Level 3 T Level Technical Qualification in Science

Qualification number (QN) 603/6989/9

Laboratory Science Learner Handbook 2024

Name: _____

You must sign and return the declaration form at the end of this session

Learner induction – The key to your success

This induction session will help you to

- develop an understanding of the outline of the programme (e.g. structure, content, assessment grids, level of programme and equivalency)
- understand the purpose of the assessments as tools for providing evidence of learning
- understand the relationship between the tasks given in an assignment and the assessment criteria
- understand your responsibility on this course

T Level Science (NCFE)
Occupational Specialism – Laboratory Science

What is a T Level?

A T Level is an entire post 16 qualification and is equivalent to 3 A Levels so it takes 2 years to complete. The qualification is eligible for UCAS points.
You are doing the Health and Science T level with an occupational specialism in Laboratory Science. This T level has been developed in collaboration with the Francis Crick Institute to prepare you for entry into skilled employment, a higher apprenticeship or related technical study through higher education (university).

T Level is split into three main sections:

1. **Technical qualification**
    a. This is the main, classroom-based element where you will study a detailed curriculum covering all aspects of laboratory sciences.

2. **Industry placement**
    a. This runs for a minimum of 315 hours overall and will give you practical insights into the science sector and an opportunity to embed the knowledge and skills you learn in the classroom. This will take place in Year 2 and will be at The Francis Crick Institute.
    b. You will have an interview with staff from The Crick before you are allocated a placement. This is to ensure that you are working in a laboratory that is suitable for you and the specialist staff.

3. **English, mathematics and digital**
    a. These are built into the classroom-based element of the T Level, meaning you will be given a solid foundation of transferable skills. You have to reach a suitable standard in all three the ensure success in your qualification.

As well as 15 hours of lessons per week, you will be expected to complete an additional 15 hours of self-directed study including homework, lab reports, reading and research, coursework, revision and exam preparation.

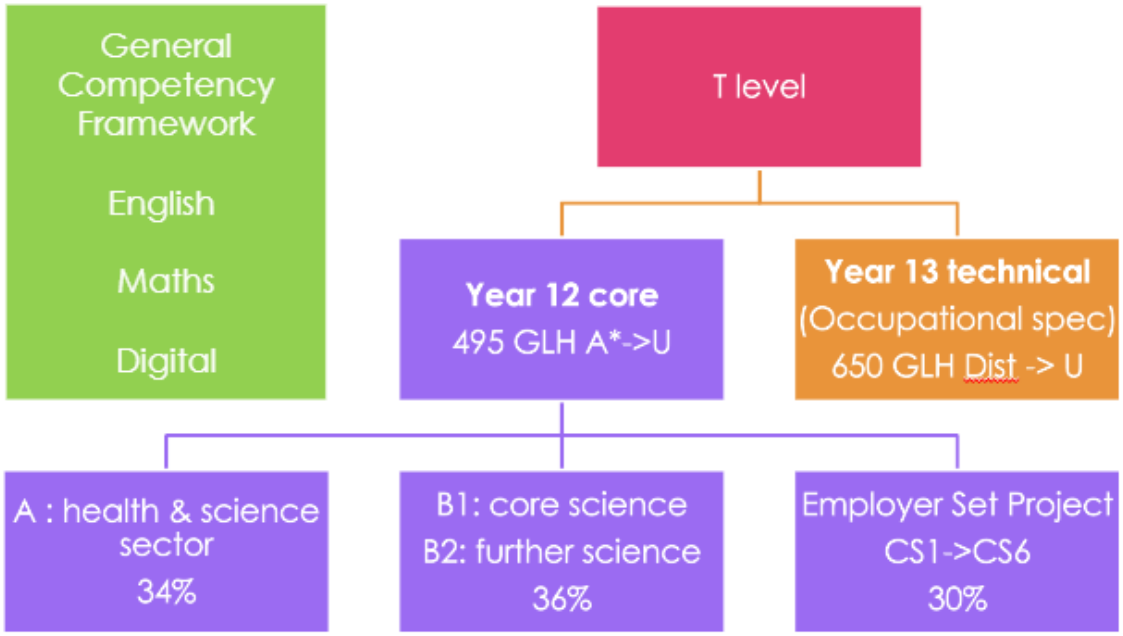
Progression opportunities

Skilled employment, higher apprenticeship or an undergraduate degree

Employment opportunities

Laboratory technician, Laboratory analyst, Microbiologist, Research scientist and many more.

