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1. INTRODUCTION

The Physics Department Graduate Student Handbook is intended as an overview of the policies and procedures regarding graduate students in the Department. The information supplied will answer the majority of questions that you may have. This handbook is also for the use of the faculty who have responsibility for guiding and advising students in Physics at Temple. However, many policies and procedures are established and administered by the Graduate School. For detailed information on policies regarding graduate students at Temple, the Graduate Division Student Handbook should be consulted. The Graduate School Handbook is available online at https://bulletin.temple.edu/graduate/graduate-policies/.

Furthermore, this handbook will provide calendar deadlines for M.S. and Ph.D. degrees. Please refer to the Registrar calendar and Graduate School for additional deadlines.

http://www.temple.edu/registrar/documents/calendars/ and
https://grad.temple.edu/resources/graduate-calendar.

Finally, as a matter of procedure, any additional questions concerning the requirements, policy etc. as outlined in this handbook should be directed to the Graduate Committee Chair.

Some of the Department policies regarding the Graduate Program are under revision by the Graduate Committee and they might be implemented already in Spring 2021. This Handbook will be updated as soon as these changes will be implemented and graduate students will be notified promptly.
1.1 Physics Faculty

Department Chair: Jim Napolitano, SERC 416, Phone 1-7827

Vice-Chair: Bernd Surrow

Graduate Committee Chair: Maria Iavarone

Staff Graduate Student Advisor: Dayna Lozano

Payroll Questions: Connie O’Donnell

Atomic, Molecular and Optical Physics (AMO)

Experimental Faculty
Marjatta Lyyra

Condensed Matter Physics

Experimental Faculty
Alexander Gray
Maria Iavarone
Chyan Long Lin
Rongjia Tao
Darius Torchinski
Xiaoxing Xi
Tan Yuen

Theoretical Faculty
John Perdew
Peter Riseberough
Adrienn Ruzsinszky
Research Programs at the Physics Department

Our faculty conduct research in Applied Physics, Atomic & Molecular Physics, Condensed Matter Physics, and Nuclear Physics, as well as collaborative interdisciplinary research. Updated information on the department’s research programs can be found here:

https://phys.cst.temple.edu/research.html
1.2 Important Locations in the Physics Department

<table>
<thead>
<tr>
<th>Room</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics Administrative Office</td>
<td>SERC 406</td>
</tr>
<tr>
<td>Physics Seminar/Conference Room (large)</td>
<td>SERC 408</td>
</tr>
<tr>
<td>Physics Seminar/Conference Room (small)</td>
<td>SERC 404</td>
</tr>
<tr>
<td>Physics Colloquium Room</td>
<td>SERC 116</td>
</tr>
<tr>
<td>Faculty/Staff/Graduate Students Mailboxes</td>
<td>SERC 406</td>
</tr>
</tbody>
</table>

Photocopy machine is in the Physics Administrative Office

The Temple Information Technology Services group provides online information at [https://its.temple.edu](https://its.temple.edu) and maintains a help desk that can be reached at 215-204-8000.
1.3 First Year Student Orientation

All entering full-time students are required to attend the orientation program. This program is offered during the two weeks prior to the start of the fall semester and includes activities organized by both the Department of Physics and the College of Science and Technology (CST). The orientation includes a discussion about department and Graduate School policies, responsibilities of teaching assistants and research opportunities. This is an excellent opportunity to meet fellow students, faculty, and staff and become familiar with campus resources. By the end of this period, students will have an idea of the range of research possibilities in the department.
2. ACADEMICS

2.1 Graduate Requirements and timetable

The Department of Physics offers Ph.D. and M.S. degrees in Physics. The graduate programs are designed to provide a solid background in Physics, and emphasize the acquisition of skills that enable students to obtain further knowledge in their research, and later, in their professional careers.

Degree requirements are a combination of general university rules and the specific requirements of the Physics Department.

Detailed information and precise rules on the university’s requirements can be found in The Temple’s Graduate School Handbook at [https://bulletin.temple.edu/graduate/graduate-policies/](https://bulletin.temple.edu/graduate/graduate-policies/).

Students are admitted into the M.S. or Ph.D. program. Students admitted to the M.S. program may petition or apply to the Graduate Committee to be transferred to the Ph.D. program.

The requirements of the different degrees are a combination of a thesis (for the doctoral degrees, and optionally for the master’s degrees), course work and departmental examinations. Each course counts for a certain number of credits. There are requirements on the number of credits that a student registers for in order to maintain his/her status as a full-time student. A unit of a credit corresponds to a class hour, i.e., 50 minutes, per week of lectures in a standard course.

