



California State University, Chico  
Mechanical and Mechatronic Engineering and Sustainable Manufacturing  
**MECH 320: Dynamics**  
Fall Semester 2019

---

**Instructor:** Dr. Dennis O'Connor

**Office Hours:** O'Connell 417, Tuesday and Friday 2 - 3PM, Thursday 1-3pm

**Contact:** 530-898-4829, dmoconnor@csuchico.edu

---

**Textbooks:** *Engineering Mechanics: Dynamics* (14<sup>th</sup> Edition) by Russell C. Hibbeler, Pearson 2016.

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

**Lecture:** Section 01: O'Connell 124, MWF Noon - 12:50PM

**Grading:** Letter grades will be assigned according to the following list and table.

- ❖ Homework and Activities 20%
- ❖ 2 Mid-Term Exams 50%
- ❖ Final Exam (comprehensive) 30%

[90,100]	A
[80,90)	B
[70,80)	C
[60,70)	D

**Homework:** Problem sets will be posted on the Blackboard class site and will be collected at the START of the class period on the due date specified. Late homework, including after the start of class, will be subjected to lost points. Work should be legible and the final answer of each problem enclosed in a box.

**Activities:** Each chapter covered may have one or more associated activities in the form of an individual closed-book quiz or an open discussion problem. Notice of an impending quiz may or may not be given and all quizzes and homework assignments will be of equal worth.

**Exams:** There will be two normal class exams and a two-hour final exam for the semester. All exams are closed-book but will have an applicable equation sheet provided on the test. Each answered question must show relevant equations and sufficient work necessary to calculate the answer. The final answer must have correct units.

**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.

**Academic Integrity:** Students are expected to be familiar with the University's Academic Integrity Policy. The policy on academic integrity and other resources related to student conduct can be found at: <http://www.csuchico.edu/sjd/integrity.shtml>.

**Course Schedule:** The following table is a tentative course schedule outlining the chapters covered and approximate time for the Tests.

Week	Dates	Topics	Readings
1	Aug 26 - Aug 30	Kinematics of a particle	12.1 - 12.4
2	Sept 2 - Sept 6	Curvilinear and relative motion	12.5 - 12.10
3	Sept 9 - Sept 13	Kinetics and Newton's 2nd Law	13.1 - 13.3
4	Sept 16 - Sept 20	Equations of motion	13.4 - 13.6
5	Sept 23 - Sept 27	Work and energy	14.1 - 14.6
6	Sept 30 - Oct 4	Review (Exam I: 12,13,14)	Study
7	Oct 7 - Oct 11	Linear impulse and momentum	15.1 - 15.4
8	Oct 14 - Oct 18	Angular momentum	15.5 - 15.7
9	Oct 21 - Oct 25	Rigid body motion	16.1 - 16.5
10	Oct 28 - Nov 1	Relative motion	16.6 - 16.8
11	Nov 4 - Nov 8	Equation of motion	17.1 - 17.5
12	Nov 11 - Nov 15	Review (Exam II: 15, 16, 17)	Study
13	Nov 18 - Nov 22	Work & energy	18.1 - 18.5
14	Nov 25 - Nov 29	Thanksgiving	Break
15	Dec 2 - Dec 6	Impulse and Momentum	19.1 - 19.4
16	Dec 9 - Dec 13	Vibrations	22.1 - 22.5
17	Dec 16 - Dec 20	Finals Week (Comp. + 18,19,22)	Study

**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. Accessibility Resource Center (530-898-5959) and Student Services Center ([arcdept@csuchico.edu](mailto:arcdept@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>.