SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
(Engineering College), VIDISHA M.P.
(An Autonomous Institute Affiliated to RGPV Bhopal)
Department Electronics Engineering
Program Electronics & Communication Engineering

Semester/Year	IIIrd/ IInd		Program			B.Tech.			
Subject Category	OE	Subject Code:	OE-305(A)	Subject Name:		Basic Electronics			

Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab Work	Quiz		L	T	P	
60	20	10	10	-	-	-	100	3	0	0	3

Prerequisites:(Only for open electives)

Nil

Course Objective:

1. The course intends to provide an overview of the principles, operation and application of the analog building blocks like diodes, BJT etc. For performing various functions.
2. This course relies on elementary treatment and qualitative analysis and makes use of simple models and equation to illustrate the concepts involved.
3. To provide an overview of amplifiers.
4. Sufficient knowledge is provided so that students will be able to use this course as the basis for other advanced courses like Analog Circuits and Linear IC's, Power Electronics etc.
5. Continue to enhance oral and written communication skills specifically directed to the practice of electronics engineering.

Course Outcomes:

After completion of the course, students would be able to -

CO1: Acquire knowledge of semiconductor devices and their working mechanism.

CO2: Analyze various electronic circuit configuration.

CO3: Analyze the circuit characteristics and compute its parameters.

CO4: Design various electronic circuits.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	1		2						2
CO2	3	3	3	3	2							
CO3	3	3	3	3	2							
CO4	3	3	3	3	2						2	

Contents:

UNITs	Descriptions	Hrs.	CO's
I	Semiconductor diodes: Introduction to PN junction diode, Zener diode and its applications, Tunnel diode, Schottky diode, Varactor diode and their applications, Optoelectronic devices: PIN diode, Light Emitting Diode (LED), Laser diode.	8	CO1, CO4
II	Bipolar Junction Transistors (BJTs):Physical structure and operation modes, Transistor as an amplifier, Basic BJT amplifier configuration: common emitter, common base and common collector amplifiers.	10	CO2, CO4
III	Biasing the BJT: fixed bias, emitter feedback bias, collector feedback bias and voltage divider bias. AC Analysis of BJT: Transistor Model: r_e Model, h-parameter model, Small Signal Analysis,	12	CO3
IV	Multistage or Cascade amplifier: classification of multi-stage amplifier, coupling and frequency response of cascaded systems, effect of cascading on voltage gain, current gain, phase, input and output impedances and bandwidth of cascaded or multistage amplifiers. Types of coupling, cascade and cascode circuits, Darlington pair, bootstrap	8	CO2
V	Tuned Amplifiers: Single tuned, double tuned and stagger tuned amplifiers characteristics and their frequency response. Power amplifier: Class A large signal amplifiers, second-harmonic distortion, Transformer coupled audio power amplifier, Class B amplifier, Class AB operation push pull and Class C power amplifiers.	7	CO2
Guest Lectures (if any)		NIL	
Total Hours		**45**	

Suggestive list of experiments:

Text Books-
- Integrated Electronics - MillmanHalkias, TMH
- Electronic Devices & Circuits – Boyelstad&Nashelsky – PHI
- Electronic Devices & Circuits – David A.Bell – PHI
- Principles of Electronic Devices – Malvino TMH

Reference Books-
- Microelectronic Circuits- Sedra, Smith.
- Electronics Circuits And Systems- Owen Bishop
- Intuitive Analog Circuit Design- Marc T. Thompson
- Starting Electronics (Fourth Edition)-Keith Brindley

Modes of Evaluation and Rubric

There will be continuous evaluation for during the semester for 40 sessional marks and 60 semester End Term Marks. Out of 40 sessional marks, 20 shall be awarded for Mid semester, 20 marks to be awarded for day to day performance and Quiz/Assignments. For the 60 Marks, there will be a semester – End examination as per the norms of AICTE.

