

Carnegie Mellon University

Department of Physics

Physics Department Graduate Program Handbook

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Welcome to Carnegie Mellon University and the Department of Physics within the Mellon College of Science. Graduate students are an integral part to the educational and research mission of the department. Attracting and training talented graduate students is vital to the research success of the department and has a high priority among the departmental goals. A thriving research program is, in turn, necessary to attract students and to provide the environment they need to reach their potential as scientists when leaving the university with a higher degree.

This graduate student handbook presents general information for all graduate students in the Department of Physics at Carnegie Mellon University and summarizes the rules and degree requirements governing the Physics Graduate Program. While this handbook is specific to the academic experience of a graduate student in the Physics Department, there are several other resources and offices graduate students are encouraged to consult during their tenure at Carnegie Mellon University. Information about The Word, the student handbook, the Office of the Assistant Vice Provost for Graduate Education, the Office of the Dean of Student Affairs and others are included in Appendix A of this handbook.

1 Overview

1.1 Mission and Brief Overview of Department

The Department of Physics within the Mellon College of Science (MCS) would like to welcome all incoming and returning graduate students to a new academic year at Carnegie Mellon University (CMU). The mission of the Physics Department is to support Carnegie Mellons mission by creating knowledge that provides insight into the fundamental nature of matter and energy as well as the applied physical sciences and to gain knowledge of the workings of our physical world by applying the skills that constitute a physicists unique approach to problem solving; to disseminate knowledge to our professional community and society; to enable our students to become scientists with the knowledge, skills, and experience necessary to succeed in their chosen professions and to contribute to society in meaningful ways. The Department of Physics will fulfill its missions through the integration of its educational and research activities. We will maximize our impact using strategic alliances within the Department, the University, and the international community of physicists.

In 1906 the first students were admitted to the School of Applied Science, and six years later the institute changed its name from the Carnegie Technical School to the Carnegie Institute of Technology, as the first four-year degrees, including physics, were awarded. By the 1920's the Department of Physics had formed a research center that focused on the application of physics and chemistry to the production of metals, establishing a tradition of interdisciplinary research and the beginnings of our condensed matter program. In 1933, the second president of Carnegie Tech, Thomas Baker, traveled to Europe and successfully recruited several eminent scientists to Carnegie Tech, including Otto Stern, who had just discovered spin quantization in a magnetic field. Stern brought parts of his original equipment with him to his new Pittsburgh lab where he continued his studies of molecular physics and applied chemistry as the first full-time graduate students began their studies in the Department. Our tradition in nuclear and particle physics was born in 1946 when Department Head Frederick Seitz, a condensed-matter theorist, oversaw the creation of the Nuclear Research Center and initiated the construction of the 450 MeV Saxonburg Cyclotron, which operated from 1951 to 1969. Another notable milestone in the Department occurred in 1948, when Seitz hired Lincoln Wolfenstein who remained an active and valued member of our department until he passed away in 2015.

In the ensuing years, the Department attracted and trained many outstanding physicists. For example, Clifford Shull received his Bachelor of Science from our department in 1937 and went on to win the 1994 Nobel Prize in Physics “for the development of the neutron diffraction technique”. John Hall received his Bachelor of Science (1956), masters (1958), and doctorate (1961) in our department and was awarded the 2005 Nobel Prize in Physics for his contributions to “the development of laser-based precision spectroscopy, including the optical frequency comb technique”.

Today the Department of Physics employs about 30 full-time tenure track faculty as well as teaching and research track faculty. Our faculty is engaged through world-class research groups in areas such as Astrophysics and Cosmology, Biological Physics, Condensed Mat-

ter Experiment and Theory, High Energy Experiment and Theory, Quantum Information Theory, as well Medium Energy Experiment and Theory. The Department also houses the McWilliams Center for Cosmology and is affiliated with the Pittsburgh Supercomputer Center, the Data Storage Systems Center at CMU, and the Molecular Biophysics and Structural Biology Graduate Program that has been established jointly between the University of Pittsburgh and CMU, to name a few. More information about the Physics Department, its research portfolio and graduate program can be found at <http://www.cmu.edu/physics/index.html>.

1.2 Degrees Offered

There are a few advanced degrees available for students entering the Physics Graduate Program at CMU. The standard degree awarded on successful completion of the graduate program is a Ph.D. (Doctor of Philosophy) in Physics. Besides the conventional Ph.D. program, the department also offers a degree in Applied Physics. Ph.D. thesis research that may appropriately be characterized as applied physics can be carried out either within the Physics Department or in conjunction with other branches of the University such as the Robotics Institute, the Data Storage Systems Center, the Materials Science and Engineering Department or the Electrical and Computer Engineering Department.