Course Overview



Science topics covered in Year 1:

Cells, Tissues and Biological Molecules, Genetics, Microbiology and Immunology, Chemical Analysis, Materials and Chemical Properties, Chemical Reactions, Electricity and Magnetism and Waves and Radiation

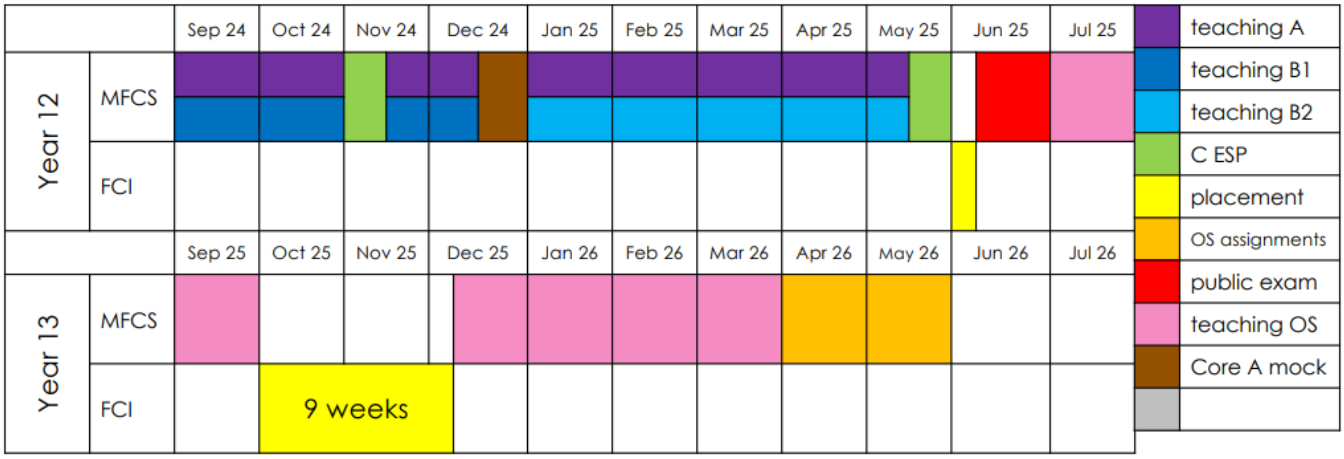
Other topics covered in Year 1:

Working within the health and science sector, Health, safety and environmental regulations in the health and science sector, Managing information and data within the health and science sector, Data handling and processing, Ethics, Good scientific and clinical practice, Scientific methodology and Experimental equipment and techniques.

You will also learn about project management and develop research and problem-solving skills.

In Year 2, you cover the content and skills for the Occupational Specialism (Laboratory Science)

Teaching and assessment schedule



Core A: The Health and Science Sector

A1 Working within the health and science sector

A2 The science sector

A3 Health, safety and environmental regulations in the health and science sector

A4 Application of safety, health and environmental practices in the workplace

A5 Managing information and data within the health and science sector

A6 Data handling and processing

A7 Ethics

A8 Good scientific and clinical practice

A9 Scientific methodology

10 Experimental equipment and techniques

Core B: Science Concepts

B1 Core science concepts

B2 Further science concepts

Employer Set Project (ESP)

The purpose of the employer-set project is to ensure that you have 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 set in the context of laboratory science and have been devised with the input of employers in the science sector. The ESP will take 18 hours to complete. All tasks are completed under supervised conditions in school time.

Core skills for the ESP

CS1 Project management

CS2 Researching

CS3 Working with others

CS4 Creativity and innovation

CS5 Problem solving

CS6 Communication

CS7 Reflective evaluation

English, mathematics and digital skills are embedded throughout the T Level and your assignments will assess these skills.

Industry Placement

Your industry placement is intended to provide you with the opportunity to develop the knowledge, skills and behaviours required for skilled employment. As part of achieving the overall T Level programme, you are required to complete a minimum of 315 hours industry placement. Your placement will be in a specialist laboratory at the **Francis Crick Institute** and you will be supervised and observed by your mentor during your time there.

You will have a one-week primary placement in year 1 prior to the full 9 week placement in year 2. You will be getting paid while you are working so this means you treat the placement as employment and must act professionally at all times.

Essential skills

While completing this qualification, you will have the opportunity to develop the knowledge, understanding and essential skills employers look for in employees. These include familiar 'key skills', such as team working, independent learning and problem solving.

