

**Physics 101: Introduction to Contemporary Physics I**

Monday 4:00-4:50

Lewis Hall, Room 103A

Instructor: Dr. Joel Mobley

[jmobley@olemiss.edu](mailto:jmobley@olemiss.edu) (E-mail is the best way to communicate with me.)

Office: NCPA, Room 1034 – ph:915-6937

**NCPA** is the Jamie Whitten National Center for Physical AcousticsIt is near the roundabout at Chucky Mullins and Hill Dr. *See the map at the end of the syllabus.*When I am in Lewis Hall, I will either be in **Lewis 211** or **Lewis 203**. Check Lewis 211 first.Office Hours Mon 1:00 pm–3:00 pm: **Lewis 211 or 203**Wed 1:00 pm–3:00 pm: **Lewis 211 or 203**

Other times by appointment

I am glad to meet in-person or by Zoom so do not hesitate to make an appointment outside regular office hours. **On Fridays I will be at NCPA all day.** Always contact me by email before you come to NCPA during or outside of office hours. I have research labs at NCPA, and I am often in other parts of the building.

**Materials:** Documents and other media will be provided by the instructor**Learning Objectives:**

After completing this course, the student should be able to do the following:

- describe topics in contemporary physics and astronomy at the qualitative level
- describe the relationship between theory and experiment in physics
- compute estimates of quantities based on physical principles and basic reasoning

**Content:** *This course is an introduction to topics in contemporary physics, including subjects such as the standard model of particle physics, Einstein's theory of general relativity and related phenomena, quantum computing, astrophysics and cosmology. It also introduces the interplay of theory and experiment in advanced physics and the use of basic physical principles to make quantitative estimates of quantities.*

**Evaluation of student performance****Grading**

40 %	Class Participation
40 %	Activities and Surveys
20 %	Capstone Presentation

Grading Scale, Minimum Score**A:** 92 **A-:** 87**B+:** 83 **B:** 79 **B-:** 74**C+:** 70 **C:** 66 **C-:** 60**D:** 50 **F:** <50

**Final:** A recorded capstone presentation will be required in lieu of a written final. The presentation will be due at the scheduled time of the final exam, 4 pm on Friday December 12<sup>th</sup>. See below for more information.

**Capstone Presentation**

Each student is required to record a *15 minute presentation in order to successfully complete the course*. The presentation will be recorded and will be peer evaluated prior to the end of classes. The students will be assigned the subject of the presentation.

**Attendance, Class Participation, Homework and Expectations**

- Attendance is expected. If you are unable to attend in-person for any legitimate reason, I will make every effort to accommodate you. Two or more unexcused absences may result in failure (F grade) for the course.
- Class participation is required. You are expected to give thoughtful responses even if you don't know the answer. The intent is to help you think through issues, and a respectful attitude toward your fellow students is expected.

**Class Schedule**

August 25	Introduction	Instructor
September 1	<b>LABOR DAY HOLIDAY</b>	
September 8	Magnets and Wires: How the World Works	Instructor
September 15	Seeing the Unseeable: Photographing a Black Hole	Prof. Nick MacDonald
September 22	What's So Special About Einstein's Special Theory of Relativity?	Prof. Breese Quinn
September 29	<i>A Tour of Our Favorite Physics Demos</i>	Prof. Bin Xiao
October 6	<i>CONTINUE</i>	
October 13	Physics and the Universe	Prof. Jennifer Meyer
October 20	Elementary Particles: Nature's Building Blocks	Prof. Jake Bennett
October 27	<i>Data Analysis in Particle Physics</i>	
November 3	The Physics of Acoustics: Sound, Sight and Silence	Dr. Wayne Prather
November 10	Dark Matter and the Mystery of the Stars	Prof. Alakabha Datta
November 17	Hearing in the Deep: Sound as the Ocean's Messenger	Prof. Likun Zhang
December 1	<i>Activity</i>	
December 12	<b>Capstone Presentation Deadline</b>	

**Academic Integrity**

Every student of the University of Mississippi, by virtue of choosing to be part of the university community agrees to abide by the University of Mississippi Creed and the UM Academic Integrity Policy which covers academic integrity. Cheating on any assignment is forbidden and, in this course, will result in a zero grade on the given assignment. If a second case of cheating occurs, this will result in an F for the entire course. Please consult the M-Book, Academic Integrity document for details on university policy and the academic creed.

**Class Materials Policy**

All materials distributed electronically and in hard copy in this class are protected under intellectual copyright. Any attempt to upload these documents onto the Internet (or to distribute them by some other means) or to profit from the distribution (by Internet or other means) of these documents constitutes theft and is in violation of intellectual property law and the UM Academic Conduct Code, unless expressly permitted for by the instructor. Accessing such materials for your own use is also in violation of the UM Academic Conduct Code. Additionally, the distribution of your own class notes via the Internet or other means, or access of such materials, encourages absence from class and is highly discouraged except for occasional loaning of notes to students concurrently enrolled in the class.

