



# TCOLC Sixth Form

Yr11 – 12 Transition Activities

Subject: Cambridge Technicals in IT



THE CITY OF LEICESTER COLLEGE

## OCR Cambridge Technical Level 3 ICT

You have made an excellent choice in deciding to study Cambridge Technical Level 3 In ICT.

This is a vocational qualification designed with the workplace in mind but at the same time provides a high-quality course to study ICT/IT at A level. You will take two units, which are assessed through written examination. You will go onto study other units that are internally assessed. This will lead to an OCR level 3 Cambridge Technical Qualification that is equivalent to either 1 or 2 full A – Levels.

### Is it for me?

The lessons will be a mixture of individual work, group work, presentations, research, and class discussions.

This is an excellent course for equipping students with valuable skills for employment and further study. It is also suited to students who are drawn towards Computer Science that don't want to learn how to program and/or don't meet its entry requirements.

### What might I study on this course?

- Unit 1 - Fundamentals of IT  
Written examination, 1.5 hours, worth 50% of the AS level  
Examination in January of year 1
- Unit 2 - Global Information  
Written examination, 1.5 hours, worth 50% of the AS level  
Examination in June of year 1
- Unit 3 - Cyber Security  
Written examination, 1 hour, worth 16.7% of the A level  
Examination in June of year 2
- Unit 8 - Project Management  
Coursework marked internally, worth 16.7% of the A level
- Unit 9 - Product Development  
Coursework marked internally, worth 16.7% of the A level
- There are other units that may be studied during the course such as Internet of Everything, Social Media etc

This pack contains a programme of activities and resources to prepare you to start an A Level in Cambridge Technicals in September. It is aimed to be used throughout the

remainder of the summer term and over the summer holidays to ensure you are ready to start your course in September.

The pack is divided into some of the key topics you will study in Cambridge Technicals in ICT. There are ranges of different activities to do in each topic area. The world of ICT continues to develop at an amazing rate. The challenge for you is to be able to respond to this everchanging world and to develop the knowledge and skills that will help you to understand technology that hasn't yet been invented!

## **Breakdown of Possible Units**

1	Fundamentals of IT
2	Global Information
3	Cyber Security
CC <sup>+</sup>	Cloud Technology
4	Computer Networks
5	Virtual and Augmented Reality
6	Application Design
7	Data Analysis and Design
8	Project Management
9	Product Development
10	Business Computing
11	Systems Analysis and Design
12	Mobile Technology
13	Social Media and Digital Marketing
14	Software Engineering for Business
15	Games Design and Prototyping
16	Developing a Smarter Planet
17	Internet of Everything
18	Computer Systems – Hardware
19	Computer Systems – Software
20	IT Technical Support
21	Web Design and Prototyping
22	Big Data Analytics
23	Cognitive Computing
24	Enterprise Computing

You will study a range of units from the list provided, the range of unit's available range from understanding cloud technology to how mobile technology works.

Throughout the course you will need to use and improve upon a range of IT skills, including

- Internet research – being discerning and selective
- Word processing – the coursework will need to be presented, often as a business report
- Presentation using PowerPoint – some coursework tasks, require a presentation
- Email – using this in a professional manner to liaise with staff and clients
- Database – to analyse and present data, for example a bar chart

## **SPECIFICATION FOR UNIT 1 and 2 AT A GLANCE:**

Students must take successfully pass unit 1 and unit 2 to achieve a qualification in the subject.

