Course Title: Statics and Dynamics
Course Prefix: CVEG **Course No.: 2454** **Section No.: P02**

Department of | **Civil & Environmental Engineering** | **College of** | **Engineering**

Instructor Name:	**Dr. Judy A. Perkins, PE**
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Office Hours: | 11am-12pm & 4pm-5pm on Mon and 2pm-5pm on Tues
Virtual Office Hours: | 2pm-3pm on Tues

Course Location: | Lectures: New Electrical Engineering Building, Room #125
Class Meeting Days & Times: | Lectures: 11am-12:50pm on Tues and Thurs
Catalog Description: | Fundamental concepts; equilibrium of particles and rigid bodies, centroids, moments of inertia, friction, and introduction to analysis of structures. Kinematics and kinetics of particles and rigid bodies; equations of motion, work and energy; impulse and momentum.

Prerequisites: | PHYS 2513
Co-requisites: | None

Required Text: | R. C. Hibbeler, *Engineering Mechanics - Statics and Dynamics*, **Pearson Prentice Hall,** 13th Ed., (2012)

Recommended Text/Readings: | See reference list

Access to Learning Resources:
PVAMU Library:
phone: (936) 261-1500;
web: http://www.tamu.edu/pvamu/library/
University Bookstore:
phone: (936) 261-1990;
web: https://www.bkstr.com/Home/10001-10734-1?demoKey=d

Course Goals or Overview:

1	To lay a solid foundation for the principles in engineering mechanics; and
2	To develop the ability to apply knowledge of mathematics, science and engineering to solve engineering mechanics problems

Course Outcomes/Objectives
At the end of this course, the student will

1	Thoroughly understanding of the theory and applications of engineering mechanics.
2	Analyze engineering mechanics problems using the principles of science and mathematics
3	Describe and predict through calculations the conditions of equilibrium of particles, and bodies on application of forces
4	Describe and predict through calculations the behavior of bodies subjected to forces resulting in dynamic motion.

Course Requirements & Evaluation Methods

This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course.
Pre-requisite Exam – written test designed to measure knowledge and retention of Physics I concepts
Periodic Exams – written tests designed to measure knowledge of presented course material
Homework Assignments – periodic written assignments designed to engage students in collaborative, team-based learning and to supplement as well as reinforce course material
TaskStream Assignment – assignments designed to engage students in the accreditation process
Final Exam – comprehensive closed book examination.

Grading Matrix

Instrument	Total Value (percent)	Total Value (points)
Pre-requisite Test/Exam	10	100
Tests/Exams	40	400
Homework Assignments	20	200
TaskStream Assignments	5	50
Final Exam	25	250
Total:	**100**	**1000**

Grade Determination:
A = 90 – 100
B = 80 – 89
C = 70 – 79
D = 60 - 69
F = 59 and Below

Course Procedures

Submission of Assignments:
Assignment Submission
Dates to submit assignments will be provided to you at the time the assignment is handed out. **LATE ASSIGNMENTS WLL NOT BE ACCEPTED!!** Your homework should be complete, neat, and professionally presented. Use the following format for all of your homework;

1. Use **only engineering paper (no graph paper)** for submitting your homework
2. Your homework should have the following on the cover page
    a. Your name and Roster Number
    b. Course name and section
    c. Homework number
    d. Date
3. Show all steps for arriving to the final answer clearly. Include all appropriate sketches.
4. Reference all figures, tables, constant values, equations, and conversions used to complete the problem.
5. Include all the appropriate units throughout the solution. Points will be deducted for answers presented without the appropriate units.
6. Start a new page for every new problem.
7. Problems should be in the order assigned.

Exam Policy:
Exams should be taken as scheduled. No makeup examinations will be allowed except under documented emergencies (See Student Handbook).

