

**Miami Dade College - HOMESTEAD Campus
SYLLABUS**

PHY 1025 – Basic Physics (3 CREDITS) Ref.#: 453572
Room G306 – Tuesdays & Thursdays 8:55 AM – 10:10 AM
Instructor: Dr. Fernando Comas, Ph. D.
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Spring Term - 2008

Course Description: The fundamental purpose of the course is to provide a general introductory background to physics for students in the transition from high-school physics to college physics. The course is basically concerned with Newtonian mechanics: kinematics and dynamics, definitions of the involved physical quantities, their units of measure, conversion of units, right-angle trigonometry, graphing, vectors and vector addition, one and two dimensional motion, circular motion, Newton's laws of motion, work and energy, and force fields. We also give a brief introduction to electricity. The course will emphasize problem-solving techniques.

Pre -requisite to PHY 1025: MAC 1105

Text Book: Inquiry into Physics, Vern J. Ostdiek and Donald J. Bord, Sixth Edition.

Grading Rules: Three tests and a mandatory Final Exam will be given during the term. Each weekend we shall have homework assignments that will be used for the tests. The final grade will be based in the following formula: 60% for the average score of the tests and 40% for the Final Exam.

Grading Scale: A: 90 - 100 C: 70 - 79
 B: 80 – 89 D: 60 – 69

COURSE/DEPARTMENTAL POLICIES

The Homestead Campus of Miami Dade College is an Academic Community committed to the values of Intellectual Integrity, Respect for Diversity, Environmental Stewardship, Social Responsibility, and Informed Participation in Civic Life. Students are expected to behave in a mature and professional manner.

The instructor supports the College's policies regarding academic integrity and honesty. These include the policies regarding cheating, plagiarism, and fabrication of information. It is **your** responsibility to understand fully what these policies are. As such, you are encouraged to obtain a copy of the *Student Rights and Responsibilities Handbook* and read these policies carefully and thoroughly.

Attendance Policy: the college requires Class attendance. Roll will be called at every class session. Students who attend class and do not appear in the class roll will be asked to report to the Registrar's Office to obtain a paid/validated schedule. Under no circumstances will you be allowed to remain in class if you are not in the class roll.

Please, be prompt. Late arrivals are very disturbing for the instructor and disruptive to fellow students. You should plan to leave enough time to allow for traffic, parking, inclement weather, etc. Consecutive late arrivals will not be allowed.

Cheating and plagiarism will not be tolerated. If you are caught cheating or plagiarizing in any form, you will receive a failing grade for the course and be reported to the college for appropriate disciplinary action.

Incompletes can only be given in cases of documented emergencies and when a contract has been entered into between the faculty and the student and the student has completed most of the requirements for the course and is in good academic standing at the time the contract is reached.

Withdrawals and class **DROP** are the responsibility of the student and should be done within the given time as specified in the MDC academic calendar.

Course competencies. The student will demonstrate knowledge and application skills in:

- 1) The use of different units for the physical quantities, as well as the ability to convert the units from one system to another.
- 2) The application of some basic mathematical tools for the study and solution of physics problems: basic algebra, vectors and scalars, simple geometric and trigonometric relations and concepts, graphing functions and drawing information from graphs, use of the scientific notation, working with a scientific calculator.
- 3) The definition and calculation of fundamental kinematical quantities: displacement, speed and velocity, acceleration. The considered problems involve both one-dimensional and two-dimensional motions: motion with constant velocity and constant acceleration, free-fall, projectile motion, circular motion and other examples.
- 4) The definition and calculation of fundamental dynamics quantities: force, mass, linear momentum, angular momentum. Also a good understanding of the Newton's laws of motion and how these laws may be applied in the study of various important examples of mechanical motion.
- 5) The study of the conservation laws: conservation of linear and angular momentum, conservation of energy. Also a good understanding of the concepts of work and energy, and how are they applied in physics.
- 6) The universal law of gravitation, the concept of a gravitational field, and how it can be applied to understand and describe the motion of the planets and other similar objects.
- 7) The study of the fundamental concepts of electricity: charge, electric currents, electric fields and the Coulomb's law for the interaction between point charges.
- 8) The study of the fundamental laws of magnetism, electromagnetism and electromagnetic waves.

Tentative Schedule:

Week	class content
1	Fundamental physical quantities & units. Displacement and speed.
2	Scalars & Vectors. Velocity. Addition of velocities.
3	Acceleration. Units. Acceleration of gravity (g).
4	Different kinds of motions. Graphing the quantities as a function of time.
5	Motion with constant acceleration. Case of free fall. Test #1
6	Force and Mass. Units. The laws of Newton. Their role in dynamics.
7	Newton's first law. Inertia. Mass and weight. Newton's second law. Different forces.
8	Newton's third law: action and reaction. Examples. Test # 2
9	Universal gravitation and gravitational field. Motion of planets.
10	Conservation laws. Linear momentum. Work and Energy.
11	Rotational motion. Angular momentum. Test # 3
12	Electric charge and atomic structure. Coulomb's law.
13	Electric current. Units. Ohm's law.
14	Magnetism. Electromagnetism and Electromagnetic Waves.
15	General Review of the subject.
16	Final Exam.