2.1.1 M.S. Degree Requirements

The following table summarizes the degree requirements for the M.S. degree offered by the Department of Physics. The table below reflects the PA Department of Education requirement that master’s degree programs be a minimum of 30 credits. (This requirement is effective for all students entering Fall 2013 and beyond.)

It should be noted that the required courses and the first part of the program are very similar to that of the Ph.D.

First the student will take the required core courses covering the main areas of physics. The list of classes in the first three semesters is the same as for the Ph.D. degree.

<table>
<thead>
<tr>
<th>M.S. with Thesis (Option One)</th>
<th>27 credits of core courses out of 30 + 3 additional credits of PHYS 8004 or PHYS 8005 and PHYS 9996 (Master’s Thesis Research)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.S. Coursework (Option Two)</td>
<td>30 credits of core courses and the M.S. Comprehensive examination.</td>
</tr>
<tr>
<td>M.S. “Along-The-Way” (Option Three)</td>
<td>Students in the Ph.D. Program can opt for the M.S. “Along-The-Way” after completing the necessary coursework and passing the written part of the Qualifying Exam.</td>
</tr>
</tbody>
</table>
• **Option One** The student cannot receive financial support from the Physics Department when completing this option. Any student wanting to pursue this option must receive prior approval from the Graduate Admission Committee and a Thesis Advisor.

• **Option Two** The student cannot receive financial support from the Physics Department when completing this option. Students must get permission from the Graduate Admission Committee to pursue this program.

• **Option Three** is reserved for students in the Ph.D. program who wish to obtain a M.S. degree.

For those students whose M.S. program entails a thesis, the requirements differ from the Ph.D. thesis in that the Master’s thesis is based on a smaller amount of research work. The current requirements for the Master’s Thesis can be found in Sec. 02.26 of the Graduate School Handbook at [https://bulletin.temple.edu/graduate/graduate-policies/#examinationtext](https://bulletin.temple.edu/graduate/graduate-policies/#examinationtext) and approved formats for the Master Thesis can be found at [https://grad.temple.edu/resources/dissertation-thesis-handbook](https://grad.temple.edu/resources/dissertation-thesis-handbook).

### 2.1.2 Ph.D. Degree requirements

• First year students will take required core courses, which cover the main areas of physics. It will typically take the first two semesters of the first year and the first semester of the second year to complete these courses. During this time, students are encouraged to meet with their mentoring committee to plan course work and learn about opportunities for research/financial support.

• All students must take the written part of the Qualifying exam the third week of May at the end of their second semester. If this exam is not passed, the student can retake the exam six months later.

• Although research does not normally start until after the student has passed the written part of the qualifying exam and the core courses, students are encouraged to start looking for a research adviser during the first year. This will be a faculty member who will advise them after the first year and may continue as thesis adviser through the completion of requirements for the Ph.D. degree. Students are strongly encouraged to become associated with a research group by the first summer and in any case at the latest after passing the written Qualifying exam.

• The student will select at least two additional electives in the fourth semester.

• By the end of the fifth semester the student will select, in consultation with his/her research advisor, other two additional members to serve on the student’s defense committee, prior

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1 The written part of the Qualifying exam is now held in August, the week before the start of the Fall semester. A change is under review by the Graduate Committee and it might be implemented already in the Fall 2020. If the change is approved the Qualifying exam will be held the third week of May at the end of the second semester.
to taking the Early Research Progress Exam (oral part of the Qualifying exam) preceding elevation to candidacy. In this exam, the student will defend a thesis proposal that must be submitted in writing to the Graduate School, and can be asked questions related to the student’s research area. Passing this examination leads to admission to candidacy, and is necessary to proceed to a Ph.D. Degree.

- Students will present Annual reports to the Defense Committee every year\(^2\) and present annually a seminar to the Department (as described below). During the final year of research, the student will write up the results of his/her research program in a thesis.
- The Student will present the results contained in the thesis at a final oral examination before the defense committee (selected at the fifth semester. An additional external member, often from another department at Temple, must be added before the defense of the thesis). If the thesis is approved, the student will be awarded a Ph.D.
- Completion with six years or less is typical and preferred. It is required that a doctoral student must complete the program within 7 years from the date of entry in the program (https://bulletin.temple.edu/graduate/scd/cst/physics-phd/). However, the Graduate Dean in appropriate circumstances may grant extensions.
- A graduate student must maintain a minimum of 3.00 grade point average (GPA).

