GAVILAN COLLEGE
5055 Santa Teresa Blvd
Gilroy, CA 95023

Course Outline

COURSE: ENGR 2 DIVISION: 10 ALSO LISTED AS:

TERM EFFECTIVE: Fall 2020 CURRICULUM APPROVAL DATE: 06/09/2020

SHORT TITLE: STATICS

LONG TITLE: Statics

Units	Number of Weeks	Type	Contact Hours/Week	Total Contact Hours
3	18	Lecture:	3	54
		Lab:	0	0
		Other:	0	0
		Total:	3	54

COURSE DESCRIPTION:

Vector treatment of two- and three-dimensional force systems acting on particles and engineering structures in equilibrium. Topics include forces, moments, couples, resultants, equilibrium conditions, trusses, centroids, moment of inertia, beams, shear and moment diagrams, cables, fluids and friction. PREREQUISITE: Mathematics 1B and Physics 4A with a grade of 'C' or better.

PREREQUISITES:

Completion of MATH 1A, as UG, with a grade of C or better.
AND Completion of MATH 1B, as UG, with a grade of C or better.
AND Completion of PHYS 4A, as UG, with a grade of C or better.

COREQUISITES:

CREDIT STATUS: D - Credit - Degree Applicable

GRADING MODES

L - Standard Letter Grade

REPEATABILITY: N - Course may not be repeated

SCHEDULE TYPES:

02 - Lecture and/or discussion
05 - Hybrid
71 - Dist. Ed Internet Simultaneous
72 - Dist. Ed Internet Delayed

STUDENT LEARNING OUTCOMES:

By the end of this course, a student should:

1. Effectively communicate problem statements and solutions in a manner easily deciphered by engineers in and out of one's specific discipline.

2. Determine the forces that act on rigid bodies including external forces, weight, normal, distributed loads, friction and reactions at supports.

3. Calculate internal forces in members and create shear and bending moment diagrams for beams.

4. Perform vector analysis methods addressing forces acting on rigid bodies, trusses, frames, and machines.

5. Analyze two- and three-dimensional force systems on rigid bodies in static equilibrium.

CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS

Curriculum Approval Date: 06/09/2020

15 Hours

CONTENT: Forces, moments, couples, resultants, equilibrium, trusses.

STUDENT PERFORMANCE OBJECTIVES: Identify and apply the principles of forces to the solution of quantitative problems.

OUT-OF-CLASS ASSIGNMENT: Reading and problems from the text.

10 Hours

CONTENT: Centroids and moment of inertia.

STUDENT PERFORMANCE OBJECTIVES:

Identify and apply the principles of centroids and moment of inertia to the solution of quantitative problems.

OUT-OF-CLASS ASSIGNMENT: Reading and problems from the text.

15 Hours

CONTENT: Beams and shear and moment diagrams.

STUDENT PERFORMANCE OBJECTIVES: Identify and apply the principles of beam theory to the solution of quantitative problems.

OUT-OF-CLASS ASSIGNMENT: Reading and problems from the text.

6 Hours

CONTENT: Friction.

STUDENT PERFORMANCE OBJECTIVES: Identify and apply the principles of frictional forces to the solution of quantitative problems.

OUT-OF-CLASS

ASSIGNMENT: Reading and problems from the text.

6 Hours

CONTENT: Principle of Minimal Potential Energy and Virtual Work.

STUDENT PERFORMANCE OBJECTIVES: Identify and apply the principles of Minimal Potential Energy and Virtual Work to the solution of quantitative problems.

OUT-OF-CLASS ASSIGNMENT: Reading and problems from the text.

2 Hours

CONTENT: Final Exam

METHODS OF INSTRUCTION:

Instruction is by lecture, discussion, demonstrations and/or illustration. Students are required to present problem solutions to their classmates. Students are also required to complete a Bridge design Project and fabricate a wooden dowel bridge.

OUT OF CLASS ASSIGNMENTS:

Required Outside Hours: 8

Assignment Description:

A one time project that requires students to analyze and study pertinent text material, solved examples and lecture notes. In addition students will have to use computer software.

Project: Truss Analysis using Matlab/Octave

Required Outside Hours: 100

Assignment Description: Regularly assigned homework that requires students to apply the principles and skills covered in class by solving related problems.

METHODS OF EVALUATION:

Writing assignments

Percent of total grade: 20.00 %

If this is a degree applicable course, but substantial writing assignments are not appropriate, indicate reason: - Course primarily involves skill demonstration or problem solving

Problem-solving assignments

Percent of total grade: 20.00 %

Percent range of total grade: 20 % to 40 % - Homework Problems

Skill demonstrations

Percent of total grade: 60.00 %

Percent range of total grade: 60 % to 80 % - Performance Exams

REPRESENTATIVE TEXTBOOKS:

Russell C. Hibbeler. Engineering Mechanics: Statics (14th Edition). Prentice Hall (Pearson),2016.

The 14th Editions is the latest version of the book.

ISBN: ISBN 13: 978-0133918922 and ISBN 10:0133918920

Reading Level of Text, Grade: Reading level of text, Grade: 13 Verified by: Verified by: DA using MS Word

ARTICULATION and CERTIFICATE INFORMATION

Associate Degree:
CSU GE:
IGETC:
CSU TRANSFER:
Transferable CSU, effective 198670
UC TRANSFER:
Transferable UC, effective 198670

SUPPLEMENTAL DATA:

Basic Skills: N
Classification: Y
Noncredit Category: Y
Cooperative Education:
Program Status: 1 Program Applicable
Special Class Status: N
CAN: ENGR8
CAN Sequence: XXXXXXXX
CSU Crosswalk Course Department:
CSU Crosswalk Course Number:
Prior to College Level: Y
Non Credit Enhanced Funding: N
Funding Agency Code: Y
In-Service: N
Occupational Course: E
Maximum Hours:
Minimum Hours:
Course Control Number: CCC000180918
Sports/Physical Education Course: N
Taxonomy of Program: 090100