Phys 417: Modern Physics Laboratory Dr. Ostrovskii Spring-2022

Instructor: Dr. Igor Ostrovskii
Lab Physicist – Thomas Jamerson

- **Laboratory Location:** Room 29 Lewis Hall
- **Classes:** Monday, Wednesday**:** 1:00 pm – 2:50 pm
- **Office**: Room 207 Lewis Hall; Email: iostrov@phy.olemiss.edu
- **Office Hours: Th 3:15 p.m. – 4:15 p.m**. & **by appointment (207 Lewis Hall).**
- **Prerequisite: PHYS 317, Introduction to Modern Physics I, is required**.

- **Text**: **Modern Physics, by Paul A. Tipler, Ralph A. Llewellyn, 6th edition.**
  ISBN-13: 978-1-4292-5078-8; ISBN-10: 1-4292-5078-X

1. General description of the course.

In this laboratory-based course students will be introduced to the experimental methods and corresponding measurements in the field of Modern Physics. The individual experiments are mainly devoted to the Nobel Prize winning works contributing into development of main physical concepts and theories of the 20th & 21st century.

2. Learning objectives/outcomes.

Students will assemble experimental setups, perform individual experimental measurements, which supplement in practice the Modern Physics concepts covered in lecture course PHYS 317.

tudents will learn laboratory skills necessary for contemporary research laboratory.

***After completing this course, the students should be able to*:**

- Understand the background of intuitive ideas of the Atomic and Quantum physics and Nuclear physics.
- Develop a comprehension of the current basis of Modern physics.
- Significantly improve critical thinking, analytical reasoning, and problem solving skills.
- Cultivate a usage of interactive methods & Internet for independent course learning.

3. Description of examinations and/or other student requirements.

- **Midterm examination will cover ~ 50% of all required experiments.**
- **COVID19 Guidelines:**

-Properly worn face coverings are required when in the Lewis Hall (as is the case for all University buildings). You will be provided disinfecting wipes in order to wipe down surfaces that you will touch

while in the lab.

- "Failure to adhere to health requirements during the COVID-19 emergency will be deemed disruptive to the classroom and will be enforced following the Academic Conduct & discipline procedures."

- The University of Mississippi has adopted a 'tiered disciplinary protocol' for nonadherence to COVID-19 health requirements. This disciplinary protocol is maintained by the Office of Conflict Resolution and
Student Conduct(https://conflictresolution.olemiss.edu/

4. Information about the grading process and standards

GRADING SCALE:

A's ---------- 89 – 100
B's ---------- 79 – 88
C's ---------- 69 – 78
D's ---------- 59 - 68.

Grades will be based on pre-labs preparation work, experiment setup, experimental measurements, final lab reports:

Pre-labs preparation work	10%
Experiment setup	20%
Experimental measurements	35%
Final Lab reports	35%
TOTAL:	100 points

5. Outline of covered topics.

Initial class and laboratory preparations needed for taking experimental data in classical modern experiments.

Electron Spin Resonance.

Photoelectric effect experiment.

Experiments on Quantization of electric charge.

Black body radiation: Spectra measurements.

Experimental investigation of Atomic spectra.

The Frank-Hertz experiment.

Observation of Hall Effect.

Disability Accommodations: It is University policy to provide, on a flexible and individual basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities, which have been verified through the Office of Student Disability Services, are encouraged to contact their instructors to discuss their individual needs for accommodations.