<table>
<thead>
<tr>
<th>Ph.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>● N. 25 credits of Core Courses out of 38 total required</td>
</tr>
<tr>
<td>● Minimum of 2 Elective Courses (6 credits)</td>
</tr>
<tr>
<td>● Physics Research and Ethics- PHYS 5002</td>
</tr>
<tr>
<td>● PHYS 8001: Practicum Teaching of Physics (1 credit) is required for Graduate Students on a Teaching Assistantship.</td>
</tr>
<tr>
<td>● Physics Seminar</td>
</tr>
<tr>
<td>● Original Research Proposal</td>
</tr>
<tr>
<td>● Research: at least 6 credit hours of a combination of PHYS 9994-PHYS 9998-PHYS 9999 (Note that a minimum of 2 credits of PHYS 9999 Doctoral Dissertation must be taken to fulfill a graduate school requirement.)</td>
</tr>
<tr>
<td>● Thesis Defense (all the requirements stated above for this degree must be satisfied before the defense)</td>
</tr>
<tr>
<td>● Total credit= 38</td>
</tr>
</tbody>
</table>

\(^2\) This change is under review by the Graduate Committee and it might be implemented in the Fall 2020.
**Typical Ph.D. Timeline**

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PHYS 5101 Analytical Mechanics (3)</td>
<td>PHYS 5301 Electromagnetic Theory (3)</td>
</tr>
<tr>
<td></td>
<td>PHYS 5501 Mathematical Physics (3)</td>
<td>PHYS 5702 Quantum Mechanics II (3)</td>
</tr>
<tr>
<td></td>
<td>PHYS 5701 Quantum Mechanics I (3)</td>
<td>PHYS 8102 Statistical Mechanics (3)</td>
</tr>
<tr>
<td></td>
<td>PHYS 8001 Practicum Teaching of Physics (1)</td>
<td>PHYS 5002 Physics Research and Ethics (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ph.D. Qualifying Exam (written part, on core coursework) by end of the Spring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Semester (third week in May)³</td>
</tr>
<tr>
<td>2</td>
<td>PHYS 8702 Solid State Physics (3)</td>
<td>Elective 1 (3)</td>
</tr>
<tr>
<td></td>
<td>PHYS 8703 Nuclear and Elementary Particle Physics (3)</td>
<td>Elective 2 (3)</td>
</tr>
<tr>
<td></td>
<td>(These courses can be substituted by other PHYS 870x courses that present an</td>
<td>PHYS 9994 Preliminary Exam Preparation (1) (early research)</td>
</tr>
<tr>
<td></td>
<td>entire subfield of modern physics, including those that may be developed in</td>
<td>Students selecting electives should consult with their research or graduate</td>
</tr>
<tr>
<td></td>
<td>the future.)</td>
<td>advisors. A list of electives that meet this requirement follows.</td>
</tr>
<tr>
<td>3</td>
<td>PHYS 9994 Preliminary Exam Preparation (1) (early research)</td>
<td>PHYS 9998 Pre-Dissertation Research/Elevation to Candidacy (1)</td>
</tr>
<tr>
<td></td>
<td>Early Research Progress Exam (the oral part of the Qualifying Exam)</td>
<td>OR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PHYS 9999 Dissertation Research (1)</td>
</tr>
<tr>
<td>≥4</td>
<td>PHYS 9999 Dissertation Research (1)</td>
<td>PHYS 9999 Dissertation Research (1)</td>
</tr>
</tbody>
</table>

The **Early Research Progress Exam** (the oral part of the Qualifying Exam), preceding elevation to candidacy should ordinarily not occur later than the end of the fifth semester.

PHYS 9998 Pre-Dissertation Research/Elevation to Candidacy (1/semester)

Most students will not take PHYS 9998, because they will be elevated to candidacy upon completion of PHYS 9994.

³ This change is under review by the Graduate Committee and it might be implemented in the Fall 2020.
Courses meeting the two-elective requirement (not offered every year):

- PHYS 5502 Computational and Mathematical Physics (3)
- PHYS 5302 Advanced Electromagnetic Theory (3)
- PHYS 8020 Topical Seminar (3)
- PHYS 8701 Quantum Field Theory (3)
- PHYS 8704 Many-Electron Theory (3)
- PHYS 8705 Advanced Topics in Nuclear and Particle Physics (3)
- PHYS 8702 Solid State Physics or PHYS 8703 Nuclear and Elementary Particle Physics (if not taken before)

Other 870x courses to be developed in the future

Courses descriptions can be found at https://phys.cst.temple.edu/graduate-courses.html.

