

COURSE: ES 2110-01 STATICS (Vector Mechanics for Engineers)

LECTURE HOURS: 4

CREDITS: 4

SEMESTER: F 2015

CLASS TIME: 8:00 - 8:50 AM

DAYS: M T Th & F

ROOM: PS 214

INSTRUCTOR'S NAME: ARDELL KNUDSON

INSTRUCTOR'S OFFICE: PS 211

PHONE: 268-2248

OFFICE HOURS:

M - Th 10:00 - 11:00 aknudson@caspercollege.edu

M & W 11:00 - 12:00 and 1:00 - 2:00

OTHER TIMES BY APPOINTMENT.

COURSE DESCRIPTION:

Statics is the study of force systems acting on particles or on rigid bodies under equilibrium conditions. In addition, topics include friction and first and second moments of area. (Concepts more familiar as the centroid and the moment of inertia).

PREREQUISITES:

Math 2200 Calculus I

Students should be enrolled concurrently in Physics I, PHYS 1310 and ES 1060 is recommended.

GENERAL OBJECTIVES:

Students will become very familiar with the concept of equilibrium as it relates to a body at rest. Forces are broken into vector components and the particle (or rigid body) is in equilibrium if at rest. This analysis also applies to machine components and trusses. As an introduction to some of the design work ahead, there is a brief look at internal forces.

SPECIFIC OBJECTIVES:

Upon completion of this course, a person should be familiar with the following concepts:

- dimensional units, numerical results and significance, and the problem solving approach.
- vector operations and the resolution of a force into vector components.
- particle statics.
- statics of rigid bodies.
- force / moment systems.
- centroids of lines, areas, and volumes.
- moment of inertia, or second moment of area.

METHODOLOGY:

Much of the material will be presented in lecture format, but the emphasis will be to encourage discussion and practical applications. Students will have some say in how the class is conducted, but there will be student participation and presentations as part of the course requirements.

EVALUATION CRITERIA:

There will be homework, exams, quizzes and some special projects. Tentative evaluation will be based on:

Exams	45%
Quizzes	15%
Homework	20%
Final	20%

Homework will be submitted on a weekly basis and will be docked 20% per day late. Work will not be accepted after the corrected papers have been returned to the class. Exams will be taken as scheduled unless prior arrangements are made.

REQUIRED TEXT:

Vector Mechanics for Engineers Statics and Dynamics Tenth Ed McGraw Hill Publ

LAST DATE TO CHANGE TO AUDIT STATUS OR TO WITHDRAW WITH A "W" GRADE:

Thursday, Nov 12th, 2015 at 5:00 p.m.

STUDENT RIGHTS & RESPONSIBILITIES:

Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities. Students are expected to behave in a professional manner with regard to usage of any electronic instruments during class if the use of these devices is not related to course content.

CHAIN OF COMMAND:

If there are any problems with this class, first contact the instructor and attempt to solve the problem. If not satisfied with the solution offered by the instructor, you should then take the matter through the appropriate chain of command starting with the Department Head, the Dean of the School of Science, and lastly the Vice President for Academic Affairs.

ACADEMIC DISHONESTY:

Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty with the academic process can result in the offending person failing the course in which the offense was committed or may result in expulsion from the school. See the Casper College student Code of Conduct for more information on this topic.

OFFICIAL MEANS OF COMMUNICATION:

Casper College faculty and staff will employ the student's assigned Casper College email account as a primary method of communication. Students are responsible to check their account regularly.

ADA ACCOMODATIONS POLICY;

If you need academic accommodations because of a disability, please inform the instructor as soon as possible. To request academic accommodations, students must first consult with the college's Disability Services Counselor located in the Gateway Building, Room 344, ph (307) 268 2557, bheuer@caseprcollege.edu. The Disability Services Counselor is responsible for reviewing documentation provided by the students requesting accommodations. The Counselor will determine eligibility for accommodations and assist students in requesting and using appropriate accommodations.

TENTATIVE SCHEDULE WITH COURSE CONTENT:

See the attached schedule for the proposed schedule of topics and homework assignments. There may be some deviation from this as the semester progresses, and this will be announced in class.

Week	Sections	Topics	Assignment
Aug 24 Week 1	1.1 - 6 2.1 - 6	Intro, dimensions, and units Addition of forces	Ch. 2
Aug 31 Wk 2	2.7 - 8	Rect components	Ch 2
Labor Day Holiday			
Sept 8 Week 3	2.9 - 11 2.12 - 14	Equilibrium 3 dim	2.35, 43, 48, 62 2.71, 72, 76, 90, 91
Sept 14 Week 4	2.14 3.1 - 5 3.6 - 8	3 dimensions Vector product The Moment vector	2.101, 103, 109 3.1, 6, 9, 12 3. 21, 26, 27
Sept 21 Week 5	No classes will be held this week. Guest lecture and take home exam		
Sept 29 Week 6	3.9 – 11 3.12	Scalar prdct Moment Moment / Couple	3.70, 73, 74 76, 85, 94, 100
Oct 5 Wk 7	4.1 - 4 4.5	Rigid Bodies Moments	4.1, 5, 7 17, 22, 25, 33
Oct 12 Week 8	4.6 4.7	2 – D Equilibrium 3 – D Equilibrium Review Test II	37, 48, 66, 75 83, 84, 105, 107
Fall Break Monday & Tue, Oct 19 & 20			
Oct 22 Week 9	6.1 – 2 6.4	Structural Analysis Method of Joints	6.1, 7, 9 6.17
Oct 26 Wk 10	6.7 6.10 - 11	Method of Sections Frames and Machines	6.45, 49, 51, 78 6.79, 97, 145, 157
Nov 2 Wk 11	8.1 - 2 8.3	Friction Belt Friction	8.5, 8, 11, 27, 32 8.107, 113, 115
The problems of Week 12 are to be submitted by e mail, to aknudson@caspercollege.edu			
Nov 9 Wk 12	5.1 - 5 5.7	Center of Mass Pappus and Guldinus	5.1, 3, 6, 56, 58, 62

Nov 16
Week 13

Review
Test III

Nov 23
Week 14

9.1 - 4
9.5

Moment of Inertia
Radius of Gyration

9.31, 35, 49, 50, 52
119, 122, 148

Thanksgiving Break Nov 25 - 27

Nov 30
Week 15

Review
Review

10.21, 45

Dec 7
Wk 16

Final Exams Dec 14 - 17