules for both employers and employees that aim to reduce problems and disagreements. These might include tips picked up from the case study video in Activity 2. Examples might include:   + Employers: ensure guidance is updated as required; have procedures in place for failing to follow guidance, etc.   + Employees: be familiar with all guidance; know how to report any instances that clash with EDAI guidance etc. * Students could present these as a written or graphical list, or as a presentation in the style of an employer introducing these rules to an organisation. * Display slide 13 and recap the learning objectives met during this lesson. |
| **Follow-up/Consolidation**  (to be completed outside of lesson)  SUGGESTED TIME:  10 minutes  RESOURCES:   * R2 Slide deck –  slide 14 | * Display slide 14. Encourage the students to answer these questions about their personal experience of EDAI in their own time and to make notes. Examples can come from any area, including work placements or experience, college, part-time work, clubs or hobbies. |

# Resource 3: Continuous Professional Development

This resource has been developed to explain to a student, at an early stage in their career what the purpose of CPD is and why employees should take advantage of it at their earliest opportunity. In addition, the resources explain the different routes available to develop their own skills, take part in in-house CPD and join a related professional organisation.

Class activities explore ‘real-world’ case studies and examples of employee progression that take advantage of CPD offers. Students are also asked to consider their own experiences of working with others and how behaviours impact business performance.

## Preparation

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| **Resources provided** | * R3 Slide deck * R3 Introduction Worksheet * R3 Introduction Worksheet answers * R3 Activity 2 Worksheet * R3 Activity 2 Worksheet answers * R3 Activity 3 Worksheet 1 * R3 Activity 3 Worksheet 1 answers * R3 Activity 3 Worksheet 2 * R3 Activity 3 Worksheet 2 answers |
| **Equipment needed** | Whiteboard/Projector, Markers/Pens, Access to online search/videos |
| **Prior learning** | Students should have some experience of training or induction programmes from their work placement or work experience.  Students will have knowledge of how to improve business, including CPD, through Unit 1.14: Business improvement through project management. |
| **Common misconceptions** | * That CPD is only needed to meet legal requirements like health and safety and first aid. * That it is always chosen by the employer, not the employee. |
| **Accessibility** | * Seek to ensure wide representation for any visiting speakers and case studies used. * Provide visual aids like diagrams and flowcharts for clearer understanding. * Include exemplar completed activities to support feedback to students. * Offer additional support or resources to students who may require extra help. * Allow for alternative assessment methods like presentations or written reports. * Basic animation is used in the slides in this lesson to improve cognitive load, stagger information or present instructions. Teachers may wish to remove this feature if it is unsuitable for students. |

