SYLLABUS

DATE OF LAST REVIEW: 02/2013

CIP CODE: 24.0101

SEMESTER: DEPARTMENTAL SYLLABUS

COURSE TITLE: Engineering Physics II with Lab

COURSE NUMBER: NASC0246

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): Engineering Physics I-NASC-0245, and Calculus II MATH-0123 or consent of the instructor.

COREQUISITE (S): Engineering Physics Lab-II, NASC1246

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 the second semester course of a two semester sequential course. The course is designed primarily for those students who are majoring in physical science and pre-engineering. The course provides solid foundation for the undergraduate level physics and other branches of engineering and fulfills a requirement for those students who want to transfer their credits to any four-year college and university. The course covers electricity, magnetism, light, and concepts of modern physics using mathematical tools algebra, calculus and preliminary differential equations. The student must be concurrently enrolled in NASC-1246-Engineering Physics II Lab. The course is offered during spring semester only.

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. Electricity and Magnetism
   A. Static Electricity
   B. Electric Circuits
   C. Magnetism
   D. Electromagnetic Induction
   E. Fundamentals of AC circuitry.
   F. Electromagnetic Waves

II. Laboratory Procedures
   A. Learn how to use various meters to make measurements.
   B. Learn safety procedures in the laboratory.
   C. Use proper technique for writing laboratory reports.

EXPECTED LEARNER OUTCOMES:
A. The learner will be able to demonstrate knowledge of static and current electricity including AC circuit.
B. The learner will be able to demonstrate knowledge of magnetic phenomena.
C. The learner will be able to demonstrate knowledge of electromagnetic phenomena.
D. The learner will be able to demonstrate knowledge of electromagnetic waves.
E. The learner will be able to demonstrate knowledge of light and optics.
F. The learner will be able to demonstrate knowledge of image formation.
G. The learner will be able to demonstrate knowledge of relativity.

COURSE COMPETENCIES:
The learner will be able to demonstrate knowledge of static and current electricity including AC circuit.

1. The learner will be able to describe the source necessary to produce static electricity.
2. The learner will be able to illustrate the source necessary to produce static electricity.
3. The learner will be able to describe the conditions necessary to produce static electricity.
4. The learner will be able to illustrate the conditions necessary to produce static electricity.
5. The learner will be able to identify the effects of static electricity.
6. The learner will be able to illustrate the effects of static electricity.
7. The learner will be able to calculate the electric force as required.
8. The learner will be able to calculate the electric field as required.
9. The learner will be able to calculate the electric potential as required.
10. The learner will be able to describe the source necessary to produce current electricity.
11. The learner will be able to illustrate the source necessary to produce current electricity.
12. The learner will be able to describe the conditions necessary to produce current electricity.
13. The learner will be able to illustrate the conditions necessary to produce current electricity.
14. The learner will be able to identify or illustrate the effects of current electricity.
15. The learner will be able to calculate the electric current of an electric circuit as required.
16. The learner will be able to calculate the resistance of an electric circuit as required.
The learner will be able to calculate the potential difference of an electric circuit as required.

The learner will be able to demonstrate knowledge of magnetic phenomena.

The learner will be able to describe the source necessary to produce a magnetic field.

The learner will be able to describe the conditions necessary to produce a magnetic field.

The learner will be able to illustrate the source necessary to produce a magnetic field.

The learner will be able to illustrate the conditions necessary to produce a magnetic field.

The learner will be able to calculate, as required, the effects of magnetism.

The learner will be able to identify, as required, the effects of magnetism.

The learner will be able to demonstrate knowledge of electromagnetic phenomena.

The learner will be able to understand the basic principles of electromagnetic induction.

The learner will be able to understand the principles of interrelation between electric and magnetic phenomena.

The learner will be able to demonstrate various laws phenomena related to the electromagnetic induction.

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

The learner will be able to demonstrate knowledge of Ampere’s law and Maxwell equations.

The learner will be able to demonstrate knowledge of momentum, radiation pressure and antenna.

The learner will be able to demonstrate knowledge of light and optics.

The learner will be able to understand the nature of light and the principles of light rays.

The learner will be able to understand the principles of reflection, refraction, interference diffraction and polarization.

The learner will be able to demonstrate the knowledge of image formation.

The learner will be able to understand and construct the formation of images using mirrors and lenses.

The learner will be able to understand the working principles of optical instruments such as camera, microscope, telescope etc.

The learner will be able to demonstrate knowledge of relativity.

The learner will be able to understand the principle of Galilean relativity.

The learner will be able to understand the Einstein theory of relativity.

The learner will be able to understand the relativistic mass, energy and momentum.

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.
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.

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