

PHYS 40 – CLASSICAL MECHANICS – SPRING 2017

Lectures: Shuhaw 1786 | TTh 12:00–1:30pm

Labs: Shuhaw 1782 | M 9:00am–12:00pm

Discussions: Shuhaw 1783 | M 3:00–4:00pm

Instructor: Saska Gjorgjievska, Shuhaw 1774, sgjorgjievska@santarosa.edu, Tel: 707-527-4637

Office Hours: MTh 7:45-8:45 am & T 3:00-4:00 pm & Th 3:15-5:00 pm

Class Website: on *Canvas*

Prerequisites: Completion of MATH 1A or higher (V2).

Recommended Preparation: One year of high school physics or PHYS 1.

Course Description and Student Learning Outcomes: This is a course intended for science and engineering students and will use vectors and calculus to investigate translational and rotational motion, work and energy, conservation of energy and momentum, static equilibrium and universal gravitation. Upon successful completion of this course you will be able to:

- Apply physical principles and laws of classical mechanics to analyze and solve physics problems in mechanics through critical thinking, problem solving, mathematical modeling, and laboratory experimentation.
- Design and assemble apparatuses to measure physical phenomena.
- Analyze and make meaningful comparisons between experiment and theory.
- Effectively communicate ideas and processes of physics.

The complete course outline is available at the SRJC homepage under “Academics” → “Course Outline Information”.

Required Textbook: *“Fundamentals of Physics” - 10th edition, extended*, by David Halliday, Robert Resnick, Jearl Walker. ISBN: 978-1-118-23072-5 or 1118230728.

Other Required Materials: Every class bring four colored 3 x 5 inch index cards (to be given in class), notebook, pencil, eraser, calculator.

Class Website: We will use Canvas for posting assignments, due dates, submitting quizzes, announcements, solutions to homework. You are responsible for keeping up-to-date.

Note: This course is taught in a format that combines four sections into one online course environment. In some instances, students in one section might be able to view or comment on the work of students in the other section. You will be informed should these instances occur. If you have any concerns about this, please contact me for more details.

Assignments and Grading:

Homework: Homeworks is generally assigned weekly and you will have one week to complete the assignments. The assignments and the due dates will be posted on Canvas. The assignments will be due at the beginning of class. Late assignments **will not** be accepted, unless extension is approved in advance. One homework, with the lowest score, will be dropped from your final homework score. For homework policy and grading see “Homework Policy and Guidelines for Preparing and Grading“ on Canvas.

It is imperative that you do **all** of the assigned problems. This is how you get a grasp on the material and gain problem solving skills. The homework is the the essential part of your test preparation. Make sure you understand the concepts in each problem rather than looking for equations that might work.

Quizzes and Reading: Expect to read on average a chapter per week. Read the words, think about the concepts, vocabulary, do the examples, and try to answer the “Checkpoint” questions. Reading is an **absolutely** necessary component for success in this class. I will plan the classes with the assumption that you have done the reading. Weekly 5-10 minutes quizzes will be given at the beginning of class time (lecture or discussion). This quiz will check that you have read the book material **before** the lecture as listed in the class schedule below, and it will also quiz you on concepts from the previous week. You may not start the quiz late. Late arrival or absence will result zero points for that quiz. **NO** make-up quizzes. I will drop the lowest score.

Participation: You are expected to actively participate in class. Respond to questions, work out problems (in groups and individually), ask questions. Participation points will be assigned based on work you do during class. You will be turning in the in-class worksheets and problems each week along with the homework assignments.

Exams: We will have 3 mid-term exams, and a comprehensive final exam. The exams will test your understanding of concepts and problem-solving skills similar to what you encounter in homework assignments or during lecture/discussion. Bring a basic (non-symbolic) calculator. Cell phones and other internet-ready devices are forbidden during exams—using one will result in penalty. The exams will be closed book and closed notes. I will post a formula sheet on Canvas that you can print and bring to exam. Once I give the graded exams back, you will have two business days to appeal your grade, should you believe that it is incorrect. Be advised that just as I could give a higher grade in review of the exam, I may see that a lower grade is deserved if I consider I have been originally too generous.

Make-up exams will be given **only** under special circumstances of which I am notified **in advance**. If a notification in advance was not feasible, collect appropriate documentation and schedule a meeting with me.

Laboratory: The lab classes meet weekly. You may only go to your registered section. PDF copies of the lab manual will be posted on Canvas. You must read the lab beforehand and complete any prelab material, which may be collected at the beginning of the lab classes. Group labs are worth 10 points, to be completed in groups of two or three, and turned in before leaving. Formal lab reports are worth 20 points and are due in one week, before lab. 1 point will be deducted for each late arrival. Reports must be typed, including equations. All reports are to be submitted electronically online. Please do not print out the lab manual using the lab’s printer or the Math Lab printer. There are no make-up labs, but I will drop the lowest group (not formal) lab report.

Extra Credit: One extra credit problem will be assigned on each exam. There will be very few other extra credit opportunities, so take advantage of them when given. Please do not ask for extra credit assignments at the end of the semester. Come to lectures, labs and discussions, do your homework, come to office hours, visit the Tutorial Center, the MESA Center, form study groups, address any struggles with the material **on time** and you should be in a good shape.

