Sections Covered from Griffiths' Electrodynamics (Fourth Edition)

1. *Maxwell's Eqn.1* – **[DJG 2.1, 2.2, 2.3.1,2.3.3, 2.3.4]**
2. Boundary conditions on the Electric field and Potential. [**DJG 2.3.5**]
3. Work and Energy in Electrostatics. [**DJG 2.4**]
4. Conductors [**DJG 2.5.1, 2.5.2, 2.5.3**]
5. Approximate potentials at large distances [**DJG 3.4.1** till Eqn 3.96, excluding the Legendre polynomials].
6. Monopole and dipole terms.[**DJG 3.4.1, 3.4.2, 3.4.4**]
7. Electric polarization [**DJG 4.1.1, 4.1.2, 4.1.3, 4.1.4**]
8. Field of a polarized object; Electric Displacement; Boundary conditions; Linear dielectrics; Energy in Dielectric systems [**DJG 4.2.1, 4.3.1, 4.3.3, 4.4.1, 4.4.3**]
9. Review of Lorentz force [DJG: 5.1.2]
10. Surface, and volume current density vectors [DJG 5.1.3]
11. B-field due to currents; Bio-Savart's Law [DJG 5.2.1, 5.2.2]
12. Differential and integral form of Ampere's law [DJG 5.3.1, 5.3.2, 5.3.3]
13. Magnetic vector potential [DJG 5.4.1]
14. Boundary conditions on vector potential [DJG 5.4.2]
15. Multipole expansion of vector and magnetic dipole moment [DJG 5.4.3]
16. Magnetism in matter and Bound Currents; H -field [DJG 6.1.1, 6.1.2, 6.1.4, 6.2.1, 6.2.3, and 6.3.1, 6.3.3]
17. Motional EMF, excluding the proof for the flux rule [7.1.3]
18. Electromagnetic induction [7.2.1]
19. Induced electric field [7.2.2]
20. Inductance [7.2.3]
21. Energy in B-field [7.2.4]
22. Maxwell's 4th equation [7.3.1, 7.3.2, 7.3.3]
23. Maxwell's equations in matter [7.3.5]
24. Boundary conditions [7.3.6]
25. Energy in EM-field [8.1.2]
26. Wave Equation for E and B, Plane Monochromatic waves [9.2.1, 9.2.2]
27. The quantum nature of radiation: Powell, Sec 1.3 till equation (1-10) OR Arthur Beiser's Concepts in Modern Physics: Sec 9.5 and 9.6
28. The photoelectric effect - particle nature of light: Powell Sec 1.4
29. Interference experiment with radiation and particle beams; Postulates of Quantum Mechanics: Feyn3, 1-2, to 1-8
30. Schrodinger wave equation: GQ 1.1,1.2, 1.4 OR Beiser Sec 5.1 -5.4
31. Position and momentum observables as operators : GQ: 1.5 OR Beiser Sec 5.5-5.6
32. Stationary states: GQ 2.1 OR Beiser Section 5.7
33. Infinite square well: GQ 2.2. upto Eq 2.31 OR Beiser Section 5.8

1. [DJG] Introduction to Electrodynamics
David J. Griffiths, Pearson Education India Learning Private Limited; 4 Edition (2015)

References for the unit on Quantum Mechanics will be provided later.