

Requirements for the Ph.D.

Students are required to complete the following requirements: satisfactorily pass the departmental written exam, complete five advanced graduate courses, a qualifying examination, teaching requirement, and a final defense of the thesis as described below.

1. Departmental Examination

Physics students are required to take the Department Examination after completing one year of graduate work at UCSD. The examination is on the level of material usually covered in upper-division undergraduate and first-year graduate courses in classical mechanics (Phys 200A&B), and classical electrodynamics (Phys 203A&B), equilibrium statistical mechanics (Phys 210A), quantum mechanics (Phys 212A,B&C), and mathematical methods (Phys 201).

The examination is offered twice a year, at the beginning of the fall and spring quarters, and lasts two days, four hours per day. The examination may be repeated once the next time it is offered.

Biophysics students take this examination after completing two years of graduate work.

2. Advanced Graduate Courses

Physics Ph.D. students are required to take five advanced graduate courses (with a grade of C or better) from at least three of the groups listed below no later than the end of the third year in the program. A 3.0 in four of the five courses is required. (In lieu of the course requirement, students may petition to take an oral examination covering three areas of physics.)

Group 1 (Plasma): Phys 218A, 218B, 218C (Plasma); Phys 235 (Nonlinear Plasma Th)

Group 2 (Cond. Matter): Phys 211A, 211B (Solid State); Phys 219 (Cond. Matt. Lab.); Phys 230 (Adv Solid State); Phys 232 (Electronic Materials)

Group 3 (Particle Phys/High Energy): Phys 214 (Elem Part); Phys 215A, 215B, 215C (Part & Fields); Phys 222A (Exp Tech Phys)

Group 4 (Math): Phys 210B (Nonequil Stat Mech); Phys 221A (Adv Mech); Phys 243 (Stoch Meth); Math 210A, 210B, 210C (Math Phys); Math 259A, 259B, 259C (Geom Phys)

Group 5 (Bio): Phys 273 (Biological Info); Phys 274 (QBio Stoch Pop Gene); Phys 275 (Fund of Biol Phys); Phys 276 (Quan Molec Bio); Phys 277 (Phys of Cell); Phys 278 (Biophys Neurons)

Group 6 (Astro): Phys 223 (Stel Str); Phys 224 (Instrstel Med); Phys 226 (Galaxies and Galactic Dynamics); Phys 227 (Cosmology); Phys 228 (High Energy Astrophysics and Compact Objects); Phys 238 (Observ. Astro Lab)

Group 7 (General): Phys 217 (Renorm Field Th); Phys 220 (Group Th); Phys 225A, 225B (Relativ);

Group 8 (Computational): Phys 241, 242 (Comp Phys); Phys 244 (Parallel Comp)

Note: Biophysics students select five courses from Biology, Biochemistry, Chemistry, or Physics in consultation with their adviser. At least three of these courses must be graduate courses. Physics courses are to be selected from Groups 1-8 listed above.

3. Instruction in Physics Teaching

Students must complete at least one quarter of Teaching Assistantship, either in a lecture course or a laboratory course.

4. Qualifying Examination and Advancement to Candidacy

In order to be advanced to candidacy, students must have met the departmental requirements and obtained a faculty research supervisor. At the time of application for advancement to candidacy, a doctoral committee responsible for the remainder of the student's graduate program is appointed by the Dean of Graduate Studies & Research. The committee conducts the Ph.D. qualifying examination during which students must demonstrate the ability to engage in thesis research. Usually this involves the presentation of a plan for the thesis research project. The committee may ask questions directly or indirectly related to the project and questions on general physics which it determines to be relevant. Upon successful completion of this examination, students are advanced to candidacy and are awarded the C.Phil. Degree.

5. Thesis Defense

When students have completed their theses, they are asked to present and defend them before their doctoral committees.