A Master's of Science (M.S.) degree in Physics is awarded to students enrolled in the Ph.D. program typically after two years of course work. Note, the Physics Department does not offer a M.S. only program, and the M.S. degree is usually offered only to students enrolled in the Ph.D. degree program. However, in exceptional circumstances applicants can be considered who intend to obtain only a M.S. degree. However, in this case admission without financial aid may be considered.

1.3 Graduate Student Handbook

This handbook presents the rules and requirements governing the Graduate Program in the Department of Physics at CMU and offers resources for students available within the department, college and the university. This document shall be updated to reflect new rules and future requirements that will be approved by the Physics Faculty. Additional requirements may apply as outlined in the

- “Carnegie Mellon University Faculty Handbook” available at <https://www.cmu.edu/faculty-senate/faculty-handbook/index.html>
- “Mellon College of Science Faculty Handbook” available at http://www.cmu.edu/mcs/fac_staff/handbook/index.html.

In the following, university policies and expectations, resources available to students, the physics graduate degree requirements and the operation of the graduate program, are described. In general, candidates for the degree of Ph.D. in Physics should expect to spend at least four years of full-time graduate study, including a minimum of one year of full-time course work at Carnegie Mellon. The first three semesters are devoted to concentrated study

of fundamental topics. During their second year, students typically take the written and oral part of the Qualifying Examination. Following successful completion of this examination, students have to seek affiliation with one of the department's research groups and identify a supervisor and subject area for their thesis research. Formal admission to candidacy for the Ph.D. depends on acceptable performance in research and course work, as well as the Qualifying Examinations. The affiliation with a research group is encouraged before admission to Ph.D. candidacy and can take place as early as the first semester. After a student is passed to Ph.D. candidacy, a committee of faculty conducts annual reviews of the students research progress until the student's thesis defense and graduation.

1.4 University Policies and Expectations

It is the responsibility of each member of the Carnegie Mellon community to be familiar with university policies and guidelines. In addition to this departmental graduate student handbook the following resources are available to assist you in understanding community expectations:

- The Word/Student Handbook:
<http://www.cmu.edu/student-affairs/theword//index.html>
- Academic Integrity Website: <http://www.cmu.edu/academic-integrity>
- University Policies Website: <http://www.cmu.edu/policies/>
- Graduate Education Website: <http://www.cmu.edu/graduate/policies/index.html>
- Mellon College of Science Faculty Handbook:
http://www.cmu.edu/mcs/fac_staff/handbook/index.html.

Please see Appendix A for additional information about The Word and University resources.

1.5 Carnegie Mellon University Statement of Assurance

Carnegie Mellon University does not discriminate in admission, employment, or administration of its programs or activities on the basis of race, color, national origin, sex, handicap or disability, age, sexual orientation, gender identity, religion, creed, ancestry, belief, veteran status, or genetic information. Furthermore, Carnegie Mellon University does not discriminate and is required not to discriminate in violation of federal, state, or local laws or executive orders.

Inquiries concerning the application of and compliance with this statement should be directed to the vice president for campus affairs, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213, telephone 412-268-2056.

Obtain general information about Carnegie Mellon University by calling 412-268-2000.

The Statement of Assurance can also be found on-line at:

<http://www.cmu.edu/policies/documents/SoA.html>.

1.6 The Carnegie Mellon Code

Students at Carnegie Mellon, because they are members of an academic community dedicated to the achievement of excellence, are expected to meet the highest standards of personal, ethical and moral conduct possible.

These standards require personal integrity, a commitment to honesty without compromise, as well as truth without equivocation and a willingness to place the good of the community above the good of the self. Obligations once undertaken must be met, commitments kept.

As members of the Carnegie Mellon community, individuals are expected to uphold the standards of the community in addition to holding others accountable for said standards. It is rare that the life of a student in an academic community can be so private that it will not affect the community as a whole or that the above standards do not apply.

The discovery, advancement and communication of knowledge are not possible without a commitment to these standards. Creativity cannot exist without acknowledgment of the creativity of others. New knowledge cannot be developed without credit for prior knowledge. Without the ability to trust that these principles will be observed, an academic community cannot exist.

