PVKN GOVERNMENT COLLEGE (A), CHITTOOR
ELECTRONICS– 2023-2024
III B.Sc. :: SEMESTER V
Course Code: 22-ELE-SE2
Course 7A: Electronic Instrumentation
(Skill Enhancement Course (Elective), 3+2 Credits) Max. Marks: Theory:100 + Practical:50

I. Syllabus: *(Total Hours: 90 including Teaching, Lab, Field Training, Unit tests etc.)*

UNIT-I :Introduction to Communication parts, channels and specifications: (12Hrs) (Seriel communication standerd) RS232, RS485, TCP/IP, USB, IR, wireless etc. Communication protocols such as MODBUS, MODBUS over TCP/IP, RS485 master slave proprietary protocols, Bluetooth, knowledge about ISM and sub1 GHz bands.

UNIT-II *Oscilloscope* (12 hrs)

Cathode Ray Oscilloscope-Introduction, Block diagram of basic CRO, Cathode ray tube, Electron gun assembly, Screen for CRT, Time base operation, Vertical deflection system, Horizontal deflection system, Use of CRO for the measurement of voltage (AC and DC), frequency, phase difference, Different types of oscilloscopes and uses.

UNIT-III *Transducers* (12 hrs)

Classification of transducers, Selection of transducers, Resistive, capacitive & inductive transducers, Resistive and capacitive touch screen transducer used in mobiles, Displacement transducer-LVDT , Photo transducer, Digital transducer. **Sensors , types of sensors**

UNIT-IV *Display Instruments* (12 hrs)

Introduction to Display devices, Seven Segment Displays, LED Displays, Construction and operation (Display of numbers),Types of SSDs (Common Anode & Common Cathode type), Limitations of SSDs, Liquid Crystal Displays, **Light emitting diodes, Applications of LEDs** and LCD modules.

UNIT-V *Biomedical Instruments* (12 hrs)

Basic operating principles and uses of (i) Clinical thermometer (ii) Stethescope (iii) ECG machine (iv) Radiography (v) Ophthalmoscope (vi) Ultrasound scanning (vii) Pulse oxymeter (viii) Glucometer, IX) **Endoscopy**, Basic ideas of CT scan and MRI scan.