PHYS 631 -- Electromagnetic Theory -- Fall 2020

Instructor:	Chung-Sang Ng
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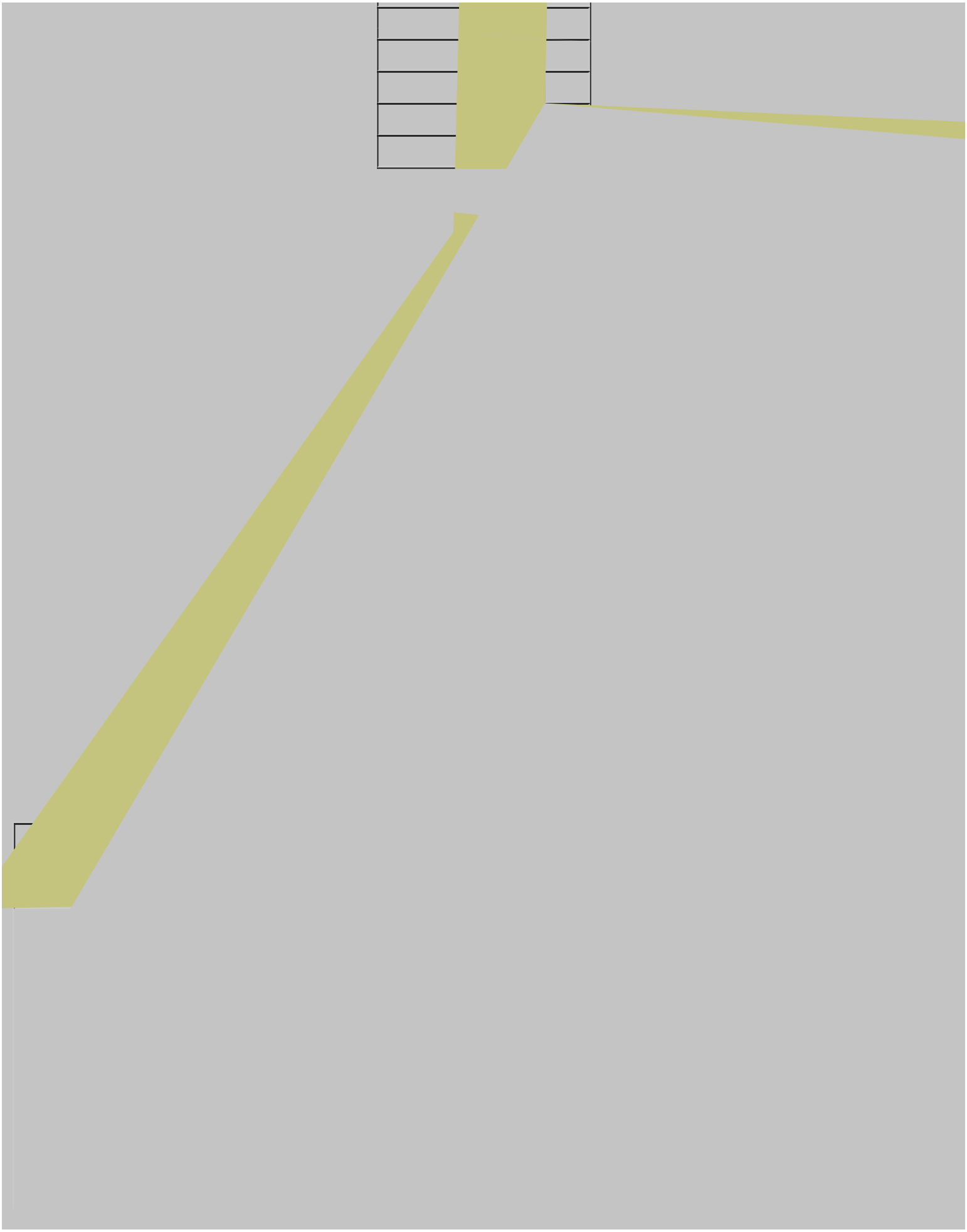
Class meets:	MWF 9:15 AM - 10:15 AM, online
Office hours:	TBD or by appointment
Credits:	3 credits: 3 hours/week of lecture.
Textbook:	Classical Electrodynamics, Jackson, 3rd edition, John Wiley & Sons, ISBN#: 9780471309321
Prerequisites:	Graduate standing
Course Home Page:	

(2.5%) What are the main conclusions of this paper and do you find them interesting or important (and why)? 2. (2.5%) What are the main mathematical/numerical/experimental methods used in this paper and do you believe the validity of the results (and why -- you don't need to repeat the presentation of the paper in the report and you don't have to understand everything in the paper but you need to show your effort trying to understand it)? 3. (5%) What research can you suggest that is directly related to the main points of this paper that hasn't been done yet (you will need to perform a search to see if your suggested research, or similar ideas, has been done by other people)?

Although you may choose from any physics journal, I would strongly recommend searching a paper in journals aiming at the level of graduate students, e.g. the American Journal of Physics (



11/11	W	5.16	Energy in magnetic field	
11/13	F	5.17	Self and mutual inductance	HW #11
11/16	M	5.18	Quasi-static magnetic fields; Eddy currents; Magnetic diffusion	
11/18	W	6.1 - 6.3	Displacement current; Vector and scalar potentials; Gauge transformation	
11/20	F	6.4	Green functions for the wave equation	HW #12
11/23	M	6.5	Retarded solutions	
11/30	M	6.6	Derivation of the macroscopic Maxwell equations	
12/2	W	6.7	Poynting's theorem; Conservation of energy and momentum	
12/4	F	6.8 - 6.9	Poynting's theorem for dispersive/dissipative media/harmonic fields	
12/9	W		Final	
12/14	M		This is absolutely the last day for submitting your report to me, as well as discussing with me about your grades.	Final project report
12/16	W		Final grades will be submitted by noon. They will also be posted on Blackboard.	

STUDENT PROTECTIONS AND SERVICES STATEMENT:

Every qualified student is welcome in my classroom. As needed, I am happy to work with you, disability services, veterans' services, rural student services, etc. to find reasonable accommodations. Students at this university are protected against sexual harassment and discrimination (Title IX), and minors have additional protections. For more information on your rights as a student and the resources available to you to resolve