**Use of Electronic Devices and Audio/Video Recoding Policy**

Students may use computers and tablets in class for taking notes, or as otherwise directed by the instructor. Phone are not to be used for communication purposes. Audio and/or video recording of class lectures is not allowed unless explicit permission is given by the instructor. Permission will only be given if the student has a Student Disability Services request. In such cases, recordings may only be used by the student to whom permission is given and all recordings must be deleted at the end of the semester. Recordings may not be distributed online or elsewhere. Videos provided by the instructor may not be downloaded, copied or shared online. Links to materials provided by the instructor may not be shared.

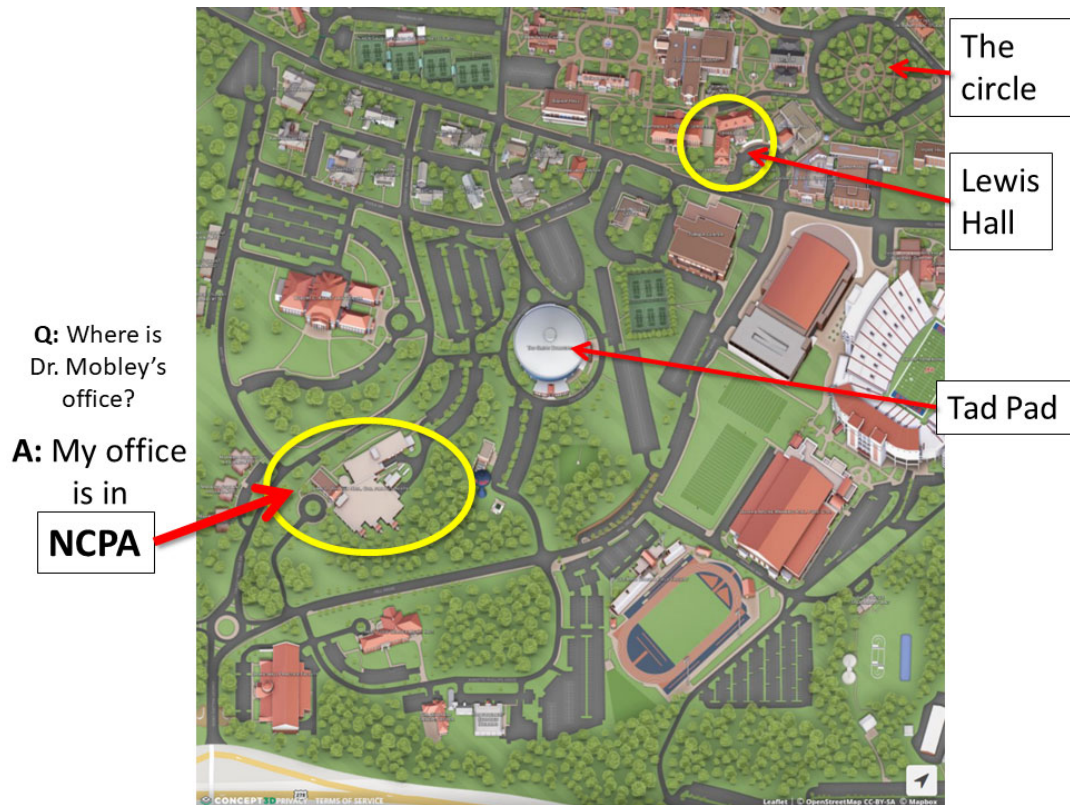
**University of Mississippi Access and Inclusion**

The University of Mississippi is committed to the creation of inclusive learning environments for all students. If there are aspects of the instruction or design of this course that result in barriers to your full inclusion and participation or to accurate assessment of your achievement, please contact the course instructor as soon as possible. Barriers may include, but are not necessarily limited to, timed exams and in-class assignments, difficulty with the acquisition of lecture content, inaccessible web content or the use of non-captioned or non-transcribed video and audio files. Students must also contact Student Disability Services at 662-915-7128 so that office can 1) provide you with an Instructor Notification form, 2) facilitate the removal of barriers and 3) ensure you have equal access to the same opportunities for success that are available to all students.

**UM Creed**

The University of Mississippi is a community of learning dedicated to nurturing excellence in intellectual inquiry and personal character in an open and diverse environment. As a voluntary member of this community:

- I believe in respect for the dignity of each person
- I believe in fairness and civility
- I believe in personal and professional integrity
- I believe in academic honesty
- I believe in academic freedom
- I believe in good stewardship of our resources
- I pledge to uphold these values and encourage others to follow my example



**Q:** Where inside of NCPA is Dr. Mobley's office?

**A:** Room 1034

#### DIRECTIONS

##### From Back Door:

You will enter into a large atrium.

1. Walk toward the front of the building.
2. Turn left before you reach the lobby.
3. Follow the long corridor to the 2<sup>nd</sup> hallway on the right. Take that 2<sup>nd</sup> hallway to the end.
4. My office is on the left at the end of the hallway.

Front Door

##### From Front Door:

1. Walk through the lobby into the large atrium.
2. Turn right and follow the long corridor to the 2<sup>nd</sup> hallway on the right. Take that 2<sup>nd</sup> hallway to the end.
3. My office is on the left at the end of the hallway.

