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Course Code	2EI303
Course Title	**Basic Electronics**

Course Learning Outcome:
At the end of the course, students will be able to -

1. analyze analog circuits
2. design and analyze the sequential logic circuits
3. evaluate the performance of various electronic circuits

Syllabus

Teaching Hours

UNIT 1: Introduction to Analog & Digital electronics

1

UNIT 2: Field Effect Transistors (FET):

Construction and characteristics of BJT, FET and MOSFET with their applications, MOSFETs for the digital IC fabrication, CMOS.

12

UNIT 3: Operational Amplifier

Fundamentals of operational amplifier, Feedback configurations of operational amplifiers, Op-amp parameters.

3

UNIT 4: Optoelectronic Devices

Overview of Photonics, Different Optoelectronic Devices.

5

UNIT 5: Sequential Logic Circuits

Classification of sequential circuits, Flip-flops, triggering of Flip-flops, conversion of flip-flops, Analysis of clocked sequential circuits. State reduction and assignments Flip-flop excitation tables. Design procedure, Design of counters, and design with state equations.

12

UNIT 6 : Registers, Counters and Memory Unit

9

Registers, shift registers, ripple counters, synchronous counters, timing sequences, memory unit.

UNIT 7: Algorithmic State Machines

3

Components of ASM chart, Features of ASM chart. Examples of ASM chart.

Self Study:

The self study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self study contents.

Laboratory Work:
Laboratory work will consist of minimum 12 experiments based on the above syllabus.

References:
(1) Robert Boylestad, Electronic devices and circuit theory, Pearson Education.
(2) R.A.Gayakwad, Op amp & Linear Integrated Circuits, Prentice- Hall.
(3) Millman-Halkias, Integrated Electronics- Analog and Digital circuits and systems, Mc-Graw Hill.
(4) M. Morris Mano, Digital Logic and Computer design, PHI publication.
(5) Norman Balabanian and Bradley Carlson, Digital Logic Design Principles, Wiley Student Edition.
(6) Biswanath Paul, Industrial Electronics and Control, Prentice Hall India.