

COURSE INFORMATION – Fall 2017
Physics 333: Electricity and Magnetism (CRN: 62137)
Class: Workman Center 310, MWF 10:00–10:50 am
Office Hours: Wed. 16:00–18:00, or by appointment

Class Instructor: Dr. Richard Sonnenfeld
Cel Phone: 575-838-7113 (until 10 pm)

Office: Workman 347
Email: Richard.Sonnenfeld@nmt.edu

1 Welcome!

Welcome to the first semester of Electromagnetic Theory. While this course stands alone, it also prepares you with the foundations for Radiation and Optics (Phys 334).

1.1 Course Goals

You will gain a deep understanding of Electric and Magnetic fields, charges, currents and potentials. You will understand the origin and meaning of Maxwell's Equations and be able to apply them to a wide variety of situations. You will reinforce techniques of vector calculus and PDE's you have previously learned and see how powerful they are when applied to E&M.

1.2 Website

Canvas:

<https://nmt.instructure.com/login/canvas>

You can download assignments and upload your reading assignments and check your grades. (Log in with your 900 #).

1.3 Questions and Corrections in Lecture

I strongly encourage questions in lecture, and know it takes courage to ask a question in front of 25 of your peers. Questions make the lecture much more interesting and relevant for all. Extra credit points will often be given for questions, and always for corrections or clarifications.

1.4 Text and Supplementary Material

Required Textbook: *Introduction to Electrodynamics*, David Griffiths, 4th edition.

Supplementary Textbook: *Electricity and Magnetism*, Edward Purcell and David Morin, 3rd edition¹.

2 Honesty

Tech has a clearly written academic honesty policy which applies to all courses even if the instructor does not mention it. It is available in the Student Handbook. Find it at: <http://www.nmt.edu/student-handbook>. I encourage you to read it. I have found Tech students to act honorably, with few exceptions. For those lapses of judgement I have taken actions ranging from failing the exam/homework in question to failing the student for the course.

3 Grading

Your grade includes homework (40%), exams (45%), and Reading Assignments (15%).

3.1 Reading Assignments

You will be asked to read roughly one section a lecture, and there will generally be a reading assignment which will consist of a couple of questions about the reading. ALSO, please ask ME at least one question about what was unclear to you in the reading that you would like to be answered in class. FINALLY, perhaps you can think of a question which requires a detailed reading of the section to be able to answer. I will use your questions to guide class discussion.

Reading assignments must be typed and submitted as .pdfs. Late reading assignments will incur a penalty unless by prior arrangement.

3.2 Homework

Homework and its due dates are posted on Canvas.

Homework **shall** be done one piece of paper (or more, if required) per problem. These pages will be kept in a three ring binder or other system that allows easy insertion and removal. Each problem **shall** have the *SPN* on the top right corner, circled.

¹I will have two copies of this book on Reserve at the library

Problems should *almost always* show a 3x3 inch figure, the fundamental equations used, and an orderly series of steps leading from fundamentals to answer. Numerical answers without physical units are incomplete, and points will be deducted.

The final answer (either formula or number) **shall** be included in a box (or a different color) **next to** the problem number.

3.3 Exams

Exams are in-class “short” answer and take-home (posted in afternoon, due following morning). You may bring a scientific calculator but no notes to the in-class portion. Involved formulae like the Laplacian in spherical coordinates will be provided. Basic constants (e.g. charge of an electron) or physics laws (e.g. Gauss’s Law, Ampere’s Law) will not be provided. These should be memorized. You may use your textbook for the take-home portion.

4 Getting Help

There are resources available to help you with problems or concepts which you find difficult. I encourage you to form a homework team, and will help connect you to other students if you need this help. You are responsible for assuring that you learn the material.

I am glad to answer your questions during (or after) class, or at my office (during office hours).

4.1 Disabilities

If you have (or think you may have) a Disability, visit the counseling center with all speed and get a documentation letter. Make an appointment to speak with me regarding how you can best succeed in the course. Please see me before the end of August.

4.2 Sex ’n Drugs ’n Rock-n-Roll (and Family and Money)

I think I have covered the five areas of a college students life that can cause serious problems (though Rock-n-Roll in itself is rarely to blame). For those times when one of these gets out of hand, you should know that New Mexico Tech offers mental health and substance abuse counseling through the Office of Counseling and Disability Services. The confidential services are provided free of charge by licensed professionals. To schedule an appointment, please call 835-6619.

4.3 Emergencies and Cel Phones

Cel phones should be set to vibrate during class. You are all encouraged to register your cel-phone with Tech’s emergency notification system. (In red at top of Tech home page) If all of our phones go off at once during class ... it probably means we should do something. If I am lost in a derivation and do not seem to notice, please interrupt me.

Good luck, and have a great semester!