The above schedule is to be used as a guide. We intend that students complete their Ph.D. within six years.

Be aware of the continuous enrollment requirements as outlined in Section 02.25 of the Temple’s Graduate Handbook. Summers are not indicated on the schedule, but students are expected to continue to carry out their research during this period. Details about each of the requirements mentioned are explained in more detail in the remainder of this handbook.

2.1.3 PhD Qualifying Exam

The written part of the Ph.D Qualifying Exam will be taken at the end of the first year summer (to be moved to the end of the second semester), and it is based on the six core courses taken in the first two semesters as well as undergraduate material. The exam is typically composed of three 4 hour parts, A, B and C. The subject matter of part A consists of Classical Mechanics, Thermodynamics/Statistical Mechanics. Part B covers Quantum Mechanics and Mathematical Physics. Part C covers ElectroMagnetism and Topics in Modern Physics. The exam is scheduled after the end of the Spring Semester. A second exam is scheduled before the beginning of the following Spring Semester for students that didn’t pass the exam the first time. The oral part of the qualifying exam will be typically held at the end of the fifth semester, and it is an Early Research Progress Exam as described below.

2.1.4 Early Research Progress Exam

This exam is taken normally at the end of the fifth semester. It is an oral exam given before the student’s thesis defense committee. The normal format is that the student will present a seminar
of about 30 minutes on his/her current or future research. This seminar should be outlining the area of research and the main questions to address in the research that will be pursued.

After the seminar, there will be an oral examination on the research area. The aim of the examination is to establish that the student has an appropriate level of expertise to continue with the research part of the Ph.D. program.

In addition, the student should prepare a written summary of his/her current research (Research Proposal) and give a copy to each member of the committee. The summary should be about 2-5 pages in length.

If the student passes this exam, the Research Proposal and the Dissertation Proposal Transmittal for Elevation to Candidacy form will be approved by the Advisor, Defense Committee, Physics Graduate Chair and the College of Science and Technology (CST) Graduate Dean and then submitted to the Graduate School.

Students are usually registered for PHYS 9994 after passing the written part of the Qualifying exam, and they will be enrolled in PHYS 9999 after passing the Early Research Progress exam.

A student who does not pass this exam will get a second chance six months later. To protect the rights of the student, the Department Chair or Graduate Chair would attend this second-chance exam.

2.1.5 After the Early Research progress Exam

After passing the Early Research progress Exam, the student will have an Annual Report presentation to the Defense Committee (see 2.3.2 of this handbook) and an Annual Seminar (see 2.3.3 of this handbook).

If a student is supported by the department as a teaching assistant (TA), adequate progress in research is a prerequisite for continued support. (Of course, a TA’s performance in teaching will also have to be satisfactory.)

TA support beyond the fifth year in graduate school will be granted only with the approval of the Department Chair.

2.1.6 Thesis for Ph.D

A doctoral Thesis is a significant contribution to a specific field of research made by the candidate. It should document the ability of the candidate to perform independent research and show considerable experience in the research techniques used during the course of the research.

2.1.7 Thesis Defense

When the thesis is complete, a thesis defense is arranged, before the student’s doctoral committee. The defense consists of an oral presentation of the thesis of about 45 minutes, followed by a period of questions and responses. The questions will mostly relate to the thesis but may cover the candidate's whole program of study. Guidelines for the thesis defense are described in Sec. 02.28 of the Graduate School Handbook (https://bulletin.temple.edu/graduate/graduate-policies/#dissertationtext).

Please note that according to Sec. 02.28.16.02 of the Graduate School Handbook, the candidate must submit the official, signed “Announcement of Dissertation Defense” form, found in TUportal under the Tools tab within “University forms”, to the Graduate School 10 or more working days before the scheduled defense.

2.1.8 Grades

A graduate student must maintain a minimum grade point average (GPA) of 3.00. This is a university requirement for graduate degrees. Although this minimum need not be maintained semester-by-semester, a Ph.D. student must meet the 3.00 minimum to pass candidacy, for admission to the comprehensive examination, the final oral examination, and for graduation. For a Master's degree, the 3.00 minimum applies for graduation.

