**Lesson Plan**

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

**Discipline: ECE**

**Semester: 3RD SEM**

**Subject: ELECTRONICS DEVICES**

Lesson Plan Duration: 15 weeks (from July, 2018 to Nov., 2018)

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

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| **Week** | **Theory** |  |
|  | **Lecture day** | **Topic(Including assignment/ test)** |  |  |
| 1st |  | Carrier Drift, Carrier Diffusion |  |  |
|  | Hall Effect, Mobility and Resistivity. |
|  | Generation and Recombination of carriers |
| 2nd |  | Fermi energy level, its position and its variation with doping concentration |  |  |
|  | PN Junction: Basic Structure, Built in potential Barrier |
|  | Electric Field, Space charge width, Junction capacitances |
| 3rd |  | Depletion & Diffusion Capacitance |  |  |
|  | Small signal model of PN Junction Diode. Tunnel Diode, Schottky Diode.  |
|  | Bipolar Junction Transistor: Basic principle of operation |
| 4th |  | First sessional Exam |  |  |
|  | Forward Active mode & other modes |
|  | Non Ideal Effects: Base Width Modulation, Current Crowding |
| 5th |  | High Injection. Ebers-Moll Model |  |  |
|  | Frequency Limitations of BJT’S |
|  | Hybrid Pi Model |
| 6th |  | Introduction to H-Parameters, Hetrojunction Bipolar Transistors |  |  |
|  | Field Effect Devices: JFET concepts |
|  | Basic Operation, Internal pinch off voltage, Pinch off voltage |
| 7th |  | Second sessional Exam |  |  |
|  | Ideal DC current voltage relationship |
|  | Transconductance, Channel length modulation |
| 8th |  | velocity saturation effects |  |  |
|  | Small Signal Model & Frequency Limitations |
|  | Two Terminal MOS structure |
| 9th |  | Energy band diagrams, Depletion layer thickness |  |  |
|  | Capacitance Voltage Relationship |
|  | Basic MOSFET operation, Small Signal Model. |
| 10th |  | Regulated Power Supplies: Voltage Regulation |  |  |
|  | Zener diode shunt voltage regulator |
|  | Transistor series and Transistor shunt voltage regulator |
| 11th |  | Controlled Transistor Voltage Regulator |  |  |
|  | Op-Amp Series voltage regulator |  |  |
|  |  Complete power supply and SMPS. Text Books |  |  |
| 12th |  | Third Sessional Exam |  |  |
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| 13th |  | Revision |  |  |
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| 14th |  | Revision |  |  |
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| 15th |  | Revision |  |  |
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