

## Getting started

The guidance sheets suggest how you could use the five different resources available within **OCR Electronics for AS**. These are:

- the **text book**, which students can use to prepare themselves for a new topic and consult as they solve problems
- the **exercises**, which students could use cooperatively or on their own to consolidate their understanding of a new topic
- the **practicals**, which give students step-by-step instructions for designing, assembling and testing circuits on breadboard
- the **data sheets**, which contain details of the small range of components required for practical work
- the **questions** in the text book, which students can use to confirm that their understanding of a topic is at AS level.

## Timings

The guidance suggests that delivery of the course requires a total of about 90 hours of classroom time. This not include time for coursework (12 hours?), formal end-of-chapter tests (9 hours?) or final exam past paper practice (6 hours?). A single teacher is assumed in the guidance notes, but two teachers could separately deliver the analogue and digital aspects of the course (about 40 hours each), with one delivering the microcontroller aspect and the other handling the coursework.

## Apparatus

The guidance notes assume the following provision of apparatus for practical work.

- the integrated circuits shown on the **Integrated Circuits** data sheet
- the discrete components shown on the **Discrete Components** data sheet
- prototyping boards (called breadboard in the practical instructions)
- wire strippers and 1/0.6 mm plastic coated tinned copper wire with a variety of colours
- electret microphones, small d.c. motors and low power 12 V lamps
- stabilised power supplies which can deliver up to 1 A at +5 V and -5 V
- double-beam oscilloscopes and signal generators
- PICAXE-18 microcontroller system (full details at [www.picaxe.co.uk](http://www.picaxe.co.uk))
- access to PC computers to program microcontrollers

## Suppliers

Components can be purchased from a variety of sources. These include

- Rapid Electronics at [www.rapidonline.com](http://www.rapidonline.com)
- RS Components at [rswww.com](http://rswww.com)
- Maplin at [www.maplin.co.uk](http://www.maplin.co.uk)

**One Teacher**

<b>Chapter</b>	<b>Section</b>	<b>Hours</b>	<b>Total</b>
Simple Digital Systems	Digital Inputs	3	12
	Combining Signals	4	
	Switching Outputs	3	
	System Diagrams	2	
Digital from Analogue	Resistive Sensors	4	13
	Op-amps and Diodes	6	
	Delaying Signals	3	
Digital Pulses	Single Spikes	3	7
	Oscillators	4	
Logic Systems	Truth Tables	4	10
	Logic System Design	2	
	Only NAND gates	4	
Storing Signals	Bistables	2	7
	Latches	2	
	Flip-flops	3	
Negative Feedback	Amplifiers	3	12
	Voltage Followers	3	
	Known Gain	3	
	Summing Signals	3	
Counting Pulses	Binary Counters	3	12
	Clocks	3	
	Continuous Sequencers	3	
	One-shot Sequencers	3	
Amplifying Audio	Audio Systems	4	8
	Filters	4	
Microcontrollers	Programmable Systems	3	9
	Hardware	2	
	Software	6	

**Two Teachers**

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	Combining Signals	4	
	Switching Outputs	3	
	System Diagrams	2	
Logic Systems	Truth Tables	4	10
	Logic System Design	2	
	Only NAND gates	4	
Storing Signals	Bistables	2	7
	Latches	2	
	Flip-flops	3	
Counting Pulses	Binary Counters	3	12
	Clocks	3	
	Continuous Sequencers	3	
	One-shot Sequencers	3	

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Microcontrollers	Programmable Systems	2	9
	Hardware	2	
	Software	5	