



T Level Technical Qualification in Design and Development for Engineering and Manufacturing (Level 3)

**Employer-Set Project
(8730-035)**

Candidate Pack
(Summer 2026)

Version 1.0

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Employer-Set Project introduction

The Employer-Set Project (ESP) is an assessment, made up of a number of tasks, which will assess the knowledge and skills you have learnt as part of the Core element of your T Level.

Each ESP is developed together with employers in the industry to reflect realistic types of developments, activities and challenges.

All the tasks relate to the same ESP brief in the following order:

Task		What will you be doing?	Timings	Marks
1	Research	You will conduct research in relation to the project brief.	3 hours	15
2	Design	Using the results of your research from task 1 and the knowledge and skills you have been taught, you will draft a design to meet the requirements of the brief.	8 hours	24
3	Plan	Using the details within the project brief, you will produce a short programme of work plan and supporting statement.	5 hours	18
4	Present	You will present the outcomes of tasks 1, 2 and 3 to your tutor, as if they were a client.	2.5 hours	24
Totals			18.5 hours	81
Maths, English and digital skills				9
Total marks				90

Maths, English and digital skills

Throughout the completion of the tasks within the project, you will generate evidence towards your maths, English and digital skills. There are 9 marks allocated to maths, English and digital skills across all tasks:

Maths	3 marks available
English	3 marks available
Digital	3 marks available

General guidance for candidates

As all the tasks relate to the project brief, it is important that you read it carefully and fully **before you start the ESP**. You will be given 30 minutes reading time for this purpose at the start of the ESP.

The ESP is a formal assessment that you will be marked and graded on. You will be marked on the quality and accuracy of the written work you produce. It is therefore important that you carry out your work to the highest standard you can. How well you know and understand the subject, and how you have used your knowledge to complete the project must be clear to the marker. This means you should explain your thinking and how and why you have made your decisions within your written work eg as part of your planning, reflections, or evaluations.

Plagiarism

Plagiarism is the failure to acknowledge sources properly and/or the submission of work that is not your own. Plagiarism is **not** allowed in this ESP.

This ESP is an assessment of your abilities, so the work submitted **must** be all your own and carried out under the conditions stated. You will be asked to sign a declaration that you have not had any help with the ESP. Your assessor is allowed to give you general advice, i.e clarification of the task instructions. However, general advice will not:

- Include any specific advice on how to improve work to meet the required standard
- Provide feedback on anything missing from your work
- Intervene in any way that improves the standard or presentation of work.

If there is a need to provide more than general advice, your assessor will need to record the advice, as this will be taken into account during the marking of the submitted work.

Where research is allowed, it **must** be able to be identified to the work you have done yourself, and what you have found from other sources. It is therefore important to make sure you acknowledge sources used and clearly reference any information taken from them (eg providing as a minimum a list of web addresses/books/articles etc. used).

Use of Artificial Intelligence (AI)

AI may only be used as a source where the use of the internet is allowed for a research task. Where you use AI, you **must** acknowledge its use and show clearly how you have used it. Please be aware that how you have decided to use it may impact on the overall mark you are allocated.

Guidance and feedback

There are some rules around how much guidance and feedback your assessor can provide as part of completing the ESP. Your assessor is allowed to give you some help in understanding the task instructions if necessary. However, if your assessor has to provide significant clarification and guidance, this will be recorded and considered as part of the marking process and may reduce your mark. Your assessor will make it clear if any guidance may reduce your mark before it is given, so that you understand this when asking for guidance.

Timings and planning

Each task has an allocated duration. You will have to plan your work so you can complete the task within the time allowed. You should take care to make sure you have divided the time available between parts of the task appropriately. If you are not sure how much time you have, check and clarify this with your assessor.

When working under supervised conditions for longer sessions, your tutor will advise you on how breaks can be facilitated.

At the end of the ESP, before submitting your work, you will be required to sign a declaration of authenticity. This document confirms the work submitted is your own and that the project tasks were completed within the set assessment times. The declaration of authenticity will also be signed by your assessor.

Presentation of work

Presentation of work must be neat, legible and appropriate to the task. You should make sure that each piece of evidence, including any forms, are clearly labelled with your name, ESP title and task number. Where there is a template to use, this will be provided by your assessor.

All electronic files must be given a clear file name that allows your assessor to identify it as your work. You should consider using a consistent, clear file-naming convention across all the pieces of evidence you generate for submission.

