California State University, Chico
MECH 320 – Dynamics
Spring Semester 2021

Instructor
Dr. Ozgul Yasar
OCNL 424
Phone: 530- 898-6142
e-mail: oyasar@csuchico.edu
Office Hours: Mondays at 1:00-3:00 pm and Wednesdays at 1:00-3:00 pm or by appointment
Zoom link for the Office Hours:
https://csuchico.zoom.us/j/84541739470?pwd=NmpHcHJNTmo2SnlHbiZ0QUZST0NUUT09

Catalog Description
Kinematics and dynamics of mechanical systems composed of rigid bodies. Moments and products of inertia, forces of interaction, inertia forces, and torques. Equations of motion of non-planar systems.

Prerequisites
CIVL 211 (Statics) with a grade of C- or higher. MATH 260 (Differential Equations)

Class Times
Section 01: Online, MWF 10:00 AM - 11:50 AM
Section 02: Online, MWF 12:00 - 12:50 PM
Zoom link for the lectures is available on Blackboard.

Textbooks

Homework
Homework sets will be assigned for the semester. These problem sets will be posted on the Blackboard Learn class site. Problem sets must be submitted to the Blackboard Learn site at the start of the class period on the due date specified. Homework submitted after the specified deadline will receive no credit unless prior arrangements are made with the instructor, or there is an officially-verifiable illness or emergency. Tardiness or absence from class on the due date is not an excuse for late submission of homework. If the points are taken from any of the assignments, there will be a note attached to the penalized question to explain the reason for the penalty. Important reminders are also going to be announced in Blackboard. I encourage you to login to Blackboard daily to check any possible announcements.

Tests
There will be quizzes, two midterms, and a final exam for the semester. All tests are closed-book. These midterms primarily cover the key topics discussed since the previous test. The final exam is comprehensive. Makeup tests will be given only with documented compelling reasons. Students will take the final exam on the day and time scheduled by the university. Time conflicts with other final exams should be brought to the instructor’s attention as early as possible. Answers to the test problems should include relevant work in a logical order with explanation where necessary. When calculation is needed to arrive at a final answer, the formula(s) used along with numerical substitutions and correct units should be clearly shown. A complete and correct answer is necessary for full credits. Your webcams must be on during the exams.

Collaboration
Collaboration and discussion on the homework is encouraged in this class, but assignments turned in for a grade must be a student’s own work. Consulting with your colleagues is fine, but copying from somebody else’s homework solution is considered academic misconduct. (I strongly recommend that you first attempt every homework problem on your own, and only then meet with your colleagues to check and improve your
work. The best learning usually comes after getting stuck on your own.) Academic misconduct will be referred to the Student Judicial Affair. Outdoor wireless coverage areas on the campus can be found at: https://www.csuchico.edu/calendar/detail/2020-08/20-08-20-outdoor-wireless-coverage-available-on-campus-map.shtml

**Evaluation**

The overall course grade will be based on homework, quizzes, midterms, and final exam.

Homework 15%
Quizzes 20%
Midterms 35%
Final Exam 30%

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<thead>
<tr>
<th>Grade</th>
<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C+</th>
<th>C</th>
<th>C-</th>
<th>D+</th>
<th>D</th>
<th>F</th>
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<tbody>
<tr>
<td></td>
<td>93-100</td>
<td>90-92</td>
<td>87-89</td>
<td>83-86</td>
<td>80-82</td>
<td>77-79</td>
<td>73-76</td>
<td>70-72</td>
<td>66-69</td>
<td>60-65</td>
<td>&lt;60</td>
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**Course Objectives and Description**

Students will learn to analyze the motion and the forces of physical systems, modeled as collections of particles and rigid bodies. The course consists of two primary types of study: kinematics, which treats only the motion of objects without consideration of the forces causing the motion, and kinetics, which involves the analysis of the forces on objects as well as the resulting motion. Students are expected to have an adequate working knowledge of statics prior to taking this course, i.e., being able to model a physical system at rest, draw free-body diagrams, and apply the laws of static equilibrium.

