

**CVEG 2043
Engineering Mechanics- I
SUMMER 2019**

Instructor:	Dr. Abdul M. Choudhury, Ph.D.	
Section # and CRN:	P01 32172	
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Office Hours:	TR 1.00 - 4.00 PM	
Mode of Instruction:	Face to Face	
Course Location:	WILS 109 K	
Class Days & Times:	TR 9.30-12.50 (Including recitation)	
Catalog Description:	Credit 3 semester hours. Fundamental concepts and principles; vector algebra and applications; equilibrium of particles and rigid bodies in two and three dimensions; moments and couples, distributed forces; centroids; moments of inertia; friction; introduction to analysis of structures.	
Prerequisites:	PHYS 2513	
Co-requisites:	None	
Required Texts:	Engineering Mechanics: Statics, R.C. Hibbeler, 14th ed., Prentice-Hall/Pearson	
Recommended Texts:	F.P. Beer & E.R. Johnston, Jr., "VECTOR MECHANICS FOR ENGINEERS - DYNAMICS", 10 th ed., McGraw Hill, New York, 2012.	

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

College of Engineering (CoE) 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. Additional information about the College of Engineering Textbook Policy and the CoE Textbook Fund may be found at <http://www.pvamu.edu/engineering/>. The student may need to contact the Director of Engineering Student Services) in the CoE Dean's office (350 SR Collins).

Student Learning Outcomes:

Course Goals or Overview:				
To develop the ability to apply knowledge of mathematics, science and engineering in solving engineering problems				
Course Objectives/Accrediting Body ABET Standards Met: SACS and ABET				
To provide the student with a clear and thorough understanding of the theory and applications of Mechanics of Material specifically:				
1. to develop the ability to apply knowledge of mathematics, science and engineering 2. to develop the ability to identify, formulate, and solve engineering problems				
At the end of this course, the student will demonstrate				
		Civil Engineering Program Objectives		ABET Criteria
1	an ability to apply engineering design to produce solutions that meet specified needs with consideration of various Engineering Aspects	1 and 2		7
2	an ability to identify, formulate, and solve engineering problems	1 and 2		7

Table: Outcome Measures

Course	CVEG Objectives				ABET Criterion 3							
	1	2	3	4	1	2	3	4	5	6	7	
CVEG 2043	x	x										x

x are the outcomes measured for this course

Civil Engineering Program Outcomes (Student Learning Outcomes)
ABET EAC Criterion 3 {[1] - [7] Student Outcomes (SOs)} Beginning Spring 2019

- 1) an ability to identify, formulate, and solve **complex** engineering problems by applying principles of engineering, science, and mathematics
- 2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- 3) an ability to communicate effectively with a range of audiences

- 4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- 5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- 6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- 7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Civil Engineering Program Criteria (2019-2020)

Curriculum: *The curriculum must prepare graduates to apply knowledge of mathematics through differential equations, calculus-based physics, chemistry, and at least one additional area of basic science; apply probability and statistics to address uncertainty; analyze and solve problems in at least four technical areas appropriate to civil engineering; conduct experiments in at least two technical areas of civil engineering and analyze and interpret the resulting data; design a system, component, or process in at least two civil engineering contexts; include principles of sustainability in design; explain basic concepts in project management, business, public policy, and leadership; analyze issues in professional ethics; and explain the importance of professional licensure.*

Faculty: *The program must demonstrate that faculty teaching courses that are primarily design in content are qualified to teach the subject matter by virtue of professional licensure, or by education and design experience. The program must demonstrate that it is not critically dependent on one individual.*

Course Evaluation Methods

Lecture Topics:

- General Principles (Chapter 1)
- Force Vectors (Chapter 2)
- Equilibrium of a Particle(Chapter 3)
- Force System Resultants (Chapter 4)
- Equilibrium of a Rigid Body (Chapter 5)
- Structural Analysis (Chapter 6)
- Internal Forces (Chapter 7)
- Friction (Chapter 8)
- Center of Gravity and Centroid (Chapter 9)
- Moments of Inertia(Chapter 10)

Based on the topics above, this course will utilize the following instruments to determine student grades and proficiency of the learning outcomes.