Recommendation by Board of studies on	Date:	
Approval by Academic council on	Date:	
Compiled and designed by	Name 1. Dr. Suchi Mishra	
Checked and approved by	Name 1.	

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Semester/Year		IIIrd/IInd		Program			B.Tech.				
Subject Category	OE	Subject Code:		OE-305(B)	Subject Name:		Communication-I				

Maximum Marks Allotted							Contact Hours			Total Credits
Theory				Practical		Total Marks				
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab-Work		L	T	P	
60	20	10	10	-	-	100	3	0	0	3

Prerequisites:(Only for open electives)

NIL

Course Objective:

To introduce the concepts of analog communication systems, and to equip students with various issues related to analog communication such as modulation, demodulation, transmitters and receivers and noise performance.

Course Outcomes:

After completion of the course, students would be able to -

CO 1: Acquire knowledge of signal and its properties, understand and demonstrate about different modulation, demodulation techniques of analog signals. (BL1,BL2)

CO 2: Conduct analysis of baseband signals in time domain and frequency domain. Analyse error performance of a communication system in presence of noise and other interference. (BL3,BL4)

CO 3: Design communication systems to meet desired needs.(BL3,BL6)

CO4: Evaluate the performance of modulation and demodulation techniques in various transmission environments and evaluate fundamental communication system parameters such as bandwidth, power and signal to noise ratio.(BL3,BL5)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	3	-	2	2	-	-	-	-	-	-	-
CO3	3	2	3	2	2	-	-	-	-	-	-	-
CO4	3	2	-	2	2	-	-	-	-	-	-	-

Contents:

UNITs	Descriptions	Hrs.	CO's
I	An introduction to signal & its properties, Operations on signals: Amplitude scaling, addition, multiplication, differentiation, integration, time scaling, time shifting, and time folding, Frequency domain representation of signal: Fourier transform & its properties, Applications of Fourier Transform for the analysis of different signals.	06	1,2
II	Basic block diagram of wireless communication, Need of Modulation, Types of Modulation, Amplitude modulation (AM): Analysis of single tone and multi-tone AM, Bandwidth, Power, modulation efficiency, under, critical and over modulation, Generation of AM, Demodulation of AM.	09	1,2,3,4
III	DSB-SC: Basic concepts, generation and demodulation, SSB-SC: Basic concepts, generation and demodulation, VSB, Frequency division multiplexing (FDM).	07	1,2,3,4
IV	Frequency modulation (FM), NBFM, Power, Bandwidth and Modulation efficiency calculation, Generation of FM, Phase Modulation, Generation of FM from PM and vice-versa, Maximum phase and frequency deviation of FM & PM, Demodulation of FM.	09	1,2,3,4
V	Mixer, Tuned Radio Frequency AM Receiver, Super Heterodyne AM Receiver, Image frequency, Image rejection ratio, Fidelity, Pre-emphasis and de-emphasis, FM Receiver, Introduction to pulse modulation: Pulse Amplitude Modulation (PAM), Pulse Position Modulation (PPM), Pulse Width Modulation (PWM), Noise in analog modulation.	09	1,2,3,4
Guest Lectures (if any)		Nil	
Total Hours		40	

Suggestive list of experiments:

Text Books-

1. Singh and Sapre: Communication System, TMH
2. B.P. Lathi: Modern Analog and Digital Communication System, Oxford University Press

Reference Books-

1. Taub and Schilling: Principles of Communication System, TMH
2. Simon Haykins: Communication Systems, 4th Edition, John Wiley.

Modes of Evaluation and Rubric

There will be continuous evaluation for during the semester for 40 sessional marks and 60 semester End term Marks. Out of 40 sessional marks, 20 shall be awarded for Mid semester, 20 marks to be awarded for day to day performance and Quiz/Assignments. For the 60 Marks, there will be a semester – End examination as per the norms of AICTE.

Recommendation by Board of studies on	Date:
Approval by Academic council on	Date:
Compiled and designed by	Dr. Ankita Srivastava
Checked and approved by	