## Activity guide

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| **Introduction**  SUGGESTED TIME:  10 minutes  RESOURCES:   * R3 Slide deck –  slides 2–6 * R3 Intro Worksheet * R3 Intro Worksheet answers | * Start by introducing the resource objectives using slide 2. * Display slide 3 and ask: 'What was the last skill you learned outside of school or college?' Answers may include a sport, hobby or repair task. Follow up with: 'How did you learn it?'. Build a list on the board of sources, which could include: YouTube, website tutorial, TikTok, a family member, a friend, a book or at a part-time job. * Ask students to describe any skills they are proud of, especially engineering-related ones, such as repairing a bike after watching a video * Highlight that there are many sources of learning outside of the classroom, and these have fed into how we learn new skills at work. * Display slide 4 which explains the role of the Engineering Council (EC). * Display slide 5 and hand out Introduction Worksheet. Explain that students will use this to make notes during the case study video they will be watching about the EC. Consider showing the students the video once before asking them to make notes. * Show students the interview with John Chudley at the EC on slide 6, reminding them to take notes to answer the questions on the slide/Intro Worksheet. (<https://vimeo.com/1096238026/ff1af8da1a>) * This video explains the importance of three of the professional registers: Chartered Engineer, Incorporated Engineer, and Engineering Technician. It outlines how important professional membership is to the industry when looking for new roles and applying for career progression. These are concepts students will not be familiar with and are useful for any career discussions. * The video also really pushes the importance of skills and expertise over academic qualifications in engineering. * A list of the 39 engineering institutions can be found here [www.engc.org.uk/about-us/our-partners/professional-engineering-institutions/](http://www.engc.org.uk/about-us/our-partners/professional-engineering-institutions/) * The last question in the Intro Worksheet requires students to research the most recent Engineering Council professional registration statistics. |
| **Activity 1: What is CPD?**  SUGGESTED TIME:  15 minutes  RESOURCES:   * R3 Slide deck –  slides 7–11 | * Show slide 7 and explain the three types of continuous professional development (CPD). * Display slides 8 to 10 and talk through the many ways CPD can be delivered. Point out to students that this is part of all organisations, including teaching (an example could be given). * Show slide 11 and divide the class into four groups and give each group one of the following roles to explore: *Manager*, *Accountant*, *Machine operator*, *CAD designer*. * These roles can be edited before the lesson, and they could be changed to focus on some of the roles that students aspire to. * Ask each group to think of an example of CPD they might follow and its benefits, particularly in terms of motivation and performance, for example, Machine operator:   + vocational – learning how to operate a new machine   + academic – City & Guilds Level 3 Machining Technician   + professional – might register with a professional body, such as the Institute of Mechanical Engineers. * Ask each group to record their discussions, then invite them to feed back to the whole class. |
| **Activity 2: Professional institutions**  SUGGESTED TIME:  20 minutes  RESOURCES:   * R3 Slide deck –  slides 12–14 * R3 Activity 2 Worksheet * R3 Activity 2 Worksheet answers | * Show slide 12 and remind the students what the professional institutions are and what they offer to individuals and to organisations. Stress that they are recognised across the industry and membership is advantageous when applying for new jobs. * Ask students in pairs to choose one of the professional institutions listed on slide 12, and to carry out a quick internet search on them. (If students are interested in other engineering routes, they could be asked to research another relevant engineering institution.) They should return to the class with one example of a course or accreditation they offer. Avoid repeated answers and cover a wide range of answers. * Hand out Activity 2 Worksheet and show slide 13. Explain to students that they are going to watch a case study video which explores how important CPD is from the perspective of the regulatory body (the Engineering Council). * Talk through the questions on Activity 2 Worksheet before showing the video on slide 14. Explain that the students should make notes on them while watching the video:   + Why does the Engineering Council promote CPD for its members?   + What are the expectations for CPD and how does the Engineering Council promote these?   + How does CPD relate to professional membership and how do individuals manage their CPD and career progression?   + What methods of CPD are appropriate?   + What are the benefits for an employer?   + What are the benefits for an employee? * Show the video (<https://vimeo.com/1096238074/795a341bc6>). This video focuses on CPD and the support professional membership of institutions can offer. It describes how CPD should be tailored for each person and how it helps develop a ‘lifelong’ learning attitude. * Make sure students are confident in the difference between the Engineering Council – a regulatory body, and professional institutions such as the Institution of Engineering and Technology (IET) who supports the engineering and technology industry more broadly and Institute of Mechanical Engineers (IMechE) who focus on mechanical engineering and its related disciplines. * The video will help students understand that CPD is not just taking courses and tests – it can be part of their daily job and successful engineers are always looking for new knowledge and experience. * Discuss the responses from students. Focus on how CPD motivates staff and improves their performance, and therefore the organisation’s productivity. * Students can use Activity 2 Worksheet answers to see an example answer. * Note that students who have a clear career goal in sight may wish to research their own possible path for development and this should be encouraged. |
| **Activity 3: Personal development case studies**  SUGGESTED TIME:  20 minutes  RESOURCES:   * R3 Slide deck –  slides 15–17 * R3 Activity 3 Worksheet 1 * R3 Activity 3 Worksheet 1 answers * R3 Activity 3 Worksheet 2 * R3 Activity 3 Worksheet 2 answers | * Show slide 15 and discuss the importance of personal development for all employees. Link back to Activity 1 and the three choices for individuals: *vocational – (developing personal skills)*, *academic – (official qualifications)*, *professional – (joining an official body)*. * Show slide 16 and hand out Activity 3 Worksheet 1. Explain that students will be watching two case study videos about the benefits of personal development. The videos explore the perspectives of two professionals and how managing their own personal development has benefited themselves and those around them. Explain that, while they are watching, the students should take notes to answer the following questions found in Activity 3 Worksheet 1:   + What is the person’s role?   + What CPD have they done?   + Why is personal development important to them?   + What are the benefits the teams and the organisation? * Use the links on slide 16 to play the video and remind the students to complete Activity 3 Worksheet 1 while viewing. Consider pausing the video after each question to give students time to make notes.  Hannah - <https://vimeo.com/1096186794/4984f2f9e3> Ronan - <https://vimeo.com/1096186886/029502a19e> * Students could be given Activity 3 Worksheet 1 answers and asked to check their own work or to assess their peers. * Display slide 17 and hand out Activity 3 Worksheet 2. Working in groups, students should suggest a development route for each scenario, and a range of potential choices to help advance the careers of the two individuals. A suggestion has been provided on Activity 3 Worksheet 2 answers. * If time allows, an additional video example can be found on the STEM website that outlines the career of engineer Faye Banks (Young Women Engineer of the Year 2004 and youngest-ever fellow of the Institution of Engineering and Technology). <https://www.stem.org.uk/resources/elibrary/resource/442714/born-engineer-faye-banks> * Display slide 18 and recap the learning objectives met during this lesson. |
| **Follow-up/Consolidation** (to be completed outside of lesson)  SUGGESTED TIME:  20 minutes  RESOURCES:   * R3 Slide deck –  slide 19 | * Display slide 19. If students have placement or work experience, ask them to consider and make notes on their experiences of CPD to date. This might include Health and Safety or machinery training. * Follow with consideration of the question: 'Should CPD be dictated by an employer or should it be chosen independently by individuals?'. * This can also be linked back to the self-review and target setting from Resource 1. Students should aim to identify any areas that CPD will help them with in the future. |