Exams - written tests designed to measure knowledge of presented course material

H.W. Assignments -homework assignments designed to supplement and reinforce course material

Class Participation – daily attendance and participation in class discussions

* The Civil Engineering Program Learning Outcomes are derived from ABET Criterion 3 (Student Outcomes)

Grading Matrix

CONTRIBUTION

GRADE SCALE:

Home work/Assignment	15%	90-100	A
Attendance	5%	80-89	B
3 Tests @ 15%	45%	70-79	C
QUIZ	10 %	60-69	D
Final Exam (Comprehensive)	25%	0-59	F
Total	100%		

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 WILL 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 top of the first sheet
 - a. Your name
 - 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).

SPECIAL NOTES ON EXAM/TESTS:

1. Mid-term Exam (TEST #2) **may** be given in F.E. Exam Format and will carry 15% of the total grade of the course.
2. The Final Exam will be prepared by the College FE TQM Team in FE Exam Format and will carry 30% of the course grade.
3. Your Instructor will explain and illustrate the examination procedure and format. **REMEMBER ABOUT 50% OF YOUR GRADE MAY BE DETERMINED BY FE EXAM FORMAT. PLEASE GET USED TO THE FE EXAM PROCEDURE.**

10 WEEK CALENDAR FOR SUMMER 2019

WEEK	TOPIC	HOMEWORK (To be assigned in class)
1.	Introduction & Course Outline General Principles & Units of Measure Scalars and Vectors Vector Operations	
2.	Cartesian Vectors Position Vector Dot Product Equilibrium of a Particle F.B. Diagram Coplanar Forces	
3.	Force System Resultants Moment of a Couple Equivalent Systems Distributed Loading TEST 1 (Will be announced in class)	
4.	Equilibrium of a Rigid Body F.B. Diagram 2-F & 3-F Members Equations of Equilibrium	
5.	Simple Trusses Method of Joints Method of Sections	
6.	Internal Forces Shear & Moment Equations Mid Term Test (As per university Calendar)	
7.	Friction Wedges & Screws Belts	
8.	C.G.& Centroid of System of Particles Center of Gravity and Center of Mass Centroid of Bodies Composite Bodies	
9.	Moment of Inertia Moment of Inertia of Areas Parallel Axis Theorem Radius of Gyration TEST 3 (Will be announced in class)	
10.	Moment of Inertia by Integration Moment of Inertia for Composite Areas Moment of Inertia Final Exam (As per University calendar)	

Civil Engineering Program Educational Objectives (PEOs)

Graduates from the Civil Engineering program will:

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

Mapping of Program Educational Objectives (PEOs) onto Program Outcomes

PEO	Objectives	CVEG Program Outcomes						
		[1]	[2]	[3]	[4]	[5]	[6]	[7]
1.	<i>Graduates from the Civil Engineering program will:</i>							
PEO 1	have careers in civil engineering or related fields that lead to increasing levels of responsibility and leadership	X	X	X	X	X	X	X
PEO 2	obtain professional licensure/certifications	X	X					
PEO 3	complete graduate studies in civil engineering or related fields	X	X	X	X		X	X
PEO 4	engage in professional development and service	X	X	X	X		X	X

Mapping of CVEG Courses onto PEOs and Program Outcomes [Beginning Spring 2019]

Course No	Course Title	CVEG Program Educational Objectives				CVEG Program Outcomes						
		1	2	3	4	[1]	[2]	[3]	[4]	[5]	[6]	[7]
CVEG 1011	Intro to Engineering	X			X							
CVEG 1021	Intro to Civil Engineering	X	X		X							

