COURSE OUTLINE: PHY 94 - ACE PHYSICS

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Course Code: Title	PHY 94: ACE PHYSICS
Program Number: Name	8220: ACAD CAREER ENTRANCE
Department:	ACAD. UPGRADING SPONSORSHIP
Semesters/Terms:	18F, 19W, 19S
Course Description:	This physics course will enable students to develop the basic concepts of physics. Students will study and explore concepts related to dynamics, forces, energy, mechanics, electricity and fluids. They will apply these concepts and principles to solve applied problems while communicating the scientific and technical information and evaluating the impact of physics on society and the environment. Successful learners must tackle each chapter and demonstrate content mastery by completing the corresponding test with a grade of 70% or higher. Learners will have their choice of final topic based on which program they are looking at taking in post-secondary. Graduates of this course will have the knowledge and understanding of all of the major concepts in the world of physics and will be well prepared for a variety of college post-secondary programs.
Total Credits:	8
Hours/Week:	5
Total Hours:	90
Prerequisites:	ENG044, MTH050
Corequisites:	There are no co-requisites for this course.
Substitutes:	ACE040
Essential Employability Skills (EES) addressed in this course:	EES 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems. EES 6 Locate, select, organize, and document information using appropriate technology and information systems. EES 7 Analyze, evaluate, and apply relevant information from a variety of sources.
Course Evaluation:	Passing Grade: 70%, B
Books and Required Resources:	Physics SPH4C-B Units 1-5 by Independent Learning Center

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
Upon successful completion of this course, the student will demonstrate mastery of The Physics Tool Kit: the basic tools they will need to attack other chapters ahead.	Demonstrate mastery in each of the following content areas in order to move forward in the course: Standards of Measure Introduction to the Metric System Length, Area and Volume Other Units of Measure

	Significant Digits, Accuracy, and Precision Calculations with Measurements Problem-Solving Methods
Course Outcome 2	**Learning Objectives for Course Outcome 2**
Upon successful completion of this course, the student will demonstrate knowledge of how vectors can be used to solve problems with forces.	Demonstrate mastery of each of the following content areas: Vectors and Scalars Components of a Vector Vectors in Standard Position
Course Outcome 3	**Learning Objectives for Course Outcome 3**
Upon successful completion of this course, the student will demonstrate knowledge of how objects move relative to their speed, direction and gravitational pull.	Demonstrate mastery of each of the following content areas: Speed Versus Velocity Acceleration Uniformly Accelerated Motion and Free Fall Projectile Motion Force, Law of Inertia, Law of Acceleration Friction Total forces in One Dimension Gravity and Weight Law of Action and Reaction Impulse and Momentum Collisions Forces in Two Dimensions Concurrent Forces in Equilibrium Torque, Parallel Force and Center of Gravity
Course Outcome 4	**Learning Objectives for Course Outcome 4**
Upon successful completion of this course, the student will demonstrate the knowledge of how changes in physical activity can accomplish different tasks including how they are related and how they differ from their everyday meanings.	Demonstrate mastery of each of the following content areas: Work, Power, Energy, and Conservation of Energy Rotational Motion, Angular Momentum and Centripetal Force Power in Rotational Systems Transferring Rotational Motion Gears and Pulleys Machines and Energy Transfer Lever, Wheel-and-Axle, Pulley, Inclined Plane and Screw Wedge and Compound Machines Effect of Friction on Simple Machine
Course Outcome 5	**Learning Objectives for Course Outcome 5**
Upon successful completion of this course, the student will demonstrate the knowledge of how the reflection and refraction of light effects how we see objects and how color is projected to our eyes, as well as the use of mirrors to create different images.	Demonstrate mastery of each of the following content areas: Nature of light, Speed of Light Light as a wave and particle, Photometry Mirrors and Images Images formed by Plane, Concave, and Convex Mirrors Law of Refraction Total Internal Reflection Types of Lenses Images Formed by Converging and Diverging Lenses
Course Outcome 6	**Learning Objectives for Course Outcome 6**
ELECTIVE FOR	Demonstrate mastery of each of the following content areas:

ELECTRICAL: Upon successful completion of this course, the student will demonstrate the knowledge of how electricity and magnetics are used in a variety of applications.	Electrical Charges, Induction, Coulomb`s Law Electric Fields, Simple Circuits, Ohm`s Law Series, Parallel and Compound Circuits Electric Instruments, Voltage Sources, Cells Electric Power Magnetic Effects of Currents Induced Magnetism, Electromagnets and Current Generators, Motor Principle, Magnetic Forces Alternating Current Electricity
Course Outcome 7	**Learning Objectives for Course Outcome 7**
ELECTIVE FOR MECHANICAL: Upon successful completion of this course, the student will demonstrate the knowledge of how hydraulics and pneumatics drive many industrial machines.	Demonstrate mastery of each of the following content areas: Properties of Matter, Solids, Liquids, Gases Hydrostatic Pressure, Air Pressure, Buoyancy Fluid Flow Temperature Heat Transfer, Specific Heat, Change of Phase Expansion of Solids and Liquids Charles Law, Boyles Law, Combination

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight	Course Outcome Assessed
Tests (5 unit tests)	100%	

Date: August 30, 2018

Please refer to the course outline addendum on the Learning Management System for further information.