### **Unit 1: Fundamentals in ICT**

A sound understanding of IT technologies and practices is essential for IT professionals. Information learnt in this unit will create a solid foundation in the fundamentals of hardware, networks, software, the ethical use of computers and how businesses use IT. After completing this unit, the knowledge, skills and understanding your students have developed will underpin their study for the additional units. Knowledge gained in the study of this unit will also help prepare students for relevant industry qualifications such as CompTIA A+, CompTIA Mobility+ and Cisco IT Essentials

### **Unit 2: Global Information**

The purpose of this unit is to demonstrate the uses of information in the public domain, globally, in the cloud and across the Internet, by individuals and organisations. Your students will discover that good management of both data and information is essential and that it can give any organisation a competitive edge. This unit will provide students with a greater understanding of how organisations use information sources both internally and externally and the types of information they will encounter. The skills gained by completing this unit will give them knowledge of the functionality of information and how data is stored and processed by organisations. They will also learn about how individuals use information of various types. This unit will help students to understand the legislation and regulation governing information which flows in to and out of an organisation and the constraints and limitations that apply to it. They'll also learn the relationship between data and Information. Knowledge gained in the study of this unit will also help prepare students for relevant industry qualifications such as VM Ware.

## **Task 1: Computer Hardware**

**Task:** below are some of the terms and devices you will need to understand. You might be asked to discuss benefits and drawbacks, too. Complete each table and give clear descriptions.

### **Input devices**

Device	Purpose
Scanner	
Sensor	
Barcode reader	

### **Output devices**

Device	Purpose
Plotter	
Braille terminal	
Speakers	

### **Input and output devices**

The touch screen is an example of a single device that can both receive and display data and information. The technologies used to enable the position of a finger or pointer on the screen are listed below. Research into each and write an explanation for each.

Type of touch screen	Explanation
Infrared	
Resistive	

Capacitive	
------------	--

### Communication devices

These devices allow one computer device to communicate with another. Explain the examples in the table below.

Type of touch screen	Explanation
Modem	
Network interface card	
Terminal adapter	
Wireless router	
Wireless network cards	
Hub	

Feedback	Little/No Evidence	Satisfactory	Good	Excellent
Presentation and Quality				
Use of Subject Terminology				
Use of Research				
Detail of answers				

Comment:

## **Task 2: Types of Computer Systems**

**Task:** You are required to explain each type of computer system listed in the table. Extend on these to provide a more through explanation and give benefits and drawbacks for each. Complete the exam question at the end.

Type	Definition	Benefits/drawbacks (bullet point)
Desktop		
Quantum		
Mainframe		
Smartphone		
Tablet		
Embedded		
Hybrid		

- multifunctioning device used by a vast range of users
- A combination of all the elements required for any computer – single chip
- 2 in 1 computes with a variety of functions
- Extremely powerful, performing a variety of tasks simultaneously
- Using atoms as a processor; completing different calculations at the same time
- Designed to stay in a single location
- Handheld, portable devices with a flat surface

**Exam question (6 marks)**

Jim is a self-employed photographer. He is going to expand his business to include another photographer and a part-time administrator. Suggest the most appropriate system for Jim to use going forward with his business.

*(For this style of question, you should discuss benefits and limitations, and compare your suggestion against at least 1 other type of system).*

	Little/No Evidence	Satisfactory	Good	Excellent
Feedback				
Presentation and Quality				
Use of Subject Terminology				
Use of Research				
Detail of answers				



Comment:



### **Task 3: Operating Systems**

Complete the table below - explain what is an operating system and the jobs of the system

<https://padlet.com/sec2/5f79h3ctp9sk>

1.	Define operating system	
2.	4 different jobs of OS's	
3.	Single user:	
4.	Multiple user:	

Complete the table below to outline example devices that use each operating system, the features and purposes of each.

OS	Devices	Features	Purpose
Windows 10 			
Apple iOS 			

Google's Android



Feedback	Little/No Evidence	Satisfactory	Good	Excellent
Presentation and Quality				
Use of Subject Terminology				
Use of Research				
Detail of answers				
Comment:				

### **Task 4: Protocols**

Define what are protocols?

What are protocols

Explain the different protocols and add your own

Protocol	Details
TCP/IP	
HTTP	
HTTPS	
IMAP	

Feedback	Little/No Evidence	Satisfactory	Good	Excellent
Presentation and Quality				
Use of Subject Terminology				
Use of Research				
Detail of answers				
Comment:				

## **Task 5: Connectivity Methods**

**Task:** research into the areas of copper wire connections, fibre cables and types of wireless technologies. Make bullet pointed notes and complete the table.

