PPH108 DIGITAL SYSTEMS AND MICROPROCESSORS

L	T	P	Cr
3	1	0	3.5

Course Objectives: To provide theoretical knowledge in Op-Amps, basic digital systems, and 8085 Microprocessor.

Operational Amplifiers: Operational Amplifier, Differential Amplifier, Transfer and frequency characteristics, Compensation in Operational Amplifiers, Application of OP-AMP as adder, Multiplier, Differentiator, Integrator, Log and Antilog Amplifier, Application of Operational Amplifier to analogue computation.

Digital systems: Standard gate assemblies. Binary Address, Parallel and Serial operations, Half Adder, Full Adder, J-K Flip-flop, Shift Register, Up and Down Counters, Synchronous and Asynchronous counters, Decoder, Multiplexer, Encoder, Read Only Memory, Random Access Memory, Applications of ROM and RAM, Digital Display, Seven segment display, Sequence generator. Memory Storage cell (both Bipolar and MOS RAM), Read, Write and Address operations (both Bipolar and MOS RAM), Digital to Analog Converters, Weighted resistor and 2R Ladder type, analog to digital Converters.

Microprocessors: An Introduction to Microprocessor, Microcomputers and assembly language. Bus interfacing, Bus organized computers, SAP-1, SAP-2 and SAP-3, Machine language, ASCII code. 8085 Microprocessor architecture, Microprocessor initiated operations. Internal data operations, 8085 registers, externally initiated operations, Memory mapping and memory classification. Simple microcomputer system, Microprocessor communication and bus timings.8085 machine cycles. Memory interfacing with 8085, Interfacing I/O devices, Introduction to 8085 assembly language programming. 8085 instructions. General purpose programmable peripheral devices. Microprocessor Applications, Recent trends in microprocessor technology, Introduction to 8086 microprocessor and 8051 microcontroller.

Course learning outcomes: Students will have achieved the ability to:

1. design circuits for various mathematical operations using Op-Amps
2. explain the working and design of various flip-flops,encoder/decoders, multiplexers, registers and counters.
3. describe the working and design of ROM, RAM, Memory storage cell and the various read and write operations.
4. explain the working and design of various A/D and D/A convertors.
5. explain various components and working of the 8085 microprocessor and their peripheral devices.

Recommended Books:

1. *Mano M., Digital Logic and computer Design, PHI (2004).*
2. *Tocci R. J., Digital Systems-Principles and Applications, Prentice Hall of India, (2002).*

3. *Gaonkar R. S., Microprocessor Architecture, Programming and Applications, Prentice-Hall (2002).*
4. *MalvinoA.P. and Brown A., Digital Computer Electronics, Prentice-Hall, (1999).*
5. *Mathur A.P., Introduction to Microprocessors, McGraw-Hill Publishing Co., (1980).*

Evaluation Scheme:

Sr. No.	Evaluation Elements	Weightage (%)
1	MST	30
2	EST	45
3	Sessionals (May include assignments/quizzes)	25