In the work place, standards are set for all employees so in addition to the skills above, you must also consider the following:

• appropriate workplace behaviour and dress

• appropriate interpersonal skills

• communicating with professional colleagues/peers and/or hierarchical seniors

• supporting other aspiring employees

• personal manners

• understanding work practices and how different roles and departments function within an organisation

You will be given further guidance closer to the time when you will also undergo an interview process which will help to determine the best laboratory for you.

Assessment

You will undertake a programme of assessment designed to measure your knowledge and understanding of science and the science sector.

Grading

Component	Grade
Core component	A* to E and U
Occupational specialism components	Distinction/merit/pass and ungraded

Assessment Methods

Core component

- 2 written examinations
    - Core A (2 hours 30 minutes)
    - Core B (2 hours 30 minutes)

- employer-set project (ESP) (Total time = 18 hours)

In order to achieve a grade for Core Component, you must have results for both sub-components i.e. written examinations and the employer-set project.

The combined results from these sub-components will be aggregated to form the overall Core Component grade (A*–E and U).

If you fail to reach the minimum standard across all sub-components, you will receive a U grade. No overall grade will be issued for the core component until both sub-components have been attempted.

Occupational Specialism Component (Year 2)

- three synoptic assignments (Total time = 16 hours)

You will be required to

1 Perform a range of appropriate scientific techniques to collect experimental data in a laboratory setting, complying with regulations and requirements

2 Plan, review, implement and suggest improvements to scientific tasks relevant to a laboratory setting

3 Identify and resolve issues with scientific equipment or data errors

You must achieve a distinction/merit/pass grade in your Laboratory Sciences specialism.

If you fail to reach the specified level of attainment, you will receive a U grade.

Calculating your final grade for the T Level Qualification (TQ)

Each core component's marks will be combined to form the overall grade for the core component. The marks from the occupational specialism assignment will form the occupational specialism grade. These grades will be submitted to the Institute for Apprenticeships and Technical Education who will issue an overall grade for the T Level TQ.

To be awarded an overall T Level grade, you must successfully pass both components of year 1, complete an industry placement and passed the occupational specialism synoptic assignment.

See the example on the next page.

This matrix shows the overall TQ grade when both components are combined.

For example, if a student achieved a B grade in the core component assessment (indicated by the vertical column on the left) and a merit grade in the occupational specialism assessment (indicated by the horizontal top row), they would achieve a merit grade for the overall TQ:

		Occupational specialism grade		
		Distinction	**Merit**	**Pass**
Core component grade	**A***	Distinction*	Distinction	Merit
	A	Distinction	Distinction	Merit
	B	Distinction	Merit	Merit
	C	Distinction	Merit	Pass
	D	Merit	Pass	Pass
	E	Pass	Pass	Pass

Merit

Note: Core component 40% / Occupational specialism 60%

What will happen in lessons?

The lessons will vary according to the subject and level but all students should experience most of these activities:

- Discussion - one to one or in groups
- Research – group or individual using a variety of methods
- Report writing – manually or using ICT
- Practical work
- Demonstrations
- Presentations
- Visits/Speakers

Which styles of teaching will be used?

Different styles of teaching will be required throughout the course. This will depend on the unit being taught, the stage of delivery and the type of assessment required for that unit.

Teacher input

At the start of a unit there will be a lot of teacher input; question and answer sessions, discussions, note taking and handouts. This may all happen at the beginning of a unit or at different points throughout the unit. It is important to note any information you are given, as it may be required at a later stage in the unit.

Student investigations

Once the assignment has been explained and the tasks have been set, you will have to work on your own to find the information you need and then you will have to produce the information in a particular format to meet the requirements of the task. The work you produce must be your own; word for word copying from a textbook, or copying and pasting from the Internet **will not** be accepted nor will you be allowed to copy the work of other students. You will have to check regularly with your teacher to make sure that your work is correct and to discuss any ideas that you want to develop.

Group work

For some tasks you may have to work in a group, either to find information or to produce evidence. This is quite acceptable providing that all students take an equal share of the work and that individual contributions are identified.

Practical Work

Practical activities may include experiments and investigations. You must follow all the usual laboratory safety rules when doing practical work.

What will be expected of you?

