PHYS 611/Spring 2024
Mathematical Methods and their Applications in
Classical Mechanics and Electrodynamics II

Modern Electrodynamics: Andrew Zangwill, Cambridge University Press, ISBN 978- 0-521-89697-9
Classical Electrodynamics: J. D. Jackson (John Wiley and Sons, third edition, ISBN 0-471- 30932-X

Instructor: Professor: Phillip Sprangle, 3335 A.V. Williams Building
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GTA: TBD

Office Hours: TBD

Homework: Homework will be assigned once a week on Tuesday and returned the following Tuesday

Grading: Grades will be based on 1000 points distributed as follows

Homework=450 pts, Midterm=250 pts, Final=300pts

Course Web Site: ELMS-Canvas

Examples of toptic to be covered in PHYS611 (S24) include:

electrostatics and magnetostatics

multipole expansion of fields

Green's functions: Cartesian,

cylindrical & spherical coordinates

a) diffusion eqn. b) wave eqn.

c) paraxial wave eqn. d) oscil. eqn.

ponderomotive forces

radiation

waveguides

dispersion relations

Kramers-Kronig relations

scattering and diffraction

Cartesian tensors

Euler angles

special relativity

Lorentz tensors

contravariant and covariant 4 vectors