



# T Level Technical Qualification in Science

Employer set project (ESP)

## Laboratory Sciences

Provider guide

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# Laboratory Science

## Provider guide

All briefs

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## Document security

Please do not distribute this document to students; it is for provider and tutor use only. All tutors must be familiar with the information in this document. This document should always be kept secure.

This document should be read along with the regulations for conduct of external assessment. Assessment conditions and resources are defined in the qualification specific instructions for delivery (QSID). These documents can be found on the NCFE website under policies and documents.

## About the employer set project

The purpose of the employer set project (ESP) is to ensure that students are given the opportunity to apply core knowledge and skills to develop a substantial piece of work in response to an employer set brief. The brief and tasks are contextualised around an occupational area, requiring students to plan a scientific project.

To achieve the assessment objectives and meet the brief, the student must demonstrate the following core skills (CS):

CS1: Project management to include independently producing a high-level project plan, taking into account: timing of activities, resource and financial considerations, ethical considerations, adherence to health and safety and the maintenance of quality outcomes

CS2: Researching from independently identified sources including scientific literature and other appropriate sources, prior to the project commencement and referencing these sources appropriately

CS3: Working with others, for example, to ensure that any scientific techniques meet all health and safety and environmental requirements

CS4: Creativity and innovation within a science context to improve practice, processes, and outcomes

CS5: Problem solving within a scientific context and, where appropriate, making use of new technologies to solve problems

CS6: Communication, for example, providing results and recommendations in appropriate formats to clients and/or wider stakeholders which take into consideration 'business benefits', or show commercial awareness in a variety of formats including written reports and verbal presentations is communicated

CS7: Reflective evaluation to be able to make improvements to own practice, for example, having completed a task, reviewing and suggesting improvements, and consideration of lessons learnt for own professional development

The knowledge requirements will be taken from the core knowledge relevant to the brief; the briefs will change for each assessment window.

## Administering the external assessment

The maximum overall time allowed for the external assessment is 18 hours under supervised conditions.

NCFE sets the start date and the submission date of the assessment window for the external assessment task. External assessment material should not be given to students until the first supervised assessment session.

The assessment window will consist of provider-arranged supervised sessions of the external assessment. Sessions can be undertaken in the normal classroom environment, so long as each student has access to, or the option to, use a computer system. Providers can decide how to arrange supervised sessions. Providers must submit students' completed assessment work by the published submission date.

When preparing to start a supervised session, the time taken to provide work from previous sessions (where required), print work from previous sessions (where required) and upload work (where required), is not included as part of the permitted external assessment time.

At any time, NCFE may request the timetable that providers have set for the supervised sessions.

The permitted time must not be increased, unless a reasonable adjustment has been agreed for a student in accordance with the reasonable adjustments and special considerations policy, which can be found on the NCFE website.

The permitted time must not be decreased. Students must be given the opportunity to complete the full amount of time for the external assessment task – providers must take this into account when timetabling the session.

## **Marking the external assessment task**

All external assessment tasks are set and marked by NCFE. This means that providers must not assess, internally quality assure or provide any feedback to the student about their performance in the external assessment tasks. The supervised external assessment tasks must be treated independently of the teaching of the outline content.

In order to achieve a grade for the core component, the student must attempt both external examinations and the employer set project (ESP). The combined grades from these assessments will be aggregated to form the overall core component grade (A\* to E and U). If students do not attempt one of the assessments, or they fail to reach the minimum standard across all assessments, they will receive a U grade. The student will have the option to re-sit the relevant components.

# Instructions for tutors

## Assessment conditions

Students must complete the employer set project (ESP) independently and under supervised conditions, following the specific guidance for each task outlined in this provider guide.

Students are required to sign the external assessment cover sheet (EACS) – declaration of authenticity form to confirm that the work is their own. The declaration form can be found on the NCFE website. This is to ensure authenticity and to prevent potential malpractice and maladministration. Students must be made aware of the importance of this declaration and the impact this could have on their overall grade if the evidence was found not to be their own work.

At the end of each session, tutors must retain all materials and/or evidence produced by students within the supervised assessment.

At various times during the whole process students will be accessing a database and laboratory information management system (LIMS) spreadsheet via a computer system, therefore there must be sufficient monitoring and checks to ensure that students have not made materials available to themselves, or anyone else, electronically, for example, via the internet.

