

Subject Code: 1SC2050104	Subject Title: Analog and Digital Electronics
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COURSE OBJECTIVE:

Physics is a science to understand the nature. This course is designed to get basic understanding of the physical world.

LEARNING OUTCOMES:

- To get basic concepts of electronics.

Teaching scheme (hours) per week		Credit		University Examination		Internal Examination		Total
Theory	Practical	Theory	Practical	Theory	Practical	Theory	Practical	
4	--	4	--	60	--	40	--	100

Unit	Content	Lectures	Weight (%)
1	PN Junction Based Devices Carrier Statistics in P-N junction-Barrier Potential and I-V Characteristics, Applications of P-N junctions- Diode as clipper, Diode as a clamper circuit, Diode as a switch, Reverse Recovery time of diode, optoelectronic devices, light emitting diode, photodiode and phototransistor, solar cells, Uni-junction Transistor, Silicon control rectifier, DIAC and TRIAC.	15	25
2	Non-linear Integrated Circuits Block diagram of Operational Amplifier IC 741, Characteristics and parameters of Op-Amp, Non-Linear Applications of Op-Amp- comparator, Schmitt Trigger, UTP and LTP adjustments, Voltage Controlled Oscillator using IC-741, Timer IC 555 block diagram, Timing waveform generators using IC 555- astable multivibrator and monostable multivibrator.	15	25
3	BCD Codes and Digital Circuits Review of Binary Coded Decimal codes, Boolean functions, Min-terms and Max-terms. Karnaugh Mapping, Tri-state logic, positive and negative logic, signed binary numbers. Arithmetic logic circuits: Adders- Half adder and Full adder, Subtractors, comparators, Combinational and Sequential Circuits- Decoders, Demultiplexers, Encoders, Multiplexers, Registers and Counters.	15	25
4	Applications of Digital Circuits Memories: Read Only Memory, Programmable Read Only Memory, Erasable Programmable Read Only Memory & Random Access Memory, expanding memory size. Digital to Analog and Analog to Digital Convertors: Resistive divider, Binary ladder, Digital to Analog Convertor using OPAMP, specifications, parallel comparators, counter method & approximation methods.	15	25

Basic Reference book:

1. Solid State Pulse Circuits by David A. Bell; Prentice Hall of India, New Delhi
2. Digital Electronics by Malvino & Leech.
3. Microelectronics: Digital and Analog by K. R. Botkar.
4. Integrated Electronics by K. R. Botkar.
5. Electronic Devices & Components by J. Seymour
6. Operational Amplifier by Ramakant Gaekwad