**Course Name: Fundamentals of Electronics Engineering**

1. Course Number: ECE102
2. Contact Hours: 3-1-2 Credits: 13
3. Semester-offered: Both (odd/even)
4. **Objective:** To introduce the students to the basics of both theoretical and practical aspects of broader area of Electronics Engineering
5. **Course Content:**

Unit-wise distribution of content and number of lectures

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| **Unit** | **Topics** | **Sub-topic** | **Lectures** |
| 1 | Circuit analysis | Circuit analysis techniques: nodal, mesh, superposition, Thevenins, and Nortons theorems; Transient analysis of capacitive and inductive circuits; Sinusoidal steady state analysis of circuits containing resistors, capacitors, and inductors; Transfer functions | 12 |
| 2 | Semiconductor physics and components | Semiconductors; Diodes and diode circuits; BJT, MOSFETs and amplifiers; IC fabrication; Operational amplifier circuits and waveform generators: 555 timer | 12 |
| 3 | Digital combinational circuit | Number system, logic gates, logic minimization, combinational circuits | 8 |
| 4 | Digital sequential circuit | Field programmable gate arrays (FPGAs); Flipflops, sequential circuits, counters, shift registers; data converters (DAC, ADC), Basic micro computer architecture. | 8 |
|  | **Total** | | **40** |

1. **Readings**

4.1 Textbook:

1. Charles K. Alexander, Matthew N.O. Sadiku, Fundamentals of electric circuits, McGraw-Hill,

5th Edition 2013

2. S. Sedra and K. C. Smith, Microelectronic Circuits, Oxford University Press , 6th edition

3. M. Moris Mano, `Digital Design’, PEARSON, 5th edition 2013.

4. Boylestad, Robert L., Louis Nashelsky, Electronic Devices and Circuit, Pearson , 11th edition

4.2 Reference books:

1. E. Hughes, Electrical and Electronic Technology, PEARSON, 2010

2. William H. Hayt , Jack Kemmerly , Steven M. Durbin, Engineering Circuit Analysis, McGraw-Hill , 8th Edition 2013

3. David. A. Bell, Electronic Devices and Circuits:, Oxford University Press, 5th Edn. , 5th edition

4. Leach, Malvino, Saha, Digital Principles and Applications, McGraw Hill Education , 8th edition

1. **Outcome of the Course:** The student will learn about fundamentals of Electronics Engineering. They will also be able to learn and use circuit analysis techniques.