

Year & Sem:	Course Code:	Course Name:	No. of Credits:	L	T&PS	P
E1S2	EC1201	Analog Electronics-1	4	2	2	0

UNIT-I: Introduction to Analog Electronic Circuits & Diode Applications: Clipping and Clamping circuits, Voltage multipliers, Rectifiers, Diode as gates and Voltage regulator.

UNIT-II: Amplifier Models and Single Stage BJT Amplifiers: Four basic amplifier models and relationship between them. Two port representation of amplifiers (h, g, Y and Z parameter models). Small signal models (hybrid π , T and h-parameter models), small signal mid frequency analysis of CE (with and without emitter resistance), CB and CC configuration (gain, input impedance and output impedance), Frequency response of CE amplifier (high frequency and mid frequency models and analysis).

UNIT-III: Single Stage MOSFET Amplifiers: Small signal equivalent circuits, Biasing in MOS amplifiers, small signal analysis of CS (with and without source resistance), CG and CD amplifiers, the high frequency model.

UNIT-IV: Differential Amplifiers: MOSFET differential amplifier and BJT differential amplifier (basic operation, differential gain, common mode gain and CMRR)

UNIT-V: Operational Amplifier and its Applications: Ideal op-amp parameters, non-ideal op-amp, bandwidth and slew rate on circuit Performance. Op-amp applications- summing amplifier, integrator, differentiator, Instrumentation amplifier, V to I and I to V converter, comparator, precision Rectifier, log and antilog amplifier. Active filters.

UNIT-VI: Feedback Amplifiers: General feedback structure, properties of negative feedback, four feedback topologies, analysis of discrete circuits in each feedback topologies

References/Text Books:

1. Sedra A. S. and K. C. Smith, Microelectronic Circuits, 5/e or 6/e, Oxford University Press, 2010
2. Boylestad R. L. and L. Nashelsky, Electronic Devices and Circuit Theory, 10/e or 11/e, Pearson, 2009
3. Millman J. and C. Halkias, Integrated Electronics, 2/e, TMH, 2010.
4. Neamen D., Electronic Circuit Analysis and Design, 3/e, TMH, 2006
5. Spencer R. R. and M. S. Ghausi, Introduction to Electronic Circuit Design, Pearson, 2003.

Lecture Plan: Unit-I & -II syllabus for MID-I, Unit-III & -IV syllabus for MID-II and Unit-V & -VI syllabus for MID-III examinations.

Video Lectures (Web Links):

1. <http://nptel.ac.in/courses/117106087/>
- 2.

Study Materials (Web Links):

- 1.
- 2.