Physics

Department Information

- **Interim Department Chair:**
  Erik Hobbie, Ph.D.
- **Graduate Coordinator:**
  Mila Kryjevskaia, Ph.D.
- **Department Location:**
  218 South Engineering
- **Department Phone:**
  (701) 231-8974
- **Department Web Site:**
  www.ndsu.edu/physics/ (http://www.ndsu.edu/physics/)
- **Application Deadline:**
  For U.S. students, one month before registration; for international students, March 1 for fall semester and September 1 for spring/summer semester.
- **Credential Offered:**
  Ph.D., M.S., Accelerated M.S.
- **Test Requirement:**
  GRE (general and subject recommended)
- **English Proficiency Requirements:**
  RA - TOEFL 71, IELTS 6, Duolingo 105; TA Grader - TOEFL 79, IELTS 6.5, Duolingo 110; TA Instructor - TOEFL 81, IELTS 7, Duolingo 115

The graduate coordinator or department chair shall assign to each incoming graduate student a temporary adviser, who shall assist in the selection of courses. During the first semester, the student is expected to discuss potential projects for thesis research with faculty members. By the beginning of the second semester, the student must have a permanent research supervisor. By the end of the second semester, the student must have filed a plan of study, selected a thesis topic, and secured two additional faculty members for the Advisory Committee.

Master of Science

Code	Title	Credits
Physics courses number 601-689 or 700-789		10
Didactic courses numbed 601-689 or 700-789		16
PHYS 790	Graduate Seminar	1
PHYS 798	Master's Thesis	6-10
Total Credits		**30**

Students are required to attend all seminars and colloquia.

Accelerated Master of Science

Code	Title	Credits
PHYS 790	Graduate Seminar	1
Choose from the following:		**21**
PHYS 611	Optics for Scientists & Engineers	
PHYS 611L	Optics for Scientists and Engineers Lab	
PHYS 613	Lasers for Scientists and Engineers	
PHYS 615	Elements of Photonics	
PHYS 662	Thermal and Statistical Physics	
PHYS 681	Materials Physics	
PHYS 685	Quantum Mechanics I	
PHYS 686	Quantum Mechanics II	
PHYS 752	Mathematical Methods in Physics I	
PHYS 758	Statistical Physics	
PHYS 761	Electromagnetism	

PHYS 771	Quantum Physics I	
PHYS 781	Solid State Physics	
PHYS 798	Master's Thesis	6-8
Total Credits		**30**

Students must meet all requirements of the Physics bachelor and master programs. For the master's degree, students must earn at least 30 graduate credits, numbered 601-798, with these conditions:

- Up to 15 credits from this list may count toward the bachelor program requirements. It is recommended that students take the 600-level of PHYS 462/662, 481/681, 485/685, and 486/686 while fulfilling the requirements for the bachelor's degree.
- Between 6 and 8 credits are PHYS 798 (Master's Thesis), with the goal to publish a paper based on the thesis research, although this is not a requirement to graduate.
- At least one credit is PHYS 790 Graduate Seminar.

Doctoral Degree

Code	Title	Credits
Required Courses		**16**
PHYS 752	Mathematical Methods in Physics I	
PHYS 758	Statistical Physics	
PHYS 761	Electromagnetism	
PHYS 771	Quantum Physics I	
PHYS 781	Solid State Physics	
PHYS 790	Graduate Seminar	
Letter-graded courses number 601-689 or 700-789		27
PHYS 899	Doctoral Dissertation	
Total credits		**90**

Credits used to satisfy the requirements for the M.S. degree may be included in the total. Students are required to attend all seminars and colloquia.

Preliminary Examination

By the end of their fourth semester, students:

- submit a report that summarizes their research results so far and details a research plan for the rest of their research work;
- give a talk about their research accomplishments and plans; and
- must pass an oral examination by the supervisory committee to confirm doctoral candidacy.

Students who pass the preliminary examination and, at the time of the exam, have completed 30 credits (16 of which are didactic) will earn a master's degree and be eligible to participate in commencement that semester. Students should choose the Ph.D. + master's option from the drop-down menu on the Doctoral Plan of Study (https://powerforms.docusign.net/7e21cd61-31cc-4cbf-a1e1-c23b2845394c/?env=na3&acct=1ceb9a57-b6a3-4df7-b655-d64cf8f1c2d7&accountId=1ceb9a57-b6a3-4df7-b655-d64cf8f1c2d7) and on the Notification of Scheduled Examination (https://powerforms.docusign.net/0abb6387-c124-45e6-bc80-337a7635ffb0/?env=na3&acct=1ceb9a57-b6a3-4df7-b655-d64cf8f1c2d7&accountId=1ceb9a57-b6a3-4df7-b655-d64cf8f1c2d7). After students have passed the preliminary examination, they should complete the exit survey and the graduation application (https://powerforms.docusign.net/71b00c0e-af21-4473-bb23-cdbd85983676/?env=na3&acct=1ceb9a57-b6a3-4df7-b655-d64cf8f1c2d7&accountId=1ceb9a57-b6a3-4df7-b655-d64cf8f1c2d7).

If the student fails the preliminary examination, they will be given the opportunity to repeat the examination in the next semester (this examination can be repeated only once). Alternatively, the student may elect to work for a master's degree instead.

Students should submit their doctoral thesis for examination at the end of their fourth year.