

Analytical Mechanics - Syllabus *revised*

Course	Physics 105, Analytical Mechanics. Spring 2017
Instructor	Mari-Anne Rosario Galileo 108A 925-631-4837 mrosario@stmarys-ca.edu
Office hours	tentatively Th 9:30am-11am F 1pm-2:30pm
Website	physics.stmarys-ca.edu
Text	<i>Classical Dynamics of Particles and Systems, 5th ed</i> , Thornton and Marion (Brooks/Cole) any calculus-based introductory physics book (e.g., Wolfson)

Course description

This course covers the principles of particle dynamics. Topics include rigid body dynamics, Lagrange's equations, Hamilton's principle, wave propagation, and normal modes of vibration in oscillating systems. Prerequisites: Physics 1-4 and Math 39.

This course is an opportunity to gain

- (1) an intermediate level understanding of classical mechanics,
- (2) further experience with mathematical techniques used in science and engineering, and
- (3) confidence in your problem solving skills and in using previously learned material

Evaluation

The final grade will be based on

Problem sets	25% 27%
Project	10% 13%
Midterm exams	35%
Final exam	30% 25%

Problem sets will be due twice a week. Take the time to *understand what you're doing*, especially if you're working with other people. Ninety-five percent (95%) of the total points will count towards your final grade. For example, if the semester's sets has a total of 210 points, 199.5 points will be needed to get the full 25%.

In addition to problems specific to this course, there will be problems from prior courses (mostly Physics 1-4, calculus problems). This course builds on ideas you're already familiar with, so these review problems are a reminder of what you already know.

A **computational project** will be due. Project results are to be presented in a written report and an in-class presentation. More info will be provided later in the semester.

Two **midterm exams** will be given during the semester. Exams will focus on recently covered material, but will assume an understanding of previously covered material. The **final exam** will be comprehensive, but will emphasize material from the latter part of the course.

Extra credit will be offered to attend specific School of Science events. These points will first go towards your homework grade, then the midterm exam grade.

Attendance, late submissions

Attendance isn't required, but is recommended.¹ Each student is responsible for all information given during class and for submitting assignments on time, even if there's a good reason for the absence. If you're present, then *be present*.

¹To steal from Prof Sauerberg: your attendance tells me how seriously you take this class, and how important it is to you that you do well. This is something I remember when assigning final grades.

Late problem sets will be accepted until I (or the grader) starts grading or solutions are posted. After that, problems will not be accepted for any reason. Conflict or make-up exams will be given only if you (1) provide an acceptable and documented excuse and (2) contact me beforehand (if it's not possible, then as soon as is reasonable).

Talk to me if there are severe or extended circumstances that affect your performance in class.

Grading

In addition to calculations, use text or sketches to explain your solution. A correct answer with no explanation will earn no credit; an incorrect answer with some correct explanation will earn partial credit. Start solutions with definitions of physical quantities (*e.g.* $\vec{v} \equiv \frac{d\vec{x}}{dt}$), physical principles (*e.g.* Newton's laws), or commonly used equations (*e.g.* kinematics equations).

If you believe that there has been a grading error, request a regrade. Resubmit the original, unaltered work within one week, accompanied by a written explanation of what I should consider.

Academic honor code

This course operates under the premises of the SMC academic honor code.² It is expected that everyone will work to uphold high standards of integrity. According to the Code, "Academic dishonesty is a serious violation of College policy because, among other things, it undermines the bonds of trust and honesty between members of the community."

It's common, and often expected, that you'll work with others on assignments (currently as a student, and in the future as a scientist or engineer). What you submit should be your work and reflect your understanding. If you include snippets of other people's work, give them credit.³ Therefore, **there is no acceptable reason for *your* work to look exactly like someone else's.**

Student disability services

Reasonable and appropriate accommodations for individuals with qualifying disabilities are extended through the office of Student Disability Services. Students with disabilities are encouraged to contact the Student Disability Services at (925) 631-4358 to set up a confidential appointment to discuss accommodation guidelines and available services.

²See the Student Handbook for more information.

³Much like a reference in a paper.