MCEG 4043 Machine Design II  
Summer 2020

Instructor: Jaejong Park, Ph.D.
Section # and CRN: Section Z01, CRN: 32995
Office Location: S. R. Collins Building, Room 324
Office Phone: 936-261-9967 (Email is preferred)
Email Address: japark@pvamu.edu
Office Hours: TR 10:00 am ~12:00 pm or by appointment only
Mode of Instruction: Online

Course Location: Online
Class Days & Times: N/A, there is no designated lecture time for this online course.
Catalog Description: Continuation of MCEG 3043. Fundamentals of mechanical design methodology, design of machine elements for static and fatigue failure, design projects, and classroom discussions of various design solutions.

Prerequisites: MCEG 3043 Machine Design I; MCEG 3053 Kinematic Design and Analysis
Co-requisites: None
Recommended Texts: None

Course Goals or Overview
This course is designed to introduce students in mechanical engineering to the contemporary mechanical design methodology as applied to machine elements and the process of mechanical design. The student will design mechanical elements using concepts developed in the design of machine elements, engineering graphics, and other related courses. This class will specifically focus on gears, shafts, clutches, brakes, and other flexible mechanical elements.

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

1. Develop the skills for mechanical element design;
2. Be able to analyze mechanical engineering elements;
3. Have the knowledge of various machine elements;
4. Be able to complete a mechanical design project.

Major Course Requirements & Evaluation Methods
This course will utilize the following instrument to determine student grades and proficiency in the learning outcomes for the course.

- **Exams**: written test designed to measure knowledge of presented course material
- **Quizzes**: written quizzes designed to measure knowledge of presented course material
- **Homework**: written assignments designed to supplement and reinforce course material
- **Project**: design project to measure the ability to apply presented course material
<table>
<thead>
<tr>
<th>Course Grade Requirement</th>
<th>Value</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Homework</td>
<td>10%</td>
<td>10</td>
</tr>
<tr>
<td>2) Project</td>
<td>30%</td>
<td>30</td>
</tr>
<tr>
<td>3) Quiz</td>
<td>10%</td>
<td>10</td>
</tr>
<tr>
<td>4) Exam 1</td>
<td>20%</td>
<td>20</td>
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<tr>
<td>5) Final Exam</td>
<td>30%</td>
<td>30</td>
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<tr>
<td><strong>Total:</strong></td>
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<td><strong>100</strong></td>
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**Grading Determination:**
A = 90 – 100  
B = 80 – 89  
C = 70 – 79  
D = 60 – 69  
F = 0 – 59

**Course Procedures or Additional Instructor Policies**

**Use of eCourses (http://ecourses.pvamu.edu):**
eCourses will be used extensively in this class. Lecture slides, assignments, and tutorials will be provided on eCourses. You need to have the printout of the lecture PPT with you when you come to the class.

**Assignments & Due Dates:**
Homework needs to be submitted at the beginning of the class on the due date. *The same day late submission will be deducted by 10%. Homework will not be accepted after the day it is due.* Exceptions will only be made under extreme circumstances and at the discretion of the instructor. Assigned homework will be graded either for completeness, and 1~2 problems per set will be graded for correctness. Students are encouraged to work together on the homework assignments; however, all students must individually submit a homework assignment that consists of their work.

**Attendance**
No attendance will be taken since there is no designated time for lectures. However, it is the students’ responsibility to watch lecture videos promptly and complete course assignments on time.

**References**
None.
# Tentative Course Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Chapter</th>
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| 1~2  | Mechanics of Materials review  
Gears - General  
Gear types, terminology, gear fundamentals, gear trains, force analysis | 13 |
| 3~4  | Spur and Helical Gears  
Lewis bending, AGMA equations, and relative factors  
Project Introduction | 14 |
| 5    | Review and Midterm Exam 1 | |
| 6    | Failure Resulting from Variable Loading  
Fatigue, fatigue failure analysis, endurance limit, fatigue strength, Marin factors | 6 |
| 7    | Bearings  
Rolling contact bearings, Journal bearings, and their lubrication | 11,12 |
| 8~9  | Clutches, Brakes, Couplings, and Flywheels  
Static analysis, Internal expanding & external contracting, band type, disk brakes | 16 |
| 10   | Flexible Mechanical Elements  
Belts, chains, ropes, drives  
Course Review | 17 |
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 an 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

University Tutoring Center
The Center 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. 307. Phone: 936-261-1561

The Student Academic Success Center
The Student Academic Success Center 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 online 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 service such as SAT and ACT for high school students. Phone: 936-261-3627

Office of 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 hard 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 Services
Veteran 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: May Hall Rm. 118. 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 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.

**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 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 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/](https://mypassword.pvamu.edu/) if they have password issues. The page will provide instructions for resetting passwords along with whom to contact if login issues persist. For other technical questions regarding eCourses, call the Center for Instructional Innovation and Technology Services 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.