

COURSE SYLLABUS

Physics 6306-001, Advanced Electromagnetic Theory
Fall Semester 2008, Tuesday, Thursday 12:30-13:50, Science Building Rm. 10

Instructor: Walter L. Borst, Professor of Physics

Office hours: M, W, F 9:30-10:45 a.m., Science Rm. 11, Tel. 742-3864, Walter.Borst@ttu.edu

Textbooks

Jackson, John David, *Classical Electrodynamics*; 3rd ed., John Wiley, 1999.

Griffiths, David J., *Introduction to Electrodynamics*, 3rd ed., Prentice Hall, 1999.

For diffraction theory, see also Born, Max, and Emil Wolf, *Principles of Optics*, 6th edition, Pergamon Press. Consult books, journals and other references in the library for this course.

Topics

Summary from Physics 5303

Electromagnetic waves in conductors, optical dispersion, plasmas

Wave guides

Electromagnetic radiation

Classical theory of fields

Scattering and diffraction

Special relativity and electrodynamics

Special topics: Presentations by students

Grades Two examination 15% each; final examination 20%; homework 30%; term paper 20%.

100-A-85-B-70-C-55-D-40-F-0

Homework

Homework problems are based on what is discussed in class and a few are assigned from the textbooks. Work the problems on your own. Informal discussions with fellow is encouraged, but writing the homework in collaborations is forbidden. The homework always is due at the beginning of class on the specified date. **Late homework will not be accepted.**

Term paper

A term paper is part of the course, accompanied by an oral presentation. Propose to the instructor a topic *closely related to the course* and submit an abstract - see attached calendar.

The paper should follow the **APS style guide** for a research paper, including a title, abstract, introduction, results and discussion, conclusion, figures, tables, and bibliography. Give to the instructor an outline of the paper three (3) weeks before the presentation. The outline should contain the important topics of the presentation - one line per topic. Send the finished paper as a PDF file *and* Word Document by e-mail to the instructor five (5) days before the presentation, and as a PDF file three (3) days before to the other students.

The examinations are closed books and cover the lecture notes, homework, textbooks to the extent discussed in class, and some demonstrations. Bring a simple calculator and a ruler.

No make-up examinations will be given. In a serious emergency, please contact the instructor to find out how the missed grade will be determined.

I require class attendance and will monitor it.

Dates: See the attached **Calendar**.

Academic honesty: Academic dishonesty will not be tolerated and will be treated according to the rules in the Student Handbook.

Course objectives and expected learning outcomes:

1. Know and apply the fundamentals of classical electrodynamics.
2. Be able to use these principles in other courses.

Methods for assessing the expected learning outcomes:

1. Examinations and grades.
2. In-class questions by instructor, responses from students.
3. Class discussions.
4. Feedback from students about usefulness of the course.

Disability: Any student who because of a disabling condition may require special arrangements in order to meet course requirements should contact the instructor as soon as possible so that the necessary accommodations can be made. The student must present appropriate verification from Access Tech. No requirement exists that accommodations be made prior to completion of the approved university procedure.