



# COURSE OUTLINE

## MCH111

Prepared: Douglas McKinnon    Approved: Greg Mapp

<b>Course Code: Title</b>	MCH111: APPLIED MECHANICS						
<b>Program Number: Name</b>	4061: AVIATION TECHNOLOGY						
<b>Department:</b>	AVIATION TECHNOLOGY						
<b>Semester/Term:</b>	17F						
<b>Course Description:</b>	This course advances the study of mechanics into the area of dynamics. Topics include: KINEMATICS (uniformly accelerated motion, projectile motion, circular motion, Newton's Second Law rectilinear and angular motion), inertia, dynamic equilibrium (work, energy forms, power, efficiency), impulse and momentum (linear and angular), dynamic friction.						
<b>Total Credits:</b>	4						
<b>Hours/Week:</b>	3						
<b>Total Hours:</b>	45						
<b>Prerequisites:</b>	MCH110						
<b>Essential Employability Skills (EES):</b>	<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>#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>#8. Show respect for the diverse opinions, values, belief systems, and contributions of others.</p> <p>#11. Take responsibility for ones own actions, decisions, and consequences.</p>						
<b>General Education Themes:</b>	Science and Technology						
<b>Course Evaluation:</b>	Passing Grade: 50%, D						
<b>Evaluation Process and Grading System:</b>	<table border="1"> <thead> <tr> <th>Evaluation Type</th> <th>Evaluation Weight</th> </tr> </thead> <tbody> <tr> <td>Quizzes</td> <td>30%</td> </tr> <tr> <td>Tests</td> <td>70%</td> </tr> </tbody> </table>	Evaluation Type	Evaluation Weight	Quizzes	30%	Tests	70%
Evaluation Type	Evaluation Weight						
Quizzes	30%						
Tests	70%						
<b>Books and Required Resources:</b>	Applied Mechanics for Engineering Technology by Keith M. Walker Publisher: Pearson Prentice-Hall Edition: 8 ISBN: 9780131721517						



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2

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### Course Outcomes and Learning Objectives:

#### Course Outcome 1.

Kinematics of Particles

#### Learning Objectives 1.

- a) Distance and Displacement
- b) Speed and Velocity
- c) Acceleration
- d) Uniformly Accelerated Motion
- e) Falling Bodies – the acceleration due to gravity
- f) Projectiles and Projectile Motion

#### Course Outcome 2.

Rotational Motion

#### Learning Objectives 2.

- a) Angular Displacement (radians)
- b) Angular Velocity
- c) Angular Acceleration
- d) Angular Motion with uniform acceleration
- e) Relationship between Rectilinear Motion and Angular Motion
- f) Normal and Tangential Acceleration
- g) Total Angular Acceleration

#### Course Outcome 3.

Kinetics: Forces and General Planar Motion

#### Learning Objectives 3.



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3

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- a) Newton's Second Law of Motion
- b) Accelerating Forces – horizontal and vertical motion
- c) 'Dynamic Equilibrium' – the Linear Inertia Force
- d) 'Angular Dynamic Equilibrium' – the Angular Inertia Torque

### **Course Outcome 4.**

Work, Energy and Power

### **Learning Objectives 4.**

- a) the concept of work
- b) Work done by constant forces
- c) Work done by variable forces
- d) Energy
- e) Gravitational Potential Energy
- f) Kinetic Energy
- g) Conservation of Energy – Translational
- h) Moment of Inertia of bodies
- i) Kinetic Energy of Rotation
- j) Conservation of Energy – Angular
- k) Power
- l) Efficiency

### **Course Outcome 5.**

Impulse and Momentum

### **Learning Objectives 5.**

- a) Linear Impulse
- b) Linear Momentum
- c) Angular Impulse
- d) Angular Momentum
- e) Conservation of Momentum

**Date:**

Thursday, August 31, 2017



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4

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