Furthermore, according to University Policy 02.24.11. 02 A student who receives more than two grades below “B-” or more than one grade of “F” is dismissed for failure to maintain satisfactory grades. Further information can be found in The Graduate School Handbook available online at https://bulletin.temple.edu/graduate/graduate-policies/ in Sec 02.24.

2.1.9 English Proficiency

All international students must demonstrate to the University that their English is at a level consistent with that expected for a TA who will be teaching undergraduates. **International students are required to take the English proficiency “SPEAK Test” upon arrival**, prior to orientation, at the University (consult www.temple.edu/ita/ for details), unless they have a degree from an English speaking University or received 28 points (or higher) on the speaking portion of the TOEFL test. If a student fails the initial “SPEAK Test”, then that student is required to take one or two semesters of the ED 5221 course. International students should be sure to take these tests promptly and seriously. Failure to complete the English exams and/or courses satisfactorily will result in that student not being eligible for a TA position.
2.1.10 Continuous Registration

All graduate students should be registered at a credit level appropriate to their level of activity. To remain in Academic Good Standing, a graduate student must maintain continuous enrollment (Sec. 02.25). To be in full-time status a graduate student must be enrolled for 9 credit hours or more of coursework until all coursework is completed. If a graduate student holds a Teaching or research Assistantship that requires at least 20 hours of service per week, the student must be enrolled in 6 credit hours until all coursework is completed. After a Ph.D. candidate has completed all coursework, he or she must be enrolled in at least 1 credit hour coursework.

2.1.11 Leave of Absence

A request for a leave of absence must be submitted to the Graduate Committee before the start of the semester for which the leave is requested. If endorsed by the Graduate Committee, the request is submitted to the Dean’s Office of your School/College for processing, where the request must be approved for the leave to take effect. There is a records maintenance fee of $25 that must be paid by the student for each semester a leave of absence request is in effect. (This form can be found in the forms section in the TU Portal under Student Tools).

2.2 Assistantship and Support

Assistantships constitute the major portion of financial support available to graduate students. Most assistantships are awarded directly by departments in the form of teaching or research assistantships. Each requires about 20 hours per week of the student's time, the former in teaching activities, and the latter in research-related activities. Teaching and research assistantships carry full tuition remission. In addition, the Graduate School provides a limited number of fellowships (see Sec. 2.2.3 below). Information about further opportunities for financial support from the University can be found at https://education.temple.edu/funding. Normally, students who maintain regular academic status and who make adequate progress toward completing their degrees can expect continued support.

2.2.1 Teaching Assistantships (“TAs”)

The Department of Physics awards teaching assistantships to incoming graduate students each year. Students supported by teaching assistantships work 20 hours per week teaching physics laboratory classes. For the summer, students are encouraged to seek alternative sources of funding. For example, a number of faculty have graduate researcher positions available. When such summer support is not available, some students for the first two years are supported as graduate teaching assistants.

In addition to providing financial support for graduate students, teaching assistantships are an important educational experience that help students to enhance their classroom skills. Students serving as a TA should realize that it is an important professional responsibility. We expect that all TAs will take the following points very seriously:
• The TA must be competent with the concepts and materials being taught in his/her course. If the TA is unfamiliar with the material they should attend course lectures, do the assigned homework and experiments. Faculty members in charge of the course may require this.

• Laboratory TAs must take their safety and the safety of their charges seriously. The TA must enforce safety standards set by the department and individual instructors. The TA has the obligation to remove a student from the laboratory environment if that student is posing a safety risk to him/herself or to anyone else in the laboratory. All TAs are required to take EHS safety courses yearly. Individual laboratory rules are set by the laboratory coordinator (John Noel).

• TAs are required to take Practicum of Teaching Physics course for their training. There are additional TA orientation and training meetings held intermittently during the semester.

• Attendance is expected in classes, proctoring assignments and in meetings relevant to the course. The TA should tell the faculty or staff member in charge in advance if they cannot attend a course-related function.

• The TA must treat students equally, regardless of sex, race, or ethnicity.

• The TA must have English skills sufficient for two-way communication with the students.

• The TA must complete grading and other assignments promptly according to course requirements. The TA must recognize the authority of the faculty instructor responsible for the course.

• To be eligible for maintaining an assistantship, graduate students must retain a minimum GPA of 3.25.

• Deficiencies in any of the above areas will be discussed with the student by the faculty or staff member in charge. These discussions are meant to aid the student in overcoming these deficiencies. Repeated deficiencies in any of the above areas or ones deemed serious by the faculty could lead to the student losing the status of Good Standing and TA support.

