Lesson Plan

Name of Faculty         :    Smt. Suresh Rani

Discipline              :    Electronics & Communication Engg

Semester                :    4th

Subject                 :    **INSTRUMENTATION**


Lesson Plan Duration    : 15 weeks

Work Load ( Lecture /Practical ) per week in hours : Lecture     :3            Practical : 3+3

| Week | Theory | | Practical | |
|---|---|---|---|---|
| | Lecture Day | Topic ( Including assignment/test ) | Practical Day | Topic |
| 1st | 1st | **Measurements:** Inroduction | 1st (G-1) | Introduction |
| | 2nd | Importance of measurement, basic measuring systems, | 2nd (G-2) | Introduction |
| | 3rd | advantages and limitations of each measuring systems | | |
| 2nd | 4th | display devices, Tranducer | 3rd (G-1) | To Study &Draw the characteristics of a potentiometer |
| | 5th | Resistance transducers , inductance transducers | 4th (G-2) | To Study &Draw the characteristics of a potentiometer |
| | 6th | Capacitance transducers, electromagnetic, piezo electric type | | |
| 3rd | 7th | Displacement Measuring Devices: | 5th (G-1) | Study of variable capacitive transducer |
| | 8th | LVDT, Assignment-I | 6th (G-2) | Study of variable capacitive transducer |
| | 9th | strain gauges and their different types such as inductance type, resistive type, | | |
| 4th | 10th | wire and foil type etc. Gauge factor | 7th (G-1) | To measure linear displacement using LVDT |
| | 11th | gauge materials and their selections. Use of electrical strain gauges, | 8th (G-2) | To measure linear displacement using LVDT |

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|---|---|---|---|---|
| | 12th | Strain gauge bridges and amplifiers Problem Discussion | | |
| 5th | 13th | Force and Torque Measurement, Different types of force measuring devices and their principles | 9h (G-1) | To study the use of electrical strain gauge |
| | 14th | load measurements by using elastic transducers and electrical strain gauges. | 10th (G-2) | To study the use of electrical strain gauge |
| | 15th | Load cells, measurements of torque | | |
| 6th | 16th | measurements of torque by brake,dynamometer, | 11th (G-1) | viva |
| | 17th | Revision & Problem Discussion | 12th (G-2) | viva |
| | 18th | electrical strain gauges, | | |
| 7th | 19th | speed measurements | 13th (G-1) | To study weighing machine using load cell |
| | 20th | speed measurements; different methods, devices. | 14th (G-2) | To study weighing machine using load cell |
| | 21th | Discussion, Revision, Problem related to chapter | | |
| 8th | 22th | Pressure Manegement, Bourdon pressure gauges | 15th (G-1) | Revision work |
| | 23th | Class Test | 16th (G-2) | Revision work |
| | 24th | electrical pressure pick ups | | |
| 9th | 25th | principle, construction and applications. electrical pressure pick ups | 17th (G-1) | Use of thermistor in on/off transducer |
| | 26th | Use of pressure cells. Problem Discussion | 18th (G-2) | Use of thermistor in on/off transducer |
| | 27th | Flow Measurement Introduction, Assignment-II | | |
| 10th | 28th | principles of magnetic and ultrasonic flow meters | 19th (G-1) | To measure temperature using a thermo-couple |
| | 29th | Basic principles of magnetic and ultrasonic flow meters | 20th (G-2) | To measure temperature using a thermo-couple |
| | 30th | Measurement of Temperature | | |
| 11th | 31th | Bimetallic thermometer construction and its working | 21th (G-1) | Internal Viva |
| | 32th | thermoelectric thermometers | 22th (G-2) | Internal Viva |

| | 33th | resistance thermometers, principle & working | | |
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| 12th | 34th | thermocouple,thermisters | 23th (G-1) | Study and use of digital temperature controller |
| | 35th | Pyrometer termisters | 24th (G-2) | Study and use of digital temperature controller |
| | 36th | Temperature recorders Discussion, | | |
| 13th | 37th | Revision | 25th (G-1) | To study pH meter |
| | 38th | Measurement of other non electrical quantities | 26th (G-2) | To study pH meter |
| | 39th | Measurement of humidity,   pH level | | |
| 14th | 40th | Measurement of vibrations | 27th (G-1) | Revision |
| | 41th | Assignment-III,Revision | 28th (G-2) | Revision |
| | 42th | Revision | | |
| 15th | 43th | Class test | 29th (G-1) | Viva |
| | 44th | Revision , Seminar, Discussion of Test | 30th (G-2) | Viva |
| | 45th | Revision , Seminar | | |

