Course Name Analog Electronic Circuits

Course Code EC(EE)301

Course Credit 3

Contact Hour 3L

Prerequisite Knowledge in Elements of Electronics Engineering

Course Objective

The objectives of this course are

Course Outcome

On completion of the course students will be able to

1. Identify the various properties of Active and Passive Devices
2. Design subsystems using the devices and experiment the pros and cons of the subsystems after interacting with the environment
3. Solve complicated social requirements by designing different subsystems.
4. Judge to choose cost effective devices to fulfill user specific needs.
5. Capitalize the choice of different electronic devices as alternative solution to a real life problem

CO Mapping with departmental POs

H: High, M: Medium, L: Low

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	H	H	M			L	L		M	L		H
CO 2	H	M	H		M	M	M		M	L		H
CO 3	H	M	H		M	H	H		H	M		H
CO 4	M	M		H					M	L		H
CO 5	H	H	L		L	L	M		M	M		H
CO 6												

Course Content

Module I:

Voltage regulation: Series regulators, shunt regulator, switching regulators, integrated circuit voltage regulators, application of IC voltage regulators. **3L**

Transistor biasing and stability: Different biasing techniques' for BJT, voltage divider bias, stability calculation for CE mode. **5L**

Transistor modeling: h-parameter basics,h-parameter model for single stage transistor amplifier in CE,CB,CC mode, expression for voltage gain, current gain, input and output impedance for CE,CC,CB mode, emitter follower circuit. **4L**

Module II:

MOSFET: Basic of MOSFET, MOS amplifier, MOSFET as switch, Biasing of discrete MOSFET amplifier, CMOS common source (CS), common gate (CG), common drain (CD) amplifier with small signal model and gain calculation. **6L**

Module III:

OPAMP applications: adder, subtractor, integrator, differentiator, comparator, Schmitt trigger, free running oscillator, log-antilog amplifier. **5L**

Multivibrators and wave shaping : Astable Multivibratior, square and triangular wave generation using astable multivibrator, Mono stable multivibrator, generation of standardized

pulse using monostable multivibrator, non liner waveform shaping circuits,555 timer, generation **7L**

Module 4

Power amplifier: Classification of class A,B,AB power amplifiers, transfer characteristics, power dissipation, power conversion efficiency of class A,B,AB type power amplifiers, cross over distortion. **6L**

Special function circuits: VCO, PLL. **4L**

Text Books

1. A.S. Sedra& K.C. Smith, Microelectronic Circuits, Oxford Univ. Press, 2004
2. Richard C. Jaeger and Travis N. Blalock, Microelectronic Circuit Design, McGraw Hill, 2007
3. Donald A. Neamen, Electronic Circuit Analysis and Design, Irwin Publications, 1996.
4. R. R. Spencer & M. S.Ghousi, Introduction to Electronic Circuit Design, Pearson Education, 2003

Reference Books