SYLLABUS

DATE OF LAST REVIEW: 02/2013

CIP CODE: 24.0101

SEMESTER: DEPARTMENTAL SYLLABUS

COURSE TITLE: Introductory Physics

COURSE NUMBER: NASC0130

CREDIT HOURS: 3

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.

REREQUISITE(S): College Algebra (MATH-0105) is recommended

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 a 3 credits introductory physics course. The main objective of the course is to provide learners with introductory concepts of broader area of general physics without any mathematical emphasis, using simplest algebraic equations. The course covers most areas of general physics such as mechanics, waves, optics, electricity & magnetism, and modern physics.

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. Measurements, systems of measurements, units & dimensions
   II. Motion of objects
       A. Distance & displacement, speed & velocity, average & instantaneous velocity, acceleration, average & instantaneous acceleration
       B. Vectors
       C. Newton’s laws of motion
   III. Impulse & Momentum
       A. Momentum & impulse, elastic and inelastic collision
       B. Conservation of momentum & energy
   IV. Work & Energy
       A. Isolated and non-isolated system, work-energy relation
       B. Potential & kinetic energy
       C. Conservation of energy
   V. Equilibrium and Simple Machines
       A. The basis of equilibrium
       B. Description of the simple machines
       C. Applications to human life
   VI. Waves
       A. General description of wave types & their phenomena
       B. Applications to other areas
   VII. Electricity & Magnetism
       A. Fundamentals
       B. Interactions
   VIII. Atomic & Nuclear Science Fundamentals
       A. Description of atomic nucleus
       B. Description of radioactive materials
       C. Applications to other areas

**EXPECTED LEARNER OUTCOMES:**
A. The learner will be able to demonstrate knowledge of kinematics and dynamics.
B. The learner will be able to demonstrate knowledge of wave properties.
C. The learner will be able to demonstrate knowledge of simple machine as implied to the human life.
D. The learner will be able to demonstrate knowledge of electricity and magnetism.
E. The learner will be able to demonstrate knowledge of atomic and nuclear science.
COURSE COMPETENCIES:

The learner will be able to demonstrate knowledge of kinematics and dynamics.

1. The learner will be able to describe the difference between velocity and acceleration.
2. The learner will be able to employ the equations of UAL to calculate the velocity and or acceleration.
3. The learner will be able to explain how force relates to velocity and acceleration.
4. The learner will be able to identify or illustrate which of Newton’s laws apply in a given situation.
5. The learner will be able to employ Newton’s laws to calculate the motion caused by an applied force.
6. The learner will be able to calculate the impulse applied to or the momentum of an object.
7. The learner will be able to identify or illustrate the concept of impulse as it applies to momentum.
8. The learner will be able to use the concept of the conservation of momentum to calculate the resultant motion of an object(s).
9. The learner will be able to describe the concept of energy as used in physics.
10. The learner will be able to identify or illustrate the concept of potential energy.
11. The learner will be able to calculate the work, gravitational potential energy or kinetic energy as required
12. The learner will be able to use the concept of the conservation of energy to calculate the resultant motion of an object(s).
13. The learner will be able to describe the difference between a torque and a force.
14. The learner will be able to identify or illustrate the conditions for the equilibrium of an object.
15. The learner will be able to use the concept of equilibrium to calculate an unknown force or torque on an object.

The learner will be able to demonstrate knowledge of simple machine as employed to the human life.

16. The learner will be able to identify or illustrate a “simple machine” as described in physics.
17. The learner will be able to use the concept of conservation of energy as it applies to simple machines
18. The learner will be able to calculate the unknown force or distance in a given simple machine.
19. The learner will be able to describe how simple machines relate to the human body.

The learner will be able to demonstrate knowledge of wave properties.

20. The learner will be able to describe the conditions necessary to produce a wave.
21. The learner will be able to describe, identify or illustrate the physical characteristics amplitude, wavelength and frequency of a wave.
22. The learner will be able to describe how the velocity is related to the amplitude, wavelength and frequency of a wave.
23. The learner will be able to use the relationship between velocity, wavelength and frequency to calculate any unknown given two of the three values.
24. The learner will be able to identify or illustrate any of the phenomena dealing with waves such as reflection, refraction, diffraction, superposition and polarization.
25. The learner will be able to describe, identify or illustrate the phenomena of superposition and how it relates to resonance.

_The learner will be able to demonstrate knowledge of electricity and magnetism._

26. The learner will be able to describe, identify or illustrate the source and conditions necessary to produce static electricity.
27. The learner will be able to identify or illustrate the effects of static electricity.
28. The learner will be able to calculate the electric force, electric field and/or electric potential as required.
29. The learner will be able to describe, identify or illustrate the source and conditions necessary to produce current electricity.
30. The learner will be able to identify or illustrate the effects of current electricity.
31. The learner will be able to calculate the electric current, resistance and/or potential difference of an electric circuit as required.
32. The learner will be able to describe, identify or illustrate the source and conditions necessary to produce a magnetic field.
33. The learner will be able to identify or illustrate the effects of magnetism.
34. The learner will be able to calculate the effect of magnetism as required.

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

35. The learner will be able to identify or describe the atom and its structure.
36. The learner will be able to describe the difference between the parts of an atom.
37. The learner will be able to identify or describe the source of radioactivity.
38. The learner will be able to describe and use the concept of half-life of a radioactive material.
39. The learner will be able to identify or describe the three most basic types of radioactive “rays”.
40. The learner will be able to describe or illustrate the use of radioactive materials.

**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 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 administered 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