Physics 241: Graduate Solid-State Physics

Prof. David Strubbe, dstrubbe@ucmerced.edu, Fall 2017
Lecture: Tuesday/Thursday 12:00-1:15 pm in COB 272
Discussion: Wednesday 3:30-4:20 in COB 265

For the first time, this class will be offered as a stand-alone graduate class, not conjoined with undergraduate Physics 141. Students who have already taken the conjoined Physics 141/241 can register for Physics 298 with me to get credit for taking this course.

Pre-requisites: knowledge at the undergraduate level of solid-state physics, quantum mechanics, and statistical mechanics. Qualified students in chemistry, materials science, etc. also welcome. Students who have not taken undergraduate solid-state physics can review material beforehand (David Sidebottom, Fundamentals of Condensed Matter and Crystalline Physics or first half of Charles Kittel, Introduction to Solid State Physics) and attend Physics 141 concurrently in the fall.


Recommended/Optional Textbooks:

Topics (may be customized based on student interests):
- Elementary excitations/quasiparticles
- Bandstructure of electrons and phonons
- Optical and dielectric properties
- Symmetry and group theory for solids
- Simulation techniques for electronic structure with practical exercises
- Many-body physics in condensed matter
- Electronic and thermal transport: classical and quantum
- Final paper: literature review on relevant topic of interest