

# **Teaching Plan**

## **AY 2019-20**



Estd: 2009

JNTUH College Code: 6C

An ISO 9001:2015 Certified Institution

## **PRIYADARSHINI INSTITUTE OF SCIENCE AND TECHNOLOGY FOR WOMEN**

(Approved by AICTE, New Delhi and Affiliated to JNTUH Hyderabad)

SaiPrabhath Nagar, Khammam Rural -507003, Khammam Dist., Telangana State.

Website: [www.priw.ac.in](http://www.priw.ac.in) Email Id: [jks\\_edu@yahoo.com](mailto:jks_edu@yahoo.com) Cell: +91-92466 25050.

### **LESSON PLAN**

**Name of the Faculty:** Mrs.Nassemunisa

**Subject Code:** EE501PC

**Subject Name:** Electrical Measurements & Instrumentation

**Academic Year:** 2019-20

**B.Tech III Year I Sem**

| S. No | Unit No.  | Topics to be covered  | Ref    | Teaching Method          |
|-------|-----------|---|--------|--------------------------|
| 1.    | <b>I</b>  | Introduction to Measuring Instruments:<br>Classification – deflecting                                 | T1, R1 | Chalk and Talk           |
| 2.    |           | Control and damping torques   | T1, R1 | Chalk and Talk           |
| 3.    |           | Ammeters and Voltmeters   | T1, R1 | Chalk and Talk.          |
| 4.    |           | PMMC, moving iron type instruments  | T1, R1 | Chalk and Talk           |
| 5.    |           | Expression for the deflecting torque and control torque   | T1, R1 | Chalk and Talk           |
| 6.    |           | Errors and compensations  | T1, R1 | Chalk and Talk           |
| 7.    |           | Extension of range using shunts and series resistance   | T1, R1 | Chalk and Talk           |
| 8.    |           | Electrostatic Voltmeters-electrometer type and attracted disc type                                    | T1, R1 | Chalk and Talk           |
| 9.    |           | Extension of range of E.S. Voltmeters.  | T1, R1 | Chalk and Talk           |
| 10.   |           | Revision  | T1, R1 | Chalk and Talk/<br>Quiz  |
| 11.   | <b>II</b> | Potentiometers & Instrument transformers:<br>Principle and operation of D.C. Crompton's potentiometer | T1, R1 | Chalk and Talk           |
| 12.   |           | Standardization – Measurement of unknown resistance   | T1, R1 | Chalk and Talk           |
| 13.   |           | Current, voltage  | T1, R1 | Chalk and Talk           |
| 14.   |           | A.C. Potentiometers: polar and coordinate type's standardization                                      | T1, R1 | Chalk and Talk           |
| 15.   |           | CT and PT – Ratio and phase angle errors  | T1, R1 | Chalk and Talk           |
|       |           | Revision  | T1, R1 | Chalk and Talk /<br>Quiz |







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|     |     |  |        |                         |
|-----|-----|--|--------|-------------------------|
| 17. | III | Measurement of Power & Energy: Single phase dynamometer wattmeter            | T1, R1 | Chalk and Talk          |
| 18. |     | LPF and UPF  | T1, R1 | Chalk and Talk          |
| 19. |     | Double element and three element dynamometer wattmeter                       | T1, R1 | Chalk and Talk          |
| 20. |     | Expression for deflecting and control torques                                | T1, R1 | Chalk and Talk          |
| 21. |     | Extension of range of wattmeter using instrument transformers                | T1, R1 | Chalk and Talk          |
| 22. |     | Measurement of active and reactive powers in balanced and unbalanced systems | T1, R1 | Chalk and Talk          |
| 23. |     | Single phase induction type energy meter – driving and braking torques       | T1, R1 | Chalk and Talk          |
| 24. |     | Errors and compensations   | T1, R1 | Chalk and Talk          |
| 25. |     | Testing by phantom loading using R.S.S. meter                                | T1, R1 | Chalk and Talk          |
| 26. |     | Three phase energy meter   | T1, R1 | Chalk and Talk          |
| 27. |     | Tri-vector meter   | T1, R1 | Chalk and Talk          |
| 28. |     | Maximum demand meters.   | T1, R1 | Chalk and Talk          |
| 29. |     | Revision   | T1, R1 | Chalk and Talk<br>/Quiz |
| 30. | IV  | <b>DC &amp; AC bridges:</b> Method of measuring low                          | T1, R1 | Chalk and Talk          |
| 31. |     | Medium and high resistance   | T1, R1 | Chalk and Talk          |
| 32. |     | Sensitivity of Wheat-stone's bridge  | T1, R1 | Chalk and Talk          |
| 33. |     | Carey Foster's bridge, Kelvin's double bridge for measuring low resistance   | T1, R1 | Chalk and Talk          |
| 34. |     | Measurement of high resistance – loss of charge method.                      | T1, R1 | Chalk and Talk          |
| 35. |     | <b>Measurement of inductance-</b> Maxwell's bridge                           | T1, R1 | Chalk and Talk          |
| 36. |     | Hay's bridge, Anderson's bridge  | T1, R1 | Chalk and Talk          |
| 37. |     | Owen's bridge  | T1, R1 | Chalk and Talk          |