# Resource 4: Human factors

This resource has been developed to explain to a student, at an early stage in their career, how we interact with the workplace and r the wide range of characteristics humans have. In addition, the resources explore the potential causes and effects of human error in the workplace.

Class activities explore a ‘real-world’ case study on workplace design and the importance of considering both physical and mental characteristics. Students are also asked to consider their own experiences of working and applying these to a range of scenarios.

## Preparation

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| **Resources provided** | * R4 Slide deck * R4 Activities 1 + 2 Worksheet * R4 Activities 1 + 2 Worksheet answers * R4 Activity 3 Worksheet * R4 Activity 3 Worksheet answers |
| **Equipment needed** | Whiteboard/Projector, Markers/Pens, Access to online search/videos |
| **Prior learning** | Students should have some experience of working with a wide range of people from their work placement or work experience. The design and layout of their work environment may have also been discussed during any induction training.  Students will have knowledge of safety considerations in the design of any workplace from Unit 12 Health and safety principles and coverage. |
| **Common misconceptions** | * It is the employer's responsibility to make sure we are safe at work. * Engineering workplaces are designed to be practical, not comfortable. |
| **Accessibility** | * Seek to ensure wide representation for any visiting speakers and case studies used. * Provide visual aids like diagrams and flowcharts for clearer understanding. * Include exemplar completed activities to support feedback to students. * Offer additional support or resources to students who may require extra help. * Allow for alternative assessment methods like presentations or written reports. * Basic animation is used in the slides in this lesson to improve cognitive load, stagger information or present instructions. Teachers may wish to remove this feature if it is unsuitable for students. |

