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 |
| LectureDay | Topics (including Assignments/Tests) | PracticalDay | 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 characteristicsStatic 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 unitsLight 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 |