

Year 11 Guided Revision

Subject: Engineering Programmable Systems



Wb 5th January	Identify input, output, and process parts of block diagrams including signal flow and feedback loops. Identify and explain open and closed loop systems.	Systems - Electronic systems (GCSE Design and Technology Revision - BBC Bitesize) Open-loop System and Open-loop Control Systems (electronics-tutorials.ws) Closed-loop System and Closed-loop Control Systems (electronics-tutorials.ws)
	Circuit parameters, multiples, and submultiples, and solve problems for series and parallel circuits.	Electrical Units of Measure and Descriptions (electronics-tutorials.ws) units-and-symbols.pdf (theiet.org) Resistance in series and parallel circuits - How do series and parallel circuits work? (OCR 21C - GCSE Physics (Single Science) Revision - OCR 21st Century - BBC Bitesize)
Wb 12th January	Ohm's Law and Watt's Law and rearrange to solve circuit problems. The purpose, function and operation of selected input and output devices in preparation for creating system block diagrams.	Sensors and Transducers and Introduction (electronics-tutorials.ws) Physics for Kids: Ohm's Law (ducksters.com) Ohms Law Explained - The basics circuit theory (YouTube) What is Watt's law? (engineeringclicks.com) Electric Power (learn.sparkfun.com)
Wb 19th January	Apply knowledge of system block diagrams, input, output, and process devices to draw or complete system block diagrams.	Block Diagram - Learn about Block Diagrams, See Examples (smartdraw.com) Understanding Electronics Block Diagrams with Example (eleccircuit.com)
	The use of different methods for programming systems including their advantages, disadvantages, and relative merits for specific applications.	Coding, Programming, Block-Based, Text-Based... What Does it All Mean? (teq.com) Block-Based vs. Text-Based Programming (teq.com) How to Make a Flowchart for Programming Easy to Understand (technokids.com)
Wb 26th January	Block diagrams, input, output, and process devices to draw or complete system block diagrams.	Examples of Closed-Loop Control System (electronicscoach.com) Understanding Electronics Block Diagrams with Example

		(eleccircuit.com) [You will be able to find further examples of simple system block diagrams for different products on the Internet]
Wb 2nd February	Applications of programmable devices including their reasons for use, advantages, and disadvantages.	What is a microcontroller? ft. Raspberry Pi Pico (YouTube) What is a Microcontroller? (YouTube) What is a microcontroller? (YouTube)
Wb 9th February (PPE 2)	Characteristics and typical applications of microcontrollers.	Everything You Need to Know About Microcontrollers RS Components (rs-online.com) What is a microcontroller? ft. Raspberry Pi Pico (YouTube)
Wb 16th February HALF TERM	Describe the main characteristics and typical applications of PLCs (Programmable Logic Controller).	What is Process Automation? (YouTube) Programable Logic Controller Basics Explained - automation engineering (YouTube) What is Ladder Logic? (YouTube)
Wb 23rd February (PPE 2)	Text-based languages and block-based editors and describe the advantages and disadvantages of each type.	Coding, Programming, Block-Based, Text-Based... What Does it All Mean? (teq.com) Block-Based vs. Text-Based Programming (teq.com)
Wb 2nd March	Flow charts for programming and describe the advantages and disadvantages of using flow charts.	Guide to Flowchart Symbols, from Basic to Advanced (gliffy.com) Flowgorithm - Flowchart Programming Language (flowgorithm.org) How to Make a Flowchart for Programming Easy to Understand (technokids.com)
Wb 9th March	The merits of using different programming techniques for specific applications.	Block-Based vs. Text-Based Programming (teq.com) Guide to Flowchart Symbols, from Basic to Advanced (gliffy.com)

