ENEL 476 Winter 2015

Chapter 10 – readings and suggested problems

We covered this material in class in a slightly different order than the text.

10.1 – overview of chapter

10.2 – waves in general – good review of wave equation, solution, parameters to describe waves (e.g. wavelength, phase velocity, propagation direction)

10.3 – wave propagation in lossy dielectrics, including general solution to the wave equation (we derived this for free space first)

10.4 – waves in lossless dielectrics

10.5 – waves in free space

10.6 – plane waves in good conductors – simplification of the general solution when conduction current dominates displacement current

10.7 – wave polarization

10.8 – Poynting – theorem developed when we discussed UPW in free space; returned to this with UPW in lossy media

10.9 – transmission and reflection of waves normally incident on material

10.10 – oblique incidence

10.11 and 10.12 – applications (optional)

Suggested problems

General waves, lossless dielectric and free space: 10.1, 10.2, 10.3, 10.15, 10.17, 10.21

Lossy media and good conductors: 10.6, 10.11, 10.13, 10.25, 10.27

Polarization: 10.35, 10.37

Poynting: 10.43, 10.47

Reflection at normal incidence: 10.53, 10.55, 10.59, 10.65

Reflection at oblique incidence: 10.72, 10.73, 10.74, 10.75