Syllabus, Physics 462, Intermediate Electricity and Magnetism II, 3 credits

Designation: Required for Physics and Engineering Physics majors.

Course Description: Electromagnetic wave propagation, reflection, refraction, waveguides, radiating systems, interference and diffraction, Newtonian and relativistic electrodynamics

Prerequisite: Physics 461 or equivalent

Required Text: D.J. Griffiths, Introduction to Electrodynamics, 3rd edition, Prentice Hall, 1999.

Course Objectives: Students should become proficient in a wide range of problems regarding electromagnetic wave propagation.

Topics Covered: electromotive force, induction, Maxwell's equations, conservation laws, electromagnetic waves in vacuum and in matter, absorption and dispersion, waveguides, dipole radiation, relativistic electrodynamics

Class Schedule: Two 75-minute classes per week; two-hour final exam during exam week.

Contribution of Course to Professional Component: This course provides the fundamental knowledge of electrodynamics and related phenomena. It constitutes an integral part of the upper-division physics core, which includes Physics 451, 454&455 and 461&462.

Relationship of Course to Program Outcomes: This course teaches students to:
e) develop an ability to identify, formulate, and solve engineering problems

Prepared by Dr. Heinrich Nakotte, Spring 2008.

Syllabus: PHYS 462 – Intermediate Electricity & Magnetism II (Spring 2008)

Location: TBA

Class Hours: TBA

Instructor: Heinz Nakotte, Office GN 160, phone: 646-2459, e-mail: hnakotte@nmsu.edu

Instructor's Office Hours: Tuesday and Wednesday, 2:00 pm - 3:30 pm

Grade Basis and Calculation:
Performance in the various categories of work will count toward the final grade as follows:
Pre-Test: 5%
Homework: 20%
Presentation: 30%
Midterm: 15%
Final exam: 20%
Class participation: 10%

Homework: Each homework assignment will consist of 3 problems covering material from Chapters 7 thru 12 of Griffiths' textbook. The homework is due at the same class meeting in the following week (unless otherwise noted). Discussion of homework with others is highly encouraged, but when it comes to writing your solutions, you are required to submit your own work. Problem solving requires a correct logical starting point followed by clear logical mathematical reasoning leading to the answer; bare answers will not receive credit; but partial scores will be given for a correct starting point. For late homework, I will take off points at a rate of about 10% per day.

Pre-test, Midterm and Final Exam: There will be a pre-test, a midterm and a final exam, on days listed in the schedule, covering the chapters indicated. The pre-test consists of 10 multiple-choice questions covering material of PHYS461, which is the pre-requisite of this course. The pre-test is will be a closed-book test. The problems given in the midterm and final exams will be similar to the homework assignments. The exams will be open-book exams, thus you may bring your textbook and your class notes to the exam. However, no other textbook will be permitted. Similar to the homework, partial credit may be given for midterm and final-exam solutions.

Class attendance and class participation: You are strongly encouraged to read the scheduled sections in the text before coming to class. In some cases, we may cover material that goes beyond the textbook, and you will be responsible for that material as well. In order not to fall behind, you should try to attend and participate in all classes. Students that are especially active in a classroom will be given credit, counting toward class participation. Furthermore, we will discuss homework solutions in class, and students who volunteer to present their solutions will receive additional points for class participation.

Presentation: Groups consisting of two students are asked to introduce and teach the material for one of the scheduled class periods. The students are expected to cover all of the material during the scheduled class period. Groups should prepare for about one hour of lecture and about 15 minutes for discussions and questions. Providing some supplementary material that might provide a deeper understanding is strongly encouraged. The formation of the group and the selection of the material

for the presentations are done in the third class period. It is up to the group members to equally distribute the workload for the presentations. In general, presentations will be graded as a group presentation based on content, style of presentation, clarity and preparation. However, if a student feels that other student does not contribute and he/she ends up doing most of the work, the students can discuss alternative arrangements.

