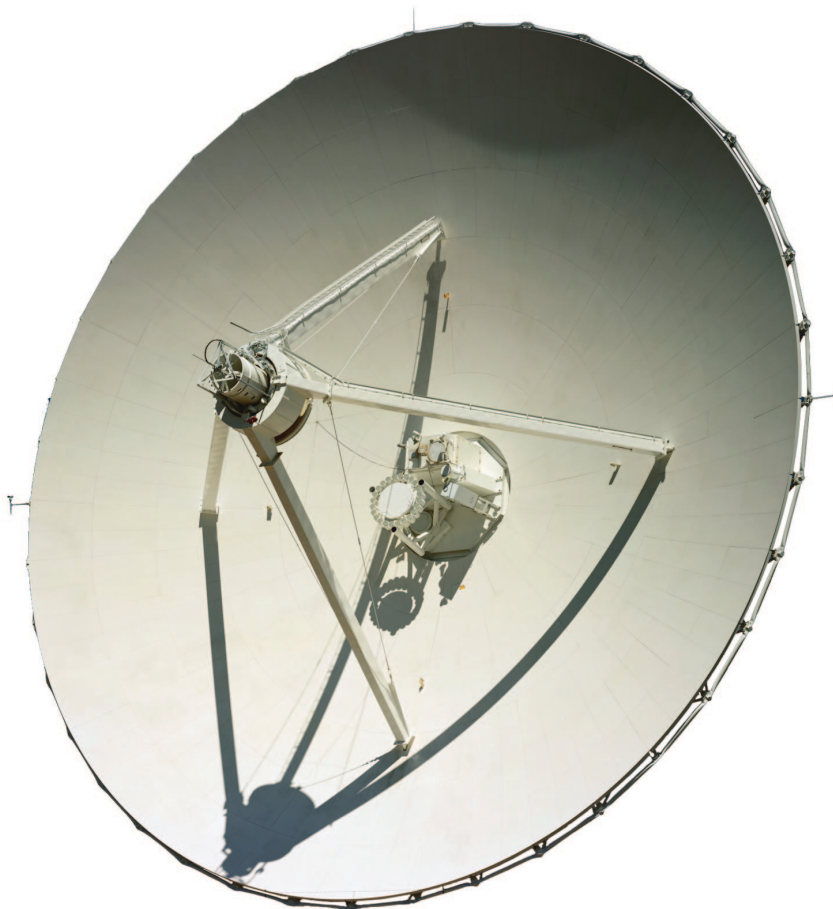


# A guide to Telecommunication Systems (2730)



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Our International Vocational Qualification in Telecommunication Systems is designed for anyone who wants to learn the underpinning knowledge and skills of the present-day telecommunications industry.

## Who is this qualification suitable for?

This qualification is suitable for people who are already working in the telecommunications industry and who want to gain an internationally recognised qualification. It is also suitable for people who want to get into the industry. It recognises that telecommunications, computing and information technology have merging skills and is also suitable for preparation for a wider range of jobs in the field of electronic communications.

There are three levels of this qualification. At Certificate level a broad introduction is provided to the theory and practical aspects of telecommunication systems for a front-line worker or a person beginning an academic training programme. The Diploma level is suitable for someone who has already learned the basic skills and who now wants to learn a broader range of skills. It is appropriate for someone who may have to supervise others, or who is preparing for higher education (eg. at university). The Advanced Diploma takes these skills to the level appropriate for a person working in first-level management or for someone who wants specialised training at a high level.

Most of the practical skills and knowledge can be learned in the training centre and the practical assignments have been designed for completion as part of the training programme. Work experience can be used to provide access to telecommunications equipment in day to day use, but is not a requirement for this qualification.

## What skills will be developed in this qualification?

At **Technician Certificate level** the candidate will learn the underpinning knowledge relevant to today's industry. Subjects include -

- Maths, science and electronics
- Computer technology
- Information transmission
- Simple telecommunication systems
- Optical fibre systems
- Principles of radio, television
- Mobile radio and cellular phone systems
- Public switched telephone networks
- Digital networks and data communication

At Technician Diploma and Advanced Technician Diploma levels, the subjects planned are -

- Satellites, programming, digital subscriber line techniques, asynchronous transfer mode, integrated networks and third generation mobile phones

And further develop the Certificate level skills in order to work independently, to supervise others and to specialise.

## How can a candidate prepare for this qualification?

Our syllabus lists the practical competencies and the knowledge requirements for each level. The practical competencies are the skills a candidate must learn and practise, and then demonstrate. The knowledge requirements are the necessary knowledge that must be taught, for example in a classroom, so that the candidate understands how to carry out the tasks.

Our syllabus is used to design a teaching programme that allows candidates to learn the required knowledge and practise the necessary skills. You can design a programme in any way you wish as long as it includes all the subjects in the syllabus.

## How is a candidate tested?

At Technician Certificate level –

### Practical assignments

Nine assignments, chosen from compulsory and optional assignments, to be completed by each candidate, covering health and safety, heat and resistance, investigating communications media, protocols, standards and standards development bodies, and global and national mobile radio and telephone systems. Each practical assignment has candidate instructions and a detailed marking scheme.

### Knowledge requirements

Two 2-hour written tests with 60 multiple choice questions each.