• They can expect to teach 3 sections of lab. Their assigned teaching will be scheduled to avoid conflicts with their classes and research duties. Specific assignment times will be announced 1 - 2 weeks before the beginning of the semester. Students can expect to teach the same course in subsequent semesters.

• TA support beyond the fifth year of the PhD program will be granted only in exceptional cases and must be approved by the Department Chair.

2.2.2 Research Assistantships

Research assistantships ordinarily support students during the period that they are devoting full attention to work on their thesis research. Such assistantships are funded by external sources such as the National Science Foundation, the Department of Energy, the Office of Naval Research, or private foundations. No university funds are used for research assistantships, and so the number
available will vary from year to year. A research assistantship is supervised by the faculty member, or members, who have obtained funding for a specific research project.

2.2.3 Fellowships from the Graduate School

Applicants to our Ph.D. program can be nominated by the Admissions Committee for Fellowships from the Graduate School. Categories are so-called “Presidential Fellowships”, “University Fellowships”, and “Future Faculty Fellowships.” More information can be found at https://phys.cst.temple.edu/apply.html and, in particular, at https://grad.temple.edu/admissions/costs-financial-aid-more/university-financial-support.

Students who receive Fellowships from Temple should read and understand the terms of their Fellowships. They typically provide support only for specific years. In other years, the student needs to request and receive RA support from faculty members or TA support from the department (both called “departmental support” in the Fellowship offer letter).

2.2.4. Fellowships from external Agencies

Fellowships are also available to qualified graduate students from external agencies. Such information can be found at:

https://stemgradstudents.science.gov/
https://www.aps.org/programs/education/scholarships.cfm
https://www.nsfgrfp.org/

A NSF GRF is a prestigious award that provides a Ph.D. student with a highly competitive stipend for three years. It is open to undergraduates in their senior year or graduate students in their first or second-year. Applicants must be US citizens, nationals, or permanent residents. Graduate students may only apply once. The application is due near the end of October each year. NB: Students with a MS degree are not eligible for a GRF unless certain conditions are met. Please read the solicitation carefully.

https://ndseg.asee.org/

The National Defense Science & Engineering Graduate (NDSEG) Fellowship is very similar to the NSF GRFP, although slightly more competitive. Applicants must be US citizens or nationals, and be either enrolled in their final year of undergraduate studies, or have completed no more than two years of full-time years graduate study in the discipline in which they are applying. It is due around December of each year.

https://www.hertzfoundation.org/
The Hertz Foundation offers a highly competitive, five-year fellowship for seniors and first-year grad students. It's only for citizens, nationals, and permanent residents. Applications are due in October.

https://sites.nationalacademies.org/pga/fordfellowships/index.htm

The Ford Foundation offers fellowships to graduate students early in their Ph.D. studies (minimum three years remaining) as well as to those in their final year while working on their dissertation. Again, only citizens, nationals, and permanent residents are eligible. A commitment to increasing diversity in education and research is a critical element of the application, which is due in November.

http://www.gemfellowship.org/students/gem-fellowship-program/

The National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc. Fellowship: GEM assists underrepresented minority students in obtaining M.S. degrees in engineering and Ph.D. degrees in engineering and the natural and physical sciences. Applicants must be US citizens or permanent residents, and applications are due in November.

https://www.aauw.org/resources/programs/fellowships-grants/current-opportunities/international/

This one-year fellowship from the American Association of University Women is specifically for women that are NOT US citizens nor permanent residents. Recipients are selected for academic achievement and demonstrated commitment to women and girls. Applications are due in November/December.

https://www.krellinst.org/csgf/

The Department of Energy funds a four-year fellowship for graduate students conducting research with a strong computational aspect. The fellowship requires additional course work as well as (at least) a 12-week research experience at a national lab. Applicants must be seniors or first-year graduate students, but there is no citizenship requirement. Applications are due in January.

https://smartscholarshipprod.servicenowservices.com/smart

The Science, Mathematics And Research for Transformation (SMART) Scholarship supports both undergraduate and graduate students training in STEM fields. Funding is contingent on agreement to work in a Department of Defense civilian position after graduation (1:1 years of service for years of funding). Applicants must be citizens of the United States, Australia, Canada, New Zealand, or United Kingdom and have the ability to obtain a security clearance. Applications are due in early December.

https://sites.nationalacademies.org/PGA/RAP/index.htm

Primarily for postdocs, the National Research Council does have a few opportunities for graduate students as well. The associateship supports work on a specific project at a US federal laboratory or affiliated institution. It is for one year, renewable up to three years, and applications are accepted four times per year for most opportunities. Citizenship requirements vary by opportunity.
2.2.5 Dissertation Completion Grant

Ph.D. students who have completed all requirements for the degree, except the required dissertation, can apply for a Dissertation Completion Grant from the Graduate School. Such grants exist for completion in Spring, Summer and Fall of each year. The award includes a stipend (at the level of a 20-hour/week TA-ship or RA-ship) and one credit of tuition remission. The Ph.D. students will be informed by the Department about the application deadlines and the required materials.

