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| **Lesson Plan** |
| **Name of Faculty** | Rajiv Kumar |
| **Discipline** | Electrical Engineering |
| **Semester** | 5th  |
| **Subject** | Instrumentation |
| **Week** | **Theory**  | **Practical** |

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|  | **Lecture Day** | **Topic (Including Assignment / Test)** | **Practical Day** | **Topic** |
| 1st | Day 1 | **1Measurements** | Day 1 | To measure the level of a liquid using a transducer |
| Day 2 | Importance of measurement, Basic measuring systems |
| Day 3 | Advantages and limitations of each measuring systems |
| Day 4 | Generalized measurement system, signal conditioning |
| 2nd | Day 1 | Display devices | Day 1 | To measure temperature using a thermo-couple |
| Day 2 | Revision |
| Day 3 | **2 Transducers** |
| Day 4 | Theory, construction and use of various transducers |
| 3rd | Day 1 | Resistance | Day 1 | Practice /Checking |
| Day 2 | Inductance |
| Day 3 | Capacitance |
| Day 4 | Electromagnetic |
| 4th | Day 1 | piezo electric type | Day 1 | Study and use of digital temperature controller |
| Day 2 | Revision |
| Day 3 | **3Measurement of Displacement and Strain** |
| Day 4 | Displacement Measuring Devices: |
| 5th | Day 1 | wire wound potentiometer | Day 1 | Use of themistor in ON/OFF transducer |
| Day 2 | LVDT, strain gauges |
| Day 3 | and their different types such as inductance type, |
| Day 4 | resistive type |
| 6th | Day 1 | Wire and foil type etc. | Day 1 | Practice /Checking |
| Day 2 | Gauge factor, gauge materials |
| Day 3 | And their selections, sources of errorsand its compensations. |
| Day 4 | Use of electrical strain gauges |
| 7th | Day 1 | Strain gauge bridges and amplifiers. | Day 1 | Study of variable capacitive transducer |
| Day 2 | Revision |
| Day 3 | **4Force and Torque Measurement:** |
| Day 4 | Different types of force measuring devices and their principles, |
| 8th | Day 1 | Load measurements by using elastic Transducers and electrical strain gauges | Day 1 | Draw the characteristics of a potentiometer |
| Day 2 | Load cells |
| Day 3 | Proving rings |
| Day 4 | Measurements of torque by brake |
| 9th | Day 1 | Dynamometer | Day 1 | Practice /Checking |
| Day 2 | Electrical strain gauges, |
| Day 3 | Speed measurements; different methods, devices |
| Day 4 | Revision |
| 10th | Day 1 | **5Pressure Measurement** | Day 1 | To measure linear displacement using LVDT |
| Day 2 | Bourdon pressure gauges |
| Day 3 | Electrical pressure pickups and their principle, |
| Day 4 | Construction and applications |
| 11th | Day 1 | Use of pressure cells. | Day 1 | To study the use of electrical strain gauge |
| Day 2 | Revision |
| Day 3 | **6Flow Measurement:** |
| Day 4 | Basic principles of magnetic |
| 12th | Day 1 | Ultrasonic flow meters |
| Day 2 | Revision | Day 1 | Practice /Checking |
| Day 3 | **7Measurement of Temperature:** |
| Day 4 | Bimetallic thermometer |
| 13th | Day 1 | Pressure thermometers | Day 1 | To study weighing machine using load cell |
| Day 2 | Thermoelectric thermometers,resistance thermometers, |
| Day 3 | Thermocouple, Thermisters |
| Day 4 | Pyrometer, errors in temperature measurements in rapidly moving fluids |
| 14th | Day 1 | Temperature recorders | Day 1 | To study pH meter |
| Day 2 | Revision |
| Day 3 | **8 Measurement of other non- electrical quantities** such as humidity |
| Day 4 | pH level and |
|  15th | Day 1 | Vibrations | Day 1 | Practice /Checking |
| Day 2 | Revision of Hsbte old Paper  |
| Day 3 | Revision of Hsbte old Paper |
| Day 4 | Revision of Hsbte old Paper |