External assessment materials should be securely stored between supervised sessions. Students must not have access to this area between the supervised sessions, including electronic files. Where students require evidence from a previous task, this must be a duplicate to ensure no amendments are made to original work.

Work such as formative assessment and/or work done with sample assessment materials, must not be used as part of the external assessment task submission to NCFE. Student work must be summative and produced during the arranged supervised assessment window.

For tasks 4b and 5 of this assessment, it is a requirement that student performances are audio-visually recorded for the purpose of external marking. It is the provider's responsibility to check that the appropriate audio-visual (AV) equipment is set up and fully operational. The AV recording must clearly identify the student(s), capture all relevant spoken words, and be clear and of sufficient quality to be adequately reviewed by the marker. Provider staff should be equipped to be able to operate the equipment sufficiently to capture all evidence. To ensure authenticity of the performance, the student's face must be clearly visible at the start of the recording.

Plagiarism may result in the external assessment task being awarded a U grade. For further guidance, refer to the student handbook –plagiarism in external assessment and the maladministration and malpractice policy located on the NCFE website.

## Resources

Each student must have access to the appropriate resources required to complete the ESP. These include the following:

- computer, including a printer
- individual access to the NCFE provided source database
- individual access to LIMS spreadsheet
- A2 paper and a variety of coloured markers, glue, and scissors and/or IT software/applications to create poster (or parts of) for printing, and printing facilities – for task 4 only

## **Accessibility and fairness**

To promote accessibility and fairness for all students, and to ensure diversity and equality, we expect providers to be aware of and meet the requirements of relevant NCFE policies and government legislation. You must ensure that:

- all your processes concerned with assessment are carried out in a fair and objective manner
- you continue to adhere to current equal opportunities legislation
- you continue to operate an effective diversity and equality policy, with which students are familiar and which applies to all students using our products and services

## Assessment and task specific instructions

For each assessment window, there will be 3 versions of the employer set project (ESP) available for booking; each version is contextualised against the occupational specialisms relevant to the pathway. These 3 briefs will be set by employers in conjunction with NCFE CACHE and will be different for each assessment window. The briefs are designed to ensure a motivating starting point for students and will be based on, for example, a real-world problem.

### Selection of brief

Students are required to discuss and agree with their tutor which of the following occupational-based briefs they would like to take forward for their ESP:

- Laboratory Sciences
- Food Sciences
- Metrology Sciences

The provider must book students onto the appropriate version of the ESP by the deadline for that specific assessment series. Please see the Key Dates Schedule on the relevant qualification page on the NCFE website for these dates.

Bookings will be made on the NCFE portal and guidance can be found in the portal handbook.

The selection and registration of the student to the appropriate brief must be agreed ahead of the deadline outlined in the key dates schedule. Whilst it is recommended that a student selects the brief that is relevant to their intended occupational specialism, it is not a requirement that the student makes a decision based on this, or any other specific given criteria.



## Task 1

Task 1 requires students to access an NCFE provided database containing a variety of sources to produce a literature review, which will enable them to produce a plan during task 2.

Students are required to work independently, under supervised conditions.

Students must complete this task within 3 hours and manage how they will spend their time, using the task 1 guidance.

Students will be given an additional 30 minutes to complete their project diary which will facilitate the completion of task 6. The project diary will not be assessed.

Resources required include access to the internet for the purpose of accessing the literature sources/links provided. Privacy mode should be disabled and policies applied to prevent deletion of browsing history. Upon completion of task 1, tutors must take screenshots/screen grabs of each students browsing history and compile this into an appropriately referenced word document as a standard piece of evidence.

Note: The literature review that the student produces will be externally assessed by NCFE

## Student resources required

- project brief
- computer access
- NCFE provided literature database (appendix 1 in project brief)
- guidance on capturing browsing history
- research a strategy template pro-forma
- project diary

## The project diary

The project diary is not assessed and does not need to be submitted as part of the student's evidence. It will be used by the student to complete their reflective evaluation in task 6. Completed project diaries should be collected with all other student evidence at the end of each supervised session.

Students are free to use any format they like for their project diary and providers are free to provide any template they consider suitable (for example, a blank template of something that has been used during teaching). It is also acceptable to provide a copy of the template for task 6: reflective evaluation, found in the relevant pro-forma document, as a template for the project diary.

