

Graduate Study in Physics

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The Desired Outcomes

The Physics graduate program offers a combination of courses and research designed to help you accomplish the following objectives:

- strengthen basic physics through our core graduate courses
- broaden your academic outlook by completing the requirement of elective courses, where you are encouraged to look beyond your specific field of study.
- perform original research in your chosen field, which may include traditional physics or any of the many inter-disciplinary or multi-disciplinary areas we offer.
- develop and strengthen your analytical and reasoning skills and establish the ability of independent thinking.
- develop communication skills and leadership qualities.
- and finally, in the end, prepare you for a career not only in academia, but also outside it, should you choose to do so.

Degree requirements

The awarding of a PhD degree requires fulfillment of the following requirements:

1. Pass the Preliminary Exam – this is a written exam which tests your preparation at the advanced undergraduate level and covers Quantum mechanics, Classical mechanics and Electrodynamics and Magnetism. The exam is offered once every semester and you have 4 chances to successfully pass it.
2. Complete 3 core physics courses – PHYS 237 (Quantum I), PHYS 210 (Electrodynamics I), PHYS 212 (Statistical Mechanics), by the end of your second year.
3. Complete 3 elective courses – these include advanced Physics courses such as Quantum II, Classical Mechanics, Condensed Matter, Biophysics, etc. These could also include graduate courses offered by other graduate groups such as Applied Math, BEST, QSB, and others, as long as these are 3 units or more standard courses, not independent study.

To pass a course you must have at least a 'B'.

Degree requirements (contd.)

4. Physics Seminar – you are required to attend four semesters of the Physics seminar series, preferably during the first four semesters. We hope that after that your attendance, though not required, will be voluntary. These seminars are an excellent opportunity for you to learn about research in other institutions and allows you to get acquainted with leading physicists outside UC Merced.
5. Advancing to Candidacy – this is an oral exam to be completed by the end of your second year. You should form your thesis committee in consultation with your thesis advisor by the beginning of your third semester. This committee will be conduct your exam. The date of this exam is arranged between you and the committee chair. At least one week prior to the exam, you will provide to the committee a written document (typically 5 to 10 pages) that describes your research topic, summarizes progress to date, and outlines what you propose to do, why it is relevant, and what will be learned.
6. Defense – your PhD defense is the final part of completion of your degree. This will be presided over by the same thesis committee as in your advancement.

Timeline for courses and exams

	1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year
Prelim Exam	Pass by end of 2 nd Year				
Core courses	PHYS 237, 210, 212 to be completed by 2 nd Year				
Research	Select advisor				
Candidacy	Form PhD committee by end of 1 st Year	Advance to Candidacy by end of 2 nd Year			
Electives	To be completed at any time in five years				
Seminars	Four semesters of PHYS 293				

Teaching Assistantships

We require you TA at least one semester during your stay here. Most of you will TA two semesters in your first year at the very least. You may need to TA part time after that in addition to being employed as a graduate student researcher. We urge you to take your TA duties seriously for several reasons.

1. Being a TA puts you in charge of the education of our undergraduates with responsibilities at par with those of the instructor of the course. Besides helping the undergraduates with their coursework, you help shape their study habits which helps them achieve their long term goals.
2. Being a TA helps you fulfill the program learning outcome of developing your communication and leadership skills. You will lead discussion sessions, organize lab sessions, hold office hours to interact with students. This experience prepares you for group activities in a way that typical research activities often do not.