Written work may be word processed or handwritten, unless stated otherwise. Any sketches should be neat and tidy, and annotated appropriately. Any technical drawings should be neat and tidy, drawn to an appropriate scale and annotated appropriately.

Any calculations should be set out clearly, with all working shown, and any assumptions made. You should use appropriate units of measurement at all times. Answers must be expressed to a degree of accuracy, consistent with the requirements of the ESP.

Word counts

Typical word counts or numbers of pages of evidence are provided within the requirements of each task. Where word counts have been provided, these are given as an indicative guide only to support you to understand the type of response that is expected from you. You will not be penalised as part of the marking if your response is below or above the indicative word count provided; however, you should consider the clarity and succinctness of your response if it goes above the word count.

Submission of evidence

Your work will be submitted as final at the end of each assessment session. You will not have an opportunity to rework any of your evidence once the assessment session ends. However, if through other tasks within the ESP, you develop your ideas or build on earlier tasks, then you should continue to build on these and use your evaluation to outline the reasons why this happened.

Project Brief

The employer

Aero-Chair Ltd is a company that designs and manufactures a range of aeroplane seats in the UK including economy, business and first-class seats. The company designs and develops safe, efficient and affordable aeroplane seats similar to those shown in Figures 1 and 2.



Figure 1

Economy Class Seating - published anonymously - <https://acro.aero/type/economy-class/>



Figure 2

Economy Class Seating - published anonymously - <https://acro.aero/type/economy-class/>

The project

The standard aeroplane seat size in the UK can vary depending on the airline and class of travel. Aero-Chair Ltd have recognised a need to develop and modify their current economy class seats for flights that are less than 3 hours. The purpose is to integrate features to improve the overall experience and comfort for passengers. The weight of the seat should be minimised to improve the fuel efficiency of the aircraft.

You have been asked to design a set of three seats for an economy class aeroplane suitable for a flight of less than 3 hours, similar to those shown in Figure 1 and Figure 2.

An extract of the product design specification relating to your part of the project has been provided, which includes performance requirements, budget constraints and timescales.

Product design specification

An airline company wishes to purchase a number of three-seat sets designed for economy class to improve customer satisfaction.

The specific performance requirements for each individual seat within the three-seat set are:

- each seat must be no less than 432 mm wide and must not exceed a width of 457 mm wide
- to be a suitable height based on ergonomic factors
- to be designed including the frame, cushions and seatbelts with a maximum weight of 8 kg per seat
- to have a suitable method of attaching each seat to the aircraft floor
- each seat must be able to recline manually and be accessible for users with access needs
- that the maximum seat recline must be between 3 to 6 degrees
- to include a means to store a life vest that is 305 mm in length and 305 mm in width
- to be fitted with adjustable armrests to provide support and allow for ease of access
- to be fitted with a tray table, up to 267 mm in length by 419 mm wide, that can be stored away when not in use
- to be fitted with a non-adjustable head rest
- to be fitted with a standard seatbelt with a minimum length of 1170 mm to a maximum length of 1420 mm
- to include a seat belt locking and unlocking mechanism that can be accessed by multiple users
- to include a means of storing literature such as A4-size literature
- to be fitted with a personal entertainment system including a media screen and connectivity options
- to include durable materials and components that are suitable to operate in temperatures between 18 °C and 27 °C
- to be designed to be aesthetically pleasing and ergonomically designed for comfort
- to be designed to be wiped clean and stain resistant
- to be manufactured with at least 70% sustainable materials
- to be constructed using fire-resistant materials.

Budget

The airline company has a maximum budget of £15,000 per set of three seats. The maximum total budget is £1,500,000 for 100 sets of three seats to be designed and manufactured. Assume that average labour cost is £15 per hour.

Project duration

The airline company would like the overall project to be completed in 26 weeks.

Task 1 – Research

You have been asked by your supervisor at Aero-Chair Ltd to respond to the client's design specification. You will need to research potential design solutions for an economy class aeroplane three-seat set and confirm the client requirements.

