

Electromagnetic Theory I (Fall 2012)

Physics 913 Mondays, Wednesdays and Fridays, 10:30-11:20A Jorgensen Hall 247

Instructor: Evgeny Tsybal

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Office Hours: Stop by or make an appointment

Classes begin	20 August
Labor Day (Student Holiday)	September 3 (Mon)
Fall Semester Break	15 - 16 October (Mon-Tue)
Thanksgiving Vacation	21 - 25 November (We -Sun)
Last day of classes	7 December (Fri)

Course outline

1. Electrostatics

Coulomb's law, Gauss's law, Scalar potential; Poisson and Laplace equations; Green's theorem; Green's function; Electrostatic energy, Capacitance; Method of images; Solutions of the Laplace equation; Boundary value problems; Multipole expansion, Electrostatics of dielectrics; Polarization.

2. Magnetostatics

Biot and Savart law; Ampere's law; Vector potential; Fields from localized current distributions; Magnetic moment; Magnetic fields in matter; Magnetization; Boundary-value problems in magnetostatics; Scalar potential; Faraday's law, Energy in magnetic field, Inductance.

Text: J. D. Jackson, *Classical Electrodynamics* (Third Edition)

Reference: D. J. Griffiths, *Introduction to Electrodynamics*

Lecture Notes: Lecture notes will be provided and cover most of the material needed for the course. The Lecture Notes will be posted to the Blackboard website.

Homework: Homework will be posted to the Blackboard website, and is normally due in a week from the day of assignment. There will be approximately 10 assignments during the semester. All the homework problems have an equal weight of 10 points unless indicated otherwise. You are encouraged to discuss ideas and approaches with other students. However, *you are required to complete all the derivations yourself*. You are not allowed to copy the work of others or use problem solutions obtained from any source. Homework is an important part of your learning. **You may fail your exams if you don't do homework carefully.**

Exams

Three Midterm Exams (in class, open book)	September, October, November
Final Exam (in class, open book)	Jorgensen Hall 247, 14 December (Fri) 10am-12pm

Performance in class will reflect your contribution to our everyday work in the classroom. Everyone is expected to participate in discussions, answer and ask questions, i.e. be active during the class time.

Grading

Homework	35%
Midterm Exams	10%
Performance in Class	5%
Final Exam	30%

Final grade:

A+	A	A-	B+	B	B-	C+	C	C-	D	F
93%	85%	80%	75%	70%	65%	60%	55%	50%	40%	<40%

Students with disabilities are encouraged to contact the instructor for a confidential discussion of their individual needs for academic accommodation. It is the policy of the University of Nebraska-Lincoln to provide flexible and individualized accommodation to students with documented disabilities that may affect their ability to fully participate in course activities or to meet course requirements. To receive accommodation services, students must be registered with the Services for Students with Disabilities (SSD) office, 132 Canfield Administration, 472-3787 voice or TTY.