

**Course Syllabi: UEE842 Power System Instrumentation (L : T : P :: 3 : 1 : 0)**

1. **Course number and name:** UEE842; Power System Instrumentation

2. **Credits and contact hours:** Credits: 3.5; Hours: 4

3. **Text book, title, author, and year**

- *Cegrell, T., Power System Control Technology, Prentice–Hall of India Private Limited (2001).*
- *Lindsley, D.M. , Power Plant Control and Instrumentation, IEE Press (2000).*
- *Jarvis, E.W., “Modern Power Station Practice: Control and Instrumentation (Vol. F)”, British Electricity International (1980).*

a. Other supplemental materials

- Nil

4. **Specific course information**

a. Brief description of the content of the course (catalog description)

**Introduction:** Measurement of electrical quantities, Active and reactive power in power plants, Energy meters, Instrument transformers and their transient response.

**Instrumentation Techniques:** Telemetry, Remote control, Remotesignaling and SCADA, Signal formation, Conversion and transmission.

**Signal Transmission Techniques:** Analog pulse and digital modulation, Amplitude and frequency modulation, AM and FM transmitter and receiver, Phase modulation, Pulse modulation, Digital transmission techniques, Error detection and correction.

**Telemetry:** Telemetry errors, DC, Pulse and digital telemetry methods and systems.

**Supervisory Control and Data Acquisition:** Function of SCADA system RTU details, Control center details, Communication between control centers, Control center and remote terminal unit.

**Power Plant Instrumentation:** Hydroelectric power plant instrumentation, Thermal power plant instrumentation, Nuclear power plant instrumentation. Applications of SCADA system to indian power systems.

5. **Specific goals for the course**

After the completion of the course, the students will be able to:

- Use electrical and electronics instrument in power systems applications.
- Able to use signal transmission techniques for specific power system purposes.
- Analyze the functions of SCADA system.
- Demonstrate of power system instrumentation.

6. **Brief list of topics to be covered**

- Instrumentation Techniques
- Signal transmission Techniques
- Telemetry
- SCADA