**KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE, WARANGAL-15**
**(*An Autonomous Institute under Kakatiya University*)**
**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

**TEACHING SCHEDULE 2015-16**

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|---|---|---|
| Class | : | **B.Tech. II-Semester** |
| Branch | : | **ECE-1 (Stream -2)** |
| Course | : | **BASIC ELECTRONICS ENGINEERING** |
| Code | : | **U 14 EI205** |
| Faculty Name | : | **Dr.K.Ashoka Reddy, Professor, Dept .of ECE.** |
| Room No. | : | **Block-I, Room No. 208** |
| Contact Details | : | **kar@ece.kitsw.ac.in** |

**BOOKS :**

1. David.A.Bell, "Electronic Devices and Circuits", *Oxford University Press,India*
2. Neil Storey, "Electronics: A systems Approach", *4/e-Pearson Education, Publishing company Pvt. Ltd*, India.
3. Helfrick. A.D and Cooper W.D, "Modern Electronic Instrumentation and Measurement Techniques", *PHI,* India.

**REFERENCE BOOKS**

1. Jacob Millman, Christos C Halkias, "Electronic Devices and Circuits" 3/e *TMH*, India.
2. Bhargava and Kulashresta, "Basic Electronics and Linear Circuits", *TTTI, TMH,* India.
3. Sawhney A.K,"Electrical and Electronic Measurements and Instrumentation", *Dhanpat Rai & sons, New Delhi,* India.
4. S.Salivahanan, N.Suresh Kumar, A.Vallava Raj, "Electronic Devices and Circuits", 3/e TMH, India.

**Course Learning Objectives:**

This subject is basically aimed at imparting knowledge of fundamentals and basics of Electronics wiyh the following objectives.

- *To introduce basic concepts of semi conductors and conductivity in semiconductors.*
- *To introduce the basic concepts and applications of Semiconductor Diodes.*
- *To introduce the basic concepts of BJT & its DC biasing and FET.*
- *To introduce the fundamental concepts and basic principles of Electronic Measuring Instruments.*

**Course Learning Outcomes:** After completion of the course, the student will be able to

- *Learn the concepts of conductivity in semi conductors.*
- *Learn the operation of basic Semiconductor Devices and their V-I characteristics.*
- *Get familiarized with the concepts of BJT and FET.*
- *Use basic electronic measuring instruments like DMM and CRO.*

## TEACHING SCHEDULE (2015-2016) SEMESTER -II

| Week & Date | Topic (UNIT-I) | Reference Books | Assignment Schedule | | |
|---|---|---|---|---|---|
| | | | S.No | Date of Posting | Date of Submission |
| Week 1 (18.01.16 to 23.01.16) | Introduction to signals and sources | 1.David.A.Bell, "Electronic Devices and Circuits" 2. Jacob Millman, Christos ,"Electronic Devices and Circuits" 3. Bhargava and Kulashresta, "Basic Electronics and Linear Circuits" | 1 | 18.01.2016 | **28.01.2016** |
| | Classification of materials based on forbidden gap | | | | |
| | Conduction in Intrinsic semiconductors-mobility & Conductivity | | | | |
| Week 2 (25.01.16 to 30.01.16) | Donor & Acceptor impurities, Fermi level | | | | |
| | Charge densities in a semiconductor | | | | |
| | Recombination and minority carrier injection | | | | |
| Week 3 (01.02.16 to 06.02.16) | Drift and diffusion currents | 1.David.A.Bell, "Electronic Devices and Circuits" 2. Jacob Millman, Christos ,"Electronic Devices and Circuits" 3. Bhargava and Kulashresta, "Basic Electronics and Linear Circuits" | 2 | 28.01.2016 | **12-02-2016** |
| | Temperature dependence of conductivity, Hall effect | | | | |
| | Formation of P-N junction, Band diagram of P-N diode | | | | |
| Week 4 (08.02.16 to 13.02.16) | Open-circuited P-N junction, V-I characteristics of P-N junction | | | | |
| | Diode Resistance and Capacitances | | | | |
| | Breakdown mechanisms | | | | |
| **Week & Date** | **Topic (UNIT-II)** | | | | |
| Week 5 (15.02.16 to 20.02.16) | Application of Diodes: Operation of Half wave, Full wave (FWR) & Bridge rectifiers | 1.David.A.Bell, "Electronic Devices and Circuits" 2. Jacob Millman, Christos ,"Electronic Devices and Circuits" 3. Bhargava and Kulashresta, "Basic Electronics and Linear Circuits" | 3 | 12-02-2016 | **26-02-2016** |
| | Filters: Ripple voltage and Diode currents | | | | |
| | operation of FWR with L,C,LC and CLC filters | | | | |
| Week 6 (22.02.16 to 27.02.16) | Voltage regulation using Zener diode | | | | |
| | Block diagram of DC adapter | | | | |
| | Operation of LED & Photodiode | | | | |
| **I MID EXAMINATION (29.02.2016 TO 07.03.2016)** | | | | | |