## Activity guide

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| **Introduction**  SUGGESTED TIME:  10 minutes  RESOURCES:   * R4 Slide deck – slides 2–4 | * Start by introducing the resource objectives using  slide 2. * Display slide 3. Ask students to suggest examples of human characteristics. Note: be considerate of the students in your class when discussing physical characteristics and the group that they are being discussed in an entirely practical sense for an engineering environment. Examples might include:   + strength, stamina, dexterity, coordination, etc.;   + ambition, happiness, self-control, etc. * Ask students to then think about which characteristics are physical and which are mental. Work through all the examples and agree on which are which. For example: strength, stamina and dexterity are all physical; ambition, happiness and self-control are all mental. * Display slide 4 as a summary of potential physical and mental characteristics and discuss their potential impact on someone working in the engineering industry. |
| **Activity 1: The importance of workplace design**  SUGGESTED TIME:  15 minutes  RESOURCES:   * R4 Slide deck – slides 5–9 * R4 Activities 1+2 Worksheet * R4 Activities 1+2 Worksheet answers | * Display slide 5 and ask students to name the different types of area in a typical engineering organisation. List them on the board. These might include office, manufacturing, factory, warehouse, design area, medical area, etc. * Display slides 6 to 8, explaining some of the key terminology relating to safety, productivity and comfort. * Display slide 9 and hand out Activities 1 + 2 Worksheet. Explain that the students need to think about what is important to consider in each of the areas listed with respect to design. They should then answer question 1 on their worksheets. (Explain to students they will be adding to their worksheet in the next activity.) * Suggestions for potential answers are provided on Activity 1+2 Worksheet answers. |
| **Activity 2: Video case study – workplace design**  SUGGESTED TIME:  15 minutes  RESOURCES:   * R4 Slide deck – slide 10 * R4 Activity 1+2 Worksheet * R4 Activity 1+2 Worksheet answers | * Show slide 10 and explain to students that the case study video they are going to watch considers how a workplace can be designed to be efficient and functional. The content considers physical aspects, productivity, and how good design improves the mental well-being of employees. Then show the video using the link on slide 10 (<https://vimeo.com/1096187067/542b455150>). * The video is an interview with Andy Wilding, Technical Manager at an independent engineering company called Lyndhurst Precision. It contains examples of practical, workshop-based engineering and how workplace design makes staff feel safe and productive. * The video describes how the company is always considering potential dangers and looking for innovative ways to prevent them before they ever happen. This attitude to prevention rather than reaction to dangers will be useful for students who may not have seen many real engineering environments. * The video also includes interesting overviews of machinery and workbenches from inside their warehouse. While watching the video, students answer question 2 on Activity 1 + 2 Worksheet (a second sheet might be needed for additional notes) by:   + ticking off the examples they noted;   + expanding their notes with examples of both physical and mental considerations. * Discuss the examples given by students and ask if they have any similar examples from industry placements or work experience. * Students can also use Activity 1 + 2 Worksheet answers to compare their responses. |
| **Activity 3: Human error**  SUGGESTED TIME:  20 minutes  RESOURCES:   * R4 Slide deck – slides 11–15 * R4 Activity 3 Worksheet * R4 Activity 3 Worksheet answers | * Display slide 11 and ask volunteers to describe to the class the last error or mistake they made in a practical sense; this could be breaking something, when cooking, trying to repair something, etc. Ask why do they think it happened? Was it tiredness, not understanding something, or not concentrating? * Show slide 12 and discuss the potential for accidents in the workplace and the reasons why they can happen. * Show slide 13 and discuss how organisations can take steps to prevent errors. There is a link to an official Health & Safety Executive (HSE) video on risk management that could be shown if there is time. (https://youtu.be/xyANahuhGs0) * Display slide 14 and give Activity 3 Worksheet to small groups of students. Explain they are going to consider four scenarios, the potential for danger and how it could be prevented. (Alternatively, each group could consider just one of the scenarios.) Internet research could also be used. Suggestions for potential answers are provided on Activity 3 Worksheet answers. * Each group should present their answers to the whole class. Check that the students are using the correct terminology. Expand on any suggestions that fall out of the content covered. * Discuss with students whether any of the human errors discussed could happen on their work experience or placements – linking to their experiences so far. * Display slide 15 and recap the learning objectives from this lesson. |
| **Follow-up/Consolidation** (to be completed outside of lesson)  SUGGESTED TIME:  15 minutes  RESOURCES:   * R4 Slide deck – slide 16 | * Display slide 16. As a consolidation of all four resources, students should return to their self-review from Resource 1, Activity 4 Worksheet and update it to consider the topics covered recently:   + professional conduct;   + job descriptions and organisational structure;   + equality, diversity, accessibility and inclusion;   + behaviour in the workplace;   + career development programmes;   + workplace design;   + human error. * Students should identify areas to add to their self-review that they will actively pursue and improve during their placements. * As you progress through your placement, consider adding further ideas and reflections to your self-review. |

# Resource 5: Preparing for assessment

This resource is intended to help consolidate learning at the end of the topic and as a revision tool.

The accompanying worksheets include exam-style questions provided to support the topics covered in Resources 1-4 in this suite

## Preparation

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| **Resources provided** | * R5 Slide deck * R5 Activity 1 worksheet * R5 Activity 1 worksheet mark scheme * R5 Activity 2 worksheet * R5 Activity 2 worksheet mark scheme |
| **Equipment needed** | Whiteboard/Projector, Markers/Pens, Access to online search/videos |
| **Prior learning** | The expectation is that students have completed Resources 1 to 4 prior to undertaking the completion of Resource 5. However, it can also be used as a means to determine students’ starting points with the topic to gauge students’ prior learning.  Students should be familiar with the exam assessment objectives from the course specification, from AO1 to AO3. |
| **Common misconceptions** | * Exam questions are written to try to catch out students. * Students can be asked questions about topics they haven’t been taught. |
| **Accessibility** | * Provide visual aids like diagrams and flowcharts for clearer understanding. * Include exemplar completed activities to support feedback to students. * Offer additional support or resources to students who may require extra help. * Allow for alternative assessment methods like presentations or written reports. * Basic animation is used in the slides in this lesson to improve cognitive load, stagger information or present instructions. Teachers may wish to remove this feature if it is unsuitable for students. |