2.2.6 Awards from the Department

The Department awards annually the Peter Havas Humanitarian Scholarship ($1,500, for up to two students) and the Stanislav Kotsev Memorial Award ($750, for one student).

The description of the Havas Scholarship reads: "Established in 2005 by former student, Angelo Armenti, family and friends of Peter Havas to provide for awards to outstanding physics graduate students with demonstrated academic achievement." Further, it is noted: "Dr. Peter Havas was committed to peace and social justice and the preference is that the scholarship is awarded to a student who is also committed to peace and social justice."

The description of the Kotsev Award reads: "Established to provide an award to be given to a student of exceptional character who is making excellent progress in the Physics graduate program at Temple University."

Students are nominated for these awards by their research supervisor. The selection of the awardees is made by the Graduate Awards Committee.

2.2.7 Awards from the College

Ph.D. Students can apply for an “Outstanding Research Assistant Award” and an “Outstanding Teaching Assistant Award” from the College of Science and Technology. Application deadlines will be communicated by the College. Information about the required application materials can be found at https://cst.temple.edu/academics/scholarships-and-awards/graduate-awards.

2.3 ADVISING AND MENTORING

Each incoming student is assigned a mentoring committee consisting of the Graduate Chair and another faculty member. The Graduate Chair meets with each student to discuss first-year courses, exemptions, academic preparation, and research interests. The second member of the mentoring committee will be a faculty member from the primary research area indicated on the student’s application for graduate study. Upon arrival on campus, incoming students should make every
effort to set up an appointment with the Graduate Chair as well as the second member of their mentoring committee.

All graduate students are encouraged to choose an advisor by the end of their second semester and no later than the fourth semester. Once chosen the research advisor takes over all advising duties for the student from the Graduate Committee until the student graduates. The search for a research advisor should be primarily a choice of one among a number of research projects offered in the Physics Department. Thus, the student’s first consideration should be the interest in the field in general and the research project in particular. The information about the research programs in the Physics Department is located on the Physics Department Website (https://phys.cst.temple.edu/research.html). However, because of the constant evolution in the status of the faculty's research, the website will often not be completely up-to-date. For this reason, it is in the best interest of the student to meet individually with each faculty member to discuss projects and areas of research. First year students are also required to take PHYS 5002 Physics Research and Ethics, where they can get an idea of some of the research carried out at the Physics Department, and they are required to attend the department colloquia to find out more about current research areas. Finally, the student should also pursue informal information gathering mechanisms. Talk to existing students and postdocs in prospective groups to learn what the working environment is really like and what financial and other support can be expected. Your more senior grad student colleagues are a wealth of information. Contact the Faculty Graduate Advisor for advice if you have difficulties in finding an appropriate research advisor.

In addition to providing the student with the means to carry out a research project, the advisor will assist the student in making sure that all degree requirements are fulfilled. Ultimately, this responsibility is the student’s responsibility. Furthermore, the advisor will help prepare the Research Proposal.

It is the student’s responsibility to assemble a Dissertation Advisory Committee (see below) to provide advice on how to proceed at each stage of your graduate studies. The student should hold an Annual Update meeting with this committee at least once a year, during which an Annual Report form will be completed. This committee is formed when the Dissertation Proposal is defended (Elevation to Candidacy Exam).

2.3.1 Dissertation Advisory Committee

In consultation with their advisor, students select their Dissertation Advisory Committee when they defend their Research Proposal (in most cases by the end of the fifth semester). The committee must include at least two physics department faculty. Typically, the research advisor will not chair the committee, but will serve on the committee. The committee may be expanded to include additional graduate faculty from Temple University or from other universities. A list of approved Temple University faculty is at https://grad.temple.edu/about/temple-faculty. Doctoral level expert advisors from outside the university setting can be considered as members of the Dissertation Advisory Committee, but must be approved by the graduate committee of the department and the Dean of the Graduate School. To nominate an outside member, you must fill out the Nomination
for Service on Doctoral Committee Form which can be found in the forms section in the TU Portal under Student Tools.