The commitment of its faculty, staff and students to these standards contributes to the high respect in which the Carnegie Mellon degree is held. Students must not destroy that respect by their failure to meet these standards. Students who cannot meet them should voluntarily withdraw from the university.

The Carnegie Mellon Code can also be found on-line at:

<http://www.cmu.edu/student-affairs/theword/code.html>.

2 Departmental Resources

2.1 Department Personnel

This section identifies some key people that graduate students will get to know and interact with at some point throughout their career toward a Ph.D. in Physics. A complete listing of all faculty, staff, post-doctoral researchers, and graduate students in Physics can be found on-line at <http://www.cmu.edu/physics/people/index.html>.

The following list of people might be of particular importance to graduate students in Physics:

- Dean of Mellon College of Science: Rebecca W. Doerge,
Mellon Institute MI 414, 412-268-8156, mcsdean@andrew.cmu.edu.
- MCS Associate Dean for Graduate Affairs: Curtis A. Meyer,
Wean Hall 8414, 412-268-2745, curtis.meyer@cmu.edu.
- Department Head: Stephen Garoff,
Wean Hall 7325, 412-268-6877, physics@andrew.cmu.edu.

- Associate Department Head: Markus Deserno,
Wean Hall 6319, 412-268-4401, deserno@andrew.cmu.edu.
- Director of Graduate Studies: Manfred Paulini,
Wean Hall 7307, 412-268-3887, paulini@cmu.edu.
- Graduate Student Program Coordinator: Heather Corcoran,
Wean Hall 7319, 412-268-2849, ugradphy@andrew.cmu.edu.
- MCS Director for Scientific Computing:
Wean Hall 6201, 412-268-3158, florin@cmu.edu.
- Graduate Student and Department Ombudsman: Helmut Vogel,
Wean Hall 7420, 412-268-2757, helmut.vogel@cmu.edu.
Additionally, students may confer with the MCS ombudsperson Rebecca Freeland,
412-268-7981, rf51@andrew.cmu.edu as well as the university graduate student om-
budsmen, Suzie Laurich-McIntyre, slaurichm McIntyre@cmu.edu, on issues of process
or other concerns as they navigate conflicts. Rebecca Freeland is the MCS Associate
Dean for Special Projects and Suzie Laurich-McIntyre is the Assistant Vice Provost
for Graduate Education.

2.2 Departmental Information

Most of the departmental information can be found on-line at the main Physics Department website at <http://www.cmu.edu/physics/index.html> or the link for the Physics Graduate Program at <http://www.cmu.edu/physics/graduate-program/index.html>.

Below is an incomplete list of departmental information relevant for graduate students:

- Main departmental phone number: +1 (412) 268-2740
- Department FAX number: +1 (412) 681-0648.
- Department mailing address:
Department of Physics
Carnegie Mellon University
5000 Forbes Ave.
Pittsburgh, PA 15213
- Mailboxes: Wean Hall 7322
- Department Printers: Wean Hall 7322
- Department Copy Machines: Wean Hall 7415
- Key Distribution is handled by Hilary Homer, Wean Hall 7315
- Physics Graduate Student Assembly (GSA): <http://web.phys.cmu.edu/~gsa/>.

2.3 Operation of Graduate Program

The operation of the Physics Graduate Program is handled by the Director of the Graduate Program (DGP) together with the Department Head ensuring a smooth running of the graduate program. The DGP oversees the various examinations (placement exam, written and oral qualifying exams), monitors the progress and success of pre-candidacy students, identifies student's developing issues such as students challenged in the program who are put on academic probation, monitors post-candidacy students by following up on the annual graduate student reports. The DGP also oversees advising and takes care of any graduate program related issues such as course issues, social activities, day-to-day operational issues, etc. The DGP also assists the Department Head in teaching assignments for graduate courses and course curriculum related issues. The DGP reports to the faculty, informs about the status of the graduate program, discusses Ph.D. candidacy as well as issues with particular graduate students and with the graduate program itself.

In addition to the DGP and the Department Head, the other elements contributing to the operation of the the Physics Graduate Program are the Graduate Admission Committee, the General Written Qualifying Exam Committee and the Special Oral Qualifying Exam Committee.

3 Graduate Degree Attainment and Requirements

The requirements to attain the advanced degrees of Ph.D. and M.S. in Physics for students entering the Physics Graduate Program at CMU are detailed in this section. It also specifies the graduate program outcomes and research expectations. Additional requirements may apply as outlined in Sec. 1.3.