## Activity guide

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| **Introduction**  SUGGESTED TIME:  15 minutes  RESOURCES:   * R5 Slide deck – slides 2–6 | * Start by introducing the resource objectives using slide 2. * Display slide 3 and introduce an overview of the types of questions and related marks that could appear on Paper 2. Refer students to look at the Sample Assessment Materials (SAMs) on the City & Guilds website, including an Exam Guide:   + <https://www.cityandguilds.com/-/media/productdocuments/engineering/mechanical/8730/assessment-materials/exam-guide-and-support/8730-em-t-level-exam-guide-v1-0-pdf.pdf> * Ask students for their thoughts on how to prepare for an exam and what practical skills they should employ. * Show slide 4 which includes elements such as:   + Get plenty of rest beforehand.   + Make sure you have eaten well and hydrated.   + Revise with others before the exam.   + Read the paper through fully, making sure to not miss questions.   + Allow approximately 1 minute per mark.   + Move on and return to a question if you are stuck. * Show slides 5 and 6 and explain that students will have the opportunity to look at the structure of Paper 2 exam questions, including:   + short and medium answer questions;   + extended response questions. * Students should be familiar with the assessment objectives from the course specification, include a reminder if required. * Point out that the questions build in difficulty and structure, from simple knowledge recall to applied knowledge/short response understanding. * Remind students that many of the topics in this lesson are evolving, and employers, education providers and governments are constantly reviewing and updating their practice. |
| **Activity 1: Exam-style questions**  SUGGESTED TIME:  30 minutes  RESOURCES:   * R5 Slide deck – slides 7–38 * R5 Activity 1 Worksheet * R5 Activity 1 Worksheet mark scheme | * It may not be necessary to work through all the questions shown on slides 7 to 38 during Activity 1. Choose the question length that your students need the most support with. Questions and their contexts can also be easily adapted to suit an organisation students are already familiar with. Slides that repeat elements of how to approach each question can also be removed to save time. * There are eight sample questions that are explained and answered within the slides. These could be delivered in any of the following ways:   + Talk through each of the questions with students.   + Show each question and allow pairs of students to come up with an answer before discussing and displaying the answer breakdowns.   + Show each question and allow students to write down a potential answer and then talk through the answers.   + Remind students that they should try to attempt longer-answer questions as this will help them to gain higher marks. * Note that students can be given Activity 1 worksheet and its mark scheme. This includes all the questions explored in the slides. You can allocate some or all of the questions for the students to answer in full. |
| **Activity 2: Exam practice**  SUGGESTED TIME:  45 minutes  RESOURCES:   * R5 Slide deck – slides 39–40 * R5 Activity 2 Worksheet * R5 Activity 2 Worksheet mark scheme | * Show slide 39 and hand out a copy of Activity 2 Worksheet which provides students with a series of similar questions. They should break down each question in pairs, then complete it on their own. * Allow the following timings for each question:   + Q9 – 5 marks – approx. 6 minutes   + Q10 – 6 marks – approx. 6 minutes   + Q11 – 6 marks – approx. 8 minutes   + Q12 – 9 marks – approx. 10 minutes   + Q13 – 2 marks – approx. 2 minutes   + Q14 – 4 marks – approx. 5 minutes * Then hand out or display Activity 2 Worksheet Mark scheme and allow students to mark and annotate their answers, providing guidance as necessary. (This is also a good opportunity to check understanding and address any gaps in learning.) * Once complete, note any types of questions that need exploring further. * Display slide 40 and recap the learning objectives met during this lesson. |
| **Follow-up/Consolidation**  (to be completed outside of lesson)  SUGGESTED TIME:  15 minutes  RESOURCES:   * R5 Slide deck – slide 41 | * Display the questions on slide 41 and encourage reflection and discussion around this series of lessons about professional responsibilities, attitudes and behaviours. * Encourage the students to continue updating their self-review sheets in their own time (Resource 1 Worksheet 4). |