## Task 2

Task 2 requires students to use their literature review from task 1 to produce a plan to investigate an issue as described in the brief. Each occupational specialism will have their own specific issue. They will need to consider the types of literature available and suitability of each source to determine the most suitable method for the problem.

Students are required to work independently, under supervised conditions.

Students must complete this task within 3 hours and manage how they will spend their time, using the task 2 guidance.

They will be given an additional 30 minutes to complete their project diary which will facilitate the completion of task 6.

Note: The plan that the student produces will be externally assessed by NCFE

### Student resources required

- project brief
- NCFE provided literature database (appendix 1 in project brief)
- literature review (from task 1)
- project diary
- risk assessment form template
- risk matrix

## Task 3

Task 3 requires students to access an NCFE provided LIMS spreadsheet providing data from organisations which have carried out similar research.

The students will need to review and analyse the data, applying any statistical techniques they feel are appropriate to produce and justify conclusions for the scientific investigation, taking into account any limitations of the data.

Students are required to work independently, under supervised conditions.

Students must complete this task within 3 hours and manage how they will spend their time using the task 3 guidance.

They will be given an additional 30 minutes to complete their project diary which will facilitate the completion of task 6.

Note: The analysis that the student produces will be externally assessed by NCFE

### Student resources required

- project brief
- computer access
- access to NCFE provided LIMS spreadsheet
- project diary
- statistical techniques guidance document

## Task 4(a)

Task 4(a) requires students to use their plan from task 2 and their analysis from task 3 to produce an A2 scientific poster, which they will use as the basis of a presentation to their tutor in task 4(b).

Students are required to work independently under supervised conditions.

Students are free to use ICT based methods to produce their poster, handwrite/draw it, or a combination. However, note that where students handwrite or draw some or all of their poster, it will need to be scanned (photographed digitally is acceptable) and uploaded as digital evidence for marking.

Students must complete this task within 3 hours and manage how they will spend their time using the task 4 guidance.

Note: The A2 scientific poster that the student produces will be externally assessed by NCFE

## Student resources required

- project brief
- computer and printer access
- access to NCFE provided LIMS spreadsheet
- their analysis from task 3
- A2 paper, various coloured markers, scissors, and glue and/or IT software/applications to create poster (or parts of) for printing, and printing facilities
- project diary

## Task 4(b)

Task 4(b) requires the student to present their poster to their tutor. The tutor may ask questions to clarify any aspect of the presentation, or to offer students the opportunity to provide further explanation. It is essential that the tutor reads the guidance and completes the assessment sheet for tutor questions before the presentation. The tutor assessment sheet task 4(b) can be found at the end of this document.

Task 4(b) must be completed under supervised conditions, and the presentation itself, along with any questions, must be recorded.

Each student has up to 1 hour to complete this task. It is likely that the presentation and any tutor questions will take a much shorter time, however, the hour provides time for the student to rehearse if they wish. If the student chooses to rehearse their presentation, this must be done independently without anyone else present. Only the presentation itself and any follow up questions need be recorded.

The student must complete the presentation, respond to any tutor questioning and optional rehearsal within 1 hour, and manage their time using the task 4 guidance.

They will be given an additional 30 minutes to complete their project diary which will facilitate the completion of task 6.

Note: The presentation of the scientific poster by the student will be externally assessed by NCFE, including through the use of the task 4(b) tutor assessment sheet

## Student resources required

- project brief
- their A2 scientific poster
- their project diary

## Tutor resources required

- Assessment sheet for tutor questions.
- Audio visual recording equipment.

## Task 5

The student is required to work with their research team to discuss the concerns that have been raised and how it would be best to respond to these concerns. They will need to refer to their research notes to contribute effectively to the discussion and take notes during the team discussion of the points and suggestions made. It is suggested that 10 minutes are given at the start of the discussion to complete this.

Each group member will then take it in turns to make suggestions and to agree an approach. It is suggested that groups consist of 5 or 6 individuals to allow sufficient time for discussion in 40 minutes, which will allow ample time for individuals to give their opinion and respond to others.

This discussion must be recorded. The recording should include all students in the group visually and should ensure that each student's verbal contribution should be clearly audible.