2.3.2 Annual Report

The Annual Report of the Dissertation Advisory Committee is informal and advisory in nature. It is not an exam. The deadline for turning in the completed Annual Update form to the Staff Graduate Advisor is June 15.4 (Students are not required to submit this form during a year when they advance to candidacy or defend their PhD.) At the meeting, the student will give a presentation (10-15 minutes) to explain their progress to date, after which the committee and student will discuss future plans and make recommendations. The student’s summary should focus on progress since the last annual meeting and on proposing a tentative plan through either advancement or completion of the dissertation as appropriate. Senior students may wish to present a more detailed description of their research. The committee will generally also hold a short closed-door discussion during which the student is not present. Along with the seminar the student will also prepare a written Annual Report that will be completed with the notes and feedback of the committee. It will be signed, submitted, and returned to the Staff Graduate Advisor and the Graduate Chair.

2.3.3 Annual Seminar

Students from their sixth semester on are required to present a short seminar (12 minutes + 3 minutes questions) about their research once a year. They will be contacted by the Graduate Chair at least 3 weeks in advance. These seminars are presented at department colloquia on Mondays at 3 pm.

2.3.4 Faculty Oversight Committee

Effective 1 July 2018, each student must meet annually with their Faculty Oversight Committee (FOC). This procedure is mandated by CST. Failure to complete this requirement will result in a hold on processing your appointment letter for the next semester. Each Student is assigned a committee (different from the Defense Committee) that explicitly excludes the faculty research supervisor. The purpose of this committee is to assess the student’s academic progress, identify possible problems with the Advisor or work environment and to try to head off or solve any problems. A progress report is submitted annually to CST by the Department. The discussion has a checklist on the progress of the student: Research and Personal issues. Research issues include progress with publications, conference participation opportunities. Personal issues include communication with the faculty advisor and group members. The FOC policy applies to all graduate students including first-year graduate students. In their case (having no advisor yet) any faculty can serve on the Committee.

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4 The Annual report is currently under discussion in the Graduate Committee. If approved it might be implemented in the Fall 2020.
2.4 EXEMPTIONS

A student may make a request to the Advanced Standing Coordinator (a member of the Physics Graduate Committee) to be exempted from one or more of the required courses on the grounds that he/she has already completed comparable course work at another institution or as a Temple undergraduate. According to the Graduate Policy 02.24.02 these prior courses will be considered only if they have been graded “B” or higher. Students who request advanced standing, must submit their transcripts from that course, along with the syllabus, and the list of textbook(s) utilized for the given course.

3. FINANCES

3.1 Tuition, Fees, and Health Insurance

Graduate tuition and fees are posted at https://bulletin.temple.edu/graduate/tuition-fees/ but most of the details are immaterial for students who are supported on Assistantships (either for Teaching or Research) or Fellowship. For these cases, tuition is paid directly by the Department, Research Grant Principal Investigator, or the Graduate School.

It is not uncommon for a graduate student to receive an invoice from the University for tuition and fees, prior to the start of the semester. For students on Assistantships or Fellowships, please forward the invoice to the Physics Department administration for handling. The Department will cover the tuition while the student is responsible to pay the fees.

See https://bulletin.temple.edu/graduate/financial-information/ for more details on financial information for graduate students. This includes links for different health insurance options. Please be aware of the provisions for spouses of married graduate students, who may require additional specific coverage.

4. ACADEMIC INTEGRITY POLICIES

Temple University maintains a universal Student Conduct Code which not only delineates the standards by which students are expected to adhere, but also provides for procedures to be followed if a student is accused of violating the code in any number of ways. Details are available at https://secretary.temple.edu/sites/secretary/files/policies/03.70.12.pdf.

In the Physics Department, we take the point of view that graduate students and the faculty are colleagues. In other words, everyone is expected to live up to professional standards in all of their work and interactions with each other. If graduate students are ever unsure as to what does or does not constitute professional behavior, they should discuss it immediately with their course instructor, their research supervisor, the Graduate Program Chair, or any other faculty member.

We also note that graduate students are also bound to set examples for the undergraduate students in their classes and their research settings. Part of the graduate student responsibility is to educate undergraduates in the professional standards we all need to live by.
Departures from professional standards of conduct will be dealt with quickly, hopefully to take immediate corrective action. Repeat offenses, or particularly egregious first time transgressions, will result in harsh consequences.