1. Course Number and Name

a. **ENGR 2302**: Engineering Mechanics-Dynamics, Spring 2022
b. Lecture: Section 010, MWF 12:00 – 12:50 pm, VIN 287
Lab: Section 01Z, Thursday 2:00 – 2:50 pm, VIN 158

2. Credits and Contact Hours

a. **Credits**: 3
b. **Contact Hours**: 3 hours/week (Classroom) 1 hour/week (Lab)

3. Instructor Information

a. **Course Coordinator**: Dr. Azize Akcayoglu
b. **Instructors**:
   i. Dr. Azize Akcayoglu, 325-486-5540, azize.akcayoglu@angelo.edu. Office: VIN 271.
   ii. Office hours: Thrs. 12:20-2:00 pm or by appointment.

4. Course Materials

a. **Required Textbook**:

- Hibbeler, R. C. (2016), Engineering Mechanics, Dynamics, (14th Ed.). Upper Saddle River, NJ: Pearson Prentice Hall. ISBN 9780133915389

b. **Other Supplemental Materials**: Materials posted on Blackboard® Learning Management System

c. **Allowable Calculators:** Non-programmable scientific calculators may be used on quizzes and exams in this course. You may borrow from the HUB if you need one. Here is the list of allowable calculators:

Casio: All FX-115 models
Hewlett Packard: The HP 33s and HP 35s models
Texas Instruments: All TI-30X and TI-36X models

5. Technology Requirements

To successfully complete this course, you need to access to the Blackboard® Learning Management System. Homework will be submitted and subsequently graded online through Blackboard.

Laptops and tablets may be used in-class.

6. Specific Course Information

a. **Catalog Description:** The course emphasizes the proper utilization of vector algebra and free-body diagrams to solve problems in the second course of the engineering mechanic's sequence. The primary purpose of this course if to give students an application of basic principles of dynamics related to different fields of engineering. The course covers four major areas of study: (1) kinematics and kinetics of particles and rigid bodies in 2D and 3D motion, rotations, translations, and oscillations; (2) principles of impulse and momentum; (3) principles and application of friction; and (4) principles of force and acceleration.
b. **Prerequisites and Corequisites**: Prerequisites: ENGR 2301 – Engineering Mechanics - Statics
c. **Required or Elective Course:** Required for the BSCE and BSME Majors.

7. Specific Goals for the Course

a. Course Learning Outcomes:

1. Express dynamic quantities as vectors in terms of Cartesian components, polar coordinates, and normal-tangential coordinates.
2. Define vector relationships between positions, velocities, and accelerations of rigid bodies and systems of particles in rectilinear and curvilinear motion.
3. Solve kinematic problems involving rectilinear and curvilinear motion of particles using Newton's Second Law.
4. Apply the principles of work and energy, and impulse and momentum, to solve engineering problems involving particles and systems of particles.
5. Solve kinematic and kinetic problems involving the translation, rotation, and oscillation of a rigid body and systems of particles.
6. Compute mass moments of inertia for systems of particles and rigid bodies.

b. Course Learning Outcome Mapping to ABET Criterion 3 Student Outcomes:

Table 1: Course Learning Outcomes mapped to ABET Student Outcomes

ABET Student Outcomes	1	2	3	4	5	6
1. Solve Problems	X	X	X	X	X	X
2. Design						
3. Communication						
4. Ethics & Professionalism						
5. Teamwork	X	X	X	X	X	X
6. Experimentation						
7. Acquire New Knowledge						

8. Topics Covered

1. Kinematics of a Particles: Rectilinear and Curvilinear motion, Projectile motion
2. Kinetics of a Particles: Force and Acceleration; Work and Energy; Impulse and Momentum
3. Planar Kinematics of a Rigid Body
4. Planar Kinetics of a Rigid Body: Force and Acceleration
5. Planar Kinetics of a Rigid Body: Work and Energy

9. Course Delivery and Communications

9.1 *Delivery Methods*

This is a face-to-face course with online components that students are expected to access in **Blackboard**. The course will meet three times a week for class, one time for lab. The students will participate in group activities to supplement the learning of the concepts introduced during class. These activities may include solving additional engineering problems, taking quizzes, and/or completing assignments.