Following the discussion, students will need to (individually) draft an email to respond to the concerns raised. This response can be handwritten or produced in suitable word processing software. It does not need to be written in an email client. Usual exam conditions apply during this part of the task (max 10 minutes). The writing of the email does not need to be recorded.

There is an overall time limit of 1 hour for this task. In this time, students will:

- be asked to read the email in their groups
- be given 10 minutes to familiarise themselves with their literature review, their plan, their data analysis and scientific poster
- discuss their suggestions for responding to the concerns
- draft an email to respond to the concerns raised

Note: The group discussion and email the student produces will be externally assessed by NCFE

## Student resources required

- project brief
- their literature review (task 1)
- their project plan (task 2)
- their data analysis and report (task 3)
- their A2 scientific poster (task 4)
- email (appendix 2 of project brief)

## Tutor resources required

- assessment sheet for tutor commentary
- audio visual recording equipment

## Task 6

Task 6 requires the student to produce a written reflective evaluation of the scientific project carried out during the previous tasks.

Students are required to work independently, under supervised conditions.

Students must complete this task within 2 hours and manage how they will spend their time using the task 6 guidance.

Note: The reflective evaluation that the student produces will be externally assessed by NCFE

### Student resources required

- project brief
- their literature review (task 1)
- their project plan (task 2)
- their data analysis and report (task 3)
- their scientific poster (task 4) – note that neither the presentation recording, or group discussion recording should be provided to the student
- their project diary
- access to the NCFE provided literature database (appendix 1 of project brief)
- access to the NCFE provided LIMS spreadsheet
- reflective evaluation template

### Timings

The timings below have been devised to support student and provider planning.

Task 1: 3 hours 30 minutes

Task 2: 3 hours 30 minutes

Task 3: 3 hours 30 minutes

Task 4(a): 3 hours

Task 4(b): 1 hour 30 minutes

Task 5: 1 hour

Task 6: 2 hours

Total: 18 hours in total, including 2 hours in total for the project diary

## **Instructions for completing and submitting the external assessment task**

The external assessment tasks must be completed and uploaded as a whole and not in separate sections. The submission of students' assessment evidence must be done by the submission date specified for the assessment window. Tutors are encouraged to ensure that students follow the filename conventions specified in the external assessment tasks for each individual document. These files, per student, should be placed within a single folder before being submitted.

Students must respond to each task individually and follow the document structure when submitting their evidence, as per the evidence requirements section within each task. They must not combine responses for separate tasks.

Audio visual recordings should be submitted digitally and labelled with the student's name in the case of the presentation task 4(b), or names in the case of the discussion task 5.

Any materials that are handwritten or drawn (for example, the scientific poster) should be submitted digitally, for example, as photographs taken on a suitable smartphone used by the tutor (students should not use smartphones to take photographs themselves). Photographs should be clear to ensure all evidence is clearly legible to support fair and reliable external marking.



# Appendix

## Tutor assessment sheet task 4(b)

The tutor will observe the presentation, and from their observations they will complete the assessment sheet for tutor questions form shown below. This form is used to record any questions they ask and the student's answers.

Note: This must be submitted along with the student's work

### Questions

It may be necessary for the tutor to ask the student questions at some point during the presentation. The need for questions will arise if:

- further clarification is required of any aspect of the presentation
- any aspect of the presentation is missing – for example, any aspect of the strategy or conclusions

Any question should simply aim to clarify any area which is unclear from the presentation, or to elicit from the student a missing piece of information. Questions which guide or lead the student to an answer are not permissible.

### Examples of permissible questions

- when you were presenting your strategy, can you clarify what you meant by X, as I did not find this clear?
- you have presented a conclusion, but you have not explained what you based your conclusion on – can you explain the basis for your conclusion?

### Examples of questions which are not permissible

- when you were presenting your strategy and you said X, did you mean Y?
- can you give me an example of a trend or pattern which you based your conclusion on?

Assessment sheet for tutor questions	
<b>Mark X if the tutor does not need to ask questions.</b>	For example: X
<b>Record tutor questions when needing to clarify parts of the presentation, or to elicit information from the student that has not been provided.</b>	For example, can you clarify what you meant by X?
<b>Record the outcome of any tutor questions, this can be a summary of the student's response, and whether they answered the question effectively.</b>	For example, student (name) gave details of Y which clarified their point. OR Student (name) was unable to provide a logical clarification of their point.

## Document information

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