

Wks Mapped with the course

WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9
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Mark Distribution:

Total Marks	CIE Marks	ESE Marks	ESE Duration
100	50	50	3 hrs

Continuous Internal Evaluation Pattern:

Attendance	: 5 marks
Continuous Assessment	: 25 marks
Internal Examination	: 20 marks

PART – A (At least 5 experiments are mandatory)

These experiments shall be performed using 8051 trainer kit. The programs shall be written either in embedded C or in assembly language.

1. Data transfer/exchange between specified memory locations.
2. Largest/smallest from a series.
3. Sorting (Ascending/Descending) of data.
4. Addition / subtraction / multiplication / division of 8/16 bit data.
5. Sum of a series of 8 bit data.
6. Multiplication by shift and add method.
7. Square / cube / square root of 8 bit data.
8. Matrix addition.
9. LCM and HCF of two 8 bit numbers.
10. Code conversion – Hex to Decimal/ASCII to Decimal and vice versa.

PART – B (At least 3 experiments are mandatory.)

Interfacing experiments shall be done using modern microcontrollers such as 8051 or ARM. The interfacing modules may be developed using Embedded C.

1. Time delay generation and relay interface.
2. Display (LED/Seven segments/LCD)
3. ADC interface.
4. DAC interface with wave form generation.
5. Stepper motor and DC motor interface.
6. Realization of Boolean expression through port.

PART C - Interface with an Advanced Microcontroller using C language (Minimum two experiments has to be completed)

1. PWM generation for DC motor control.
2. Object/Visitor Counter.
3. UART interface to Bluetooth.
4. SPI/I2C interface to display.
5. Real-time clock.

Text Books:

1. Mazidi, M. A., Mazidi, J. G., & McKinlay, R. D. (2013). *The 8051 microcontroller and embedded systems: Using assembly and C* (3rd ed.). Pearson Education.
2. Ayala, K. J., & Gadre, D. V. (2019). *The 8051 microcontroller: Architecture, programming, and applications* (3rd ed.). Cengage Learning.

Reference Books:

1. Das, L. B. (2011). *Microprocessors and microcontrollers*. Pearson Education.
2. Furber, S. (2000). *ARM system-on-chip architecture*. Addison-Wesley.
3. Yiu, J. (2019). *System-on-chip design with ARM Cortex-M processors* (3rd ed.). ARM Education Media.