Physics

Department Information

 Department Chair: Alan Denton, 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 | r 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 | |

2 Physics

| 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 Degre | e | |
|-------------------------|-----------------------------------|---------|
| 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 n | 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) and on the Notification of Scheduled Examination (https://powerforms.docusign.net/0abb6387-c124-45e6-bc80-337a7635ffb0/?env=na3&acct=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).

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.