

Course Code: ELE-507

Course Title: ELECTRONICS PRACTICALS – II

Number of Credits: 04

Total Hours: 120

Total Marks: 100

Effective from AY: 2022-23

Prerequisites for the course	
Should have studied microcontrollers, embedded system, OS and EDA tools	
Objectives of Course	
This course is intended to, <ul style="list-style-type: none">• Develop skills in handling controllers like 89C51/52, PIC and ARM controller derivatives .• Input Output operation, Various communication interfaces, data acquisition, task management and Robotic applications.• Cover experiments using LabVIEW with MyRIO and NI ELVIS Platform	
Course Content	
Practical Title	120 Hours
<u>Unit I</u> <ol style="list-style-type: none">1. 7-segment Interfacing to ATMEL 89C52 (BCD counter)2. Display Temperature using ATMEL 89C52 on LCD3. Obstacle Avoidance using 89V52 based Robot4. Serial Transmission and reception PIC16F8775. Configuring On – chip ADC PIC16F8776. Hex Keypad Interfaced to ARM controller & display on LCD	
<u>Unit II</u> <ol style="list-style-type: none">7. Switching of LED using μ - COS8. Switching of LED using RTX9. Switching of LED using FPGA10. KEY pad and ADC interfacing using RTOS11. Shell programming – Web Application.12. Shell programming – System Management	
<u>Unit III</u> <ol style="list-style-type: none">13. VHDL implementation for the Multiplexer & Demultiplexer14. VHDL Implementation for Encoder & Decoder15. VHDL implementation for the Counter.16. LCD and 7 -segment Interfacing using DE2 board17. UART Interface using DE2 board18. Echo & Reverberation implementation on speedy33 kit(lab view)	
<u>Unit IV</u> <ol style="list-style-type: none">19. Automated Street lighting20. Smart Irrigation System21. Home Automation22. Smart water monitoring system	

- 23. Surveillance System
- 24. Smart Parking System

Unit V

- 25. Switch basic setup
- 26. Virtual LAN
- 27. Spanning tree protocol
- 28. Routing
- 29. DHCP (Dynamic Host Configuration Protocol)
- 30. Switch stacking

Pedagogy

Presentations /Experiential Learning/laboratory design and implementation

Course Outcome

The Students will be,

- Able to analyze the architectures of any controller.
- Designs application using embedded system using tasks for real time applications.
- Handle any computing machine using shell script for computing and management.
- Develop and design some applications based on SPEEDY 33 using LABView , NI ELVIS , MYRio, Altera DE2 Board.
- Develop an android app.

References/Readings

1. Digital Design Principles and Practices, by John F. Wakerly, Prentice Hall's Fourth Edition. Lipovski G. J. Single and multiple Chip Microcontroller interfacing. Prentice Hall, USA 1998.
2. Beginning Android 4 Application Development
3. Professional Android 4 Application Development
4. Learning Android Game Programming : A Hands-On Guide to Building Your First Android Game 1st Edition