3.1 Orientation Program

Entering graduate students will attend an orientation program during the week preceding the beginning of classes which is typically at the end of August. During that week students attend talks introducing them to the department, take a placement test, discuss the responsibilities of teaching assistants, and enjoy informal social events. International students need to arrive one week earlier, as they will receive additional orientation organized by the Office of International Education (OIE).

3.1.1 Placement Process

To determine the preparedness for graduate studies, every student takes a placement test on basic undergraduate physics. The results of which are used to identify suitable courses for the first year of graduate studies. The placement test will consist of questions on Quantum Mechanics, Electrodynamics, Mathematical Physics and Statistical Mechanics, which are the standard courses for first year graduate students. The results of the test together with

Number	Name	Units	Requirement
Fall Semester, First Year			
33-755	Quantum Mechanics I	12	required
33-759	Introduction to Mathematical Physics	12	required
33-761	Classical Electrodynamics I	12	required
33-775	Introduction to Research I	2	required
33-794	Physics Colloquium	1	suggested
Spring Semester, First Year			
33-756	Quantum Mechanics II	12	required
33-762	Classical Electrodynamics II	12	suggested
33-765	Statistical Mechanics	12	required
33-776	Introduction to Research II	6	required
33-794	Physics Colloquium	1	suggested

Table 1: Typical graduate course program indicating required and suggested courses in the first year. The course units indicate the expected number of hours spent by a student on a particular course per week.

student interviews are used to determine the optimum choice of courses in the first and second semesters. The placement test does not affect the student's grades in any way. The responsibility for advising incoming graduate students is handled by the DGP who also serves as academic advisor for all first year graduate students. Following the placement test, students meet with the DGP to plan their course work for the first and second semesters.

3.2 Course Requirements

Students must successfully complete a series of courses before being admitted to Ph.D. candidacy. The typical pre-qualifying course program is shown in Table 1.

By the end of the second year of graduate studies, students should complete the breadth requirement consisting of two courses out of the following list:

33-758 Quantum Computation and Quantum Information Theory

33-767 Biophysics: From Basic Concepts to Current Research

33-777 Introductory Astrophysics

33-779 Introduction to Nuclear and Particle Physics

33-783 Solid State Physics

With special permission of the DGP, other physics courses can also be permitted as substitutes to satisfy the breadth requirement. In addition, individual research groups may impose further course requirements on their students.

There is no total number of units required for Ph.D. degree attainment but at the time when a student is passed on to Ph.D. candidacy, the required courses add up to a total of 92 units. However, on discretion of the DGP a student with sufficient preparedness can be

placed out of a required introductory course.

For the M.S. degree in Physics students must complete at least 96 units of courses with a B average (3.0) or better. For more information on the M.S. degree requirements, please see Sec. 3.14.

3.2.1 Transfer Credits

The Department does not accept transfer credits for graduate courses taken as undergraduate or graduate student before enrolling as graduate student at CMU. However, on discretion of the DGP in consultation with the Department Head and physics faculty, a student can be placed out of required courses.

3.2.2 Transfer Courses & PCHE

Carnegie Mellon University offers students the opportunity to take courses for credit through a cross-registration program (see Pittsburgh Council on Higher Education (PCHE) and Cross-registration below) and through the receipt of transfer credit from other accredited institutions. The Carnegie Mellon University transcript will include information on such courses as follows: Carnegie Mellon courses and courses taken through the university's cross-registration program will have grades recorded on the transcript and be factored into the QPA. All other courses will be recorded on this transcript indicating where the course was taken, but without grade. Such courses will not be taken into account for academic actions, honors or QPA calculations. (Note: suspended students may take courses elsewhere; however, they may receive transfer credit only if their college's and department's policies allow this). For more details see <http://www.cmu.edu/policies/documents/TransferCredit.html>.

3.3 Academic Performance

The Department of Physics follows the University Policy on Grades, which is outlined at <http://www.cmu.edu/policies/documents/Grades.html>. This policy offers details concerning university grading principles for students taking courses and covers the specifics of assigning and changing grades, grading options, drop/withdrawals and course repeats. It also defines the graduate grading standards using letter grades: A+ A, A-, B+, B, B-, C+, C, C-, D+, D, or R.

Students must pass all required physics courses with a grade of B- (B-minus) or higher before being admitted to Ph.D. candidacy. Exceptions can be made only if a student demonstrates proficiency in the subject matter of a particular course and receives prior approval by the DGP. Students are also required to maintain a satisfactory academic record in order to continue in the Graduate Program. This means students cannot have a grade-point average (GPA) of less than 3.0 in each of two consecutive semesters (see Sec. 3.11 for more details).