Wb 16th March	Circuit parameters and their SI units or derived units. Solve problems involving multiples and submultiples. Solve series and parallel resistor circuit problems.	Electrical Units of Measure and Descriptions (electronics-tutorials.ws) units-and-symbols.pdf (theiet.org) Resistance in series and parallel circuits - How do series and parallel circuits work? OCR 21C - GCSE Physics (Single Science) Revision - OCR 21st Century - BBC Bitesize (bbc.co.uk)
Wb 23rd March	Ohm's Law and rearrange to solve circuit problems.	Physics for Kids: Ohm's Law (ducksters.com) Ohms Law Explained - The basics circuit theory (YouTube)
Wb 30th March	Watt's Law and rearrange to solve circuit problems.	What is Watt's law? (engineeringclicks.com) Electric Power (learn.sparkfun.com)
Wb 6th April EASTER HOLIDAYS	Identify input devices from circuit symbols. Draw circuit symbols. Describe the purpose, function, and application of selected input devices.	Inputs - Electronic systems GCSE Design and Technology Revision - BBC Bitesize (bbc.co.uk) Sensors and Transducers and Introduction (electronics-tutorials.ws)
Wb 13th April EASTER HOLIDAYS	Identify output devices from circuit symbols. Draw circuit symbols. Describe the purpose, function, and application of selected output devices. The use of different methods for programming systems including their advantages, disadvantages, and relative merits for specific applications.	Outputs - Electronic systems (GCSE Design and Technology Revision - BBC Bitesize) Sensors and Transducers and Introduction (electronics-tutorials.ws) Coding, Programming, Block-Based, Text-Based... What Does it All Mean? (teq.com) Block-Based vs. Text-Based Programming (teq.com) How to Make a Flowchart for Programming Easy to Understand

		(technokids.com)
Wb 20th April	Identify selected process devices from description. Describe purpose, function, and typical application of selected process devices.	Introduction to the Amplifier an Amplifier Tutorial (electronics-tutorials.ws) Counters in Digital Logic (geeksforgeeks.org) 555 Timer Tutorial - The Monostable Multivibrator (electronics-tutorials.ws) Introduction to Latches (electronics-tutorials.ws) Simple 555 Pulse Generator circuits (eleccircuit.com)
Wb 27th April	Identify selected process devices from description. Describe purpose, function, and typical application of selected process devices.	Analogue to Digital Converter (ADC) Basics (electronics-tutorials.ws) What Is ADC Converter [The Ultimate Guide] (dewesoft.com) Logic AND Function - Digital Logic Gates (electronics-tutorials.ws) Logic.ly Online Demo [free online logic simulator]
Wb 4th May	Advantages and disadvantages of using programmable systems. The characteristics and typical applications of microcontrollers and PLCs.	What is a Microcontroller? (YouTube) What is a microcontroller? (YouTube) What is Process Automation? (YouTube) Programable Logic Controller Basics Explained - automation engineering
	Methods for prototyping circuits including reasons for use, advantages, and disadvantages of each method. Methods for testing circuits including the process for safe use of selected test equipment, advantage, and disadvantage of each.	What's The Best Way To Prototype Circuits?(freecodecamp.org) Breadboarding and Prototyping Circuits Analog Devices (analog.com) Prototyping using breadboard and strip board (YouTube) Test Equipment 101 - The Basics of Electronic Testing - Circuit Basics (circuitbasics.com) How to Use a Multimeter (learn.sparkfun.com) What is Continuity and How to Test for it With a Multimeter (YouTube) How to Use an Oscilloscope (learn.sparkfun.com) Operating a signal generator (YouTube)

		Fix it Friday! - (Logic Series 01) Using a Logic Probe (YouTube)
Wb 11th May	Commercial PCB production, including reasons for use and advantages and disadvantages of each method. PCB types, characteristics, and typical applications. Recall methods for placing and soldering components to PCBs.	How Commercial Printed Circuit Boards Are Made (hackaday.com) Circuit Skills: Circuit Board Etching (YouTube) CNC Milling PCB using Eagle, Flatcam and GRBL (YouTube) Single-Sided vs. Double-Sided vs. Multilayer PCBs (pcb-gogo.com) Flexible PCBs: advantages and disadvantages (proto-electronics.com) What is SMT: Surface Mount Technology Primer » Electronics Notes (electronics-notes.com) Through-Hole Vs. Surface Mount: Contrasting Benefits and Uses (telancorp.com) Electronics Assembly (learn.sparkfun.com) Agrowtek Wave Soldering Process for Electronics Manufacturing (YouTube)