Fifth year of Five Years integrated M.Sc (Physics)
M.Sc. - V, Semester – IX

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MP 503 : **Microcontroller - 8051**

- **MICROCONTROLLERS** **(06 Hours)**
  Introduction to Microcontrollers, Microprocessors and Microcontrollers, Microcontroller survey, 4, 8, 16, and 32 bit Microcontrollers.

- **MICROCONTROLLER-8051 ARCHITECTURE** **(08 Hours)**
  8051 architecture, Functional blocks, Internal memory, Input- output pins, I/O Ports, External memory, Addressing modes.

- **TIMERS AND COUNTERS** **(08 Hours)**
  Logical separation of program and data memory, timers/counters and programming of counters and timers, register in serial data input/output, serial data Transmission modes.

- **PROGRAMMING 8051** **(10 Hours)**
  Assembly language Programming, Programming tool and techniques. Assembly Language programming for 8051 microcontroller, Data transfer Instruction, Arithmetic instruction, Branch Instructions, Bit manipulation instruction, rotate Instruction, Instructions stack operation, calls and subroutines, Interrupts and returns.

- **INTERFACING 8051 AND DATA TRANSMISSION** **(10 Hours)**
  External Memory and Memory space decoding, Memory Mapped i/o, Memory decoding, Timing subroutines, Time delay using software and timer, Look up tables, Serial data transmission, Character Transmission by polling, Interrupt Driven Character Transmission and reception.

(Total Contact Time (Theory) : 42 Hours)

BOOKS RECOMMENDED :

1.	**Ayala K. J.**	*8051 Microcontroller : Architecture, programming and applications*	Penram International	1997
2.	**Mazidi M. A. and Mazidi J. G.**	*8051 microcontroller and embadded systems*	Pearson Education	2003
3.	**Calcutt D. M., Cowan F. J., Parchizadeh G. H.**	*8051 microcontrollers: hardware, software, and applications*	Elsevier	1998
4.	**Predko M.**	*Programming and customizing the 8051 microcontroller*	Tata McGraw-Hill	2007
5.	**MacKenzie I. S.**	*The 8051 microcontroller*	Prentice Hall	1995