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

<table>
<thead>
<tr>
<th>Units</th>
<th>Number of Weeks</th>
<th>Type</th>
<th>Contact Hours/Week</th>
<th>Total Contact Hours</th>
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<tr>
<td>3</td>
<td>18</td>
<td>Lecture:</td>
<td>3</td>
<td>54</td>
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<tr>
<td></td>
<td></td>
<td>Lab:</td>
<td>0</td>
<td>0</td>
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<td></td>
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<td>Other:</td>
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<td>Total:</td>
<td>3</td>
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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

6/9/2020
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
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.

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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:
The 14th Edition is the latest version of the book.
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