LESSON PLAN

Name of the Faculty : PUNJAB SINGH

Discipline : ECE

Semester : 1ST

Subject : Fundamental of Instrumentation Engineering

Lesson Plan Duration : 15 weeks

\*\*Work Load (Lecture/ Practical) per week (in hours): Lectures-04, Practicals-03

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| Week | Theory | | Practical | |
| Lecture  Day | Topics (including Assignments/Tests) | Practical  Day | Topic |
| 1st | 1st | Definition of measurements and its significance | 1st | Familiarization with the process of calibration. |
| 2nd | Methods of measurements: Direct methods, Indirect methods |
| 3rd | Scope and necessity of instruments |
| 2nd | 4th | Primary sensing element,  Variable conversion element  Data presentation element | 2nd | Calibrate the given Ammeter with the standard Ammeter of same range. |
| 5th | Introduction of Transducers |
| 6th | Definition of sensors & transducers |
| 3rd | 7th | Difference between sensor & transducer | 3rd | Calibrate the given Voltmeter with the standard Voltmeter of same range |
| 8th | Revision |
| 9th | Class test |
| 4th | 10th | Intelligent instrumentation system  Dump instrumentation system | 4th | Familiarization and demonstration of Liquid Crystal Display. |
| 11th | Classification of Instruments |
| 12th | Absolute instruments |
| 5th | 13th | Secondary instruments. | 5th | Identification of various types of Instruments. |
| 14th | Functions of instruments. |
| 15th | Indicating function,  Recording function  Controlling function |

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| 6th | 16th | Modes of operation of secondary Instruments.  i. Analog mode  ii. Digital mode | 6th | To study and operate different types of printers. |
| 17th | Revision |
| 18th | Class test |
| 7th | 19th | Performance characteristics  Static characteristics of instruments-accuracy, precision, | 7th | Demonstration and operation of strip chart recorder |
| 20th | linearity, resolution, sensitivity, hysteresis, drift, dead time, loading effects. |
| 21st | Dynamic characteristics-time constant, response time |
| 8th | 22nd | natural frequency, damping coefficient. | 8th | Demonstration of Circular chart recorder. |
| 23rd | Selection criteria of instruments. |
| 24th | Calibration. |

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| 9th | 25th | Definition and importance of calibration,  Process of calibration. | 9th | To assemble seven segment display using LEDs. |
| 26th | Revision |
| 27th | Class test |
| 10th | 28th | Need of Recorders in Instrumentation system | 10th | Calculate parallax error in analog meter. |
| 29th | Classification of Recorders |
| 30th | XY, Strip chart recorder, magnetic tape recorder |
| 11th | 31st | Digital display units  Light Emitting Diode (LED) | 11th | Detection and removal of Systematic error in an Instrument. |
| 32nd | Liquid Crystal Display (LCD) |
| 33rd | Segmental displays |
| 12th | 34th | Dot matrices  Fluorescent Displays | 12th | Identification of various types of Sensors and transducers. |
| 35th | Revision of unit 1 and 2 |
| 36th | Revision of unit 3 and 4 |
| 13th | 37th | Limiting errors, Relative limiting error | 13th | Familiarization and use of Fluorescent display. |
| 38th | known error |

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|  | 39th | Sources of errors |  |  |
| 14th | 40th | Gross error  Systematic error | 14th | To prepare laboratory equipment maintenance check list. |
| 41st | Instrumental error  Environmental error |
| 42nd | Observational error  Random error |
| 15th | 43rd | Normal distribution of errors | 15th | To study safety precautions in handling laboratory equipments |
| 44th | Revision of all unit with previous year questions |
| 45th | Class test |