

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

Course Schedule: June - November 2023

Department : Physics
Name/s of the Faculty : Dr. Annie Vinosha. P
Course Title : Electromagnetism
Course Code : 19PH/MC/EM54
Shift : I

Week & No. of hours	Units & Topics	Teaching Methodology	Text & References	Method of Evaluation
June 19 – June 26, 2023 (Day Order 1 to 6)	Unit 1 Electrostatics 1.1. Electrostatic field - Coulomb's Law – divergence and curl of electrostatic field – Gauss's law – application – cylindrical charge distribution 1.2. Electric potential - Poisson's equation	Lecture	Electricity and Magnetism by Tewari K.K	Questioning on the topic
June 27 – July 04, 2023 (Day Order 1 to 6)	1.2 Laplace's equation – work done in moving a charge – energy of a point charge distribution- energy of continuous charge distribution – electrostatic boundary conditions.	Lecture and solving numerical problems	Electricity and Magnetism by Tewari K.K Electricity and magnetism – Sehgal	Quiz
July 05– July 12, 2023 (Day Order 1 to 6)	Unit2 Electrostatic Fields In Matter 2.1. Polarization - induced dipoles – alignment of polar molecules 2.2. Capacitors - parallel plate capacitors -.	Lecture	Electricity and Magnetism - Sehgal	Third Comp T1
July 13 – July 20, 2023 (Day Order 1 to 6)	2.2 Field inside a dielectric – Gauss's law in the presence of dielectrics Unit 3 Magnetostatics 3.1. Biot – Savart law – steady currents Magnetic fields due to steady currents flowing (i) in a long straight wire at a point near it. (ii) along a circular coil at a point on its axis	Lecture	Electricity and Magnetism - Sehgal	Questioning on the topic
July 21 – July 28, 2023	3.1 (iii) along a solenoid at a point on its axis-	Lecture	Electricity and Magnetism - Sehgal	Questioning on the topic

(Day Order 1 to 6)	Divergence and curl of B - straight line currents			
July 31 – Aug 03, 2023 (Day Order 1 to 4)	3.2.Ampere’s law (i) Magnetic field at a point near a long straight wire carrying steady current. – (ii) magnetic field of a long solenoid (iii) Magnetic field of a toroidal coil	Lecture	Electricity and Magnetism - Sehgal	Questioning on the topic
Aug 04 – Aug 09, 2023	CONTINUOUS ASSESSMENT TEST -I			
Aug 10 – Aug 11, 2023 (Day Order 5 to 6)	3.2 comparison of magnetostatics and elctrostatics -Magnetic vector potential -	Lecture	Electricity and Magnetism - Tewari K.K	Questioning on the topic
Aug 14 – Aug 22, 2023 (Day Order 1 to 6)	3.2 Ampere’s law in terms of vector potential – magnetostatic boundary conditions	Lecture and solving numerical problems	Electricity and Magnetism, Tewari K.K	Third Comp II
Aug 23 – Aug 31, 2023 (Day Order 1 to 6)	Unit4 Magnetostatic Fields in Matter 4.1.Magnetic properties of Materials – Torque and Forces on Magnetic Dipoles- Magnetization	Lecture	Electricity and Magnetism Sehgal	Questioning on the topic
Sept 01 – Sept 11, 2023 (Day Order 1 to 6)	4.2 Magnetic field and its equations (i) $B = \mu_o (H+M)$ (ii) $\mu = \mu_o (1+\chi_m)$ (iii) $\mu_x = 1+\chi_m$	Lecture and solving numerical problems	Electricity and Magnetism Sehgal	Quiz
Sept 12 – Sept 19, 2023 (Day Order 1 to 6)	Unit 5 Electrodynamics 5.1. Faraday’s Laws – electromagnetic induction	Lecture and solving numerical problems	Electricity and Magnetism Sehgal	Quiz
Sept 20 - Sept 27, 2023 (Day Order 1 to 6)	5.1 inductance - self inductance	Lecture and solving numerical problems	Electricity and Magnetism Sehgal	Quiz
Sept 29 – Oct 03, 2023 (Day Order 1 to 3)	5.1. Mutual inductance – energy in magnetic fields	Lecture and solving numerical problems	Electricity and Magnetism Sehgal	Quiz
Oct 04 – Oct 09, 2023	CONTINUOUS ASSESSMENT TEST -II			
Oct 10 – Oct 12, 2023 (Day Order 4 to 6)	5.2. Maxwell’s equations	Lecture and solving numerical problems	Electricity and Magnetism Sehgal	Questioning on the topic

Oct 13 – Oct 20, 2023 (Day Order 1 to 6)	5.2. Maxwell's equations inside matter - boundary conditions	Lecture and solving numerical problems	Electricity and Magnetism, Tewari K.K	Questioning on the topic
Oct 25 – Oct 27, 2023 (Day Order 1 to 3)	5.2. boundary conditions	Lecture and solving numerical problems	Electricity and Magnetism, Tewari K.K	Questioning on the topic
Oct 28- Nov 04, 2023	REVISION			