Part A

You must conduct research to determine:

- limitations of current economy class aeroplane seats including aesthetics and ergonomics
- materials that meet the requirements of the product design specification, including their cost, sustainability and flame-retardant properties.
- suitable mechanisms for a manual reclining seat that is accessible for users with access needs
- suitable mechanisms for safe locking and unlocking of the seat belt
- suitable options for a fixed head rest, tray table, methods for storing literature and personal entertainment system
- suitable mechanisms for adjustable armrests to provide support and allow for ease of access
- materials and components that are suitable to operate in temperatures from between 18 °C and 27 °C
- a suitable method of attaching each seat to the aircraft floor
- appropriate aeroplane seat standards that exist
- storage and accessibility requirements for the life vest
- health and safety considerations.

You must capture notes made as part of your research, including details of your research approach and how you planned your research. This should outline the research you have carried out. You must include a list of your references/sources alongside your research notes.

Part B

Using this research and the client's design specification you must write a technical brief. This must detail your initial concept ideas for an economy class aeroplane three-seat set.

This brief must include:

- material options for all elements of economy class aeroplane seats
- the cost of the materials
- how the seats will be made lightweight
- locking and unlocking mechanism of the seat belt, reclining mechanism and arm rest mechanism of each seat
- overall shape and aesthetics of the design and consideration of practical situations
- key requirements for the economy class aeroplane three-seat set, based on the client's product design specification.

At this stage you do not need to recommend which of your ideas is your preferred. You will develop your ideas further in later tasks.

The technical brief will typically be 1500 words. The brief can include sourced pictures, engineering drawings, schematics, images, specifications and sketches.

Timing of assessment

- You will have **three hours** to carry out the research and complete the technical brief.

Conditions of assessment

- Your research and technical brief must be completed working alone under supervised conditions.
- You must not share or discuss your work with other candidates.
- You will have access to the Internet to conduct your research.
- Assessment evidence must be handed in at the end of each session for secure storage which cannot be accessed.

What you must submit on completion of this task

- **Part A - Research notes** including a list of references/sources.
- **Part B - Technical brief** (typically 1500 words) hard copy or file saved securely (eg in a secure online location or on a memory stick to be handed in). **This must be a separate document from the research notes.**

Additional evidence of your performance that will be captured for marking

- N/A

Marks available

- 15

Task 2 – Design

The technical design brief you created in Task 1 has been submitted to the client, who has accepted the brief. You have now been asked to further develop your design ideas by preparing drawings and calculations for the economy class aeroplane three-seat set.

Part A

You are to prepare fully annotated sketches (3D, plan, elevation, section and detail) of at least **two potential designs** of an economy class aeroplane three-seat set. The sketches and drawings must illustrate:

- a suitable seat belt locking and unlocking mechanism
- suitable materials and components that meet the requirements of the product design specification
- a suitable mechanism for manual adjustable arm rests
- a manual reclining seat mechanism that is accessible for all users
- shape and aesthetics, including ergonomic considerations
- the inclusion of a fixed head rest, tray table, methods for storing literature, life vest and personal entertainment system
- a suitable method of attaching each seat to the aircraft floor
- annotations on the sketches with all relevant information.

In addition to these sketches, you must:

- calculate the cost to manufacture the economy class aeroplane three-seat set
- calculate the weight of the economy class aeroplane three-seat set
- calculate the size of the economy class aeroplane three-seat set based on your designs
- calculate the seat height based on your designs
- include all your assumptions in the calculations.

When preparing your sketches and drawings, you will need to use the information provided in the project brief and design specification, as well as a copy of the technical brief that you prepared as part of Task 1.

Part B

Once you have developed the sketches of your economy class aeroplane seat designs you should then prepare a final fully dimensioned and scaled CAD drawing(s) of your **one preferred** chosen design. The CAD drawing(s) should use standard engineering conventions.

You must include reflective notes (typically 500 words) on your final CAD drawing, to show how your design ideas have developed during the completion of the task. This should justify how your design effectively meets the requirements of the product design specification and why you have chosen to go with this design.

Timing of assessment

- You will have **eight hours** to complete your sketches, calculations and dimensioned CAD drawing. You will have access to relevant software to complete your CAD drawing.

Conditions of assessment

- Your sketches, calculations, CAD drawing and notes must be completed working alone under supervised conditions.
- You must not share or discuss your work with other candidates.
- You will have access to a copy of your response to the previous task (for review purposes only).
- You will have access to relevant software to complete your CAD drawing.
- You will **not** have access to the Internet for the completion of this task, with the exception of access to the CAD library.
- Assessment evidence must be handed in at the end of each session for secure storage which cannot be accessed.