CVEG 2001	Emerging Issues in CE Prof	X	X		X				I	M	I		R
CVEG 2043	Engineering Mechanics I	X	X										I
CVEG 2061	Materials & Dynamics Lab											M	
CVEG 2063	Mechanics of Materials I	X	X					I					
CVEG 2081	Surveying & Geospatial								R				M
CVEG 3023	Geotechnical Engineering	X	X					I					
CVEG 3031	Concrete & Steel Lab	X											M
CVEG 3043	Environmental Engineering	X	X						R				M
CVEG 3053	Transportation Engineering	X	X						R			M	
CVEG 3063	Hydraulics	X	X						M			R	
CVEG 3073	Structural Analysis I	X	X					I					M
CVEG 3083	Steel Design	X	X	X	X		M	M	R				
CVEG 4013	Reinforced Concrete	X	X	X	X		R	M					
CVEG 4021	Geotech Engineering Design Lab								R				M
CVEG 4043	Environmental Eng Design	X	X	X	X		M	M	R				
CVEG 4053	Transportation Eng Design	X	X	X	X		M		M	M	M		
CVEG 4063	Water Resources Eng.	X	X	X	X		M	M					I
CVEG 4072	Systems Engineering and								M				M
CVEG 4141	Engineering Mgmt & Ethics										M		
CVEG 4472	Sr. Design &	X	X	X	X			M	M	M	M		M
CVEG 4482	Sr. Design &	X	X	X	X		M	M	M	M			
	<p>I - means the described outcome is introduced (not measured) but could be monitored. M - means that the skills described in the program outcome are covered and measured in the course. R - means the described outcome is reinforced in the course (not measured) but could be monitored.</p> <p>Additionally evidence are to be collected to satisfy CE Program Criteria covering basic concepts in Management (CVEG 3053, 4053, 4472, 4482, 4072), Business (CVEG 2001, 4141, 4472, 4482), Public Policy (CVEG 2001, 4141, 4472, 4482), Professional Ethics (CVEG 3051, 4141), Leadership (CVEG 4472, 4482); and considerations of sustainability in developing engineering solutions (CVEG 4043, 4053, 4063)</p>												

Note: Courses with a mixture of students from other Programs are intentionally excluded when possible.

The Assessment Process

Student Learning outcomes are measured using both **direct** and **indirect** measurements. Direct measurement are derived from either designated homework, tests, lab reports project reports or other assignments. Indirect measurement are drawn from end-of-semester Student Opinion Surveys (SOS) and any surveys completed by graduating Seniors. The above listed Student Learning Outcomes (Program Outcomes) are measured and evaluated in specified cycles and an Assessment Report is prepared annually for the purposes of continuously improving the Program's learning outcomes.

Student Support and Success

John B. Coleman Library

The library and its partners have as their mission to provide resources and instructional material in support of the evolving curriculum, as a partner in Prairie View A&M University's mission of teaching, research, and service and to support the University's core values of access and quality, diversity, leadership, relevance, and social responsibility through emphasis on ten key areas of service. It maintains library collections and access both on campus, online, and through local agreements to further the educational goals of students and faculty. <https://www.pvamu.edu/library/> Phone: 936-261-1500

The Learning Curve (Center for Academic Support)

The Learning Curve offers Tutoring via peer tutoring. The services include workshops (i.e., Save My Semester, Recalculate Your Route), seminars (i.e., Tools You Can Use: TI-84), group review sessions (i.e., College Algebra Topic Reviews, GRE Preparation), group study opportunities (i.e., TSIA, HESI, Study Break, Exam Cram), and test-taking strategies (How to take Notes, Study Buddy, 5 Day Study Guide). The Learning Curve is a nationally certified tutoring program through the National Tutoring Association. The peer tutors are trained and certified by the coordinator each semester. Location: J.B. Coleman Library Rm. 207F. Phone: 936-261-1561

The Center for the Oversight and Management of Personalized Academic Student Success (COMPASS)

The Center for the Oversight and Management of Personalized Academic Student Success (COMPASS) is designed to help Prairie View students in their second year and beyond navigate towards graduation by providing the following services: Academic Advisement, Targeted Tutorials for Personalized Learning, Campus-Wide Referrals, and Academic & Social Workshops. Location: J.B. Coleman Library Rm. 306. Phone: 936-261-1040

Writing Center

The Writing Center provides student consultants on all aspects of the writing process and a variety of writing assignments. Writing Center consultations assist students in such areas as prewriting, brainstorming, audience awareness, organization, research, and citation. Students taking on-line courses or courses at the Northwest Houston Center or College of Nursing may consult remotely or by email. Location: Hilliard Hall Rm. 121. Phone: 936-261-3724.