You will be expected to do all of the following as part of your day-to-day work

- Read and research
- Keep a record of the information you find and the sources
- Plan your work in a logical order and keep a record of your progress
- Prepare Risk Assessments
- Work safely
- Talk to your teachers about your ideas and how to achieve the best results

- Produce drafts and final copies of your work
- Produce good quality work with high standards of grammar and spelling
- Present your work in a suitable format according to the purpose and the audience
- Make sure that you use SI units appropriately
- Evaluate your work and make suggestions for improvement
- Meet deadlines
- Keep a record of the work you have completed, including the grades awarded
- Keep visual records e.g. photographs/videos/PowerPoint presentations

How will standards of work be maintained?

External Marking

All tasks must be completed under supervised conditions. You can access resources in order to complete your assessments.
When a unit of work has been completed and assessed the scripts are sent to the NCFE to be marked.

Storage of work

You will be provided with a folder and lab-book in which to keep your ongoing class work and homework. You will be responsible for these and must bring them to all lessons. All completed classwork will be put into your folder.

The Appeals Process and Policy

The Appeals Process

The Science Department will follow NCFE's policy regarding your right to appeal.

Notice to Candidates

This part of the document tells you about some things that you must and must not do when you are completing work.

If there is anything that you do not understand, you **must** ask your teacher.
This course provides you with an opportunity to do some independent research into a topic. The research you do will involve looking for information in published sources such as textbooks, journals, TV, radio, and on the internet.
Using information from published sources (including the internet) as the basis for your work is a good way to demonstrate your knowledge and understanding of a subject, but you must take care how you use this material - you cannot copy it and claim it as your own work.

The regulations state that:

"the work which you submit for assessment must be your own";
"you must not copy from someone else or allow another candidate to copy from you".

If you use the same wording as a published source, you must place quotation marks around the passage and state where it came from. This is called "referencing". You must make sure that you give detailed references for everything in your work which is not in your own words. A reference from a printed book or journal should show the name of the author, the year of publication and the page number, for example: (Morrison, 2000, pg.29).

For material taken from the internet, your reference should show the date when the material was downloaded and must show the precise web page, not the search engine used to locate it. This can be copied from the address line. For example: the link to your specification is as shown here.

https://www.ncfe.org.uk/qualification-search/qualification-detail/t-level-technical-qualification-in-science-level-3-delivered-by-ncfe-883

If you copy the words or ideas of others and don't show your sources in references and a bibliography, this will be considered as cheating.

Please be sure to use the Harvard referencing System on all your work

Preparing your work – good practice

Take care of your work and keep it safe. Don't leave it lying around where your classmates can find it. You must always keep your work secure and confidential whilst you are preparing it; do not share it with your classmates. If it is stored on the computer network, keep your password secure. Collect all copies from the printer and destroy those you don't need.

Don't be tempted to use essays from online essay banks — this is cheating. Electronic tools used by awarding bodies can detect this sort of copying.

Plagiarism

Plagiarism involves taking someone else's words, thoughts or ideas and trying to pass them off as your own. **It is a form of cheating which is taken very seriously.**

Don't think you won't be caught; there are many ways to detect plagiarism.

- Markers can spot changes in the style of writing and use of language.
- Markers are highly experienced subject specialists who are very familiar with work on the topic concerned — they may have read the source you are using (or even marked the essay you have copied from!).
- Internet search engines and specialised computer software can be used to match phrases or pieces of text with original sources and to detect changes in the grammar and style of writing or punctuation.

Penalties for breaking the regulations

If your work is submitted and it is discovered that you have broken the regulations, one of the following penalties will be applied:

- the piece of work will be awarded zero marks;
- you will be disqualified from that unit for that examination series;
- you will be disqualified from the whole subject for that examination series;
- you will be disqualified from all subjects and barred from entering again for a period of time.

Your awarding body will decide which penalty is appropriate.

REMEMBER – IT'S YOUR QUALIFICATION SO IT NEEDS TO BE YOUR OWN WORK

NCFE Guidance

Plagiarism definition

"The reproduction or appropriation of someone else's work without proper attribution; passing off as one's own the work of someone else." (Plagiarism.org - Best Practices for Ensuring Originality in Written Work, 2016)

Examples of plagiarism are likely to be (though not limited to) circumstances where learners have not acknowledged the actual source and:

- copied word for word from a printed or online source
- closely paraphrased the original text with a slight wording change
- used someone else's ideas and conclusions

When copied work is referenced, a learner may not meet the relevant grading criteria in the Assessor/Examiner's judgment, but plagiarism and therefore maladministration or malpractice will not be considered to have occurred.