Attendance in class is expected. Some of the material presented will correlate with the textbook, but other material will not and/or may be presented differently. You are responsible for all topics that are covered in class. Please communicate to the instructor if you need to miss class so a suitable arrangement can be made.

Respect for your fellow classmates is required. Do not act in a manner that may distract others,

includingbut not limited to: talking during lecture, texting, phone calls, watching YouTube videos, eating noisily, listening to loud music, walking to the front of the room during lecture just to turn your homework in because you were late to class, etc… If you need to do any of these activities, you are free to leave the classroom.

9.2: Communications

Written communication via email: All private communication will be done exclusively through your ASU email address. Check frequently for announcements and policy changes. In your emails, include the course name and section number in your subject line.

Important course announcements and changes will be sent by email via Blackboard. Students are expected to regularly check their Angelo State University email and their Blackboard for these messages.

Students should feel free to contact the instructor regarding any issues with the class.

Office hours or advising may be arranged with the assistance of Collaborate, Zoom, or another web meeting platform.

Students can also email Dr. Akcayoglu with any questions and concerns. Dr. Akcayoglu will usually respond to email within a few hours, but definitely within 24 hours Monday through Friday. Weekend messages may not be returned until Monday.

10: Professionalism

Professional engineering standards apply in this class. You are expected to demonstrate a behavior consistent with the conduct of an individual practicing in the engineering profession. You are expected to:
(1) come prepared for class; (2) respect faculty and peers; (3) demonstrate responsibility and accountability for your own actions; (4) demonstrate sensitivity and appreciation for diverse cultures, backgrounds, and life experiences; (5) offer and accept constructive criticism in a productive manner; (6)demonstrate an attitude that fosters professional behavior among peers and faculty; (7) be punctual to class meetings; (8) maintain a good work ethic and integrity; and (9) recognize the classroom as a professional workplace. (10) Do not act in a manner that may distract others, including but not limited to: talking during lecture, texting, phone calls, watching YouTube videos, eating noisily, listening to loud music, walking to the front of the room during lecture just to turn your homework in because you were late to class, etc… If you need to do any of these activities, you are free to leave the classroom.

11. Graded Material

11.1: Evaluation and Grades

Course grades will be determined as indicated in the table below.

Table 2: Grade Weighting

Assessment	Percent
Participation/Quiz/In-Class Assignments:	15%
Homework	15%
Exam I	20%
Exam II	20%
Final Exam	30%
Total	100%

The instructor reserves the right to adjust the weights given to the assignments/homework/exams listed above. Any adjustments will be applied evenly to the entire class and never to the detriment of your grade.

11.2: Grading Scale

90.00% - 100%	**A**
80.00% - 89.99%	**B**
70.00% - 79.99%	**C**
60.00% - 69.99%	**D**
0.00% - 59.99%	**F**

11.3 : Class Attendance, Participation, Timeliness and Teamwork

- A portion of your grade will be based on participation. For full credit, students are expected to arrive to class on time and adequately prepared, meaning that any assigned readings and/or homework are already completed by the time the class period begins.
- Participation points will be assigned at the discretion of the instructor, and may be based upon the following:
    - Attendance throughout the class period
    - Completion of homework or reading assignments
    - Willingness to answer a question when called upon (answer does not have to be correct)
    - Effort displayed during group activities or in-class assignments
- In-class assignments or quizzes may be given periodically to help identify student understanding of the material. The quizzes will be unannounced and unscheduled.
- Students may work together on in-class assignments, but may have to turn in his or her own problem work.
- If you will be absent, please make prior arrangements with the instructor.

