

PHYSICS (MS)

The Graduate Physics program is intended to serve the needs of students who wish to enhance their preparation for a doctoral degree in physics or applied science, students who wish to obtain a terminal masters degree in order to work in a physics or engineering related industry, and students who wish to enhance their teaching of physics at the secondary level. To fulfill these purposes, the department offers a degree program: Master of Science in Physics.

Program Requirements	Quarter Hours
Core Requirements	28
Elective Requirements	16
Thesis Requirements	4
Total hours required	48

Learning Outcomes

Students will be able to:

- Students can demonstrate the mathematical, computational, or experimental expertise sufficient to carry out original research in physics.
- Students can interpret and effectively present the results of independent projects based on coursework and research.

Degree Requirements

Course Requirements

Core Requirements

Course	Title	Quarter Hours
PHY 411	ELECTRODYNAMICS I	4
PHY 412	QUANTUM MECHANICS I	4
PHY 420	ELECTRODYNAMICS II	4
PHY 440	CLASSICAL MECHANICS	4
PHY 460	QUANTUM MECHANICS II	4
PHY 481	THESIS WRITING SEMINAR	8

Thesis Requirement

Course	Title	Quarter Hours
PHY 480	THESIS RESEARCH	1-8

Four Electives

- Any physics course with a number equal to or higher than PHY 410. A second PHY 480 is allowed as one of these six electives.
- Courses at the 300 or 400 level in biology, chemistry, mathematics, physics, computer science or other related fields can be substituted for up to two of these four elective courses with the written approval of the departmental graduate committee. Please contact the Program Director for details.

Thesis Requirement

A thesis based on independent research in theoretical or experimental physics is generally required. However, a review thesis reflecting study of a broad subject or development of an interdisciplinary, historical or educational theme is also acceptable with permission from the Graduate Committee.

As a rule, one course credit of 4 quarter-hours in PHY 480 is applicable to the thesis research. An additional PHY 480 course (4 credit hours) may be allowed with the written approval of the student's faculty advisor. While students are permitted to register for more than two 4-credit sections of PHY 480, in no case will more than two PHY 480 courses (4 credit hours each) be applied toward the Master of Science degree.

Students are advanced to candidacy upon the written approval of their thesis proposal by the graduate committee, subject to the rules and conditions given below. An oral examination on the thesis is required, eligibility and rules are given below.

Thesis Procedures and Timelines

1. A committee with the advisor as Chair and two other members of the DePaul Physics department must be constituted **three months prior** to the MS Thesis Defense. Committee members (from outside the Physics Department, or outside DePaul) are allowed by permission of the Graduate Director, but cannot function as Committee Chairs.
2. A written report on the thesis project must be furnished to the Committee three months prior to the planned MS Thesis Defense. The written report should include: Title of the thesis project, abstract of the research, a 1-page update on what work has been accomplished so far, and what work remains to be done. The committee members reserve the right to meet with the student and seek clarification and information orally at this time.
3. Following submission of the written report described in (2) above, the committee members will sign the College of Science and Health's (CSH) *Approval of Proposal for Final Project* form found on the website for the CSH's Office of Advising and Student Services. A signature on this form does not constitute permission to defend in another three months, nor does it make any judgment in this regard. Instead, the signatures attest to the fact that the committee has been constituted, and that the committee members have received a written report on the thesis project described in (2) above from the student.
4. The signed CSH *Approval of Proposal for Final Project* form found on the website for the CSH's Office of Advising and Student Services will then be submitted to the Program Director who will, upon receipt of this form, make known to the thesis advisor and student **the earliest date** on which they are eligible to schedule a thesis defense if (5) and (6) below are satisfactorily fulfilled.
5. A written version of the thesis that is in reasonably final form must be furnished to all the three members of the committee by the student **two weeks prior** to the planned MS Thesis Defense. No exceptions will be granted on this rule.
6. Within a week of having received the thesis mentioned in (5) above, that is, one week prior to the planned thesis defense, all committee members must sign the Physics Department *Approval of Scheduling of Thesis Defense* form giving the student permission to proceed with the thesis defense. A signature on this form does not reflect a judgment on, or acceptance of, the thesis; it constitutes only an approval for the date of the defense. If the committee members feel that the student is not ready to defend, based on their reading of the thesis (which case may be either because the thesis is not written in a satisfactory manner, or because they feel more work needs to be done on the project), they can choose to withhold their signature; the committee member(s) withholding his/her signature(s) must provide a written explanation of why they did not sign, and what changes and corrections, if any, would be required to obtain their signature. This will automatically mean that the student cannot defend during the next week. In such a case, the cycle will start from

