

2. Maklumat terperinci setiap mata pelajaran

No.	Title		
1.	Subject	Introduction to Electronics	
2.	Subject Code	KE008	
3.	Status	Major	
4.	Credit Hours	Four (4) [(3L + 1T) x 14 weeks + 12 hours Lab]	
5.	Semester and Year	Semester 1	
6.	Pre-requisite	-	
7.	Mode of Delivery	Lectures, Tutorials and Labs	
8.	Assessment	Assignments	10%
		Lab work/Test	20%
		Class Test	10%
		Final Examination	60%
9.	Objectives	To provide a basic knowledge of electronic devices both in analogue electronics and digital electronics.	
10.	Learning Outcomes	<p>Upon the completion of the unit, the students will be able to:</p> <ol style="list-style-type: none"> 1. Distinguish between analog electronics and digital electronics. 2. Derive the output function of combination of logic gates. 3. Design combiational logic gates to give a specific output. 4. Predict the gain of operational amplifier configurations. 5. Design operational amplifier configurations to give a specified gain. 6. Appreciate qualitative some differences between ideal and real operational amplifiers. 	
11.	Details of subject	Contents	Hours
		Chapter 1 : Basic Electronics Benefits and applications of digital technique. Computers, test-equipments, communication and domestic equipments. Classification of electronics. Waveforms and its characteristics. Duty Cyle and frequency.	3L 1T
		Chapter 2: Basic electronic circuit and network The concept of potential difference, current and power calculations.	3L 1T
		Chapter 3: Binary System The representation of digital information: number systems, simple codes and applications, the binary signal, logic levels , types of digital signals	3L 1T
		Chapter 4: Introduction to basic logic gates Understanding AND/OR/NOT/NAND/NOR gates. Use of truth tables to solve simple logic problems involving switching logic and logic gates. Introduction to Boolean Algebra to solve simple logic problems. Use of K-maps.	9L 3T

		Chapter 5: Digital Building Blocks Binary adders, subtractors, bit and word comparators. Decoders, encoders, multiplexer and demultiplexer.	6L 2T
		Chapter 6: Sequential Logic Flip-flop, binary counter and shift registers.	6L 2T
		Chapter 7: Diode and Transistor Semiconductor: PN junction, diode, zener diode, rectifier and power supply. NPN and PNP transistor. Transistor and its applications. Transistor as an electronic switch. Biasing, transfer characteristic.	6L 2T
		Chapter 8: Operational Amplifier The ideal operational amplifier, inverting and non-inverting configurations. Qualitative discussion of imperfections: input and output resistance, frequency response. Operational amplifiers applications: summer, integrator and differentiator.	6L 2T
		Total	L = 42 hrs T = 14 hrs P = 12 hrs 68 hours
12.	Main Reference	1. Boylestad, R. L., & Nashelsky, L. (2001). <i>Electronic Devices and Circuit Theory</i> (8 th ed.). Prentice Hall. 2. Floyd, T. (2006). <i>Digital Fundamentals</i> (9 th ed.). Prentice Hall.	
13.	Additional Reference	3. Ritchie, G. J. (1999). <i>Transistor Circuit Techniques</i> (5 th ed.). Chapman and Hall.	
14.	Practical/Lab Classes	Students are required to conduct the following practical laboratory experiments, each of 2 hours duration: 1. Familiarization of Test Equipment: Function Generator and Oscilloscope 2. LED and Current Limiting Resistor 3. Applications of digital gates 4. IC 555 Frequency Generator 5. Applications of transistors 6. IC 741 Applications	