### **Copper wire connections**

- 
- 
- 
- 
- 
- 
- 
- 
- 
- 

### **Fibre cables**

- 
- 
- 
- 
- 
- 
- 
- 
- 
- 

### **Types of wireless technologies**

	<b>Used for</b>	<b>Range</b>
<b>Bluetooth</b>		
<b>Wi-fi</b>		
<b>Laser networks</b>		
<b>Infrared technology</b>		
<b>Microwave communication</b>		

Feedback	Little/No Evidence	Satisfactory	Good	Excellent
Presentation and Quality				
Use of Subject Terminology				
Use of Research				
Detail of answers				
Comment:				

## **Task 6: Physical Security**

- You need to know about physical and digital security methods and their characteristics.
- You should be able to discuss why different methods are used in different contexts.

### **Examples :**

Physical Security i.e.
locks
biometrics
RFID
Tokens (e.g. key fob)
privacy screens
shredding

Physical Security		
Measure	Explanation	How this increases security
locks		
biometrics		
RFID		
Tokens (e.g. key fob)		
privacy screens		
shredding		

Feedback	Little/No Evidence	Satisfactory	Good	Excellent
Presentation and Quality				
Use of Subject Terminology				
Use of Research				
Detail of answers				
Comment:				

## Task 7: Digital Security

- You need to know about physical and digital security methods and their characteristics.
- You should be able to discuss why different methods are used in different contexts.

### Examples :

Digital Security i.e.
anti-virus
firewalls
anti-spyware
username/passwords
Access permissions
encryption

Digital Security		
Measure	Explanation	How this increases security
anti-virus		
firewalls		
anti-spyware		
username/passwords		
permissions		
encryption		

Feedback	Little/No Evidence	Satisfactory	Good	Excellent
Presentation and Quality				
Use of Subject Terminology				
Use of Research				
Detail of answers				
Comment:				

## **Task 8: Safe Disposal of Data and Computer Equipment**

- You may be asked about 3 different aspects of disposal of data & equipment in the exam:
  - Legislation
  - Overwriting data and electromagnetic wipe
  - Physical destruction

Using the following information, answer the questions below

<https://padlet.com/sec2/1emmqmychdzo>

<http://www.safepcdisposal.co.uk/>

No.	Question	Answer
1.	What is the name of an organisation that deals with disposals of monitors? (1)	
2.	Describe the term e-waste. (2)	



3.	What legislation contains terms regarding safe disposal of data? (2)	
4.	What are the terms of the DPA, in regard to disposal of data? (3)	
5.	What is the purpose of the WEEE? (2)	
6.	What type of chemicals are found in computer systems? (2)	
7.	Describe the term overwriting. (3)	
8.	Why is overwriting not always effective? (2)	
9.	Explain an example for when physical destruction of hardware might be suitable. (4)	
10.	Explain how a company should dispose of its old computer systems and the data held on hard discs safely. (4)	
11.	Explain the importance of doing this (safely). (4)	

Feedback	Little/No Evidence	Satisfactory	Good	Excellent
Presentation and Quality				
Use of Subject Terminology				
Use of Research				
Detail of answers				
Comment:				



## **Recommended Resources**

<https://www.bbc.co.uk/bitesize/levels/z98jmp3> - Whilst aimed at GCSE, this will also provide useful information on many areas, especially if you did not do GCSE Computing. You can use the information in the ICT, Computing and Digital Technology areas

<https://www.bbc.co.uk/news/technology> - this area of the BBC news website will provide you with up-to-date information on technology development

[www.teach-ict.com](http://www.teach-ict.com) – a website totally devoted to IT and Computing. The username is and the password is

<https://www.thinkuknow.co.uk/> - website for e-safety advice