Grade Scale: The final letter grades may be found from the following standard scale of percentage cutoffs for the grades:
95% for A+
90% for A
85% for A-
80% for B+
75% for B
70% for B-
65% for C+
60% for C
55% for C-
45% for D
below 45% for F

Students with disabilities:
If you have, or believe you have, a disability and would benefit from any accommodation(s), you may wish to self-identify by contacting the Services for Students with Disabilities (SSD) Office located at Corbett Center, Room 244 (phone; 646-6840; TTY: 646-1918) to register. If you have already registered, please make sure that your instructor receives a copy of the accommodation memorandum from SSD within the first two weeks of classes. It will be your responsibility to inform either your instructor or SSD representative (in a timely manner) if services/accommodations provided are not meeting your needs.
If you have a condition that may affect you ability to exit safely from the premises in an emergency or that may cause an emergency during class, you are encourage to discuss your concerns with the instructor or the director of Disabled Student Programs. If you have general question about the Americans with Disabilities Act (ADA), call 646-3333. All medical information will be treated confidentially.

Academic and non-academic misconduct:
For a copy of the Academic Misconduct Policy, visit http://www.nmsu.edu/vpsa/handbook.html
Any form of cheating or plagiarism is prohibited, and (if caught) the particular work will be graded with a zero.
Students should turn off cell phones and beepers while in class.

Excused Absences:
If for a good reason a student cannot make the due date for a homework assignment or misses an exam, the student should inform me beforehand in order to discuss other arrangement, if possible.
If the student's absence is due to an emergency, the student has to get into contact with me at the earliest possibility following that assignment. I will reserve the right to request proof for the occurrence of the emergency (doctor's excuse, police report etc.)

Tentative schedule for PHYS 462

Below the tentative schedule for PHYS462 in Spring 2008. Note that it may be necessary to make some changes in this during the semester.

Class Meeting	***Tentative topic***
Thursday, January 17	General Introduction; Brief Review Chapters 1-6
Tuesday, January 22	Brief Review Chapters 1-6, Pre-Requisite Test
Thursday, January 24	Chapter 7, Section 1, Selection of Group Presentations
Tuesday, January 29	Chapter 7, Section 2, Homework 1 distributed
Thursday, January 31	Chapter 7, Section 3
Tuesday, February 5	Chapter 7, Section 3, Homework 2 distributed
Thursday, February 7	Chapter 8, Sections 1&2
Tuesday, February 12	Chapter 8, Section 2, Homework 3 distributed
Thursday, February 14	Chapter 9, Section 1&2
Tuesday, February 19	Chapter 9, Section 2, Homework 4 distributed
Thursday, February 21	Chapter 9, Section 3
Tuesday, February 26	Chapter 9, Section 4, Homework 5 distributed
Thursday, February 28	Chapter 9, Section 5
Tuesday, March 4	Review (Chapters 7-9)
Thursday, March 6	Midterm (covering Chapters 7-9)
Tuesday, March 11	Discussion Midterm
Thursday, March 13	Chapter 10, Section 1
Tuesday, March 18	Chapter 10, Section 2, Homework 6 distributed
Thursday, March 20	Chapter 10, Section 3
Tuesday, March 25	SPRING BREAK
Thursday, March 27	SPRING BREAK
Tuesday, April 1	Chapter 11, Section 1
Thursday, April 3	Chapter 11, Section 1, Homework 7 distributed
Tuesday, April 8	Chapter 11, Section 2
Thursday, April 10	Chapter 11, Section 2, Homework 8 distributed
Tuesday, April 15	Chapter 12, Section 1&2
Thursday, April 17	Chapter 12, Section 2&3, Homework 9 distributed
Tuesday, April 22	Chapter 12, Section 3
Thursday, April 24	Chapter 12, Section 3, Homework 10 distributed
Tuesday, April 29	Review (Chapters 7-12)
Thursday, May 1	Review (Chapters 7-12)
TBA: May 5-9 (?)	Final Exam (Chapters 7-12)