

**NIRMA UNIVERSITY**  
**Integrated B. Tech. (CSE)-MBA programme**  
**Term - II**

L	T	P	C
2	0	2	3

<b>Course Code</b>	CSI0204
<b>Course Title</b>	Basic Electronics

**Course Outcomes:**

At the end of the course, students will be able to –

1. recognize the functions of electronic devices and basic circuits
2. design circuits based on operational amplifier
3. apply the concepts of number system conversion and Boolean algebra for digital logic design

**Syllabus:**

**Teaching  
hours: 20**

**Unit I**

**6**

**Analog Electronics:** Physics of semiconductors, half and full wave rectifiers, special purpose diodes, clipping and clamping circuits, BJT and its biasing circuits, FET and its biasing circuits, applications such as amplifiers and oscillators, overview of opto-electronics devices.

**Unit II**

**7**

**Operational Amplifier and its Applications:** Operational amplifier, comparator, timer IC and multi-vibrators.

**Unit III**

**7**

**Digital Electronics:** Overview of number systems and its arithmetic, binary codes, Boolean-algebra & simplification of Boolean expression; logic gates, concept of universal logic; implementation of Boolean expressions using logic gates, application of digital circuits (e.g. adder, subtractor, multiplexer, de-multiplexer, etc.)

**Self-Study:**

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

## **Laboratory Work:**

This shall consist of at least 8 experiments based on the above syllabus.

## **Suggested Readings<sup>^</sup>:**

1. V. K. Mehta, Rohit Mehta, Principles of Electronics, S. Chand and Co. Ltd.
2. R. Boylestad and L. Nashelsky, Textbook of Electronics Devices & Circuit Theory, PHI Publication.
3. R. Gayakwad, Textbook of Operational Amplifiers and Linear Integrated Circuits, PHI Publication.
4. Sergio Franco, Textbook of Designing with Operational Amplifiers and Analog Integrated Circuits, McGraw Hill.
5. R. Coughlin and Driscoll, Textbook of OpAmp & Linear Integrated Circuits, PHI Publications.
6. Anandkumar, Fundamentals of Digital Circuits, PHI publication.
7. Malvino A.P., Digital Computer Electronics, TMH publication.

L=Lecture, T=Tutorial, P=Practical, C=Credit

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<sup>^</sup>this is not an exhaustive list