PHY 151 – General Physics I
Syllabus

Credit
4 semester hours (3 hours of lecture per week, 3 hours of lab per week)

Prerequisites
MAT 102 or MAT 121 or MAT 206

Course Description
Mechanics, thermodynamics, waves, and sound.

Rationale for Course
Part of the mission of Mississippi College is to stimulate the intellectual development of students through the liberal arts and sciences. Physics is the science that seeks to describe the physical phenomena that we observe in our universe. It is broad ranging, essential to all the sciences, and typically divided into the following sub-fields: classical mechanics, electricity and magnetism, thermodynamics and statistical mechanics, modern physics, and quantum mechanics. The primary focus of this course is to introduce students to the fundamental concepts of classical mechanics. Students will develop problem solving skills and learn how to logically approach and evaluate a variety of physical situations related to this topic.

Learning Objectives
Students taking this course will be expected to analyze physical situations by identifying known quantities and developing a plan to solve for desired unknowns. This will be accomplished in the context of classical mechanics by understanding and applying the laws of physics to describe macroscopic, non-relativistic phenomena. Specifically, algebra and trigonometry will be used to determine present or future behavior of

- objects or systems in motion via the equations of kinematics
- static and dynamic objects or systems being acted upon by forces via Newton's Laws of Motion
- objects or systems experiencing a change in energy resulting from forces acting upon them via the law of conservation of energy
- objects or systems experiencing elastic and inelastic collision events via the law of conservation of momentum
- confined or moving fluid systems via the principles of fluid mechanics
- mechanical vibrations via the properties of wave motion
- heat transfer in systems via the laws of thermodynamics

Course Outline*
- Introduction
- Vectors
- Kinematics in One and Two Dimensions
- Newton's Laws of Motion
- Circular Motion
- Gravitation
- Work and Energy
- Linear Momentum
- Rotational Motion
- Fluids
- Vibrations and Sound
- Thermodynamics

*This course outline is tentative and subject to change.

Laboratory Experiments

- Vectors
- Projectile Motion
- The Atwood Machine
- Coefficient of Friction
- Hooke's Law and Conservation of Energy
- Conservation of Energy and Momentum
- Equilibrium of a Rigid Object
- Simple Harmonic Motion
- Archimedes Principle

Method of Instruction

Class will consist primarily of presenting fundamental physics concepts, working problems, and discussing in-class demonstrations. Key points will be highlighted by the choice of examples, and these points will be discussed in the context of the example.

Required Text and Materials

Physics, 7th Edition, by Giancoli. In addition to the text, you will need a scientific calculator and a laboratory data notebook. It may also be beneficial to bring a set of colored pencils to lecture and lab. Figures shown on the board are often drawn in multi-color for clarity, so it is recommended that the illustrations in your notes take advantage of this capability as well.

Grading

The final average will be computed as follows: 50% will be from lecture tests, 10% from homework, 20% from lab, and 20% from the final exam. Students will be permitted to use a formula sheet on tests (special instructions regarding the formula sheet will be given prior to each test). During tests, students are not permitted to wear headphones or use any electronic resource other than a watch and calculator. Homework will be assigned from each chapter covered. The final exam is comprehensive. Lab points will be determined based on lab report grades (see Lab Policies and Procedures handout).

Scale:

Grade	Final Average
A	90-100
B	80-89
C	70-79
D	60-69
F	0-59

Makeup Tests

Makeup tests will be given only under the following circumstances:

- Consent of the instructor has been obtained prior to the test.
- An excused absence is obtained from a doctor or the Vice-President for Academic Affairs
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Drop Date

Drops after the drop date will only be permitted for extreme circumstances and will require approval from the course instructor, department chair, Dean of the School of Science and Mathematics, and the Vice-President for Academic Affairs.

Academic Integrity

Mississippi College students are expected to be scrupulously honest. Dishonesty, such as cheating or plagiarism, or furnishing false information, including forgery, alteration or misuse of University documents, records or identification, will be regarded as a serious offense subject to severe penalty, including, but not limited to, loss of credit and possible dismissal. See the *Mississippi College Student Handbook* or University Policy 2.19 for specific information regarding penalties associated with dishonest behavior at Mississippi College. Copies of the *Mississippi College Student Handbook* are available in the Office of the Vice President for Enrollment Management and Student Affairs, Nelson 313. Copies of University policies are available on the Mississippi College web site.

Attendance Policy

Class attendance/participation is an essential part of university education, and students are expected to attend/participate regularly and punctually in all classes and laboratories. The responsibility for any work missed as the result of an absence rests entirely with the student. Cumulative absences/nonparticipation may result in a lowered grade or loss of credit for the course. Tardiness is also subject to penalty, as is any failure to complete required class work on time. A student will receive a grade of F immediately upon accumulating the following number of absences, whether excused or unexcused:

- 12 in semester classes meeting three times per week (6 for PHY 151/152 in the summer)
- 8 in semester classes meeting two times per week

If a student misses more than the number of class periods specified in university policy and believes that there are reasonable explanations for the absences, he/she may appeal the absences to the Dean of the School of Science and Mathematics.

Students with Disabilities

In order for a student to receive disability accommodations under Section 504 of the Americans with Disabilities Act, he or she must schedule an individual meeting with the Director of Student Counseling Services immediately upon recognition of their disability (if their disability is known they must come in before the semester begins or make an appointment immediately upon receipt of their syllabi for the new semester). The student must bring with them written documentation from a medical physician and/or licensed clinician that verifies their disability. If the student has received prior accommodations, they must bring written documentation of those accommodations (example Individualized Education Plan from the school system). Documentation must be current (within 3 years).

The student must meet with SCS face-to face and also attend two (2) additional follow up meetings (one mid semester before or after midterm examinations and the last one at the end of the semester). Please note that the student may also schedule additional meetings as needed for support through SCS as they work with their professor throughout the semester. Note: Students must come in each semester to complete their Individualized Accommodation Plan (example: MC student completes fall semester IAP plan and even if student is a continuing student for the spring semester they must come in again to complete their spring semester IAP plan).

Student Counseling Services is located on the 4th floor of Alumni Hall) or they may be contacted via email at mbryant@mc.edu . You may also reach them by phone at 601-925-7790. Dr. Morgan Bryant is director of MC Student Counseling Services.

Tutoring

Physics tutoring is available multiple times a week. The tutoring schedule will be posted on the door of the classroom.