

ECE 3318

Applied Electricity and Magnetism

Reading Assignments

The reading assignments are chosen from the two books listed below. Reading from either of these two books should be fine. (Sometimes a particular topic is only covered in one of them, however.) These reading assignments offer a helpful perspective on the material that is in the class notes. Please note that the Shen and Kong book is presently out of print.

- ❖ W. H. Hayt and J. A. Buck, *Engineering Electromagnetics*, McGraw-Hill. (9th Edition, 2019).
- ❖ L. C. Shen and J. A. Kong, *Applied Electromagnetism*, 3rd Edition, PWS, 1995.

Other EM books may be used for your reading instead of these two, but then it will be up to you to find the appropriate page numbers from your book that discusses the topics below.

You are encouraged to also browse through the other supplementary books that have been placed on reserve in the library or that are available in electronic form (please see the syllabus).

Charge

Hayt 9th: Pages 33-35

Current

Hayt 9th: Pages 112-113

Electric field, Voltage Drop, Potential Energy

Hayt 9th: Pages 76-85

Shen: Pages 315-316, 331, 345-347

Coordinate Systems

Hayt 9th: Chapter 1

Shen: Pages 8, 143, 213

Coulomb's Law and the Calculation of Electric Field

Hayt 9th: Pages 26-42

Shen: Pages 295-303, 332

Electric Flux

Hayt 9th: Pages 48-51, 156-161

Gauss's Law

Hayt 9th: Pages 52-60

Shen: Pages 304-314

Conductors

Hayt 9th: Pages 116-120

Shen: Pages 424-426

Divergence

Hayt 9th: Pages 61-70

Shen: Pages 24-25, 29-30

Potential Calculations

Hayt 9th: Pages 83-90

Shen: Pages 291-303

Curl

Hayt 9th: Pages 197-208

Shen: Pages 24-27

Faraday's Law

Hayt 9th: Pages 279-282

Shen: Pages 23, 537-543

AC Generators

Shen: Pages 566-576

Gradient

Hayt 9th: Page 91-96

Shen: Page 25

Poisson and Laplace Equations

Hayt 9th: Pages 162-174

Shen: Page 292

Dielectrics

Hayt 9th: Pages 129-134

Shen: Page 35

Dielectric Breakdown

Shen: Pages 364-368

Van de Graaff Generator

Shen: Pages 323-325

Lightning

Shen: Page 319

Boundary Conditions

Hayt 9th: Pages 135-139

Shen: Pages 84-88

Uniqueness Theorem

Hayt 9th: Pages 164, 569-570

Shen: Pages 386-388

Boundary Value Problems

Hayt 9th: Pages 164-170

Shen: Pages 380-383

Image Method

Hayt 9th: Pages 124-127

Shen: Pages 389-407

Capacitance

Hayt 9th: Pages 145-152

Shen: Pages 359-362

Stored Electric Energy

Hayt 9th: Pages 100-104

Shen: Pages 355-359

D.C. Currents

Hayt 9th: Pages 117-121

Shen: Chapter 12

Magnetic Field

Hayt 9th: Page 232-233

Shen: Page 445

Ampere's Law

Hayt 9th: Pages 188-197

Shen: Pages 445-455

Biot-Savart Law

Hayt 9th: Pages 182-190

Shen: Pages 455-459

Magnetic Materials

Hayt 9th: Pages 246-254, 260-261

Shen: Pages 490-509

Magnetic Boundary Conditions

Hayt 9th: Pages 254-256

Shen: Pages 84-88

Magnetic Stored Energy

Hayt 9th: Pages 263-264

Shen: Page 476

Inductance and Mutual Inductance

Hayt 9th: Pages 265-267, 270-271

Shen: Pages 477-483

Magnetic Force and Torque

Hayt 9th: Pages 230-237, 240-245

Shen: Pages 462-463, 472

DC Motors

Shen: Page 475, 567

Magnetic Circuits and Transformers

Hayt 9th: Pages 257- 259

Shen: Pages 509-516, 556-562