GRAPHIC ERA DEEMED TO BE UNIVERSITY DEHRADUN

SEMESTER I and II

Name of Department : Electronics and Communication Engineering

1 Subject Code : TEC 101/201 Course Title : Basic Electronics Engineering

2	Contact Hours :	L	3	T	0	P	0				
3	Exam Duration :	Theory	3	Practical	0						
4	Relative Weight :	CWA	25	PRS	0	MSE	25	ESE	50	PRE	0

5 Credits : 3

6 Semester : Autumn/Spring

7 Subject Area : Fundamental Course (FC)

8 Pre-requisite : Basic Physics

9 Course Outcome :

- Identifying various semiconductor materials used for electronic components.
- Comprehensive understanding of Basic diode concepts and applications.
- Understanding of Transistor (BJT) basics and biasing circuits.
- Understanding of basic concepts and circuits of Field effect transistor.
- Understanding the working of various measuring instruments.
- Understanding of Number system and Boolean algebra.

10 Details of the Course

UNIT	Contents	Contact Hours
I	***SEMICONDUCTORS, DIODES AND DIODE CIRCUITS*** Insulators, Semiconductors and Metals, Mobility and Conductivity, Intrinsic and extrinsic semiconductors and charge densities in semiconductors, current components in semiconductors, PN Junction diode characteristic and analysis	6
II	***REGULATED POWER SUPPLY*** Rectifiers and filter circuit: Half wave, full wave and Bridge rectifier circuits and their analysis, L, C and Pi filters, Zener Diode, Basic regulator supply using zener diode, Design of Regulator circuits.	8
III	***TRANSISTORS*** Construction and characteristics of bipolar junction, transistors (BJT's)-Comm. Base, Comm. emitter, Comm. Collector configuration, Transistor biasing and bias stabilization: - the operating point, stability factor, analysis of fixed base bias, collector to base bias, Emitter resistance bias circuit and self bias circuit.	6
IV	***INTRODUCTION TO OPERATIONAL AMPLIFIERS*** Ideal op-amp, Inverting and Non-inverting op-amp circuits, Op-amp applications; Voltage follower, Addition, Subtraction, Integration,	5

	Differentiation.	
V	***NUMBER SYSTEMS & BOOLEAN ALGEBRA*** Number systems and their conversion, Addition & Subtraction of binary, octal and hexadecimal numbers , multiplication & division of binary numbers, fractional numbers, Boolean algebra, logic gates , De-Morgan's theorem, implementation of basic gates using universal gates, implementation of logic functions using basic gates & universal gates, SOP & POS form of logic expression, canonical form, conversion from SOP &POS form to canonical form, simplification of Boolean function: Algebraic method, Karnaugh map method(two, three &four variable K-map with don't care condition.	8
	TOTAL	33

11 Suggested Books

S.N.	Name of Authors/Books/Publishers	Year of Publication/Reprint
Text Books		
1	Jacob Millmann & Halkias, Integrated Electronics, TMH, 2nd Edition	2010
2	Mano M. Morris and Ciletti M. D., Digital Design, Pearson Education 5th Edition.	2013
Reference Books		
1	Kalsi H. S., 'Electronics Instrumentation', TMH	2004
2	Boylestad and L. Robert and Nashelsky Louis, 'Electronics Devices and Circuits Theory ', PHI/Pearson Education, 9th Edition.	2010

12 Mode of Evaluation : Test / Quiz / Assignment / Mid Term Exam / End Term Exam / Lab Exam