

# Course Syllabus

## Course Information

**Course Title:** General Education Physics

**Subject and Number:** PHY 1020

**Course Description:** This is a general education course for non-science majors. The students will learn the fundamentals laws of physics at an introductory level. Must be completed with a grade of "C" or better.

**Class Number:** LOREM IPSUM

**Term and Year:** LOREM IPSUM

**Course Modality:** [MDC Modalities](https://www.mdc.edu/registration/options/default.aspx)

## Instructor Information

**Name:** LOREM IPSUM

**Department and Campus:** LOREM IPSUM

**Office location:** LOREM IPSUM

**Office hours:** *(communicate course office hours with students)*

**Phone number:** 123-456-7890

**Email:** LOREM IPSUM

**Communication Policy:** *(Faculty will establish protocols for communication with students)*

## Required Textbook, Course Materials, and Technology

**Required course materials:** *(Textbook(s), library reserves, shark pack, and/or other required readings. Include ISBN Number and author(s))*

**List optional/supplemental materials/OER:** LOREM IPSUM

**Technology & Technical Skill Requirements:** *(Technology tools or equipment students need to complete this course are included)*

## Grading Policy & Assessment Methods

*List all activities, papers, quizzes, tests, etc. including grading scale used for final grade calculation. Relationships between the final grade and the learner’s accumulated points or percentages/weights breakdown for each assessment or component of the course grade.*

*Include policy on late submissions.*

*For MDC Live and MDC Online courses, include policy regarding exams (e.g., ProctorU, Respondus Lockdown and Monitor, etc.)*

*If applicable, include guidelines for extra credit.*

**Incomplete Grades:** [View the college’s procedures for Incomplete Grades](https://www.mdc.edu/procedures/Chapter8/8381.pdf)

## Miami Dade College Policies

**Attendance Policy:** *(Faculty include precise statements about illnesses/emergencies/ tardiness, missed assignments/make-up.)*

**Students Rights and Responsibilities:** *Policies addressing academic integrity and plagiarism, code of conduct, grade appeals, religious observations, services for students with special needs, student complaints, and other.*

[For more information, visit the Student’s Rights and Responsibilities page](https://www.mdc.edu/rightsandresponsibilities/)

## Available Support Services & Resources

* [Tutoring Labs and Technology – Learning Resources](https://www.mdc.edu/learning-resources/tutoring-labs-technology/)
* [Virtual Tutoring through Learning Resources or Smarthinking Online Tutoring](https://libraryguides.mdc.edu/BbLTutoring)
* [ACCESS: A Comprehensive Center for Exceptional Student Services](https://www.mdc.edu/access/)
* [Advisement](https://www.mdc.edu/advisement/)
* [Password and Login Technical Support](https://www.mdc.edu/registration/password.aspx)
* [Technical Support for MDC Live and MDC Online Courses](https://www.mdc.edu/online/resources/tech-support.aspx)
* [SMART Plan](https://www.mdc.edu/smart/)

*(Faculty select from the above if applicable and include additional course/campus specific resources)*

## Available Support Services & Resources

* [Public Safety - Services](https://www.mdc.edu/safety/services/)
* [Hurricane and Other Natural Disasters:](https://www.mdc.edu/safety/in-case-of-emergency/) In the event of a hurricane or other disaster, the class follows the schedule established by the College for campus-based courses. Please visit the MDC website or call the MDC Hotline (305-237-7500) for situation updates.

## Course Description

**PHY1020 | General Education Physics | 3 credits**

This is a general education course for non-science majors. The students will learn the fundamentals laws of physics at an introductory level. Must be completed with a grade of "C" or better.

## Course Competencies

### Competency 1:

The student will demonstrate knowledge of what science is by:

* Describing the steps involved in the scientific method.
* Recognizing the necessity of the scientific method for understanding the physical world.
* Identifying important contributions of science to technology, economics, history and society.

Learning Outcomes

* Communication
* Critical thinking
* Numbers / Data

### Competency 2:

The student will demonstrate knowledge of what physics is by:

* Describing the subject of study, scope and limitations of physics as a science.
* Identifying the major subdivisions of physics.
* Identifying important physicists.

