**Lesson Plan**

**Name of faculty: ASHOK KUMAR, AP-ECE**

**Discipline: ECE**

**Semester: 1ST SEM**

**Subject: BASICS OF ELECTRONICS ENGG.**

Lesson Plan Duration: 15 weeks (from AUGUST, 2018 To NOV, 2018)

Work Load(Lecture/Practical) per week (in hours): Lectures: 03 hours, Tutorials:02hours

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| **Week** | **Theory** | **Practical** |
|  | **Lecture day** | **Topic(Including assignment/ test)** | **Practical day** | **Topic** |
| 1st |  | Active Components (Current & Voltage Sources) | 1 | 1. Identification, Specifications, Testing of R, L, C Components (Colour Codes), Potentiometers, Switches (SPDT, DPDT and DIP), Bread Boards, Diodes, BJTs, JFETs, MOSFETs, Power Transistors, SCRs and LEDs. |
|  | Passive Electronic components (Resistors, Capacitors & Inductors) |
|  | concept of P-N diode, Diode Equivalent Circuits |
| 2nd |  | Load Line Analysis, Diode as a Switch | 2 | 2. Study the operation of Digital Multi Meter, Function / Signal Generator, Regulated Power Supply (RPS), Cathode Ray Oscilloscopes; Amplitude, Phase and Frequency of Sinusoidal Signals on CRO. |
|  | Breakdown Mechanisms, Zener Diode: Operation and Applications |
|  | Rectifiers: Half Wave |
| 3rd |  | Full Wave Rectifiers | 3 | 3. To study & perform the Experimental Verification of V-I characteristics of PN- diode in forward and reverse bias & study of various parameters of diode like threshold voltage and breakdown voltage etc |
|  | Photo Diode and Applications |
|  | LED |
| 4th |  | Different Types of Transistors, basic operation of a transistor | 4 | 4. To study & perform the Experimental Verification of Half-Wave & Full-Wave Rectifier and calculate its ripple factor, efficiency and PIV |
|  | Amplifying Action of BJT |
|  | Input and Output Characteristics of Common Base (CB) |
| 5th |  | Common Collector (CC) and Common Emitter (CE) Configurations | 5 | 5. To study & perform the Experimental Verification of Zener Diode as a Voltage Regulator and calculate its parameters. |
|  | Operating Point, Transistor as a switch |
|  | Transistor as a switch and amplifier |
| 6th |  | Biasing: Fixed Bias | 6 | 6. To study & perform the Experimental Verification of the input and output characteristics of BJT in common-emitter configuration & calculate all its parameters |
|  | Biasing: Fixed Bias, Self-Bias |
|  | Voltage Divider Bias |
| 7th |  | Concept of Feedback in amplifiers | 7 | 7. To study & perform the Experimental Verification of Op-Amp as Inverting, NonInverting, Differential amplifier & calculate its Voltage gain. |
|  | Advantages of negative feedback |
|  | Oscillators: Barkhausen criterion for oscillations |
| 8th |  | Operational Amplifier: Basic Block Diagram | 8 | 8. To study & perform the Experimental Verification of Summing and Difference amplifier & calculate its Voltage gain. |
|  | Equivalent Circuit, Characteristics of Ideal Op-Amp |
|  | Concept of Virtual Short, Ideal Op-Amp vs Practical Op-Amp |
| 9th |  | Configurations of Op-Amp: Inverting, Non-Inverting | 9 | 9. To study & perform the Experimental Verification of the I-V characteristics of JFET and MOSFET & calculate all its parameters. |
|  | Configurations of Op-Amp:Differential |
|  | Parameters of Op-Amp: Bandwidth, Slew Rate, Gain, CMRR, PSRR,  |
| 10th |  | Parameters of Op-Amp: Input offset voltage | 10 | 10. Simulation of simple electronic circuits and analyzing its input and output waveforms using any of EDA tools. |
|  | Output offset voltage |
|  | Op-Amp Applications: Summing and Difference Amplifiers |
| 11th |  | Integrator | 11 | REVISION |
|  | Integrator |
|  | Operation and I-V Characteristics of enhancement MOSFET |
| 12th |  | Operation and I-V Characteristics of depletion MOSFET | 12 | REVISION |
|  | concept of n-MOSFET |
|  | p-MOSFET |
| 13th |  | C-MOSFET | 13 | REVISION |
|  | DIAC: Characteristics |
|  | DIAC: Operation and Applications |
| 14th |  | UJT: Characteristics | 14 | REVISION |
|  | UJT: Operation&Applications |
|  | SCR: Characteristics |
| 15th |  | SCR: Operation and Applications | 15 | REVISION |
|  | TRIAC: Characteristics |
|  | TRIAC: Operation and Applications |