Student Counseling Services

The Student Counseling Services unit offers a range of services and programs to assist students in maximizing their potential for success: short-term individual, couples, and group counseling, as well as crisis intervention, outreach, consultation, and referral services. The staff is licensed by the State of Texas and provides assistance to students who are dealing with academic skills concerns, situational crises, adjustment problems, and emotional difficulties. Information shared with the staff is treated confidentially and in accordance with Texas State Law. Location: Owens-Franklin Health Center Rm. 226. Phone: 936-261-3564

Testing

The Department of Testing administers College Board CLEP examinations, the HESI A2 for pre-nursing majors, LSAT for law school applicants and MPRE for second-year law students, the Experiential Learning Portfolio option, the Texas Success Initiative (TSI) Assessment, which determines college readiness in the state, and exam proctoring, among other services such as SAT and ACT for high school students. Location: Delco Rm. 141. Phone: 936-261-4286

Office of Diagnostic Testing and Disability Services

As a federally-mandated educational support unit, the Office of Disability Services serves as the repository for confidential disability files for faculty, staff, and students. For persons with a disability, the Office develops individualized ADA letters of request for accommodations. Other services include: learning style inventories, awareness workshops, accessibility pathways, webinars, computer laboratory with adapted hardware and software, adapted furniture, proctoring of non-standardized test administrations, ASL interpreters, ALDs, digital recorders, livescribe, Kurtzweil, and a comprehensive referral network across campus and the broader community. Location: Evans Hall Rm. 317. Phone: 936-261-3585

Veteran Affairs

Veterans Services works with student veterans, current military and military dependents to support their transition to the college environment and continued persistence to graduation. The Office coordinates and

certifies benefits for both the G.I. Bill and the Texas Hazlewood Act. Location: Evans Hall Rm. 323. Phone: 936-261-3563

Office for Student Engagement

The Office for Student Engagement delivers comprehensive programs and services designed to meet the co-curricular needs of students. The Office implements inclusive and accessible programs and services that enhance student development through exposure to and participation in diverse and relevant social, cultural, intellectual, recreational, community service, leadership development and campus governance. Location: Memorial Student Center Rm. 221. Phone: 936-261-1340

Career Services

Career Services supports students through professional development, career readiness, and placement and employment assistance. The Office provides one-on-one career coaching, interview preparation, resume and letter writing, and career exploration workshops and seminars. Services are provided for students at the Northwest Houston Center and College of Nursing in the Medical Center twice a month or on a requested basis. Distance Learning students are encouraged to visit the Career Services website for information regarding services provided. Location: Evans Hall Rm. 217. Phone: 936-261-3570

University Rules and Procedures

Disability Statement (Also See Student Handbook):

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Evans Hall, Room 317, or call 936-261-3585/3.

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.

Title IX Statement

Prairie View A&M University (PVAMU) is committed to supporting students and complying with the Texas A&M University System non-discrimination policy. It seeks to establish an environment that is free of bias, discrimination, and harassment. If you experience an incident of sex- or gender-based discrimination, including sexual harassment, sexual assault or attempted sexual assault, we encourage you to report it. While you may talk to a faculty member about an incident of misconduct, the faculty member must report the basic facts of your experience to Ms. Alexia Taylor, PVAMU's Title IX Coordinator. If you would like to speak with someone who may be able to afford you privacy or confidentiality, there are individuals who can meet with you. The Title IX Coordinator is designated to handle inquiries regarding non-discrimination policies and can assist you with understanding your options and connect you with on- and off-campus resources. The Title IX Coordinator can be reached by phone at 936-261-2123 or in Suite 013 in the A.I. Thomas Administration Building.

Class Attendance Policy (See Catalog for Full Attendance Policy)

Prairie View A&M University requires regular class attendance. Attending all classes supports full academic development of each learner whether classes are taught with the instructor physically present or via distance learning technologies such as interactive video and/or internet.