Lesson Plan

Name of Faculty        :    Dinesh Kumar

Discipline            :    Electronics & Communication Engg

Semester            :    4$^{th}$

Subject              :    **MICROPROCESSOR AND PERIPHERAL DEVICE**

Lesson Plan Duration    : 15weeks

Work Load ( Lecture /Practical ) per week in hours : Lecture       : 4          Practical : 3

| Week | Theory | | Practical | |
|------|--------|--------|-----------|--------|
| | **Lecture Day** | **Topic ( Including assignment/test )** | **Practical Day** | **Topic** |
| 1st | 1st | Evolution of Microprocessor Introduction | | |
| | 2nd | Typical organization of a microcomputer system and functions of its various blocks. | | |
| | 3rd | Microprocessor, its evolution, | | |
| | 4th | function and impact on modern society | | |
| | | | 1st | Familiarization of different keys of 8085 microprocessor kit and its memory map |
| 2nd | 5th | Architecture of a Microprocessor | | |
| | 6th | Architecture of a Microprocessor | | |
| | 7th | Concept of Bus, | | |
| | 8th | bus organization of 8085, | | |
| | | | 2nd | Steps to enter, modify data/program and to execute a programme on 8085 kit |
| 3rd | 9th | Functional block diagram of 8085 | | |

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| | 10th | function of each block, , | | |
| | 11th | Pin details of 8085 and related signals, | | |
| | 12th | Demultiplexing of address/data bus | | |
| | | | 3rd | Writing and execution of ALP for addition and sub station of two 8 bit numbers |
| 4th | 13th | generation of read/write control signals | | |
| | 14th | generation of read/write control signals Instruction cycle,. | | |
| | 15th | Steps to execute a stored programme | | |
| | 16th | Steps to execute a stored programme | | |
| | | | 4th | Writing and execution of ALP for multiplication and division of two 8 bit numbers |
| 5th | 17th | Instruction Timing and Cycles Inroduction | | |
| | 18th | Instruction Cycles Programming (with respect to 8085 microprocessor) Introduction | | |
| | 19th | Instruction Cycles | | |
| | 20th | machine cycle | | |
| | | | 5th | Writing and execution of ALP for arranging 10 numbers in ascending/descending order |
| 6th | 21th | T-states. | | |
| | 22th | Fetch cycle | | |

| | 23th | execute cycle | | |
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| | 24th | execute cycle | | |
| | | | 6th | Writing and execution of ALP for 0 to 9 BCD counters (up/down counter according to choice stored in memory) |
| 7th | 25th | Brief idea of machine and assembly languages.Group | | |
| | 26th | Machines and Mnemonic codes., | | |
| | 27th | Machines and Mnemonic codes. | | |
| | 28th | Instruction format and Addressing mode    Examples can be taken from the list of experiments). | | |
| | | | 7th | Interfacing exercise on 8255 like LED display control |
| 8th | 29th | Identification of instructions as to which addressing mode they belong | | |
| | 30th | Identification of instructions as to which addressing mode they belong | | |
| | 31th | Identification of instructions as to which addressing mode they belong | | |
| | 32th | Concept of Instruction set. | | |
| | | | 8th | Interfacing exercise on 8253 programmable interval timer |
| 9th | 33th | Explanation of the instructions of the following groups of instruction set. | | |
| | 34th | Data transfer group, | | |
| | 35th | Data transfer group, | | |
| | 36th | Arithmetic group | | |
| | | | 9th | Interfacing exercise on 8279 programmable KB/display interface like to display the hex code of key pressed on display |

