SYLLABUS

COURSE TITLE: Introduction to Physical Science
COURSE NUMBER: NASC0101
CREDIT HOURS: 3

PREREQUISITE(S): None. Good algebra skills are helpful

REQUIRED TEXT AND MATERIALS: Please check with the KCKCC bookstore, http://www.kckccbookstore.com, for the required texts for your particular class.

COURSE DESCRIPTION:
This is an introductory course into the major areas of the physical sciences including concepts of physics such as forces, energy, electricity / magnetism, nuclear science, earth science and astronomy. This course is designed to acquaint the student with the scientist's approach to the world. It is not recommended for science majors. No laboratory is required.

METHOD OF INSTRUCTION:
A variety of methods is used depending on the content area. These include but not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE:
The course outline is indicated below and is subject to change as course development dictates.
I. Motion of Objects
   A. Velocity and acceleration
   B. Newton’s Laws
II. Momentum

III. Energy
   A. Potential energies
   B. Kinetic energy
   C. Exchanges of energy

IV. Gravity and Satellite Motion

V. Thermal Energy
   A. General description and phenomena
   B. Applications to other areas

VI. Electricity and Magnetism
   A. Fundamentals
   B. Interactions

VII. Waves Mechanics
   A. General description and phenomena
   B. Applications to other areas

VIII. Atomic and Nuclear science fundamentals
   A. Description of the atomic nucleus
   B. Description of radioactive materials
   C. Applications to other areas

IX. Basic Concepts of Chemistry
   A. The atom as it relates to matter.
   B. Use and organization of the periodic table.
   C. Basics of chemical reactions

X. Earth Sciences
   A. Basis of geology.
   B. The structure of the earth.
   C. Meteorology in brief.

XI. Astronomy
   A. The solar system.
   B. The stars.
   C. Galaxies and the Universe.

EXPECTED LEARNER OUTCOMES:
A. The learner will be able to demonstrate knowledge of mechanics.
B. The learner will be able to demonstrate knowledge of electricity and magnetism.
C. The learner will be able to demonstrate knowledge of wave properties.
D. The learner will be able to demonstrate knowledge of atomic and nuclear science.
E. The learner will be able to demonstrate knowledge of the basic ideas of chemistry.
F. The learner will be able to demonstrate knowledge of the basis ideas of earth science.
G. The learner will be able to demonstrate knowledge of the basic ideas of astronomy.
H. The learner will be able to demonstrate familiarity with the tools and methods of physics experimentation.

**COURSE COMPETENCIES:**

*The learner will be able to demonstrate knowledge of mechanics.*

1. The learner will be able to identify the Scientific method as a process of science.
2. The learner will be able to demonstrate the knowledge of different types of measurements and units such as CGS and Metric System (SI units).
3. The learner will be able to demonstrate the knowledge of measurements in different systems and co-relate them.
4. The learner will be able to demonstrate the knowledge of rest, motion, vector and scalar quantities as related to the motion of objects.
5. The learner will be able to demonstrate the knowledge of kinematic relations and dynamics.
6. The learner will be able to demonstrate the knowledge of Newton’s laws of motion.
7. The learner will be able to demonstrate the knowledge of vector and scalar quantities and apply to the real life applications.
8. The learner will be able to demonstrate the knowledge of momentum, energy and their conservation principles.
9. The learner will be able to demonstrate the knowledge of universe as applied to the laws of motions of related to the gravity and gravitation.
10. The learner will be able to demonstrate the knowledge of uniform circular motion and elliptical motion with regard to the motion of objects around the earth, sun and the other terrestrial objects in the universe.
11. The learner will be able to demonstrate the knowledge of heat and temperature
12. The learner will be able to demonstrate the knowledge of structural detail of the earth.
13. The learner will be able to demonstrate the knowledge of mechanical waves and the different wave phenomena.
14. The learner will be able to demonstrate the knowledge of atmospheric pressure, normal pressure and the liquid pressure.
15. The learner will be able to demonstrate the knowledge of laws of thermodynamics and various phenomena as applied to these laws.

*The learner will be able to demonstrate knowledge of electricity and magnetism.*

16. The learner will be able to demonstrate the knowledge of static and current electricity.
17. The learner will be able to demonstrate the knowledge of electric potential and electric field.
18. The learner will be able to demonstrate the knowledge of magnetic field and various types of phenomena.
19. The learner will be able to demonstrate the knowledge of electromagnetic field and various electromagnetic phenomena.

_The learner will be able to demonstrate knowledge of wave properties._

20. The learner will be able to demonstrate the knowledge of electromagnetic waves.

_The learner will be able to demonstrate knowledge of atomic and nuclear science._

21. The learner will be able to demonstrate the knowledge of radioactive phenomena.

22. The learner will be able to demonstrate the knowledge of atoms and molecules, atomic and molecular structure and periodic table.

_The learner will be able to demonstrate knowledge of the basic ideas of chemistry._

23. The learner will be able to demonstrate the knowledge of chemical reactions.

_The learner will be able to demonstrate knowledge of the basic ideas of earth science._

24. The learner will be able to demonstrate the knowledge of introductory geology and metrology.

_The learner will be able to demonstrate knowledge of the basic ideas of astronomy._

25. The learner will be able to demonstrate the knowledge of solar system, galaxy and stars.

_The learner will be able to demonstrate familiarity with the tools and methods of physics experimentation._

26. The learner will be able to gather the data and present it in a form showing their analysis.

**ASSESSMENT OF LEARNER OUTCOMES:**
Student progress is evaluated by means that include, but are not limited to, exams, written assignments, and class participation.

**SPECIAL NOTES:**
This syllabus is subject to change at the discretion of the instructor. Material included is meant to provide and outline of the course and rules that the instructor will adhere to in evaluating the student’s progress. However, this syllabus in not intended to be a legal contract. Questions regarding the syllabus are welcome at any time.

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