## PHYSICS

**PHYS 1001K - Physical Science I ........................ 4.00 Credits**

This course is designed for non-science majors, and covers fundamental principles of physics, survey of astronomy, including topics on basic mechanics, heat, waves, sound, light, electricity and magnetism, universal galaxies, stars and planets. (non-science majors)

**PHYS 1002K - Physical Science II ................... 4.00 Credits** This course covers the fundamental principles and description of atomic structure, elements, compounds, formula, equations, organic chemistry, nuclear reactions, rocks, minerals, geological cycle, weather and climate. (non-science majors)

**PHYS 1003K - Earth & Space Science .............. 4.00 Credits** This course covers the fundamentals of earth and space sciences including the universe, solar system, the earth, rocks, minerals, geological cycle, weather and climate. (non-science majors)

*Co-requisite(s): PHYS 1003*

**PHYS 1010 - Physics Appreciation .......................3.00 Credits** This course covers surveys the development of physics from Newton to the present day and its technological impact on modern society. (non-science major)

**PHYS 1020 - Survey of Modern**

**Science & Tech .............................................00 OR 3.00 Credits**

A multimedia course that surveys the advances of modern technology inspired by the physical sciences, the inter- relationships between various science and non-science disciplines and reviews the impact of physics on their study.

**PHYS 1110K - Honors Physical Science ……... 4.00 Credits** This course covers fundamental principles of physics including topics on basic mechanics, heat, waves, sound, light, electricity and magnetism and selected topics in nuclear physics. (non-science majors)

**PHYS 1111K - Introductory Physics I.............. 4.00 Credits** This is an introductory course in physics for science majors. Trigonometry is frequently used. it covers mechanics, heat, Thermodynamics, vibrations and waves.

*Prerequisite(s): MATH 1113*

**PHYS 1112K - Introductory Physics II …….... 4.00 Credits** The second part of the introductory physics course covers electricity, magnetism, electromagnetic induction, Ohm’s law, Kirchoff’s law, electromagnetic theory, waves, light, sound and fundamentals of modern physics.

*Prerequisite(s): PHYS 1111K US D*

**PHYS 2100 - Computer Applications ........................ 3.00 Credits** This course is designed to give students the necessary computer skills in using spreadsheets, word processors, data-base applications, graphics and other scientific software that facilitate learning, data analysis and simulation. (For science majors)

**PHYS 2120 - Applied Math for Sciences I............2.00 Credits** The fundamental mathematical concepts and tools needed in the study and application of scientific principles and laboratory practices are covered in this course.

**PHYS 2121 - Applied Math for Sciences II ..........2.00 Credits**

A course in advanced mathematical concepts and tools needed in the study and application of scientific principles and laboratory practices.

*Prerequisite: PHYS 2120.*

**PHYS 2221K - Principles of Physics I................... 4.00 Credits**

An introductory course in calculus-based physics for science and engineering majors; it covers topics on motion, force, work, energy, heat, thermodynamics and electricity.

*Prerequisite(s): MATH 1211 US C*

**PHYS 2222K - Principles of Physics II ................ 4.00 Credits**

An introductory course in calculus-based physics for science and engineering majors; it covers topics on electromagnetic theory, waves, light and sound.

*Prerequisite(s): PHYS 2221K US D*

**PHYS 2223K - Principles of Physics III ………... 4.00 Credits**

An introductory course in calculus-based physics for science and engineering majors; it covers selected topics in quantum and modern physics including atomic structure.

*Prerequisite(s): PHYS 2222K US C*

**PHYS 3001 - Advanced Concepts in Physics .......4.00 Credits** This course is designed for the middle grades science teachers and covers the physics portion of the Science curriculum. The following topics will be covered: heat, waves, sound, light, motion, force, energy, electricity and magnetism. The lab includes demonstrations that may be utilized in explaining physics principles.

*Prerequisite: PHYS 1001 US C.*

**PHYS 3002 - Adv Earth and Space Science .........4.00 Credits**

A study of the earth and its connection to other celestial bodies. Theories about information of the solar system and the universe will be explored. Earth resources and forces that shape the earth will be explored. Earth's atmosphere and weather elements will be studied. The lab gives experiences which will include techniques for identifying minerals, rocks, fossils, and course technology in simulating and predicting weather.

**PHYS 3111 - Mechanics I.......................................3.00 Credits**

A course that covers elements of coplanar statics of particles and rigid bodies and analysis of forces on structures and beams. *Prerequisite(s): PHYS 2221K US C*

**PHYS 3112 - Mechanics II .....................................3.00 Credits**

A course that covers the study of one-, two- and three dimensional motion of particles and rigid body motion.

*Prerequisite: PHYS 3111.*

**PHYS 3220 - Thermodynamics .............................3.00 Credits** This course involves the study of the principles and concepts of heat and thermodynamics including thermal equilibrium, reversible and non-reversible processes and heat engines.

*Prerequisite(s): PHYS 2221K US C*

**PHYS 3311 - Electricity/Magnetism I...................3.00 Credits**

An intermediate level course covering electrostatics, electric and magnetic fields and forces, electromagnetic induction, AC and DC circuits.

*Prerequisite(s): PHYS 2222K US C*

**PHYS 3312 - Electricity/Magnetism II .................3.00 Credits**

An advanced level course covering magnetic properties of matter, time-variable electric and magnetic fields, Maxwell's equations and their application to the generation and transmission of electromagnetic waves.

*Prerequisite: PHYS 3311 US C.*

**PHYS 4011L - Advanced Laboratory I ......00 OR 3.00 Credits** This course is designed to provide students with laboratory skills in physics; it covers experiments in classical and modern physics including the Frank-Hertz experiment, photo- electric effects, X-rays, optical and microwave spectroscopy.

**PHYS 4012L - Advanced Laboratory II ....00 OR 3.00 Credits** This course is designed to provide students with laboratory skills in physics; it covers experiments involving electric and electronic circuits including memory and logic circuits and storage devices. *Prerequisite: PHYS 4011L.*

**PHYS 4110 - Optics ................................................3.00 Credits**

In this course, wave motion, properties and applications of lenses in optical instruments, interference, diffraction and other optical phenomena and quantum theory of light are investigated.

**PHYS 4121 - Modern Physics I ………………….3.00 Credits**

In this course the student is introduced to the principle and phenomenology of modern physics including special theory of relativity and selected topics in atomic and molecular physics are covered in this course.

*Prerequisite(s): PHYS 2222K US C or PHYS 2222 US C*

**PHYS 4122 - Modern Physics II............................3.00 Credits**

A continuation of PHYS 4121, in which topics involving nuclear structure and radioactivity, and selected topics in quantum and solid state physics are examined.

Prerequisite: *PHYS 4121 US C.*

**PHYS 4230 - Special Projects ................................3.00 Credits** Independent study and research on a selected top in physics and/or in a related field in which a project report and presentation are required.

**PHYS 4240 - Internship .........................................3.00 Credits** Internship at off-campus sites to provide experience and training in a real-life work environment.