References

- *Engineering Mechanics - Statics and Dynamics*, I. H. Shames, **Prentice Hall,** 4th Ed.**,** (1997), Upper Saddle River, NJ.
- *Engineering Mechanics Volume I-Statics*, J.L. Meriam & L.G. Kraige, **John Wiley and Sons,** (1986), New York, NY.
- *Engineering Mechanics Volume II – Dynamics*, J.L. Meriam & L.G. Kraige, **John Wiley and Sons,** (1986), New York, NY.

16 WEEK CALENDAR

Week 1: Topic(s)	Course Maintenance
Chapter(s):	Chapters 1-4
Assignment(s):	None
Week 2: Topic	General Principles; Force Vectors; and Equilibrium of a Particle
Chapter(s):	Chapter 4
Assignment(s):	**Pre-requisite Exam**
Week 3: Topic(s)	Force System Resultants; Equilibrium of a Rigid Body
Chapter(s):	Chapter 5
Assignment(s):	**Homework # 1: Select Problems are Assigned**
Week 4: Topic(s)	Structural Analysis
Chapter(s):	Chapter 6
Assignment(s):	**Exam #1**
Week 5: Topic(s)	Center of Gravity and Centroid
Chapter(s):	Chapter 9
Assignment(s):	**Homework # 2: Select Problems are Assigned**
Week 6: Topic(s)	Moments of Inertia
Chapter(s):	Chapter 10
Assignment(s):	None
Week 7: Topic(s)	Friction
Chapter(s):	Chapter 8
Assignment(s):	**Taskstream Assignment #1 & Homework #3 - Select Problems are Assigned**
Week 8: Topic(s)	Kinematics of a Particle
Chapter(s):	Chapter 12
Assignment(s):	**Exam #2**
Week 9: Topic(s)	Force and Acceleration (e.g., particles and rigid bodies)
Chapter(s):	Chapters 13 and 17
Assignment(s):	**Homework #4 – Select Problems are Assigned**
Week 10: Topic(s)	Force and Acceleration (e.g., particles and rigid bodies)
Chapter(s):	Chapters 13 and 17
Assignment(s):	None
Week 11: Topic(s)	Force and Acceleration (e.g., particles and rigid bodies)
Chapter(s):	Read Chapters 13 and 17
Assignment(s):	**Homework #5 – Select Problems are Assigned**
Week 12: Topic(s)	Impulse and Momentum (e.g., particles and rigid bodies)
Chapter(s):	Chapters 15 and 19
Assignment(s):	**Exam #3**
Week 13: Topic(s)	Impulse and Momentum (e.g., particles and rigid bodies)
Chapter(s):	Chapters15 and 19
Assignment(s):	None
Week 14: Topic(s)	Work and Energy (e.g., particles and rigid bodies)
Chapter(s):	Chapters 14 and 18
Assignment(s):	**Homework #6: Select Problems are Assigned**
Week 15: Topic	Work and Energy (e.g., particles and rigid bodies)
Chapter(s):	Chapters 14 and 18
Assignment(s):	**Exam #4: Select Problems are Assigned**
Week 16: Topic(s)	Last Class Day; Course Evaluation; Course Review for Final Examination
Assignment(s):	**Comprehensive Final Exam – 10:30am-12:30pm on Thursday, May 5, 2016**

Civil Engineering Program Objectives and ABET 2000 Criterion 3

The specific objectives of the Civil & Environmental Engineering program at Prairie View A&M University are:

1. Have careers in civil engineering or related fields that lead to increasing levels of responsibility and leadership;
2. Obtain professional licensure/certifications;
3. Complete graduate studies in civil engineering or related fields;
4. Engage in professional development and service.

