Physics 514, Winter 2018, University of Washington

Graduate Classical Electrodynamics: Quarter 2 of 3

Text: John David Jackson, "Classical Electrodynamics," 3th ed.

(syllabus ver. 02Jan18 13:00)

week	date	lecture topic	reading*
1	3-Jan	Maxwell equations. Vector & scalar potentials. Gauge transformations.	6.1-3
	5-Jan	Green functions for the wave equations. Retarded solutions.	6.4-5
2	10-Jan	Macroscopic electromagnetism. The Poynting formalism.	6.6-7
	12-Jan	Admittance & Impedance (field view). Transformation properties.	6.9-10
3	17-Jan	On the question of magnetic monopoles.	6.11-12
	19-Jan	Plane waves in nonconductors. Polarization.	7.1-2
4	24-Jan	Reflection & refraction	7.3
	26-Jan	Polarization effects. Total internal reflection.	7.4-5
5	31-Jan	Propagaton in the ionisphere. Group velocity.	7.6, 7.8
	2-Feb	MID-TERM EXAM	
6	7-Feb	The connection between D and E. Dispersive media.	7.10-11
	9-Feb	Fields near and in conductors. Cylindrical guided waves.	8.1-8.3
7	14-Feb	Rectangular guided waves. Energy flow.	8.4-5
	16-Feb	Resonant cavities. Cavity Q.	8.7-8
8	21-Feb	Fields and radiation from a localized source. Electric dipole radiation.	9.1-2, 9.4
	23-Feb	Spherical waves and the scalar wave equation.	9.6
9	28-Feb	Poynting formalism for multipole fields. Angular momentum.	9.8-9
	2-Mar	Sources of multipole moments. Radiation from atoms & nuclei.	9.10-11
10	7-Mar	Special lecture	Other antenna designs
	9-Mar	Review & catch up	
11	14-Mar	**FINAL EXAM / MRE (TENTATIVE: CHECK FINAL-EXAM SCHEDULE)**	

We may also introduce "superpotentials".

We may also mention advanced-potential electrodynamics.

We may also mention other definitions of velocity.

We may mention the various ways to define impedance.

* The pace of the class, and therefore the readings, will likely vary from shown above.

Also, there will be special topics discussed in lecture.