UNIT CODE	EMMI2131
UNIT NAME	Principles of Electrical Technology
CLASS	B.Tech. Mechanical Engineering, Year 2
LECTURER	Eng. BENARD MUMO MAKAA, PE, MIEK, MAAK Email:ben@benardmakaa.com Website:www.benardmakaa.com Phone.+254716518555

Course Textbooks	
1	John Bird, (2017), *Electrical Circuit Theory and Technology*, Routledge.
2	Ozgur Ergul (2017), *Introduction to Electrical Circuit Analysis,* Wiley.
3	Robert Boylestad,(2010), *Introductory Circuit Analysis*, Pearson

COURSE OUTLINE			
CONTENT			HOURS
1	**Introduction to electric circuit theory**	Units associated with basic electrical quantities, Standard symbols for electrical components, Potential difference and resistance, and current, Basic electrical measuring instruments, Ohm's law, Resistivity, Temperature coefficient, Conductors and insulators, Electrical power and energy, Kirchhoff's laws	6
2	**Electrical Circuits Networks**	Series circuits, Parallel networks/ Circuits, Alternating current theory(Introduction)	3
3	**Capacitors and Inductors**	Capacitors, Energy Stored in a capacitor, Properties of a capacitor, Capacitors connected in parallel and series, Inductor,	6

		Energy stored in an inductor, Properties of an inductor, Applications, AC Resistance, Impedance.	
4	**Electrical Energy & Power**	Importance of Electrical Energy, Generation of Electrical Energy, Sources of energy, Unit of electrical energy, Types of fuels, Electrical Power Supply, Single phase, Three Phase, Electrical transmission, Distribution systems	6
5	**Electrical Power Generation**	Generating Stations, Steam Power Station (Thermal Station), Hydro-electric Power Station, Diesel Power Station, Nuclear Power Station, Gas Turbine Power Plant, Comparison of the various power plants,	6
CAT 1			
6	**Electrical Supply and Distribution**	Single Phase Electric Power, Three Phase Electric Power, Private Sub-station/transformer, Electricity Intake to a Building, Distribution Board, Power Distribution Circuits, Manholes, Service Boxes.	6
7	**Single Phase AC Circuits**	Series AC Circuits (R-L, R-C, R-L-C) Parallel AC Circuits(R-L, R-C, L-C, LR-C), Power in AC circuits.	8
8	**Three-Phase Systems**	Three-Phase Supply, Star Connection, Delta Connection, Power in Three Phase Systems, Comparison of star and delta connections, Advantages of three phase systems.	8
9	**Electromagnetic induction**	Introduction to electromagnetic induction Laws of electromagnetic induction Rotation of a loop in a magnetic field	8

		Inductance, Inductors, Energy stored, Inductance of a coil,Mutual inductance	
10	**Electrical measuring instruments and measurements**	Introduction Analogue instruments Digital instruments	7
CAT 2			