Referencing of sources is an important skill for learners to develop and is essential for the integrity of assessment, qualifications and awards.

Maria Fidelis Sixth Form has an agreed policy on plagiarism including what we believe to be the most appropriate recognised method for acknowledging sources at the point of use, such as referencing by including citations or identifying quotations and generating a bibliography.

Demands for thorough references become greater for higher level qualifications/awards (Level 3 and above), where clear referencing is necessary to support the demonstration of knowledge, understanding and critical thinking.

Detecting and preventing plagiarism

NCFE expects your school to have mechanisms in place to prevent plagiarism such as being vigilant and continuously checking for any occurrences where this is allowed by the type of assessment, possibly in conjunction with the use of plagiarism-identifying software.

Teaching the techniques of referencing to learners and ensuring learners have sufficient time, understanding, and the resources to complete assessments can all be important factors in combatting plagiarism.

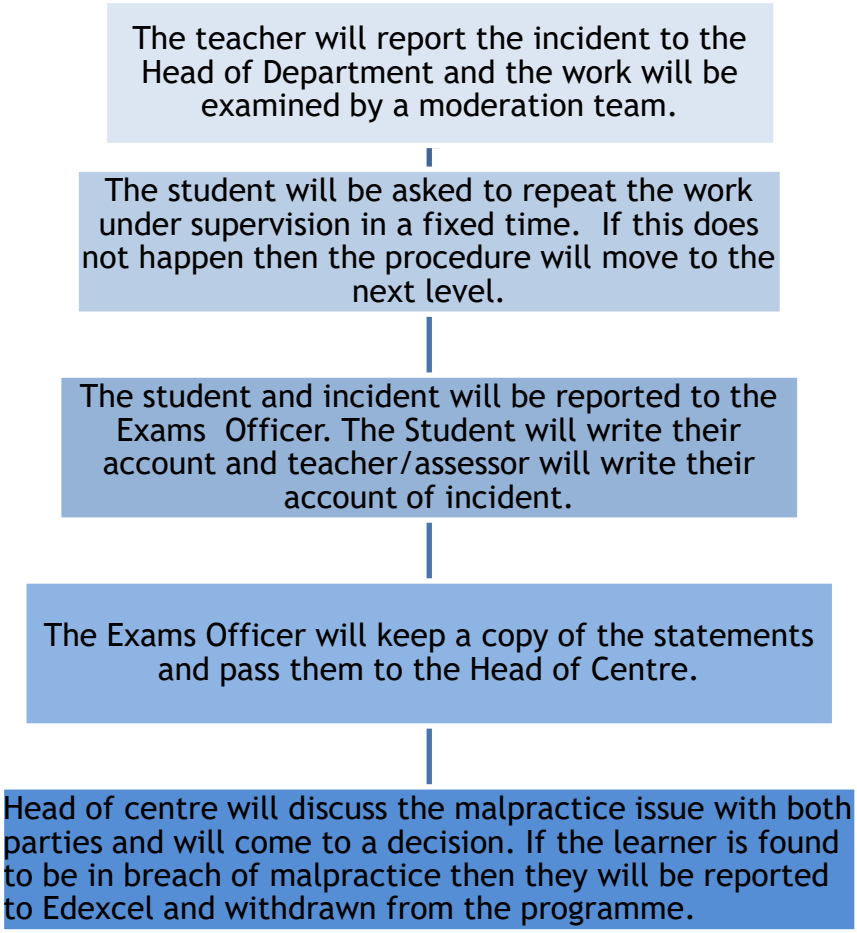
NCFE also expect centres to address all cases of potential plagiarism. This may range from dealing with unreferenced work to investigating cases of deliberate attempts to copy unacknowledged material. The centre should deal with all cases of plagiarism identified before grades/marks and/or assessment work is submitted to NCFE.

For external assessments not seen by the centre, the responsibility is on the learner to ensure plagiarism is avoided. Any instances of plagiarism will be dealt with in conjunction with the NCFE Maladministration and Malpractice Policy, which can be downloaded from our website www.ncfe.org.uk.

When plagiarism is identified by NCFE in external assessments where it is not possible for centres to check for plagiarism beforehand, centres will be notified and achievement may be withheld from the learner.

Student Malpractice

If a learner has conducted malpractice then the following actions will occur:



Sign the declaration form and return it to your teacher to show you have attended this induction session and that you understand what is expected of you.