11.4 : Homework

- Your online assignments will be due at the time specified on Blackboard. Assignments submitted in hard copy are due at the beginning of class on the due date. Your instructor may assess penalties for late work.
- Late homework may not be accepted for full credit, unless previous arrangements with the instructor are made. Please talk to me!!
- Late homework is subject to additional deductions at the discretion of the instructor. In general, it is more beneficial to turn in late homework that you have tried to complete than it is to turn in"junk" on time.
- Neatness counts! As an engineer and a professional, your work will often be read and scrutinized by others. In some instances, it could be a legal document or a piece of evidence in a court of law. It is your responsibility that the work you prepare is presented in a legible, methodical, and logical manner.
- Any handwritten homework should be performed directly on the printout of the homework, on one side of 8.5" x 11" DLHE engineering calculation paper, (available on Blackboard).
- Each problem should start on a separate page.
- The solution should include: the problem statement, drawing/sketch, given, find, assumptions, solution steps, and answer. Key intermediate values should be indicated by underlining or some other means, and the final answershould be written in the box at the bottom right of the DLHE engineering calculation paper.
- Units should be included with all answers.
- Sketches/diagrams (if any) should be made with a straight edge, or copied/pasted from the problem.
- Name, date, page number, and problem info should be included on each page. "Project" section may be filled out by course name and/or course number. "Calculation" section should show the HW/Quiz number. See the example homework solution posted to Blackboard, which meets all or part of these requirements.
- The first sheet of the cover page must be filled out by the students. See the sample cover page posted to Blackboard.
- Students may collaborate to complete the homework; however, each student must turn in his/her own assignment for grading. Direct copying of other's work is not allowed and may be subject todisciplinary actions.
- Homework problems will be graded out of 10 pts (if 2 problems, 20 pts total; if 4 problems, 40 pts total)- unless otherwise noted.
- At the end of the semester, 30 pts will be added to your homework total. This will account for any lost points or missed problems.

11.5 : Exams

- Make-up exams will only be given for extenuating circumstances, unless prior arrangements withthe instructor are agreed upon.
- Exams will not be open textbook or notes, but the use of a formula/cheat sheet will be permitted.Details will be discussed closer to the exam time.
- Exams I and II will be given during the class. The final exam will be given according to the university's standard schedule (Angelo State University Final Exam Schedule) on Monday, May 9, 2022 from 1:00pm- 3:00pm.

12: Classroom and University Policies and Student Support

12.1: General Policies

All students are required to follow the policies and procedures presented in these documents:

- Angelo State University Student Handbook
- Angelo State University Catalog

12.2 : Student Disability Services

ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA) and subsequent legislation.
Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student's responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte University Center, Room 112, or contacting the department via email at ADA@angelo.edu. For more information about the application process and requirements, visit the Student Disability Services website. The employeecharged with the responsibility of reviewing and authorizing accommodation requests is:

Dallas Swafford
Director of Student
Disability ServicesOffice of
Student Affairs
325-942-2047
dallas.swafford@angelo.edu
Houston Harte University Center, Room 112

12.3 : Title IX at Angelo State University

Angelo State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. In accordance with Title VII, Title IX, the Violence Against Women Act (VAWA), the Campus Sexual Violence Elimination Act (SaVE), and other federal and state laws, the University prohibits discrimination based on sex, which includes pregnancy, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination and unwelcome behavior of a sexual nature. The term includes sexual harassment, nonconsensual sexual contact, nonconsensual sexual intercourse, sexual assault, sexual exploitation, stalking, public indecency, interpersonal violence (domestic violence or dating violence), sexual violence, and any other misconduct based on sex.