At Technician Diploma level and Advanced Technician diploma levels the assessments will be a combination of practical assignments for the practical competencies, and multiple choice or short answer written papers for the knowledge requirements.

At diploma level –

### Practical competencies

A checklist of practical skills that must be demonstrated.

### Knowledge requirements

A one and a half hour written test with 9 short answer questions.

The practical assignments can be completed at any time during the teaching programme. We recommend that they are fully completed by the time of the written examination.

Written examinations for each level will be available twice a year, in May/June and November/December.

Details about the content of the written tests, and the practical assignments are all in our syllabus.

## What resources do I need to offer this qualification?

You need the following –

- Suitably qualified teachers or trainers – either with some recent experience of working in the industry, or with a recent qualification in this sector. Teachers must have the industry or learning experience to teach topics such as mobile and cellular radio. Teachers should be capable of preparing students to an academic level suitable for university entrance. The teaching of subjects in this syllabus can be shared by teams of teachers, according to their specialism and experience.

- Access to workshop or laboratory facilities to carry out the practical assignments
- Access to equipment needed for teaching and for practical assignments. At the **Technician Certificate level** this includes personal computers and printers, software routinely used at work, fire fighting and first aid equipment for demonstrations, voltmeters, ammeters, dc power supplies, filament lamps, communication media such as wire, cables, optical fibre, equipment such as multiple band radio receivers, television sets, hair dryers
- Access to research facilities – component catalogues, reference books
- One suitably qualified person (we suggest a qualified supervisor or training manager in the industry) either working or recently retired), who is not teaching your candidates, who can confirm that your candidates have reached the necessary levels in the practical skills.

Full details about the resources needed are given in our syllabus.

#### What can a person do after gaining this qualification?

At Technician Certificate level a person should be able to work in the telecommunications industry at the technician level in the fields of manufacture, installation, maintenance or operation. At Technician Diploma level a person will be able to fulfil the role of technician or senior technician across a range of specialised subjects. At the Advanced Technician Diploma level a person will have the potential to fulfil the role of senior/chief technician with a high level of responsibility, including use of personal initiative and critical judgement.

For those interested in a management qualification, we offer the **International Management Award** – managing people, activities, information and resources. The examinations for this are held in November and June of each year. This qualification will be suitable for candidates who have completed the Technician Diploma or Advanced Technician Diploma levels of our Telecommunication Systems qualification.

#### How does this qualification differ from the Telecommunications and Electronics Engineering award (2720)?

The table at the last page of this information sheet shows the main differences.

#### How do I start?

Three simple steps –

To offer this programme, first of all you need to read the regulations and syllabus to make sure that you have the necessary resources.

Then you must apply to City & Guilds Customer Relations to become an approved centre for the 2730 Telecommunications Systems qualification.

Finally, plan your teaching programme using the syllabus as guidance.

#### What additional help can we receive?

As well as the syllabus, which is a complete guide to what you need to teach, and which includes all the checklists and application forms that you will need, we offer –

- A suggested book list related to each syllabus section
- Specimen exam questions
- Equipment list
- Guidance on how to assess the practical skills
- Guidance on how to confirm (or verify) the results of your practical

#### Contacts

For more information about this qualification, please contact

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#### If asked for a scheme number please quote 2730.

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**How does this qualification differ from the Telecommunications and Electronics Engineering award (2720)?**

	<b>Telecommunications and Electronics Engineering (2720)</b>	<b>Telecommunications Systems (2730)</b>
<b>Syllabus content – Certificate level</b>	Mathematics Physical Science  Telecommunications Systems  Communication Studies  Implied coverage of health and safety	Similar content (same as 2565) Science and Electronics (revised and expanded) Communication Systems and Digital Networks (switching and telegraphy deleted, new sections on digital and telephone networks, computer and data networks) Removed – some activities within practical assignments Health and safety included as section with required outcomes Introduction to computer technology (using IT)
<b>Syllabus content – Diploma and Advanced Diploma levels</b>	Current: Maths, Telecommunication Principles, Electronics Radio Switching and transmission Microelectronic systems Data communication Fibre optic equipment	<b>Proposed:</b> Satellites Programming Digital subscriber line techniques Asynchronous transfer mode Integrated networks Third generation mobiles Optical fibre systems Additional mathematics
<b>Suggested learning hours</b> Technician Certificate Technician Diploma Advanced Technician Diploma	} 1200 hours in total	300 hours 600 hours 600 hours
<b>Written examinations</b> Technician Certificate  Technician Diploma Advanced Technician Diploma	3 x 2 hour multiple choice papers plus 1 x 3 hour written paper 8 x 3 hour written papers 7 x 3 hour written papers	2 x 2 hour multiple choice papers  Reduced number of written papers Reduced number of written papers
<b>Practical assessment</b> All levels	None set by City & Guilds	Practical assignments set by City & Guilds and marked locally
<b>Project</b>	Optional	Proposed as a requirement for Diploma and/or Advanced Diploma
<b>Centre approval</b>	Required to offer this qualification	Required to offer this new qualification. 2720 approval will not be automatically changed to 2730
<b>Visiting verifier</b>	Only required if entering optional project component	Required for entry to practical components

**Note:** The content of the Telecommunications and Electronics Engineering Award (2720) and the Telecommunications Systems Award (2730) is intentionally different. The 2720 award will continue to be available alongside the 2730. However, we recommend that teaching centres plan to adopt the 2730 award.