- (5) again, whenever the advisor and student feel they have addressed satisfactorily the concerns of their committee member(s).
7. The signed Physics Department *Approval of Scheduling of Thesis Defense* form will then be submitted to the Program Director who will, upon receipt of this form, make known to the thesis advisor and student **the earliest date** on which they are eligible to schedule a thesis defense.
 8. Following the thesis defense, the committee members will render a decision as to the outcome of the defense in **one of** the two following ways:
 - a. If they believe the student has satisfactorily defended his/her thesis and the thesis requires no modifications or only minor modifications, meaning that they wish to pass the student immediately, they will sign the CSH's *Final Requirements Report* form found on the website for the CSH's Office of Advising and Student Services.
 - b. In all other cases, they will sign the Physics Department *Interim Thesis Defense Report* form. Further action will be determined by the actions recommended in this form.
 9. The signed form (CSH *Final Requirements Report* or Physics Department *Interim Thesis Defense Report*) should be forwarded to the Program Director, the former for forwarding to the CSH's Office of Advising and Student Services, the latter for student file purposes.
 10. If, at any time during this period, the student and/or advisor reconstitute a committee by changing the committee members, the process will restart from (1) above. The only exception to this rule will be if a committee member (but not the Committee Chair) takes an emergency leave of absence or is otherwise unable to discharge their duties, in which case the process may be allowed to restart from (5) above with permission from the Graduate Committee.

Program Graduate Academic Student Handbook

Academic Probation

A graduate student in the Physics department is subject to academic probation as soon as his/her cumulative graduate GPA falls below 2.75.

Academic Dismissal

If a graduate student fails to raise his/her cumulative GPA to at least a 2.75 after four courses are taken while on academic probation or for more than two consecutive quarters while completing coursework on academic probation, the student may be academically dismissed for poor scholarship, and prohibited from registering for additional course work. A graduate student who is not making satisfactory progress toward the degree may be academically dismissed upon the recommendation of the Graduate Committee of the Physics Department for failing grades (below C-) in two or more graduate courses, or any other situation that has been deemed by a majority of the Graduate Committee to constitute an instance of not making satisfactory progress toward the degree.

Readmission

A student who has been dismissed may, after a period of time, petition for reinstatement. The petition, addressed to the Dean of the College of Science and Health, would provide information that would demonstrate a change in the student's circumstances to an extent that would support successful completion of the student's degree program. The Dean's decision, based upon the merits of the petition and the recommendation of the Graduate Committee of the Physics department, may, if favorable,

stipulate conditions of reinstatement. The Dean has the discretion to reject the recommendation for reinstatement.

Transfer Credit

A maximum of three courses (12 quarter credit hours or the semester equivalent) may be transferred from another university or DePaul program, subject to the following: The determination of whether or not a particular course is deemed suitable for transfer will be made by the Program Director who may, at his/her discretion, consult the Graduate Committee for assistance in making this decision. Upon successful support, the request would be made to the Associate Dean for Graduate Studies for approval. Transfer credit can only be awarded for graduate level coursework which has not counted toward the completion of a degree at DePaul or any other institution.

Undergraduate Courses

Students who are deemed to have inadequate undergraduate preparation in physics may be required to take undergraduate courses in Physics. Such courses will be specified by the Program Director in consultation with the Graduate Committee. A maximum of two such courses as eight credit hours may be counted toward the graduate degree, but undergraduate courses cannot substitute for any required (core) courses in the graduate program.

Graduation Requirements

Requirements include, but are not limited to, earning a minimum cumulative GPA of 2.75, completing a minimum of 48 quarter hours as twelve graduate courses applicable toward the graduate physics program, and completing and defending a thesis.

Thesis

A thesis based on independent research in theoretical or experimental physics is generally required. An oral examination on the thesis is also required. The thesis and the defense will be evaluated by a committee consisting of three faculty members from the Physics department at DePaul, who may judge the thesis and/or oral examination to be satisfactory or may require the student to submit changes to the thesis, and go through more cycles of oral examination. Committee members from outside the Physics department (whether DePaul faculty, or external to DePaul) are allowed only by consent of the Program Director.

Thesis Proposal

A proposal (minimum one page) stating the broad outlines of the project, and signed by both the thesis advisor (deemed Thesis Committee Chair) and the student must be completed per the schedule below. A copy of this signed proposal, together with a copy of the Approval of Proposal for Final Project must be kept on file in the Physics department for reference. The thesis advisor may, at his/her discretion, prepare a longer, more comprehensive proposal.

Student plans oral defense of thesis no earlier than	Student must submit Thesis Proposal no later than
Spring/Summer term of immediately following calendar year	Autumn term
Winter term of immediately following calendar year	Summer term
Autumn term of immediately following calendar year	Winter term

The thesis proposal is a document that records the broad outline of the project only. The determination of when a student has completed the

necessary work to be able to finish and defend the thesis will rest solely with the thesis advisor, and the thesis proposal cannot be used as a basis for determining the same. Changes to the thesis proposal may be carried out at the discretion of the thesis advisor. Changes proposed by the student will only be allowed if the thesis advisor agrees to make those changes.

Graduation with Distinction

Graduating students will be deemed to have graduated with distinction if they earn a minimum cumulative GPA of 3.50 in coursework applied toward their graduate physics program and their thesis committee declares their project to have been completed with distinction (as evidenced by their signature on the Final Requirements Report form).

Time Limitation

Students pursuing a master's degree must complete all requirements for the master's degree within a maximum of six years from their first term of enrollment in the program.