RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE

EMET 236 – Dynamics for Technology

I. Basic Course Information

A. Course Number and Title: EMET 236 – Dynamics for Technology

B. New or Modified Course: New Course

C. Date of Proposal: Fall 2018

D. Effective Term: Fall 2019

E. Sponsoring Department: Science and Engineering

F. Semester Credit Hours: 2

G. Weekly Contact Hours: 2 Lecture: 2
Laboratory: 0
Out of class student work per week: 4 hours

H. Prerequisites: EMET235 (Statics for Technology)

I. Laboratory Fees: None

J. Name and Telephone Number or E-Mail Address of Department Chair and Dean at time of approval: Chair: Dr. Marianne Baricevic, marianne.baricevic@raritanval.edu, Dean: Dr. Sarah Imbriglio, Sarah.Imbriglio@raritanval.edu

II. Catalog Description

Prerequisites: EMET235 (Statics for Technology)

Provides an understanding of the mathematics of the motion of particles and rigid bodies, and of the relation of forces and motion of particles. Upon successful completion of this course, the students should be able to describe the motion of particles and rigid bodies as functions of time and position, develop their equations of motions due to applied forces, and determine post impact behavior.

III. Statement of Course Need

A. It is a required course for the Mechanical Engineering Technology (MET) program.
B. This course generally transfers as a requirement of engineering programs.

IV. Place of Course in College Curriculum

A. This course is a Free Elective.
B. This course meets a program requirement for the Mechanical Engineering Technology (MET) AS degree.
C. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, www.njtransfer.org; b) for all other colleges and universities, go to the individual websites.

V. Outline of Course Content

A. Kinematics of Particles: Rectilinear Motion, Curvilinear Motion,
B. Kinetics of Particles: Newton's 2nd Law, Energy Methods, Momentum Methods,
C. Systems of Particles,
D. Kinematics of Rigid Bodies,
E. Relative Motions,
F. Plane Motion of Rigid Bodies Forces & Accelerations,
G. Plane Motion of Rigid Bodies Systems & Constraints,
H. Plane Motion of Rigid Bodies Energy Methods,
I. Plane Motion of Rigid Bodies Momentum Methods,
J. Vibrations

VI. General Education and Course Learning Outcomes

A. General Education Learning Outcomes:

At the completion of the course, students will be able to:

1. Analyze text and interpret problem data. (GE-NJ 2) #.
2. Compose hypotheses and apply problem solving strategies. (GE-NJ 2, GE-NJ 3) #

(#) Embedded critical thinking

B. Course Learning Outcomes:

At the completion of the course, students will be able to:

1. Select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities (*).
2. Select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies (*).
3. Perform standard vector operations including addition, subtraction, Dot and Cross products
4. Resolve vectors into components along prescribed directions.
5. Perform equilibrium analysis of rigid bodies.

6. Solve problems involving kinematics of particles in Rectilinear and Curvilinear Motion, using Newton's 2nd Law, Energy Methods, Momentum Methods,
7. Solve problems involving the Kinematics of Rigid Bodies in plane motion under conditions of forces, accelerations, and constraints, using energy and momentum methods.
8. Solve problems involving mechanical in-plane vibrations

(*) The Course Learning Outcomes support the achievement of the TAC of ABET Criterion 9 requirements.

C. Assessment Instruments

1. Quizzes
2. Exams
3. Homework
4. Projects

VII. Grade Determinants

A. Quizzes
B. Chapter Exams
C. Homework
D. Final Cumulative Exam
E. Projects

Primary formats, modes, and methods for teaching and learning that may be used in the course:

A. lecture/discussion
B. small-group work
C. student collaboration
D. independent study

VIII. Texts and Materials

Text: Vector Mechanics for Engineers, 9th Ed. by F.P. Beer, E.R. Johnston, Jr., and E.R. Eisenberg Prentice-Hall, 2010, ISBN: 978-007-352923-

Computer Use:

- Microsoft Office

Please Note: The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.

IX. Resources

No other type of resources are needed

X. Honors Option

Not applicable