

Electrodynamics and Optics (BMETE12AP49)

Schedule for semester 2025/26/1

| Week | Date | Topic | Serway-Jewett 10th ed. |
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| 1 | 10 September, 2024 | Properties of Electric Charges, Triboelectric Effect, Coulomb's Law, Static Electric Field | pp. 588-605 |
| | 11 September, 2024 | Electric Field of a Continuous Charge Distribution, Electric Flux, Gauss's Law | pp. 616-625 |
| 2 | 17 September, 2024 | Electric Potential, Conductors in Electrostatic Equilibrium, Faraday cage, Electrostatic Tip effect, | pp. 637-651, 653-654 |
| | 18 September, 2024 | Capacitance of a Conductor, Combinations of Capacitors, Energy Stored in a Charged Capacitor | 664-675 |
| 3 | 24 September, 2024 | Electric Dipole in an Electric Field, An Atomic Description of Dielectrics, Dielectric Displacement Vector | pp. 672-681, Supplementary lecture note |
| | 25 September, 2024 | Classification of Dielectrics, Boundary Conditions at Material Interfaces | Supplementary lecture note |
| 4 | 01 October, 2024 | Electric Current, Ohm's law, A Model for Electrical Conduction | pp. 692-701 |
| | 02 October, 2024 | Insulators, Conductors, Semiconductors , Superconductors, Electrical Power | pp. 701-705, Supplementary lecture note |
| 5 | 08 October, 2024 | Electromotive Force, Resistors in Series and Parallel, Kirchhoff's Rules, Simple RC Circuits, Electrical Safety | pp. 713-734 |
| | 09 October, 2024 | Magnetic Fields, Magnetic Force Acting on a Charged Particle and on a Current-Carrying Conductor, The Hall Effect | pp. 743-762 |
| 6 | 15 October, 2024 | The Biot-Savart Law, Ampère's Law, The Magnetic Force Between Two Parallel Conductors, Gauss's Law in Magnetism | pp. 772-786 |
| | 16 October, 2024 | Magnetism in Matter, paramagnetic, diamagnetic and ferromagnetic materials | pp. 786-789 |
| 7 | 22 October, 2024 | Faraday's Law of Induction, Motional emf, Lenz's Law, Generators and Motors, Eddy Currents | pp. 798-815 |
| | 23 October, 2024 | No lecture, National Holiday | |
| 8 | 29 October, 2024 | Self-Induction and Inductance, RL Circuits, Energy in a Magnetic Field, LC and RLC Circuit | pp. 824-837 |
| | 30 October, 2024 | Alternating-Current Circuits, Resistors, Capacitors and Inductors in an AC Circuit, Resonance in a Series RLC Circuit | pp. 847-856 |
| 9 | 05 November, 2024 | Power in an AC Circuit, The Transformer and Power Transmission, The Skin Effect | pp. 859-863, Supplementary lecture note |
| | 06 November, 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 | 12 November, 2024 | Electromagnetic Waves, Hertz's experiment, Wave equation, Properties of EM waves | pp. 876-881 |
| | 13 November, 2024 | Energy Carried by Electromagnetic Waves, Momentum and Radiation Pressure, The Spectrum of Electromagnetic Waves | pp. 882-889 |
| 11 | 19 November, 2024 | No lecture, Students' Scientific Conference | |
| | 20 November, 2024 | The Nature of Light, Historical and modern light models , Ray Approximation, Reflection, Refraction, Dispersion | pp. 899-91, Supplementary lecture note |
| 12 | 26 November, 2024 | Total Internal Reflection, Polarization of Light Waves, Brewster's effect | pp. 914-91, 998-100, Supplementary lecture note |
| | 27 November, 2024 | Images Formed by Flat Mirrors, Images Formed by Spherical Mirrors, Images Formed by Refraction | pp. 926-937 |
| 13 | 03 December, 2024 | Images Formed by Thin Lenses, Lens Aberrations, Optical Instruments | pp. 939-954 |
| | 04 December, 2024 | Young's Double-Slit Experiment, Intensity Distribution of the Double-Slit Interference Pattern, Coherence of light | pp. 963-969, Supplementary lecture note |
| 14 | 10 December, 2024 | Change of Phase Due to Reflection, Interference in Thin Films, The Michelson Interferometer | pp. 969-976 |
| | 11 December, 2024 | Diffraction, Diffraction Patterns from Narrow Slits and Circular Apertures, Resolution of an Optical system, The Diffraction | pp. 984-998 |