DATE OF LAST REVIEW: 02/2013

CIP CODE: 24.0101

SEMESTER: DEPARTMENTAL SYLLABUS

COURSE TITLE: General Physical Science

COURSE NUMBER: NASC0103

CREDIT HOURS: 5

INSTRUCTOR: DEPARTMENTAL SYLLABUS

OFFICE LOCATION: DEPARTMENTAL SYLLABUS

OFFICE HOURS: DEPARTMENTAL SYLLABUS

TELEPHONE: DEPARTMENTAL SYLLABUS

EMAIL: DEPARTMENTAL SYLLABUS

KCKCC-issued email accounts are the official means for electronically communicating with our students.

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:
The study of matter and energy is the central theme unifying the various areas of physical science such as motion of objects, energy, waves, electricity / magnetism, light, nuclear science, earth science and astronomy. This is a general course which satisfies the laboratory natural science requirement. The course requires numerous brief laboratory and discussion activities plus outside work. This is not an online course but does require minimal computer skills. The KCKCC computer labs are available for students not having a home computer.

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

CORE OUTCOMES MISSION STATEMENT: The Core Outcomes Project is an academic initiative of the Kansas Board of Regents that brings together faculty for the purpose of developing core outcomes and competencies for general education courses from the state’s universities, community colleges, and technical colleges. Common core outcomes and
competencies contribute to the state’s system of higher education by creating a seamless pathway for students by improving articulation and transfer between state institutions, facilitating communication within disciplines among the state’s faculty, and communicating to the state’s secondary schools the expectations of college-level curriculum that could result in improvements in college preparedness of students.

**CORE OUTCOMES SYLLABI:** The learning outcomes and competencies detailed in this syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Project for this course, as sanctioned by the Kansas Board of Regents.

**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 Law

II. **Momentum**
   A. Energy
   B. Potential energies
   C. Kinetic energy
   D. Exchanges of energy

III. **Gravity and Satellite Motion**

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

VI. **Electricity and Magnetism**
   A. Fundamentals
   B. Interactions

VII. **Waves, Sound and Light**
   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

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

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

*The learner will be able to demonstrate knowledge of atomic and nuclear science.*

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.
27. The learner will be able to produce graphs of data provided by the instructor or gathered by the learner.
28. The learner will be able to interpret graphs of data provided by the instructor or gathered by the learner.
29. The learner will demonstrate knowledge of the use of models in science.
30. The learner will be able to make predictions based on the use of models.
31. The learner will demonstrate the use of math as a tool of science.
32. The learner will be able to convert between the units of the metric and customary English units.
33. The learner will be able to demonstrate ability in problem solving as it relates to physical science.
34. The learner will be able to understand and use the vocabulary customary in physical science.
35. The learner will be able to critically review selected science writings.
36. The learner will be able to apply the concepts of physical science to real life situations.
37. The learner will be able to recognize key concepts and/or principles of physical science.
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 an outline of the course and rules that the instructor will adhere to in evaluating the student’s progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome at any time.

Kansas City Kansas Community is committed to an appreciation of diversity with respect for the differences among the diverse groups comprising our students, faculty, and staff that is free of bigotry and discrimination. Kansas City Community College is committed to providing a multicultural education and environment that reflects and respects diversity and that seeks to increase understanding.

Kansas City Kansas Community College offers equal educational opportunity to all students as well as serving as an equal opportunity employer for all personal. Various laws, including Title IX of the Educational Amendments of 1972, require the college’s policy on non-discrimination be administrated without regard to race, color, age, sex, religion, national origin, physical handicap, or veteran status and that such policy be made known.

Kansas City Kansas Community College complies with the Americans with Disabilities Act. If you need accommodations due to a documented disability, please contact the Director of the Academic Resource Center at 913-288-7670.