

# Physics 498 (V1 12/29/15)

*"The purpose of the classroom is to build a tool kit and to understand what we know in the hopes of uncovering something that we don't." Jedidah C. Isler, astrophysicist.*

Instructor: Dr. Cecille Labuda  
Class time/location: 8:00 am Lewis 101  
Office hours: Lewis 211 MW 9–10 am; 1031 NCPA by appt

Email: cpembert@olemiss.edu  
Phone: +16629153945  
Last updated 12/27/2015

## Text

- Halliday, Resnick and Walker. Fundamentals of Physics.
- Serway, Moses, Moyer. Modern Physics.

## Description

This is a capstone course in which students review their overall knowledge of physics, solve problems involving all major areas of the undergraduate physics curriculum and develop their oral communication skills. The course is required for graduation as a physics major.

## Prerequisites / Corequisites

Senior standing.

## Course Objectives

- Primary course objective: Synthesization of material taught previously over a variety of courses in the physics department into a broad knowledge base.
- Secondary course objective: Exposure to scientific ethics and ethos through science history studies, case studies and enumeration of ethical principles.

## Grading

- $90\% \leq \mathbf{A} \leq 100\%$
- $80\% \leq \mathbf{B} < 90\%$
- $70\% \leq \mathbf{C} < 80\%$
- $50\% \leq \mathbf{D} < 70\%$
- $\mathbf{F} < 50\%$

## Course Topics

- Mechanics
- Electromagnetism
- Optics
- Special Relativity
- Thermodynamics and Statistical Mechanics
- Quantum Mechanics
- Atomic Physics

## Evaluation

### Attendance: 10%

Students who are absent for three or more classes, lose the full 10% attendance grade. If fewer than three classes are missed, the full 10% is awarded.

### Final Exam: 10%

Physics Major Fields Test. The MFT is a standardized test whose purpose is to evaluate the totality of your undergraduate instruction in physics. All students must take the test. Failure to take the Physics MFT will result in an F for the course. The MFT exam schedule will be posted when available.

### Study Notebook: 40%

- Homework problems with complete solutions. Consult rubric for what is considered acceptable presentation and completeness.
- Derivations of core results as described in additional course documents.

### Oral Presentations: 40%

- Presentation of Major Fields Test solutions
- Presentation of worked homework problems.
- Presentation of physics topics.

## Policies

### Attendance

- Class resources will be posted on Blackboard. Students are responsible for downloading and studying Blackboard-posted items when so indicated.
- Students are responsible for all information communicated via their university email.
- Minor updates to the syllabus may be made from time to time. Only the most recent syllabus will be valid.

## Important Dates

- March 7 – Midterm grades
- May 6 – last day of class