

<b>4<sup>th</sup> Semester</b>	<b>RIT4D002</b>	<b>Microprocessor and Microcontroller</b>	<b>L-T-P 3-0-0</b>	<b>3 CREDITS</b>
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**Module-I (10 Hours)**

**Introduction to 8 bit and 16 bit Microprocessors-H/W architecture**

Introduction to microprocessor, computer and its organization, Programming system; Address bus, data bus and control bus, Tristate bus; clock generation; Connecting Microprocessor to I/O devices; Data transfer schemes; Architectural advancements of microprocessors. Introductory System design using microprocessors; 8086 – Hardware Architecture; External memory addressing; Bus cycles; some important Companion Chips; Maximum mode bus cycle; 8086 system configuration; Memory Interfacing; Minimum mode system configuration, Interrupt processing.

**Module -II (08 Hours)**

**16-bit microprocessor instruction set and assembly language programming:**

Programmer’s model of 8086; operand types, operand addressing; assembler directives, instruction Set-Data transfer group, Arithmetic group, Logical group.

**Module-III (08 Hours)**

**Microprocessor peripheral interfacing:**

Introduction; Generation of I/O ports; Programmable Peripheral Interface (PPI)-Intel 8255; Sample-and-Hold Circuit and Multiplexer; Keyboard and Display Interface; Keyboard and Display Controller (8279).

**Module-IV (12 Hours)**

**8-bit microcontroller- H/W architecture instruction set and programming:**

Introduction to 8051 Micro-Controllers, Architecture; Memory Organization; Special Function register; Port Operation; Memory Interfacing, I/O Interfacing; Programming 8051 resources, interrupts; Programmer’s model of 8051; Operand types, Operand addressing; Data transfer instructions, Arithmetic instructions, Logic instructions, Control transfer instructions; Programming.

**Module-V (07 Hours)**

**8086:** Maximum mode system configuration, Direct memory access, Interfacing of D-to-A converter, A-to-D converter, CRT Terminal Interface, Printer Interface, Programming of 8051 timers, 8051 serial interface, Introduction to 80386 and 80486 Microprocessor family.

**Books:**

- Microprocessor Architecture, Programming and application with 8085, R.S. Gaonkar, PRI Penram International publishing PVT. Ltd., 5<sup>th</sup> Edition
- Microprocessors and Interfacing, Programming and Hardware, Douglas V Hall, TMH Publication, 2006.
- Microprocessors and Interfacing, N. Senthil Kumar, M. Saravanan, S. Jeevananthan and S.K. Shah, Oxford University Press.
- The 8051 Microcontroller and Embedded Systems, Muhammad Ali Mazidi, Janice Gillispie Mazidi, Rolin D.M C Kinlay, Pearson Education, Second Edition, 2008.
- Microcontrollers: Principles and Application, Ajit Pal, PHI Publication
- Microprocessors and Microcontrollers Architecture, programming and system design using 8085, 8086, 8051 and 8096, Krishna Kant, PHI Publication, 2007.
- Advanced Microprocessors and Peripherals, A.K. Ray, K M Bhurchandi, TMH Publication, 2007.
- Textbook of Microprocessor and Microcontroller, Thyagarajan, Scitech Publication.