Course Code	GP118
Course Title	Basic Electrical and Electronic Engineering
No of Credits	3
Prerequisites	None
Compulsory/Optional	Compulsory

Aim(s): To provide students with an understanding of fundamental concepts and applications of a number of topics in electrical and electronic engineering

Intended Learning Outcome:

On successful completion of this module, the students should be able to

1. analyse electrical circuits using fundamental laws and theorems,
2. analyze transient behavior of RLC circuits,
3. apply fundamental laws of electromagnetism and calculate basic quantities in electro and magnetostatic problems,
4. analyse electronic circuits and test their performance,
5. appreciate application of computer interfacing with analog and digital components.

No	Topics	Time Allocation / hr			
		L	**T**	**P**	**A**
1.	**Electrical Circuits:** Mesh and nodal analysis of dc circuits, Thevenin's theorem, Norton's theorem, Maximum power transfer theorem	8	2	3	
2.	**RLC circuits:** Transient analysis and RLC circuits under dc excitations, Impedance and admittance concepts under ac excitations	4	1		
3.	**Electromagnetism** • Electrostatic field concepts; capacitance; field mapping in cylindrical systems; energy and mechanical force • Magnetostatic field concepts, magnetic field calculations in simple systems, magnetic force and torque, electromagnetic induction, self and mutual inductance, leakage inductance and magnetizing inductance, energy and mechanical force;	13	2	3	
4.	**Electronic devices and Applications:** Review of Diodes and Transistors, Applications of Diodes and Transistors, Op-Amp fundamentals and Applications, Linear and switch mode power supplies.	3	1	6	
5.	**Computer interfacing applications with analog and digital circuit components**	2			6
	Total	30	6	12	6

Note: L – Lectures; T – Tutorials; P – Practicals; A - Assignments

References:

[1] Edward Hughes, Ian Makenzie Smith, "Electrical Technology", Publisher - Longman Science & Technology, 1995; ISBN-13: 978-0582226968

[2] V.K. Mehta, "Principles of Electrical Engineering and Electronics", 2010.

[3] Paul Horowitz, Winfield Hill, "The Art of Electronics", 3rd Edition, Cambridge University Press, 2015, ISBN-13: 978-0521809269

[4] Thomas C. Hayes, Paul Horowitz, "Learning the Art of Electronics: A Hands-On Lab Course", 1st Edition, Cambridge University Press, 1989, ISBN-13: 978-0521177238

Assessment	Percentage Mark
In-course	
Laboratories	20
Assignments	10
Mid-semester examination	20
End-semester examination	50