What you must submit on completion of this task

Part A

- **Fully annotated sketches** for **two** designs
- **Supporting calculations** - hard copy or file saved securely (eg in a secure online location or on a memory stick to be handed in). **This must be a separate document from the sketches.**

Part B

- **A CAD drawing** for your **one** preferred design
- **Reflective notes** detailing how your design meets the brief requirements (typically 500 words). **This must be a separate document from the CAD drawing.**

Additional evidence of your performance that will be captured for marking

- N/A

Marks available

- 24

Task 3 – Plan

You have been asked by your supervisor to produce a programme of work plan detailing the stages and considerations required to complete the design and manufacture of your final economy class aeroplane three-seat set design.

All 100 sets of three seats should be designed and manufactured within 26 weeks. Each set of three seats costs £15,000 (maximum total budget £1,500,000).

Part A

The programme of work plan will need to include:

- key stages of the project, including approximate costs for each stage
- resources and equipment required to manufacture economy class aeroplane three-seat sets
- a critical path analysis to show duration and sequence of activities.

The programme of work plan should be presented in an industry-recognised format of your choice. You must use digital software to present your planning. The programme of work plan will typically be **two** sides of A4.

Part B

Alongside your programme of work plan, you will need to provide a supporting statement justifying the approaches you have taken during the planning which considers:

- health and safety including risk assessment requirements
- quality control
- key stages for manufacturing economy class aeroplane three-seat sets
- any relevant standards
- specialist equipment required
- waste management and environmental considerations
- all assumptions relating to resources and costs.

The supporting statement will typically be 1000 words.

Timing of assessment

- You will have **five hours** to complete your programme of work plan and supporting statement.

Conditions of assessment

- Your programme of work plan and supporting statement must be completed working alone under supervised conditions.
- You must not share or discuss your work with other candidates.
- You will have access to software that may be required to create the programme of work plan (eg, word processing software, spreadsheets etc.).
- You will have access to copies of your responses to the previous tasks (for review purposes only).
- You will **not** have access to the Internet for the completion of this task.
- Assessment evidence must be handed in at the end of each session for secure storage which cannot be accessed.

What you must submit on completion of this task

- **Part A - Programme of work plan** (typically two sides of A4)
- **Part B - Supporting statement** (typically 1000 words) – hard copy or file saved securely (eg in a secure online location or on a memory stick to be handed in)

Additional evidence of your performance that will be captured for marking

- N/A

Marks available

- 18

Task 4 – Present

The designs for an economy class aeroplane three-seat set have been completed, and you are now required to present them in a meeting to the client. The audience will include people with a technical background.

You are to prepare and deliver a presentation.

You must cover:

- the final design solution including an outline of the key features of an economy class aeroplane three-seat set
- the programme of work plan, including the budget of an economy class aeroplane three-seat set
- challenges presented by the brief and how these have been overcome, including future improvements
- how well your design proposal addresses the requirements of the product design specification.

You **must** use digital technology for the presentation.

Your Assessor will take on the role of a manager from the client. They will ask questions relating to your presentation from the client's perspective.

Timing of assessment

- You will have **two hours** to prepare your presentation.
- You will have **30 minutes** to present your findings and respond to questions (typically split with 20 minutes for presenting your findings and 10 minutes for responding to questions).

Conditions of assessment

- Your presentation must be developed and delivered working alone under supervised conditions.
- You must not share or discuss your work with other candidates.
- You will have access to copies of your responses to the previous tasks (for review purposes only) as well as any presentation materials/notes (eg PowerPoint slides).
- You will have access to digital technology for the presentation of your findings - you can choose the format/program and program features you wish to use (eg PowerPoint).
- You will **not** have access to the Internet for the completion of this task.
- Assessment evidence must be handed in at the end of each session for secure storage which cannot be accessed.

What you must submit on completion of this task

- **Presentation materials** – eg slides, handouts etc. Hard copy or digital file saved securely (eg in a secure online location or on a memory stick to be handed in).

Additional evidence of your performance that will be captured for marking

- **Video recording** of presentation.
- **Presentation Q&A record.**

Marks available

- 24

Get in touch

City & Guilds Technicals Quality Team

We are here to answer any queries you may have regarding your T Level Technical Qualification delivery.

Should you require assistance, please contact us using the details below:

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