ABET Criterion 3. Program Outcomes and Assessment of a Civil & Environmental Engineering program must demonstrate that their graduates have the following:

(a) An ability to apply knowledge of mathematics, science, and engineering
(b) An ability to design and conduct experiments, as well as to analyze and interpret data
(c) An ability to design a system, component, or process to meet desired needs
(d) An ability to function on multi-disciplinary teams
(e) An ability to identify, formulate, and solve engineering problems
(f) An understanding of professional and ethical responsibility
(g) An ability to communicate effectively
(h) The broad education necessary to understand the impact of engineering solutions in a global and societal context
(i) A recognition of the need for, and an ability to engage in life-long learning
(j) A knowledge of contemporary issues
(k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Mapping: CVEG Courses vs PEOs vs Student Outcomes (Fall 2015 Degree Plan)

Course No	Course Title	CVEG PEOs				CVEG Program Outcomes										
		1	2	3	4	a	b	c	d	e	f	g	h	i	j	k
CVEG 1011	Intro to Engineering	X			X						M			M		
CVEG 1021	Intro to Civil Engr Laboratory	X	X		X							M				M
CVEG 2001	Emerging Issues in the CE Profession	X	X		X				M							M
CVEG 2043	Engineering Mechanics I	X	X			M				M						
CVEG 2061	Materials & Dynamics Lab	X	X			M			M							
CVEG 2063	Mechanics of Materials I	X	X			M				M						
CVEG 2454	***Statics & Dynamics***	***X***	***X***			***M***				***M***						
CVEG 2081	Surveying & Geospatial Concepts	X	X				D								M	
CVEG 3023	Geotechnical Engineering	X	X		X		M					M				
CVEG 3031	Concrete & Steel Lab	X					M					M				
CVEG 3043	Environmental Engineering	X	X				M D			M						
CVEG 3051	Professional Engineering I	X	X		X						M			M		
CVEG 3053	Transportation Engineering	X	X							M			M			
CVEG 3063	Hydraulics	X	X			M	M D									
CVEG 3073	Structural Analysis I	X	X							M						M
CVEG 3083	Steel Design	X	X	X	X			M								M
CVEG 4013	Reinforced Concrete	X	X	X	X			M								M
CVEG 4021	Geotechnical Engr Design Lab	X	X						M				M			
CVEG 4043	Environmental Eng Design	X	X	X	X			M						M		
CVEG 4053	Transportation Eng Design	X	X	X	X			M							M	
CVEG 4063	Water Resources Eng.	X	X	X	X			M			M			M		
CVEG 4072	Systems Engr & Uncertainity	X		X												
CVEB 4141	Engr Management & Ethics	X	X		X						M				M	

CVEG 4473	Sr. Design - I	X	X	X	X			M	M		M			M		
CVEG 4483	Sr. Design - II	X	X	X	X			M				M	M		M	

X means the program objective is achieved
M – means the skills described in the program outcome is covered in greater details and measured in the course
D – design of experiments

- Acceptable average in each outcome for department = 70%
- Acceptable percentage of students at or above expected average = 70%

Note: In addition, evidence will be collected to demonstrate the satisfaction of CE Program Criteria for the following:
I) Application of probability and statistics to address uncertainty; II) the inclusion of principles of sustainability in design; III) explanation of basic concepts in Management, Business, Public Policy and Leadership; and IV) the analysis of issues in professional ethics.

Notes:

- Attendance in the class is mandatory and students are expected to report to class on time. If you know that you will be late to class or have to leave class early, please speak with or email me before class and enter/leave the classroom quietly. Attendance will be taken at the beginning of class and may be taken at the end of class. Please read the attached University Class Attendance Policy.
- Turn cell phones and other electronic devices off prior to the start of class. They must remain off while class is in session whether we are in the classroom or outside the classroom. If you are expecting an emergency call, please keep the cell phone in silence mode and exit the classroom to take the call.
- Course review will be provided for the mid-term and final exam on the designated date.
- No makeup test(s) will be given. If you miss a test you will receive zero credit. If you have an excused absence please discuss with me ahead of time. Failure to take the final examination will result in an automatic "F" grade.
- Late homework will not be accepted. The format for submitting homework will be discussed on the designated dates.
- Cheating on an exam or homework and other forms of academic dishonesty will result in referral with the maximum penalty recommended.
- Grading/class related Appeals (see undergraduate catalog)

