Special Topics: Solid State Physics. Syllabus

Physics 140, Fall 2018

Meeting times	TTh 9:45-11:20
Website	`physics.stmarys-ca.edu`
Texts	*Solid State Physics: An Introduction, 2nd ed*, Hofmann (Wiley-VCH, 2015)
	The Physics of Solids, Turton (Oxford University Press, 2000)
	any calculus-based introductory physics book (e.g., Wolfson or Knight)
Instructor	Mari-Anne M. Rosario
	Galileo 108A 925.631.4837 `mrosario@stmarys-ca.edu`

what is this class? course description

This course is an introduction to solid state physics. Topics include crystal structure, mechanical properties, thermal properties of the lattice, electronic properties of metals, semiconductors, and magnetism. Prerequisites: Physics 1-4 and Math 39. This course is an opportunity to

1. understand the principles used to describe various solid state phenomena,
2. study applications of theory to real world problems,
3. gain further experience with mathematical techniques used in physics and engineering, and
4. develop confidence in using previously learned material to understanding new topics.

grades? assessment

The final grade will be based on

Problem sets	20%
In-class work	10%
Project	10%
In-class exams	35%
Final exam	25%

Problem sets will be due almost every class meeting. Take the time to *understand what you're doing*, especially if you're working with other people. This course builds on ideas you're already familiar with. Therefore, in addition to problems specific to this course, there will be problems from prior courses, mostly intro physics and calculus. Ninety-five percent (95%) of the total points will count towards your final grade. For example, if the semester has a total of 200 points, 190 points is needed to get the full 20%.

In-class work will be graded on quality of effort, correctness and completion. Although you'll be working with a partner, you should be able to demonstrate that you've both contributed more/less equally to the work. Ninety-five percent of the total possible points will count towards your grade.

A **project** will be due. More info will be provided later in the semester.

There will be two **in-class exams** during the semester. Each 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 given to attend specific School of Science events. Extra credit will not increase your grade between the different letters. For example, extra credit may tip your grade from a B- to a B, but it will not make a B+ into an A-.

miss a class? attendance, late assignments and make-up exams

There's no way to make up in-class work, not even if you have a good reason. Problem sets will be accepted until I start grading. After that, they won't be accepted for any reason. Make-up exams will be given if you (1) provide an acceptable excuse and (2) contact me as soon as is reasonable.

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

wait, this grade doesn't look right... grading policies

In addition to calculations, text and sketches are expected to be part of your solution. 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.

we take this seriously... the academic honor code

This course operates under the premises of the SMC academic honor code.[1] It's expected that everyone, including the instructor, will work to uphold high standards of integrity. It's common and expected that you'll work with others — 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.[2] **There is no acceptable reason for *your* work to look exactly like someone else's.**

these may be useful

STEM Center: Assumption Hall 2nd floor, Sunday to Thursday afternoon and evenings. More info? 925.631.6282 athompson@stmarys-ca.edu

Student Disability Services: Filippi Academic Hall FAH190 925.631.4358 sds@stmarys-ca.edu

Student Engagement and Academic Success: Filippi Administrative Hall 925.631.4349 seas@stmarys-ca.edu

[1] See the Student Handbook for more information.
[2] Much like a reference in a paper.