



COURSE OUTLINE

PHY125

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Prepared: Douglas McKinnon Approved: Greg Mapp

Course Code: Title	PHY125: PHYSICS				
Program Number: Name	4061: AVIATION TECHNOLOGY				
Department:	AVIATION TECHNOLOGY				
Semester/Term:	17F				
Course Description:	Topics included are properties of fluids, forces, and pressure involved in hydrostatics and hydraulics, wave motion and propagation, properties and intensity levels of sounds.				
Total Credits:	4				
Hours/Week:	4				
Total Hours:	60				
This course is a pre-requisite for:	AFT120, AVF122, AVT123, ELR104				
Essential Employability Skills (EES):	<p>#1. Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.</p> <p>#2. Respond to written, spoken, or visual messages in a manner that ensures effective communication.</p> <p>#3. Execute mathematical operations accurately.</p> <p>#4. Apply a systematic approach to solve problems.</p> <p>#5. Use a variety of thinking skills to anticipate and solve problems.</p> <p>#7. Analyze, evaluate, and apply relevant information from a variety of sources.</p> <p>#8. Show respect for the diverse opinions, values, belief systems, and contributions of others.</p> <p>#10. Manage the use of time and other resources to complete projects.</p> <p>#11. Take responsibility for ones own actions, decisions, and consequences.</p>				
General Education Themes:	Science and Technology				
Course Evaluation:	Passing Grade: 50%, D				
Evaluation Process and Grading System:	<table><tr><th>Evaluation Type</th><th>Evaluation Weight</th></tr><tr><td>Tests</td><td>100%</td></tr></table>	Evaluation Type	Evaluation Weight	Tests	100%
Evaluation Type	Evaluation Weight				
Tests	100%				
Books and Required	Physics by James S. Walker				



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Resources:

Publisher: Pearson Addison-Wesley Edition: 5
ISBN: 9780321976444

Course Outcomes and Learning Objectives:

Course Outcome 1.

Introduction and Mathematical Concepts

Learning Objectives 1.

- a) Mathematics of basic physics
- b) Units of measurement
- c) Base quantities and units
- d) S.I. metric prefixes and their abbreviations
- e) Derived quantities and derived units
- f) Conversion of units of measure
- g) Significant figures
- h) Numerical accuracy and precision
- i) Vector and scalar quantities

Course Outcome 2.

Introductory Kinematics and Dynamics

Learning Objectives 2.

- a) Distance and displacement
- b) Speed and velocity
- c) Acceleration
- d) Equations of "uniform accelerated motion"
- e) Acceleration due to gravity – free fall
- f) Projectile motion
- g) Definition and characteristics of forces
- h) Types of forces
- i) Distinguish between mass and weight
- j) Definition and application of Newton's three laws of motion
- k) "normal force" and Newton's third law of motion



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- l) Static and kinetic frictional forces
- m) The tension (tensile) force
- n) Static equilibrium problems

Course Outcome 3.

Introductory WORK, ENERGY, IMPULSE, MOMENTUM and ROTATIONAL KINEMATICS

Learning Objectives 3.

- a) Define and describe work and energy
- b) Distinguish between kinetic and potential energy
- c) Gravitational potential energy
- d) Conservation of energy and mechanical energy
- e) Definition of power
- f) Efficiency
- g) Mechanical advantage
- h) Velocity ratio
- i) Analyze and describe "simple" machines
- j) Define and describe Momentum
- k) Define and describe Impulse
- l) Understand the conservation of momentum
- m) Describe and determine Angular measurement and derivation of velocity and acceleration
- n) Equations and attributes of rotational kinematics
- o) Describe the relationship between angular and linear motion
- p) Define and describe normal and centripetal forces.
- q) Quantify normal and centripetal forces

Course Outcome 4.

MECHANICAL PROPERTIES OF SOLIDS, LIQUIDS AND GASES

Learning Objectives 4.

- a) Mass density
- b) Weight density
- c) Specific gravity



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- d) Define pressure
- e) Units of pressure measurement
- f) Pressure at a depth in a liquid
- g) Atmospheric, absolute and gauge pressure
- h) Pascals Law
- i) Describe the hydraulic press
- j) Understand and apply Archimedes Principle
- k) Fluids in motion
- l) Understand and apply Bernoullis Principle and Equation

Course Outcome 5.

TEMPERATURE and HEAT

Learning Objectives 5.

- a) Define and describe temperature
- b) Convert between various temperature scales
- c) Define and describe heat
- d) Quantify thermal linear, area and volume expansion of solids
- e) Quantify thermal volume expansion of liquids
- f) Define specific heat capacity
- g) Define and describe physical characteristics of changes of state
- h) Describe and quantify specific heat of fusion and vaporization
- i) Understand various methods of heat transfer
- j) Understand and quantify the ideal and general gas laws
- k) Awareness of Boyles, Charles and Gay-Lussacs gas laws

Date:

Thursday, August 31, 2017

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