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| 10th | 37th | Logic Group instruction | | |
| | 38th | Stack, | | |
| | 39th | , I/O and Machine Control Group | | |
| | 40th | Programming exercises in assembly language | | |
| | | | 10th | Use of 8085 emulator for hardware testing |
| 11th | 41th | Concept of memory mapping, partitioning of total memory space. | | |
| | 42th | Address decoding, | | |
| | 43th | concept of peripheral mapped I/O and memory mapped I/O. . | | |
| | 44th | concept of peripheral mapped I/O and memory mapped I/O. . | | |
| | | | 11th | |
| 12th | 45th | concept of peripheral mapped I/O | | |
| | 46th | concept of peripheral  memory mapped I/O. . | | |
| | 47th | Interfacing of memory mapped I/O | | |
| | 48th | Interfacing of memory mapped I/O | | |
| | | | 12th | |
| 13th | 49th | Concept of interrupt, Maskable and non-maskable | | |
| | 50th | Edge triggered and level triggered interrupts,oftware interrupt | | |

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| | 51th | Restart interrupts and its use, Various hardware interrupts of 8085, | | |
| | 52th | Servicing interrupts, extending interrupt system | | |
| | | | 13th | |
| 14th | 53th | Concept of programmed I/O operations | | |
| | 54th | .sync data transfer, async data transfer (hand shaking), | | |
| | 55th | Interrupt driven data transfer, DMA | | |
| | 56th | Serial output data , Serial input data , | | |
| | | | 14th | |
| 15th | 57th | 8255 PPI and 8253 PIT, | | |
| | 58th | 8257 / 8237 DMA controller, | | |
| | 59th | 8279 Programmable KB/Display Interface, | | |
| | 60th | 8251 Communication Interface Adapter8255 | | |

Lesson Plan

Name of Faculty          :     Rakesh Malik

Discipline               :     Electronics & Communication Engg

Semester                 :     4th

Subject                  :     **CUMMUNICATION SYSTEM**


Lesson Plan Duration     : 15Weeks

Work Load ( Lecture /Practical ) per week in hours : Lecture          :3                    Practical : 6

| Week | Theory | | Practical | |
|------|--------|--|-----------|--|
|      | **Lecture Day** | **Topic ( Including assignment/test )** | **Practical Day** | **Topic** |
| 1st | 1st | **AM/FM Transmitters** Introduction | 1st (G-1) | Introduction |
|     | 2nd | Classification of transmitters on the basis of modulation, service, | 2nd (G-2) | Introduction |
|     | 3rd | Classification of transmitters on the basis of frequency and power | | |
| 2nd | 4th | Block diagram of AM transmitters and Armstrong FM transmitters ,FET | 3rd (G-1) | To observe the waveforms at different stages of a AM transmitter |
|     | 5th | principles and working AM  Supernet rodyne Rx and waveform | 4th (G-2) | To observe the waveforms at different stages of a AM transmitter |
|     | 6th | Performance characteristics of a radio receiver: sensitivity, selectivity, fidelity, S/N ratio,image rejection ratio and their measurement procedure. | | |
| 3rd | 7th | ISI standards of radio  receivers and selection criteria of IF,Rx for FM signals | 5th (G-1) | To observe the waveforms at different stages of a Radio Receiver |
|     | 8th | FM supernet rodyne Rx ,wavr form, Need for limiting and de-emphasis in FM reception | 6th (G-2) | To observe the waveforms at different stages of a Radio Receiver |
|     | 9th | Block diagram of communication receivers, differences with respect to broadcast receivers | | |
| 4th | 10th | Revision, Problem Duscussion and Assignment-I | 7th (G-1) | To identify and study the various types of antennas used in different frequency ranges |

