

EGR 245

Engineering Mechanics - Dynamics

Faculty Name: Richard Clark

Program Head: Richard Clark

Dean's Review:

Dean's Signature: _____ Date Reviewed: ___/___/___

VIRGINIA WESTERN COMMUNITY COLLEGE
PO Box 14007
Roanoke, VA 24038
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Revised: Fall 2016

EGR 245

Engineering Mechanics - Dynamics

COURSE OUTLINE

Prerequisites:

EGR 140

Course Description:

Presents approach to kinematics of particles in linear and curvilinear motion. Includes kinematics of rigid bodies in plane motion. Teaches Newton's second law, work-energy and power, impulse and momentum, and problem solving using computers. Lecture 3 hours per week.

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Semester Credits: 3 Lecture Hours: 3 Lab/Recitation Hours: *Select Hours*
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Course Outcomes

At the completion of this course, the student should be able to:

1. Calculate the velocity and/or acceleration of a particle in plane motion using Work-Energy methods and/or Impulse-Momentum methods.
2. Calculate the velocity and/or acceleration of a rigid body in plane motion using Work-Energy methods and/or Impulse-Momentum methods.
3. Establish the forces acting on a particle in plane motion using Newton's Laws.
4. Establish the forces acting on a rigid body in plane motion using Newton's Laws.
5. Articulate steps necessary to determine the velocity and/or acceleration and forces acting on a particle and/or a rigid body in three dimensions.

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Required Materials:

Engineering Computation Paper
Calculator

Textbook:

1. **Engineering Mechanics Dynamics & Mastering Engineering Package, 14/E**
Russell C. Hibbeler

ISBN-13: 9780134116990

Publisher: Prentice Hall

2. All Homework will be handled through www.masteringengineering.com

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Topical Description:

Week	Topic	Chapter
1	Kinematics of Particles	12
2		
3	Kinetics of Particles ($F = ma$)	13
4	Kinetics of Particles (Work-Energy)	14
5	Kinetics of Particles (Impulse-Momentum)	15
6		
7	2-D Kinematics of Rigid Bodies	16
8		
9	2-D Kinetics of Rigid Bodies ($F = ma$)	17
10	2-D Kinetics of Rigid Bodies (U)	18
11	2-D Kinetics of Rigid Bodies (mv)	19
12	3-D Kinematics of Rigid Bodies	20
13		
14	3-D Kinetics of Rigid Bodies	21
15	Vibrations	22

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Notes to Instructors

1. All instructors teaching this course will use the same textbook.
2. Course content within this course may be covered at the instructor's discretion but with all topics being covered.
3. This course and its grades will be structured around a minimum of homework, 2 tests, final exam, and homework.
4. At the end of the semester, all instructors will give the outcome assessment as it relates to the final exam to the program head at the same time they prepare their student final grades.

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