| Week & Date | Topic (UNIT-III) | Reference Books | Assignment Schedule | | |
|---|---|---|---|---|---|
| | | | S.No | Date of Posting | Date of Submission |
| Weeks 7 & 8 (09.03.16 to 12-03-16) & (14.03.16 to 19.03.16) | Transistor Physical structure : npn and pnp transistors, Current components | 1.David.A.Bell, "Electronic Devices and Circuits" 2. Jacob Millman, Christos ,"Electronic Devices and Circuits | 4 | 26-02-2016 | 15-03-2016 |
| | CE,CC and CB Configurations I/O characteristics,Base width modulation | | | | |
| Week 9 (21.03.16 to 26.03.16) | Concept of DC load line, operating point | 1.David.A.Bell, "Electronic Devices and Circuits" 2. Jacob Millman, Christos ,"Electronic Devices and Circuits" | 5 | 18-03-2016 | 28-03-2016 |
| | Need for biasing | | | | |
| | Fixed and Collector to Base bias for CE configuration | | | | |
| Week 10 (28.03.16 to 02.04.16) | Self bias circuit & Simple problems on biasing | 1.David.A.Bell, "Electronic Devices and Circuits" 2. Jacob Millman, Christos ,"Electronic Devices and Circuits" | 6 | 28-03-2016 | 07-04-2016 |
| | Transistor as switch & amplifier | | | | |
| | Block diagram of PA system | | | | |
| Week 11 (04.04.16 to 09.04.16) | Structure JFET | | | | |
| | Operation of JFET | | | | |
| | Problems on JFET | | | | |
| **Week & Date** | **Topic (UNIT IV )** | | | | |
| Week 12 (11.04.16 to 16.04.16) | Measurement system :Block diagram and its requirements | 1.Helfrick. A.D and Cooper "Modern Electronic Instrumentation an Measurement Techniques" 2. Sawhney A.K, "Electrical & Electronic Measurements and Instrumentation", | 7 | 07-04-2016 | 18-04-2016 |
| | Performance characteristics of the measurement system | | | | |
| | Principle of PMMC | | | | |
| Week 13 (18.04.16 to 23.04.16) | Working principle of Voltmeter, Ammeter | | | | |
| | Working principle of Ohmmeter & Loading effects | | | | |
| | Block diagram of DMM | | | | |
| Week 14 (25.04.16 to 30.04.16) | Block diagram of CRO | 1. Sawhney A.K, "Electrical & Electronic Measurements and Instrumentation" | 8 | 18-04-2016 | 26-04-2016 |
| | Deflection sensitivity of CRT and CRT Screens | | | | |
| | Measurement of Amplitude and Time Period using CRO | | | | |

**LAST DAY OF INSTRUCTION: APRIL 30, 2016**

## II-MID EXAMINATIONS: 02.05.2016 TO 09.05.2016

**Expectations:** *All the students are expected to:*

- Be regular to the class work.
- Be attentive in the Class.
- Maintain a separate class note book and take running notes for this course
- Have the zeal to learn the subject with concept and interest.
- **B**e in time to the classes and do not disturb the teacher and the fellow students by coming late
- Be self-disciplined and maintain decorum in the class

**Attendance & Discipline**: *Attendance and discipline are vital in the academic success of a student.*

- **75% attendance is mandatory. But 100% attendance is highly appreciated.**

**Homework/Assignment:**

- Assignments will be posted in the class website as per the assignment schedule.
- **Make an honest effort to solve the assignment problems.** In case of difficulty, discuss with friends/ Teacher and refer to solutions as a last resort. **Finally, rework the solutions on your own for submission**.
- Submit the solutions of the assignments during lunch time on or before the scheduled date.

**Exams & Grading:**

**Continuous Internal Evaluation (CIE) : (40 marks)**

Teacher Assessment (15 marks) + Mid Semester Examination (25 Marks)

**Teacher Assessment ( TA) : 15 marks**

Two Assignments for 15 marks each, from every unit

Average marks obtained in all 08 assignments will be considered under TA

**Mid Semester Examination (MSE) : 25 Marks**

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|---|---|---|---|
| MSE 1 | : | 25 | Marks |
| | | | } Average of the Two MSEs |
| MSE 2 | : | 25 | Marks } |

**External Semester Exam (ESE) : 60 Marks**

-- *K. Ashoka Reddy, Professor, Dept of ECE*