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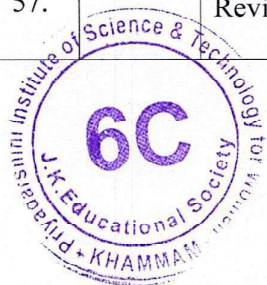
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|     |   |   |        |                          |
|-----|---|---|--------|--------------------------|
| 38. |   | Measurement of capacitance and loss angle   | T1, R1 | Chalk and Talk           |
| 39. |   | Desaunty's bridge   | T1, R1 | Chalk and Talk           |
| 40. |   | Wien's bridge, Schering Bridge  | T1, R1 | Chalk and Talk           |
| 41. |   | Revision  | T1, R1 | Chalk and Talk/<br>Quiz  |
| 42. | V | Transducers: Definition of transducers  | T1, R1 | Chalk and Talk           |
| 43. |   | Classification of transducers   | T1, R1 | Chalk and Talk           |
| 44. |   | Advantages of Electrical transducers  | T1, R1 | Chalk and Talk           |
| 45. |   | Characteristics and choice of transducers;<br>Principle operation of LVDT and capacitor transducers | T1, R1 | Chalk and Talk           |
| 46. |   | LVDT Applications, Strain gauge and its principle of operation                                      | T1, R1 | Chalk and Talk           |
| 47. |   | Gauge factor, Thermistors, Thermocouples  | T1, R1 | Chalk and Talk           |
| 48. |   | Piezo electric transducers  | T1, R1 | Chalk and Talk           |
| 49. |   | Photovoltaic  | T1, R1 | Chalk and Talk           |
| 50. |   | Photo conductive cells, and photo diodes  | T1, R1 | Chalk and Talk           |
| 51. |   | Measurement of Non-Electrical Quantities:<br>Measurement of strain                                  | T1, R1 | Chalk and Talk           |
| 52. |   | Gauge sensitivity, Displacement   | T1, R1 | Chalk and Talk           |
| 53. |   | Velocity, angular velocity  | T1, R1 | Chalk and Talk           |
| 54. |   | Acceleration, force, torque   | T1, R1 | Chalk and Talk           |
| 55. |   | Temperature, pressure, vacuum,  | T1, R1 | Chalk and Talk           |
| 56. |   | Flow and Liquid level.  | T1, R1 | Chalk and Talk           |
| 57. |   | Revision  | T1, R1 | Chalk and Talk /<br>Quiz |







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### **TEXT BOOKS:**

1. G. K. Banerjee, "Electrical and Electronic Measurements", PHI Learning Pvt. Ltd., 2nd Edition, 2016.
2. S. C. Bhargava, "Electrical Measuring Instruments and Measurements", BS Publications, 2012.

### **REFERENCES:**

1. A. K. Sawhney, "Electrical & Electronic Measurement & Instruments", Dhanpat Rai & Co. Publications, 2005.
2. R. K. Rajput, "Electrical & Electronic Measurement & Instrumentation", S. Chand and Company Ltd., 2007.
3. Buckingham and Price, "Electrical Measurements", Prentice – Hall, 1988.
4. Reissland, M. U, "Electrical Measurements: Fundamentals, Concepts, Applications", New Age International (P) Limited Publishers, 1st Edition 2010.
5. E.W. Golding and F. C. Widdis, "Electrical Measurements and measuring Instruments", fifth Edition, Wheeler Publishing, 2011.



  
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