Learning Outcomes

* Communication
* Critical thinking
* Numbers / Data

### Competency 3:

The student will demonstrate knowledge of the scientific notation by:

* Describing the standard form of scientific notation.
* Expressing various numbers in scientific notation.
* Utilizing scientific notation to perform basic numerical operations.

Learning Outcomes

* Communication
* Critical thinking
* Numbers / Data

### Competency 4:

The student will demonstrate knowledge of scientific units and measurements by:

* Identifying the main systems of units.
* Identifying the main multiples and submultiples within each system.
* Distinguishing between base units and derived units.
* Converting measurements.

Learning Outcomes

* Communication
* Critical thinking
* Numbers / Data

### Competency 5:

The student will demonstrate knowledge of kinematics by:

* Identifying the main types of motion.
* Describing motion in terms of position, distance, speed, velocity and acceleration.
* Performing basic calculations on motion.

Learning Outcomes

* Communication
* Critical thinking
* Numbers / Data

### Competency 6:

The student will demonstrate knowledge of dynamics by:

* Identifying force as the cause of motion.
* Distinguishing between mass and weight.
* Describing Newton’s laws of motion.
* Performing basic calculations using the laws of motion.

Learning Outcomes

* Communication
* Critical thinking
* Numbers / Data

### Competency 7:

The student will demonstrate knowledge of conservation laws by:

* Distinguishing between work, kinetic energy, potential energy, total energy, and linear momentum and angular momentum.
* Expressing and using in basic calculations the law of conservation of energy.
* Expressing and using in basic calculations the law of conservation of linear momentum.
* Expressing and using in basic calculations the law of conservation of angular momentum.

Learning Outcomes

* Communication
* Critical thinking
* Numbers / Data

### Competency 8:

The student will demonstrate knowledge of fluids by:

* Distinguishing between density and pressure.
* Describing Pascal’s principle and its applications.
* Describing Archimedes’ principle and its applications.
* Describing Bernoulli’s principle and its applications.
* Distinguishing the different kinds of fluid flow.

Learning Outcomes

* Communication
* Critical thinking
* Numbers / Data

### Competency 9:

The student will demonstrate knowledge of thermodynamics by:

* Describing the laws of thermodynamics.
* Distinguishing between temperature and heat.
* Identifying the main types of heat flow.
* Describing the relationship between temperature, pressure and volume.

Learning Outcomes

* Communication
* Critical thinking
* Numbers / Data

### Competency 10:

The student will demonstrate knowledge of electricity by:

* Distinguishing between electric charge, electric force, electric field, electric potential and electric current.
* Describing Coulomb’s law and using it in basic calculations.
* Describing Ohm’s law and using it in basic calculations.
* Distinguishing between series and parallel connections in circuits.
* Distinguishing between direct and alternating currents.

Learning Outcomes

* Communication
* Critical thinking
* Numbers / Data

### Competency 11:

The student will demonstrate knowledge of magnetism by:

* Distinguishing between magnets, magnetic force, magnetic field, and magnetic torque.
* Describing how magnetic fields affect the motion of charges and currents.
* Describing electromagnetic induction and its applications.

Learning Outcomes

* Communication
* Critical thinking
* Numbers / Data

### Competency 12:

The student will demonstrate knowledge of optics by:

* Distinguishing between ray and wave front.
* Distinguishing between reflection, refraction, dispersion, interference and diffraction.
* Describing the law of reflection and using it in basic calculations.
* Describing the law of refraction and using it in basic calculations.
* Identifying fundamental optical instruments.

Learning Outcomes

* Communication
* Critical thinking
* Numbers / Data

### Competency 13:

The student will demonstrate knowledge of relativity by:

* Describing the postulates of special relativity.
* Describing time dilation and length contraction.
* Describing the relation between mass and energy and its implications.
* Describing the general ideas of general relativity and its implications.

Learning Outcomes

* Communication
* Critical thinking
* Numbers / Data

### Competency 14:

The student will demonstrate knowledge of atomic, nuclear and particle physics by:

* Describing the main components of the atom.
* Describing Bohr’s model of the atom.
* Describing the quantized nature of atomic properties.
* Describing nuclear particles and the force between them.
* Describing radioactivity and identifying its main types.
* Identifying the main types of subatomic particles.

Learning Outcomes

* Communication
* Critical thinking
* Numbers / Data