RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE

EMET 235 – Statics for Technology

I. Basic Course Information

A. Course Number and Title: EMET 235 – Statics for Technology

B. New or Modified Course: Modified Course

C. Date of Proposal: Fall 2020

D. Effective Term: Fall 2021

E. Sponsoring Department: Science and Engineering

F. Semester Credit Hours: 3

G. Weekly Contact Hours: 3 Lecture: 3
Laboratory: 0
Out of class student work per week: 6 hours

H. Prerequisites: MATH 151 (Calculus I) and PHYS 101 (General Physics I) or PHYS 150 (Analytical Physics I)

I. Laboratory Fees: None

J. Name and Telephone Number or E-Mail Address of Department Chair and Dean at time of approval: Chair: Dr. Ed Carr, edward.carr@raritanval.edu, Dean: Dr. Sarah Imbriglio, Sarah.Imbriglio@raritanval.edu

II. Catalog Description

Prerequisites: MATH 151 (Calculus I) and PHYS 101 (General Physics I) or PHYS 150 (Analytical Physics I)

Provides an understanding of equilibrium of particles and rigid bodies subject to concentrated and distributed forces. Upon successful completion of this course, the students should be able to analyze problems involving the equilibrium of particles and rigid bodies, including simple machines, trusses, and frictional forces.

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. Units Fundamentals,
B. Force Vectors,
C. Unit Vectors,
D. Equilibrium of a Particle,
E. Forces in Space,
F. Rectangular Components,
G. Equilibrium Rigid Bodies,
H. Equivalent Force Systems,
I. Moments, Couple Systems,
J. Equiv. Force-Couple Systems,
K. Equilibrium of a Rigid Body,
L. Distributed Forces,
M. Trusses and Frames,
N. Machines, Centroids,
O. Center of Gravity,
P. Moment of Inertia,
Q. Polar Moments of
R. Inertia, Friction and Belt Friction

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. Determine equivalent systems of forces and couples.
7. Perform equilibrium and structural analysis of trusses and frames.
8. Determine centroids and moments of inertia of various areas.
9. Perform equilibrium analysis of impending motion including frictional forces.

(*) 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