Course Code: ELE-503
Course Title: ELECTRONICS PRACTICALS – I
Number of Credits: 04   **Total Hours: 60**   **Total Marks: 100**
Effective from AY: 2022-23

Prerequisites for the course
Should have studied graduate level basic level electronic subject. It is assumed that students have a working knowledge of passive and active components and digital circuits.
Objectives of Course
This course is intended to: ● Give the hands-on experience to design the basic digital and analog circuits   ● Simulate the various digital modulation techniques and data correction and detection used in general communication system.   ● Expose students to design digital circuits using microwind.   ● Implement numerical algorithm.
Course Content

Practical Title	120 Hours
Unit I 1. Design of counters for digital clock (using Microwind s/w) 2. Multiplexer and Demultiplexer (using Microwind s/w) 3. Encoder and Decoder (using Microwind s/w) 4. 2nd order Butter-worth Notch Filter (p-Spice) 5. Buffer design using SPICE (p-Spice) 6. Memory design using 6T cell	
Unit II 7. Design of variable voltage supply @ 2 Amps. 8. Design of Function Generator. 9. Design of Power Amplifier 10 Watts. 10. Design of Stepper driver using Monoshot & 555 Timer. 11. Design of S/C circuit for Strain gauge /Glucose strip @ 3.3V. 12. Design of 4-bit UP-DOWN Counter.	

Unit III
 13. Implementation of MSK modulation and demodulation.
 14. ASK, FSK, QPSK modulation & demodulation.
 15. QPSK, modulation & demodulation
 16. DS-CDMA simulation.
 17. Channel Coding methods. a. Convolution b. Block code
 18. Error detection and correction Algorithm
      a. CRC
      b. Hamming code	

Unit IV			
19. Numerical Programming 1 (Trapezoid method)			
20. Numerical Programming 2 (Bisection method)			
21. Numerical Programming 3 (Runge Kutta method)			
22. Numerical Programming 4 (Newton Raphson method)			
23. Numerical Programming 5 (Regula falsi method)			
24. Numerical Programming 6 (Secant method)			

Pedagogy

Presentations /assignments/Experiential learning

Course Outcome

The Students will :

- learn the basics of a communication system for modulation, data coding , error coding channel coding methods.
- Design signal conditioning and VLSI circuits for various applications.