You are encouraged to report any incidents involving sexual misconduct to the Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator, Michelle Miller, J.D. You may submit reports in the following manner:

Online: Incident Reporting Form[1]
Face to Face: Mayer Administration Building, Room 210
Phone: 325-942-2022
Email: michelle.miller@angelo.edu

Note, as a faculty member at Angelo State, I am a mandatory reporter and must report incidents involving sexual misconduct to the Title IX Coordinator. Should you wish to speak to someone in confidence about an issue, you may contact the University Counseling Center (325-942-2371), the 24-Hour Crisis Helpline (325-486-6345), or the University Health Clinic (325-942-2171).

For more information about resources related to sexual misconduct, Title IX, or Angelo State's policy please visit the Title IX website.

12.4 : **Student Absence for Observance of Religious Holy Days**

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. See ASU Operating Policy 10.19 Student Absence for Observance of Religious Holy Day for more information.

12.5 : Incomplete Grade Policy

It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 Grading Procedures for more information.

12.6 : **Information About COVID-19**

Please refer to ASU's COVID-19 (Coronavirus) Updates web page for current information about campus guidelines and safety standards as they relate to the COVID-19 pandemic.

12.7 : Student Conduct Policies

12.7.1 : Academic Integrity

Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU.
The College of Science and Engineering adheres to the university's Statement of Academic Integrity (Page 97).

12.7.2 : Plagiarism

Plagiarism is a serious topic covered in ASU's Academic Integrity Statement in the Student Handbook. Plagiarism is the action or practice of taking someone else's work, idea, etc., and passing it off as one's own. Plagiarism is literary theft.

In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marksand the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list.

Papers are subject to be evaluated for originality via Turnitin or SafeAssign. Resources to help you understand this policy better are available at the ASU Writing Center.

12.7.3 : Copyright Policy

Students officially enrolled in this course should make only one printed copy of the given articles and/or chapters. You are expressly prohibited from distributing or reproducing any portion of course readings in printed or electronic form without written permission from the copyright holders or publishers.

13: Instructor Specific Information

The instructor reserves the right to change the policies and procedures of this course when he deems it necessary. Any such changes will be implemented fairly and will typically not be a detriment to your grade. The instructor will notify you of any such changes in a timely manner.

13.1 : Photo/Video Policy

Students are not allowed to take photos/videos of lectures and classroom activities.

13.2 : Diversity and Equity Statement

The instructor strives to promote a living and learning environment for outstanding growth and productivity among all students, faculty and staff. Diversity is broadly defined to include such characteristics as, but not limited to, race, ethnicity, gender, religion, age, disability, sexual orientation, or socio-economic background. Diversity also entails different viewpoints, philosophies, and perspectives. Course activities and attention to these aspects of diversity will help promote a culture of inclusion and belonging, and an environment where diverse opinions, backgrounds and practices have the opportunityto be voiced, heard and respected. All students in my classroom are expected to show respect for one another.

14. Modifications to the Syllabus

This syllabus, including grade evaluation and course schedule, is subject to modification on potentially short notice based on developing circumstances.

15: End Notes

[1] https://www.angelo.edu/live/profiles/11374-azize-akcayolu
[2] https://blackboard.angelo.edu/
[3] https://www.angelo.edu/student-handbook/code-of-student-conduct/misconduct.php
[4] https://www.angelo.edu/live/profiles/6463-anthony-battistini
[5] https://www.angelo.edu/current-students/registrar/final.php
[6] https://www.angelo.edu/current-students/student-handbook/
[7] https://www.angelo.edu/academics/catalog/
[8] https://www.angelo.edu/current-students/disability-services/
[9] http://www.angelo.edu/incident-form
[10] https://www.angelo.edu/current-students/title-ix/
[11] http://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of
[12] https://www.angelo.edu/content/files/14197-op-1011-grading-procedures
[13] http://www.texastech.edu/downloads/ttus-policy-face-coverings.pdf
[14] http://www.angelo.edu/student-handbook/community-policies/academic-integrity.php
[15] https://www.angelo.edu/current-students/writing-center/academic_honesty.php