## Instructor Professor John Belz office: INSCC 228 hours: TTh 11:00 AM - 12:00 noon, or by appointment telephone: (801)585-9620email: belz@physics.utah.edu T.A. Mr. Josh Peterson office: INSCC 262 hours: W 4:00-5:00 PM F 2:00-3:00 PM email: josh.henry.peterson@gmail.com Description A calculus based physics course designed for students planning graduate studies in physics or a related field. This class is intended to give students a more in-depth understanding of classical mechanics. Topics include work and energy, vectors, kinematics, forces, Newton's three laws of motion, momentum, circular motion and rotations, angular momentum, Newtonian gravity, mechanical oscillations, sound, and wave motion. All topics are covered in one, two, and three spatial dimensions, in both Cartesian and curvilinear coordinate systems. Preparation Prerequisite: MATH 1210 or 1250, Calculus I Corequisite: MATH 1220 or 1260, Calculus II Lectures TTh at 2:00pm-3:55pm, Room JFB B1 Discussions WF at 3:05pm-3:55pm, Room JFB B1 Texts Primary: Kleppner & Kolenkow, An Introduction to Mechanics (2nd Ed.) Supplemental: Morin, Introduction to Classical Mechanics Supplemental: Serway and Jewett, Physics for Scientists and Engineers Web Page www.physics.utah.edu/~belz/phys3210 Grading Homework will be assigned approximately once per week. There will be two exams during the semester and one final exam. The grading breakdown is Homework 20%40%Exams Final 30%Discussion 10%Missed homeworks and exams will be excused or made up only under special circumstances and with the *prior* permission of the instructor.

Physics 3210: Physics for Scientists I, Spring 2019

**Deadlines** Last day to add or drop; January 18. Last day to withdraw; March 8.

Week 01	$\begin{array}{c} 01/08\\ 01/10 \end{array}$	Vectors Kinematics
Week 02	$01/15 \\ 01/17$	Kinematics in polar coordinates Newton's Laws
Week 03	$01/22 \\ 01/24$	Newton's Laws Forces and Equations of Motion
Week 04	$01/29 \\ 01/31$	Forces and Equations of Motion Momentum
Week 05	$02/05 \\ 02/07$	Momentum EXAM I
Week 06	$02/12 \\ 02/14$	Energy Energy
Week 07	$02/19 \\ 02/21$	Special Topics: Lagrangian Mechanics Special Topics: Normal Modes
Week 08	$\begin{array}{c} 02/26\\ 02/28 \end{array}$	Rotational Dynamics Rotational Dynamics
Week 09	$03/05 \\ 03/07$	Angular Momentum Vector Rotational Dynamics Exercises
Week 10	$03/12 \\ 03/14$	SPRING BREAK SPRING BREAK
Week 11	$03/19 \\ 03/21$	Review for Exam EXAM II
Week 12	$03/26 \\ 03/28$	Non-Inertial Systems and Fictitious Forces Non-Inertial Systems and Fictitious Forces
Week 13	$\begin{array}{c} 04/02\\ 04/04 \end{array}$	Central Force Motion Central Force Motion
Week 14	$04/09 \\ 04/11$	The Harmonic Oscillator Special Relativity
Week 15	$\begin{array}{c} 04/16\\ 04/18\end{array}$	Special Relativity Problem Session
Week 16	$04/23 \\ 04/25$	Course Review FINAL EXAM, 1:00-3:00 PM