

Electrodynamics and Optics (BMETE12AP49)

Schedule for semester 2024/25/1

Week	Date	Topic	Serway-Jewett 10th ed.
1	04 September, 2024	Properties of Electric Charges, Triboelectric Effect, Coulomb's Law, Static Electric Field	pp. 588-605
	05 September, 2024	Electric Field of a Continuous Charge Distribution, Electric Flux, Gauss's Law	pp. 616-625
2	11 September, 2024	Electric Potential, Conductors in Electrostatic Equilibrium, Faraday cage, Electrostatic Tip effect,	pp. 637-651, Supplementary lecture note
	12 September, 2024	Capacitance of a Conductor, Combinations of Capacitors, Energy Stored in a Charged Capacitor	664-675
3	18 September, 2024	Electric Dipole in an Electric Field, An Atomic Description of Dielectrics, Dielectric Displacement Vector	pp. 672-681, Supplementary lecture note
	19 September, 2024	Classification of Dielectrics, Boundary Conditions at Material Interfaces	Supplementary lecture note
4	25 September, 2024	Electric Current, Ohm's law, A Model for Electrical Conduction	pp. 692-701
	26 September, 2024	Insulators, Conductors, Semiconductors, Superconductors, Electrical Power	pp. 701-705, Supplementary lecture note
5	02 October, 2024	Electromotive Force, Resistors in Series and Parallel, Kirchhoff's Rules, Simple RC Circuits, Electrical Safety	pp. 713-734
	03 October, 2024	Magnetic Fields, Magnetic Force Acting on a Charged Particle and on a Current-Carrying Conductor, The Hall Effect	pp. 743-762
6	09 October, 2024	The Biot-Savart Law, Ampère's Law, The Magnetic Force Between Two Parallel Conductors, Gauss's Law in Magnetism	pp.772-786
	10 October, 2024	Magnetism in Matter, paramagnetic, diamagnetic and ferromagnetic materials	pp.786-789
7	16 October, 2024	Faraday's Law of Induction, Motional emf, Lenz's Law, Generators and Motors, Eddy Currents	pp. 798-815
	17 October, 2024	Self-Induction and Inductance, RL Circuits, Energy in a Magnetic Field, LC and RLC Circuit	pp. 824-837
8	23 October, 2024	Szünnap: Nemzeti ünnep	
	24 October, 2024	Alternating-Current Circuits, Resistors, Capacitors and Inductors in an AC Circuit, Resonance in a Series RLC Circuit	pp. 847-856
9	30 October, 2024	Power in an AC Circuit, The Transformer and Power Transmission, The Skin Effect	pp. 859-863, Supplementary lecture note
	31 October, 2024	Displacement Current and the General Form of Ampère's Law, Maxwell's Equations in Integral and Differential forms	pp. 873-876, Supplementary lecture note
10	06 November, 2024	Electromagnetic Waves, Hertz's experiment, Wave equation, Properties of EM waves	pp. 876-881
	07 November, 2024	Energy Carried by Electromagnetic Waves, Momentum and Radiation Pressure, The Spectrum of Electromagnetic Waves	pp. 882-889
11	13 November, 2024	The Nature of Light, Historical and Modern Light Models the Ray Approximation, Reflection, Refraction, Dispersion	pp. 899-91, Supplementary lecture note
	14 November, 2024	Total Internal Reflection, Polarization of Light Waves, Brewster's Effect, Birefringence	pp. 914-91, 998-100, Supplementary lecture note
12	20 November, 2024	Images Formed by Flat Mirrors, Images Formed by Spherical Mirrors, Images Formed by Refraction	pp.926-937
	21 November, 2024	Images Formed by Thin Lenses, Lens Aberrations, Optical Instruments	pp.939-954
13	27 November, 2024	Young's Double-Slit Experiment, Intensity Distribution of the Double-Slit Interference Pattern, Coherence of Light	pp.963-969, Supplementary lecture note
	28 November, 2024	Change of Phase Due to Reflection, Interference in Thin Films, The Michelson Interferometer	pp. 969-976
14	04 December, 2024	Diffraction, Diffraction Patterns from Narrow Slits and Circular Apertures, Resolution of an Optical system	pp. 984-992
	05 December, 2024	The Diffraction Grating, Diffraction of X-Rays by Crystals, Holograms	pp. 992-998, Supplementary lecture note