

Course Code	Course Title	L	T	P	C
1151BM105	Analog Electronics and Integrated Circuits	3	0	0	3

a) Course Category

Program core

b) Preamble

To be exposed to the operation and applications of electronic devices.

To study the application of analog ICs in the designing circuit

c) Prerequisite

Basic Electronics Engineering.

d) Related Courses

Sensors and Transducers, Circuit Theory.

e) Course Outcomes

Upon the successful completion of the course, students will be able to:

CO Nos.	Course outcomes	Knowledge Level (Based on Revised Bloom's Taxonomy)
CO1	Explain the structure of basic electronic devices	K2
CO2	Design applications using basic electronic devices	K3
CO3	Explain the application of analog ICs in the designing circuit.	K2
CO4	Design various functional circuits using these ICs	K3
CO5	Understand the basic of the Digital systems	K2

f) Course content

UNIT I BJT & FET 9

Transistor as an amplifier; Methods of Transistor biasing- fixed bias, voltage divider, Emitter feedback bias and Bias stability. Large signal amplifiers- Introduction; Classification based on biasing condition- Class A, Class B, Class AB, Class C. Construction and operation of N-Channel J-FET; Enhancement MOSFET & Depletion MOSFET; Biasing the FET; Biasing MOSFET.

UNIT II Analysis of Small signal Amplifiers and Multi-stage Amplifiers 9

Introduction to 2-port devices and hybrid model of 2-port network; Analysis of transistor using h-parameters; Analysis of CB, CE and CC; Millers theorem; Multi stage amplifiers- Two stage RC coupled Amplifier- Transformer Coupled Amplifier- Darlington Amplifier- Cascode Amplifier.

UNIT III Introduction to Op-amp 9

Introduction; Ideal Operational Amplifier; Operational Amplifier Stages; Operational amplifier parameters; Equivalent Circuit of Op-Amp; Ideal Voltage Transfer Curve; Open loop Op-Amp configurations; Closed loop Op-Amp Configurations; Noise; Frequency response and compensation; Op-Amp Applications- Summing Amplifier- Difference Amplifier- Differentiator- Integrator- Voltage Follower- Phase Inverter; Log and Antilog amplifiers.

UNIT IV Wave shaping circuits and Oscillators 9

Clippers and Clampers; Comparator, Astable Multivibrators; Monostable Multivibrator. Oscillators- Classification of Oscillators, Barkhausen Criterion, General form of an LC Oscillator, Hartley oscillator, Colpitts oscillator, Tuned Collector Oscillator, RC oscillator, Wein-Bridge Oscillator, Triangular wave generator, Sine wave generator, Schmitt Trigger.

UNIT V 555 Timers and its applications 9

Introduction to 555 timer; Astable and monostable operation of 555 timer; Schmitt Trigger using 555 timer; Applications of 555 in Astable and Monostable operation

Total 45 Hrs.

g) Learning Resources

Text Books

1. Electronic Devices and Circuits – S Salivahanan, N Suresh Kumar. Mc Graw Hill Education 3rd edition.
2. D. Roy Chowdary, Sheil B Jani- Linear Integrated circuits- new age publication, 2003 edition.

Reference Books

1. Jacob Milliam Halkias- Electronic devices and circuits- printis hall of india 2010 edition.
2. Allan Mottershed- Electronic devices and circuits an introduction- printis hall of india 2011 edition.