1: Instructor
- Dale B. McDonald, PhD  Phone: 325-486-5509  Email: dale.mcdonald@angelo.edu

2: Required materials

3: Prerequisites
- ENGR 2301

4: Course Description
Basic theory of engineering mechanics, using calculus, involving the motion of particles, rigid bodies, and systems of particles; Newton’s Laws; work and energy relationships; principles of impulse and momentum; application of kinetics and kinematics to the solution of engineering problems.

Engineering mechanics, of which dynamics is a core course, will expand and deepen our knowledge of how particles, systems of particles, and rigid bodies behave in our universe.

5: Course Learning Outcomes
When you complete this class you should be able to:

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.
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. Recognize current social, economic, and environmental issues where statics principles are important for the development of engineering solutions.

Course outcome mapping
The mapping of the course outcomes to the program outcomes is shown in Table 1. The program outcomes correspond to the listed ABET Criterion 3 student outcomes (1) through (7).
Table 1. ENGR 1201 course outcome mapping

<table>
<thead>
<tr>
<th>Course Learning Outcomes</th>
<th>1 Problem Solving</th>
<th>2 Design</th>
<th>3 Experimentation</th>
<th>4 Communication</th>
<th>5 Professional Ethics</th>
<th>6 Ongoing Learning</th>
<th>7 Teamwork</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I = Introduce, A = Apply, S = Synthesize

6: Course structure and communication

This course will contain a significant amount of lecture. However, I very much encourage questions and discussion during class. In addition, there will be occasions (some for credit, some not) where you will work in small groups or teams to address a particular aspect of the course material as an “in-class” team activity. You are expected to stay current in lecture and readings in the text. We will be using both Blackboard and Piazza to communicate during this course. Lesson materials will be delivered in class and via Blackboard. Piazza will be used for announcements and discussion of course materials. Please do not email your instructor with questions about class—instead post your questions on Piazza.

6.1: Calculator policy

The use of a calculator is allowed in general, at the discretion of the instructor. Computers, tablets, smartphones, I-pads and similar electronics are not allowed on tests in general (instructor discretion). Calculators with graphing capabilities will be allowed in the course. Recommended calculators with these capabilities include the HP48, HP49, HP50, TI86, and TI89. However, only calculators currently allowed in the Fundamentals of Engineering (FE) and Professional Engineering (PE) exams will be allowed in exams and quizzes. Please refer to the National Council of Examiners for Engineering and Surveying (NCEES) calculator policy for the list of acceptable calculators (http://ncees.org/exams/calculator-policy/).

6.2: Professionalism

One of the goals of this course is to teach students about professionalism, including the standards and expected behavior of your chosen profession. With this in mind, students are expected to demonstrate a behavior consistent with the conduct of an individual practicing in the engineering profession. Students are expected to: (1) come prepared for class; (2) respect faculty and peers; (3) demonstrate responsibility and accountability for your own actions; (4) 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.

7: Graded Material

7.1: Homework

Homework assignments will be made in class and/or via Blackboard. Your lowest homework grade will be dropped
7.2: Grades: Weighting and Letter Grades

The following weighting system will be used in determining final grade for the course:

<table>
<thead>
<tr>
<th>Item</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam One</td>
<td>20%</td>
</tr>
<tr>
<td>Exam Two</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
</tr>
<tr>
<td>Homework</td>
<td>20%</td>
</tr>
<tr>
<td>“In-class” team activities</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

The instructor will determine letter grades for the course using his professional judgment, and the following standards as described in the University Catalog:

A = excellent work    B = good work    C = average work    D = poor work    F = failing work

8: Classroom and University Policies and Student Support

8.1: Academic Integrity

Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding the Academic Honor Code, which is contained in both print and web versions of the Student Handbook.

8.2: Americans with Disability Act

Persons with disabilities which may warrant academic accommodations must contact the Student Life Office, Room 112 University Center, in order to request and to implement academic accommodations.

8.3: Religious Holy Day

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence.

9: Instructor Prerogative

This class does not operate under democratic principles. Your instructor may change policies, procedures, of this course when he deems it necessary. You will be notified of any such changes.