**Class Schedule**

The following table is a tentative course schedule outlining the chapters covered and approximate time for the tests. The schedule and topics might be modified based on student progress and time availability.

**Tentative Schedule, Spring 2021**

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
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</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>1/25-1/29</td>
<td>Kinematics of a Particle</td>
<td>12.1-12.4</td>
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<td>Week 2</td>
<td>2/1-2/5</td>
<td>Curvilinear and Relative Motion</td>
<td>12.5-12.10</td>
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<tr>
<td>Week 3</td>
<td>2/8-2/12</td>
<td>Kinetics and Newton’s 2nd Law</td>
<td>13.1-13.3</td>
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<tr>
<td>Week 4</td>
<td>2/15-2/19</td>
<td>Equations of Motion</td>
<td>13.4-13.6</td>
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<td>Week 5</td>
<td>2/22-2/26</td>
<td>Work and Energy</td>
<td>14.1-14.6</td>
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<tr>
<td>Week 6</td>
<td>3/1-3/5</td>
<td>Review (Midterm I: Ch#12,13,14)</td>
<td>Study</td>
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<tr>
<td>Week 7</td>
<td>3/8-3/12</td>
<td>Linear Impulse and Momentum</td>
<td>15.1-15.4</td>
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<tr>
<td>Week 8</td>
<td>3/15-3/19</td>
<td>Spring Break</td>
<td>Enjoy</td>
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<tr>
<td>Week 9</td>
<td>3/22-3/26</td>
<td>Angular Momentum</td>
<td>15.5-15.7.5</td>
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<td>Week 10</td>
<td>3/29-4/2</td>
<td>Rigid Body Motion</td>
<td>16.1-16</td>
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<td>Week 11</td>
<td>4/5-4/9</td>
<td>Relative Motion</td>
<td>16.6-16.8.5</td>
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<tr>
<td>Week 12</td>
<td>4/12-4/16</td>
<td>Equation of Motion</td>
<td>17.1-17</td>
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<tr>
<td>Week 13</td>
<td>4/19-4/23</td>
<td>Review (Midterm II: Ch#15,16,17)</td>
<td>Study</td>
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<tr>
<td>Week 15</td>
<td>5/3-5/7</td>
<td>Impact</td>
<td>19.1-19.4</td>
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<td>Week 16</td>
<td>5/10-5/14</td>
<td>Vibrations</td>
<td>22.1-22.5</td>
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<tr>
<td>Week 17</td>
<td>5/17-5/21</td>
<td>Final Exam (TBA)</td>
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**Dropping and Adding Class**

Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc., found in the [CSU Chico University Catalog](http://www.csuchico.edu/catalog). You should be aware of the new deadlines and penalties for adding and dropping classes.

**Academic Integrity**

Students are expected to be familiar with the University’s Academic Integrity Policy. Your own commitment to learning, as evidenced by your enrollment at California State University, Chico, and the University’s Academic Integrity Policy requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the Office of Student Judicial Affairs. The policy on academic integrity and other resources related to student conduct can be found at: [http://www.csuchico.edu/sjd/integrity.shtml](http://www.csuchico.edu/sjd/integrity.shtml)

**Americans with Disabilities Act**

If you need course adaptations or accommodations because of a disability or chronic illness, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Please also contact Accessibility Resource Center (ARC) as they are the designated department responsible for approving and coordinating reasonable accommodations and services for students with disabilities. ARC will help you understand your rights and responsibilities under the Americans with Disabilities Act and provide you further assistance with requesting and arranging accommodations.

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530-898-5959
Student Services Center 170
arcdept@csuchico.edu
hhunt@csuchico.edu

**Student Learning Center**

The mission of the Student Learning Center (SLC) is to provide services that will assist CSU, Chico students to become independent learners. The SLC prepares and supports students in their college course work by offering a variety of programs and resources to meet student needs. The SLC facilitates the academic transition and retention of students from high schools and community colleges by providing study strategy information, content subject tutoring, and supplemental instruction. The SLC is online at [http://www.csuchico.edu/slc](http://www.csuchico.edu/slc)