Virginia Western Community College
EGR 245
Engineering Mechanics - Dynamics

Prerequisite
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.

Semester Credits: 3 **Lecture Hours: 3**

Required Materials

Textbook:

Engineering Mechanics Dynamics & Mastering Engineering Package, 14/E, Author: Russell C. Hibbeler, Publisher: Pearson Prentice Hall, ISBN# 9780134116990,

Other Required Materials:
Engineering Computation Paper
Calculator
All Homework will be handled through www.masteringengineering.com

VIRGINIA WESTERN COMMUNITY COLLEGE
School of Science, Engineering, Technology, and Mathematics
540)-857-7273

3080 Colonial Ave. SW
Roanoke, VA 24038

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.

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

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 there student final grades.

5. A comprehensive final exam will be given, which must be at least 10% of the final grade.