Weblinks and resources

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| Teaching Guide page 3 | https://www.cityandguilds.com/qualifications-and-apprenticeships/engineering/mechanical/8730-t-level-technical-qualification-in-engineering-and-manufacturing-core | City and Guilds\* | June 2025 |
| Teaching Guide page 3 | [www.technicaleducationnetworks.org.uk](http://www.technicaleducationnetworks.org.uk) | Technical Education Networks | June 2025 |
| Teaching Guide page 5 | [www.cityandguilds.com/tlevels/resources](http://www.cityandguilds.com/tlevels/resources) | City & Guilds | June 2025 |
| Teaching Guide page 6 | support.tlevels.gov.uk/hc/en-gb/articles/360015345420-Industry-placement-logbook-for-students | GOV UK | June 2025 |
| Teaching Guide page 7 | [www.engc.org.uk/about-us/our-purpose-and-organisational-structure/governance/guidance-for-licensee-codes-of-professional-conduct/](http://www.engc.org.uk/about-us/our-purpose-and-organisational-structure/governance/guidance-for-licensee-codes-of-professional-conduct/) (with permission) | Engineering Council | June 2025 |
| Teaching Guide page 7 | <https://raeng.org.uk/media/k3hjbd35/statement-of-ethical-principles.pdf> (with permission) | Royal Academy of Engineering | June 2025 |
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| Teaching Guide page 7 | www.engc.org.uk/professional-development/continuing-professional-development-cpd/ (with permission) | Engineering Council | June 2025 |
| Teaching Guide page 7 | [www.imeche.org/membership-registration/professional-development-and-cpd/continuing-professional-development-cpd](http://www.imeche.org/membership-registration/professional-development-and-cpd/continuing-professional-development-cpd) (with permission) | Institution of Mechanical Engineers | June 2025 |
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| Teaching Guide page 7 | <https://iea.cc/wp-content/uploads/2021/06/Principles-and-Guidelines_June2021.pdf> (with permission) | The International Ergonomics Association | June 2025 |
| Teaching Guide page 7 | [www.sciencedirect.com/science/article/pii/S0160791X21000476](http://www.sciencedirect.com/science/article/pii/S0160791X21000476) (with permission) | Science Direct | June 2025 |
| Teaching Guide page 7 | [www.themanufacturer.com/articles/the-role-of-human-factors-in-the-future-of-manufacturing](http://www.themanufacturer.com/articles/the-role-of-human-factors-in-the-future-of-manufacturing) (with permission) | The Manufacturer | June 2025 |
| Teaching Guide page 14 | <https://engineering-jobs.theiet.org> (with permission) | The Institution of Engineering and Technology | June 2025 |
| Teaching Guide page 14 | <https://uk.indeed.com/jobs?q=engineering> (with permission) | Indeed | June 2025 |
| Teaching Guide page 14 | <https://ignys.com/live-it/> (with permission) | Ignys | June 2025 |
| Teaching Guide page 18 | [www.equalityhumanrights.com/equality/equality-act-2010](http://www.equalityhumanrights.com/equality/equality-act-2010) | Equality and Human Rights Commission | June 2025 |
| Teaching Guide page 19 | [www.legislation.gov.uk/ukpga/2010/15/contents](http://www.legislation.gov.uk/ukpga/2010/15/contents) | GOV UK | June 2025 |
| Teaching Guide page 19 | [www.networkrail.co.uk/who-we-are/equity-diversity-and-inclusion/](http://www.networkrail.co.uk/who-we-are/equity-diversity-and-inclusion/) | Network Rail | June 2025 |
| Teaching Guide page 22 | [www.engc.org.uk/about-us/our-partners/professional-engineering-institutions/](http://www.engc.org.uk/about-us/our-partners/professional-engineering-institutions/) | Engineering Council | June 2025 |
| Teaching Guide page 24 | [www.stem.org.uk/resources/elibrary/resource/442714/born-engineer-faye-banks](http://www.stem.org.uk/resources/elibrary/resource/442714/born-engineer-faye-banks)  (with permission) | STEM Learning | June 2025 |
| Teaching Guide page 27, Resource 4 slide 13 | <https://youtu.be/xyANahuhGs0> (with permission) | Health and Safety Executive | June 2025 |
| Teaching Guide page 28, Resource 5 slide 3 | [www.cityandguilds.com/-/media/productdocuments/engineering/mechanical/8730/assessment-materials/exam-guide-and-support/8730-em-t-level-exam-guide-v1-0-pdf.pdf](http://www.cityandguilds.com/-/media/productdocuments/engineering/mechanical/8730/assessment-materials/exam-guide-and-support/8730-em-t-level-exam-guide-v1-0-pdf.pdf) | City & Guilds | June 2025 |

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