| | 11th | Antenna<br>Electromagnetic spectrum and its various ranges: VLF, LF, MF, HF, VHF, UHF, Microwave. | 8th<br>(G-2) | To identify and study the various types of antennas used in different frequency ranges |
|---|---|---|---|---|
| | 12th | Radition from Dipole, Polarization of EM waves,Point Source | | |
| 5th | 13th | gain directivity, aperture, effective area, radiation pattern, | 9th<br>(G-1) | Internal viva |
| | 14th | beam width and radiation resistance loss resistance. | 10th<br>(G-2) | Internal viva |
| | 15th | half wave dipole antenna, medium wave (mast) antenna, | | |
| 6th | 16th | folded dipole, patch antenna, and their radiation pattern | 11th<br>(G-1) | To install a Dish Antena |
| | 17th | loop antenna yagi antenna and their radiation pattern | 12th<br>(G-2) | To install a Dish Antena |
| | 18th | ferrite rod antenna (used in transistor receivers, broad-side array & radiation pattern | | |
| 7th | 19th | end fire arrays, Rhombic antenna their radiation pattern, | 13th<br>(G-1) | To plot the radiation pattern of a directional and omni directional antenna |
| | 20th | dish antenna in detail | 14th<br>(G-2) | To plot the radiation pattern of a directional and omni directional antenna |
| | 21th | Class test | | |
| 8th | 22th | Propagation<br>Basic idea about different modes of wave propagation and typical areas of application | 15th<br>(G-1) | Revision Work |
| | 23th | Ground wave propagation and its characteristics, summer field equation for field strength | 16th<br>(G-2) | Revision Work |
| | 24th | Space wave communication – line of sight propagation, standard atmosphere, | | |
| | | | 8th | |
| 9th | 25th | Concept of effective earth radius range of space wave propagation standard atmosphere | 17th<br>(G-1) | To observe waveforms at input and output of ASK modulators |

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| | 26th | . Duct propagation: sky wave propagation | 18th (G-2) | To observe waveforms at input and output of ASK modulators |
| | 27th | virtual height, critical frequency, skips distance | | |
| 10th | 28th | maximum usable frequency, multiple hop propagation | 19th (G-1) | To observe waveforms at input and output of FSK modulators |
| | 29th | Assignment-II, Revision,Problem Discussion | 20th (G-2) | To observe waveforms at input and output of FSK modulators |
| | 30th | Digital vs Analolg Modulation Techniques | | |
| 11th | 31th | PCM, DPCM | 21th (G-1) | Visit to industry |
| | 32th | DELTA Modulation, ASK | 22th (G-2) | Visit to industry |
| | 33th | FSK,PSK and their detail | | |
| 12th | 34th | QPSK, Spread Spectrum Techniques, CDMA | 23th (G-1) | To observe the waveform of PCM modulator |
| | 35th | Frequency Hopping Technique | 24th (G-2) | To observe the waveform of PCM modulator |
| | 36th | Comparison of all Techniques | | |
| 13th | 37th | Revision | 25th (G-1) | Internal viva-II |
| | 38th | Class Test-II,Assignment-III | 26th (G-2) | Internal viva-II |
| | 39th | Revision & Problem Discussion | | |
| 14th | 40th | Revision | 27th (G-1) | To study & obseve the Delta Modulation Tech |
| | 41th | Oral Test | 28th (G-2) | To study & obseve the Delta Modulation Tech |
| | 42th | Revision and Problem Discussion | | |
| 15th | 43th | Seminar | 29th (G-1) | Revision |
| | 44th | Seminar | 30th (G-2) | Revision |
| | 45th | Seminar | | |

**LESSON PLAN**

**Name of Faculty: Ravinder Kumar**

**Discipline: Electronics & Communication Engg.**

**Semester: 4$^{th}$**

**Subject: Troubleshooting of Electronic Equipment**

**Work Load (Lecture/Practical) per week in hours:    Lecture: 00        Practical: 03**

| S. No. | Date of Planning | Topic Covered |
|---|---|---|
| 1 | 1$^{st}$ Week & 2$^{nd}$ Week | Demonstration and practice of fault finding and repair of: <br> (a) C.R.O <br> (b) Function Generator <br> (c) Power supplies <br> (d) Digital multimeter |
| 2 | 3$^{rd}$ Week & 4$^{th}$ Week | Demonstration, practice of fault finding and repair of any one equipment from group-I i.e. Telephone Handsets. |
| 3 | 5$^{th}$ Week & 6$^{th}$ Week | Demonstration, practice of fault finding and repair of any one equipment from group-II i.e. Inverters/UPS Emergency Lights |
| 4 | 7$^{th}$ Week & 8$^{th}$ Week | Demonstration, practice of fault finding and repair of any one equipment from group- III i.e. Audio Systems |
| 5 | 9$^{th}$ Week & 10$^{th}$Week | Demonstration, practice of fault finding and repair of any one equipment from group IV i.e. Monitor |
| 6 | 11$^{th}$Week & 12$^{th}$Week | Testing of Integrated Circuits (ICs) |
| 7 | 13$^{th}$Week & 14$^{th}$Week | Use of digital tools for troubleshooting digital equipments |