Important Semester Dates

- Week 1 – MLK Holiday, Monday, January 18, 2016
- Week 1 – First Class Day, Tuesday, January 19, 2016
- Week 2 – General Assembly for all Students on Thursday, January 28, 2016
- Week 3 – Last Day to Withdraw from Course(s) without academic record is Wednesday, February 3, 2016
- Week 3 – Withdrawal from course(s) with academic record ("W") Begins on Thursday, February 4, 2016
- Week 8 – Mid-Semester Examination Period, Thursday – Saturday, March 10-12, 2016
- Week 9 – Spring Break, Monday – Friday, March 14-19, 2016
- Week 10 – Instruction Resumes – Monday, March 21, 2016
- Week 10 – Mid-Semester Grades Due on Tuesday, March 22, 2016
- Week 10 – Good Friday/Easter Holiday, Friday-Saturday, March 25-26, 2016
- Week 11 – Founders Day/Honors Convocation, Wednesday, March 30, 2016
- Week 12 – Withdrawal from course(s) with academic record ("W") Ends on Monday, April 4, 2016
- Week 13 – Priority Registration Begins for Summer/Fall 2016 on Tuesday, April 12, 2016
- Week 16 – Last Class Day for Spring Semester, Tuesday, May 3, 2016

College of Engineering Textbook Policy – Students MUST acquire the required textbook that is listed on the course syllabus for this course. The textbook must be acquired by the 10th class day. Students are not allowed to share textbooks with students who are currently registered in the same class. Failure to acquire (or show proof of purchase) the required textbook by the 10th class day will result in the student being administratively dropped from the course. The University will assess financial obligations for the course to the student as with any other dropped class according to the fee schedule as well as your financial aid may be affected.

If you are not financially able to purchase a required textbook for an engineering course prior to the 10th class day, you may apply to the College of Engineering Textbook Fund for a textbook voucher. The voucher can only be used at the Campus Bookstore. This voucher is a loan and must be paid back to the College of Engineering prior to the start of pre-registration for

the coming semester. If the loan is not repaid, a hold will be placed on your account. Additional information and application materials can be obtained from the Assistant Dean's Office (SR Collins Room #349) and obtained online at the College of Engineering website under student resources.

This policy is only for students who have declared a major (Engineering, Computer Science, and/or Technology) in the Roy G. Perry College of Engineering.

University Rules and Procedures

Disability statement (See Student Handbook)
Students with disabilities, including learning disabilities, who wish to request accommodations in class, should register with the Services for Students with Disabilities (SSD) early in the semester so that appropriate arrangements may be made. In accordance with federal laws, a student requesting special accommodations must provide documentation of their disability to the SSD coordinator.

Academic misconduct (See Student Handbook)
You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures.

Forms of academic dishonesty
1. Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.
2. Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.
3. Fabrication: use of invented information or falsified research.
4. Plagiarism: unacknowledged quotation and/or paraphrase of someone else's words, ideas, or data as one's own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one's own work also constitutes plagiarism.

Nonacademic misconduct (See Student Handbook)
The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor's ability to conduct the class, (2) the inability of other students to profit from the instructional program, or (3) campus behavior that interferes with the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under nonacademic procedures.

Sexual misconduct (See Student Handbook)
Sexual harassment of students and employers at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action.

Attendance Policy
Prairie View A&M University requires regular class attendance. Excessive absences will result in lowered grades. Excessive absenteeism, whether excused or unexcused, may result in a student's course grade being reduced or in assignment of a grade of "F". Absences are accumulated beginning with the first day of class.

Student Academic Appeals Process
Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have adversely affected the instructor's assessment of their academic performance, the student has a right to appeal by the procedure listed in the Undergraduate Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.