Course code: Course Title	Course Structure			Pre-Requisite
	L	T	P	
PE102: Electronics and Communication concepts for Mechanical Engineers	3	0	2	NIL

Course Objective: To familiarize the students with the fundamentals of analog electronic devices and circuits, digital circuits and schemes for analog and digital communications.

S. NO	Course Outcomes (CO)
CO1	Explain the principles of operation of semiconductor devices such as diode, BJT, JFET and MOSFET.
CO2	Design and analysis of CE-amplifier using small signal hybrid-pi model.
CO3	Simplify logic expression using Boolean law, Skills to minimize logic expression using k-map and design of various combinational and sequential logic circuits.
CO4	Explain the concepts of various Analog modulation schemes.
CO5	Illustrate the concepts of various Digital modulation schemes.

S. NO	Contents	Contact Hours
UNIT 1	PN junction diode, V-I characteristics, Half wave and full wave rectifiers, Clipping and Clamping circuits, Zener diode as a voltage regulator.	6
UNIT 2	Bipolar Junction Transistor: Physical operation, CB, CC, CE Characteristics, operating point, load line, DC biasing circuit: Self Bias. Common emitter amplifier: Small signal model (Hybrid Pi-model), Current gain, voltage gain, input/output Impedance. Introduction to JFET and MOSFET: Structure and Characteristics.	12
UNIT 3	Digital circuits: Boolean algebra, Logic gates, K map up to 4 variables, Binary Adder and subtractor, MUX and DMUX, Flip flops: SR, JK, D, T.	10
UNIT 4	Basic Block Diagram of Analog Communication system, Concepts of Analog modulation Schemes: AM, FM, PM.	6

UNIT 5	Basic Block Diagram of Digital Communication system, Concepts of Sampling, Pulse code modulation, Concepts of Digital modulation Schemes: ASK, FSK, PSK.	8
	TOTAL	**42**

REFERENCES

S.No.	Name of Books/Authors/Publishers	Year of Publication / Reprint
1	Electronic Devices and Circuit Theory; R. Boylestad, L. Nashelsky, Prentice Hall, 7th edition.	1998
2	Digital Design; M. M. Mano, Pearson Education, 4th edition.	2006
3	Modern Analog and Digital Communication; B. P. Lathi, Oxford, 3rd edition.	1998
4	Communication Systems; H. Simon, John Wiley & Sons, 4th edition.	2006

B. Tech. Software Engineering