Grading

Your total grade is based upon:		GRADES:	
Quizzes:	5%	90-100%	A
Participation:	5%	80-89%	B
Homework:	15%	70-79%	C
Labs:	20%	60-69%	D
Mid-term exams:	45%	0-59%	F
Final Exam:	10%		

Course Policies:

Attendance and Conduct: Attendance is **mandatory** in lecture, lab and discussions. Students who fail to attend the first class meeting may be dropped by the instructor. No-Shows will be dropped immediately after the second meeting. I may drop you if you have more than 7 total absences not excused in advance. If you do miss a class you are responsible for all announcements and material covered in your absence. If you decide to discontinue this course, it is your responsibility to officially drop it.

Using cellphones, headphones, tablets, and similar electronic devices is not allowed during class. Set your phone on vibration for in case of emergency notification and stow it away. Conduct yourself according to the SRJC Student Conduct rules and be respectful of others. No disruptive behavior will be tolerated—I reserve the right to ask you to leave the classroom and you will lose participation points, or the behavior may result in disciplinary action.

Academic Integrity: Cheating, plagiarism, collusion, and other academic misconduct will not be tolerated. Please consult section 3.11P of the Academic Policy in the Policy Manual for definitions and procedures. The instructor reserves the right to award zero credit in the event of academic misconduct.

Special Needs: Students with disabilities are encouraged to contact the Disability Resources Department (DRD) to verify their eligibility for appropriate accommodations and provide me with the Authorization for Academic Accommodations letter. Except for unusual circumstances, request for academic accommodations are to be made during the first three weeks of the semester.

A Word of Advice: If you are struggling with the material, ask for help immediately. Come see me during office hours, or e-mail me, I respond within 48 hours. Take advantage of the Tutorial Center (Doyle Library 4251), or the MESA Student Study Center (Bertolini 4832). **Do not fall behind!!!** Catching up is difficult and often impossible!

Disclaimer: This syllabus is intended to give you guidance in what may be covered during the semester and will be followed as closely as possible. However, I reserve the right to modify, supplement and make changes as the course needs arise.

Important Dates:

Class begins	1/17/2017
Last day to add without instructor's approval	1/22/2017
Last day to drop for refund	1/29/2017
Last day to add with instructor's approval	2/5/2017
Last day to drop without W	2/5/2017
Last day to drop with W	4/23/2017
Class ends	5/18/2017

Tentative Schedule (it may change):

TUESDAY	THURSDAY	LAB
<div>Jan 17th</div> Velocity & Acceleration 2.1 - 2.3	19th Free Fall & Graphical Analysis 2.4 - 2.6	
24th Vectors 3.1 - 3.3	26th Motion in 2D 4.1 - 4.3	Lab 1: Graphing
31st Projectile & Circular Motions 4.4 - 4.5	<div>Feb 2nd</div> Relative Motion 4.6 - 4.7	Lab 2: Uncertainty in Measurement
7th Newton's Laws 5.1 - 5.2	9th Applying Newton's Laws 5.3	Lab 3: 1D Motion
14th Catch up/Review	16th No Class	Lab 4: Projectile Motion Extra Office Hours (T 9:00 - 11:45 am)
21st Exam 1 Chapters 2 - 5	23rd Friction & Circular Motion 6.1 - 6.3	Lab 5: Computation
28th Work & Kinetic Energy 7.1 - 7.3	<div>Mar 2nd</div> Work by Non-Uniform Forces 7.4 - 7.6	Lab 6: Force Table
7th Potential Energy 8.1 - 8.3	9th Conservation of Energy 8.4 - 8.5	Lab 7a: Air Resistance
14th Center of Mass & Linear Momentum 9.1 - 9.3	16th Impulse & Conservation of Linear Momentum 9.4 - 9.5	Lab 7b: Air Resistance
21st No Class Spring Break	23rd No Class Spring Break	No Labs Spring Break
28th Catch up/Review	30th Exam 2 Chapters 5 - 9 (up to 9.5)	Lab 8: Conservation of Energy
<div>Apr 4th</div> Collisions 9.6 - 9.8	6th Rotation 10.1 - 10.3	Lab 9: Masses and Springs
11th Rotational Inertia 10.4 - 10.5	13th Torque & Newton's 2 nd Law 10.6 - 10.8	Lab 10: Springs and Energy

TUESDAY	THURSDAY	LAB
18th Rolling Motion 11.1 - 11.3	20th Torque & Angular Momentum 11.4 - 11.6	Lab 11: Collisions
25th Conservation of Angular Momentum 11.7 - 11.9	27th Equilibrium & Elasticity 12.1 - 12.3	Lab 12: Atwood Machine
May 2nd Catch Up/Review	4th Exam 3 Chapters 9 - 12	Lab 13: Static Equilibrium
9th Gravitation 13.1 - 13.3	11th Gravitational Potential Energy 13.4 - 13.5	Lab 14a: Moment of Inertia
16th Planets & Orbits 13.6 - 13.8	18th Catch Up/Review	Lab 14b: Moment of Inertia
23rd	25th Final Exam 10:00-12:45pm & 1-3:45pm	