ECE 458 — 27 Lectures on Radiowave Propagation

1. Radiowaves and space-weather
2. Antenna fundamentals, apertures
3. SNR, link equations
4. Radar equation, RCS
5. Soft-target radar equation
6. Coherent and incoherent scatter radars
7. Simplified theory of incoherent scatter radar
8. Soft-target radar signal processing
9. Applications of scatter radars and communication
10. Collisionless plasmas, ionospheric dispersion
11. Phase and group delays, TEC
12. Occultation measurements
13. Radiowave scintillations
14. Ionospheric reflections at normal incidence
15. WKB and full-wave solutions
16. Ionosondes and ionograms
17. Ionospheric absorption
18. Propagation in inhomogeneous media and ray tracing
19. Rays in spherical geometry
20. Sky-wave links in plane stratified ionosphere
21. Sky-wave links in spherical geometry
22. Earth-ionosphere waveguide
23. Anisotropic propagation and magneto-ionic theory
24. TEM waves, Appleton-Hartree equation, O- and X-modes
25. Cutoffs, resonances, vertical sounding
26. QL- and QT-propagation and Faraday rotation
27. Faraday and differential-phase methods in ISR