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 during regular semesters and summer terms. Each faculty member will include the University's attendance policy in each course syllabus.

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.

TECHNICAL CONSIDERATIONS

Minimum Recommended Hardware and Software:

- Intel PC or Laptop with Windows 7; Mac with OS X; Smartphone or iPad/Tablet with Wi-Fi
- High speed Internet access
- 8 GB Memory
- Hard drive with 320 GB storage space
- 15" monitor, 800x600, color or 16 bit
- Sound card w/speakers
- Microphone and recording software
- Keyboard & mouse
- Most current version of Google Chrome, Safari, Internet Explorer or Firefox

Note: Be sure to enable Java & pop-ups in the Web browser preferences

Participants should have a basic proficiency of the following computer skills:

- Sending and receiving email
- A working knowledge of the Internet
- Proficiency in Microsoft Word (or a program convertible to Word)
- Proficiency in the Acrobat PDF Reader
- Basic knowledge of Windows or Mac O.S.

Netiquette (online etiquette):

Students are expected to participate in all discussions and virtual classroom chats as directed. Students are to be respectful and courteous to others on discussions boards. Foul or abusive language will not be tolerated.

Technical Support:

Students should go to <https://mypassword.pvamu.edu/> if they have password issues. The page will provide instructions for resetting passwords and contact information if login issues persist. For other technical

questions regarding eCourses, call the Office of Distance Learning at 936-261-3283

Communication Expectations and Standards:

Emails or discussion postings will receive a response from the instructor, usually in less than 48 hours. Urgent emails should be marked as such. Check regularly for responses.

Discussion Requirement:

Online courses often require minimal to no face-to-face meetings. However, conversations about the readings, lectures, materials, and other aspects of the course can take place in a seminar fashion. This will be accomplished by the use of the discussion board. The exact use of discussion will be determined by the instructor.

It is strongly suggested that students type their discussion postings in a word processing application and save it to their PC or a removable drive before posting to the discussion board. This is important for two reasons: 1) If for some reason your discussion responses are lost in your online course, you will have another copy; 2) Grammatical errors can be greatly minimized by the use of the spell-and-grammar check functions in word processing applications. Once the post(s) have been typed and corrected in the word processing application, it/they should be copied and pasted to the discussion board

POLICY TO ERADICATE CHEATING (PROTECT INTEGRITY OF EXAMS)

Cheating is unprofessional, unethical and is antithetical to our core value of "Excellence in Civil Engineering Education," and WILL NOT BE TOLERATED at any level. To combat this serious problem, the Civil & Environmental Engineering (CEE) Department has adopted the following rules to eradicate cheating.

- If a student cheats on a test/assignment, the student shall receive an automatic zero for the test/assignment.
- A student who has been determined to have cheated in a course will IMMEDIATELY relinquish his/her leadership position in any of the department's professional organizations.
- If a student cheats multiple times in a course, the student will receive a grade of "F" for the course.
- The calculators allowed for use in exams is restricted to the latest FE-approved calculators. For the latest NCEES FE approved calculators visit ncees.org or <https://ncees.org/exams/calculator/> [This NCEES policy protects the integrity of NCEES exams and has been adopted to do likewise for department's exams.]

EXAM GUIDELINES

- 1) All cellphones/smartwatches MUST be placed in a book bags during exams and turned off. Book bags MUST be placed in front of the classroom and away from students. Students without a book bag must place cellphone/smartwatch (turned off) on Instructor's desk – no exceptions
- 2) Any student possessing a cellphone/smartwatch or any other unauthorized device WILL receive an automatic zero for the test/assignment. This is cheating.
- 3) Calculator covers are DISALLOWED during tests and must be placed in students' book bags during exams.
- 4) There shall be NO SHARING of resources during the exam
- 5) Restroom Visit: if you need to use the restroom, do so before opening the exam. Once the exam begins, you must submit your work to the instructor if you leave the classroom to visit the rest room (your exam terminates).