3.4 Academic Integrity

Please review the University expectations on academic integrity at <http://www.cmu.edu/academic-integrity/>.

Please review the entire policy at <http://www.cmu.edu/policies/documents/Academic%20Integrity.htm>.

3.5 Qualifying Exams

Two qualifying exams have to be passed for a student to be admitted to Ph.D. candidacy: The General Written Qualifying Exam and the Special Oral Qualifying Exam. Students take these exams during their second year of graduate studies. If both examinations are not passed on the level required for the Ph.D. program, candidates are still eligible to pass the Written Qualifying Examination on the Master's level to receive a M.S. degree in Physics.

3.5.1 General Written Qualifying Exam

To qualify for Ph.D. candidacy, students have to pass the General Written Qualifying Exam which covers the course material of the first year graduate courses plus Classical Mechanics. The exam is offered twice a year: in August and again in late January or early February. The exam is administered over two days: Day 1 tests Classical Mechanics, Electrodynamics as well as Mathematical Physics. Day 2 tests Quantum Mechanics, Statistical Mechanics and “integrated” problem-solving ability. The problems will be at the level of the first year graduate material or the advanced undergraduate level in the case of Classical Mechanics.

Graduate students must take both days of the Written Qualifying Exam in August after their first year of graduate study or earlier. The last opportunity for a student to pass the Written Qualifying Exam is in August before the student's third year of graduate study.

The exam committee will either pass or fail a student on each day of the exam separately. Passage of each day's exam will be based on the score from all problems for that day. That is, insufficient performance on a single physics area will not necessarily lead to failure of the whole exam. Failure to pass one of the two days results in the requirement to retake only that day's exam. If a student fails one or both days, the student is expected to retake the failed portion(s) again at the next offered opportunity. The exam committee will decide whether the exam is been passed at the Master's level consisting of a lower level of performance.

If a graduate student does not pass the Written Qualifying Exam in the offered three attempts before the student's third year of graduate study, the student can be asked to leave the graduate program. Although there is no requirement or promise, the student is typically still supported as TA in the fall semester following the last attempt on the Written Qualifying Exam but has to leave CMU after the end of the fall semester.

3.5.2 Special Oral Qualifying Exam

The purpose of the Special Oral Qualifying Exam is to evaluate the candidate's ability to learn new material and apply knowledge from course work to a new topic, present a coherent talk on a large topic as well as answer questions on various aspects of a given topic. Particular emphasis is placed on conceptual understanding.

Students are required to take the Special Oral Qualifying Exam in their second year of graduate studies. The exam is given annually in January in the week prior to the start of the spring semester classes. If the Special Oral Qualifying Exam is not passed on the first attempt, it must be taken a second time the following year.

The chair of the Special Oral Qualifying Exam Committee meets with all students taking the exam at the beginning of December. At this meeting the topic of the exam is announced and references as well as the suggested reading material will be made available to students. The students have about 3-4 weeks to prepare for the exam. After reviewing the suggested material, each student prepares a 20 minute talk exposing what the student considers the most important and interesting aspects of the subject. The presentation will be given without notes, using only the blackboard. After the talk the Exam Committee will ask a series of questions based on the talk or other aspects of the given subject. The question period will last typically from 30 minutes to one hour. Candidates should prepare their talk completely on their own; there should be no discussion between the candidates concerning any aspect of the exam or topic.

If a graduate student does not pass the Special Oral Qualifying Exam after the second attempt, the student cannot continue in the graduate program. Although there is no requirement or promise, the student is typically still supported as TA in the spring semester following the last attempt on the Special Oral Qualifying Exam but has to leave CMU after the end of the spring semester.

3.6 Advancement to Ph.D. Candidacy

After a student has fulfilled all course requirements and successfully passed both of the Qualifying Exams, a meeting of the faculty is held to review the academic record and exam results of the student. Progress toward research, finding a research advisor, the expected research aptitude of a student, as well as completing the teaching requirement, which is required for graduation, are part of this discussion. After a positive vote by the faculty the student is passed on to Ph.D. candidacy and begins full-time thesis research.

Students are encouraged to familiarize themselves with the University Policy for Doctoral Status as outlined at <http://www.cmu.edu/policies/DSS.html>. This is a series of policies that set forth a definition of All But Dissertation (ABD), time limits on doctoral candidacy status, a definition of in residence and in absentia status for ABD candidates and the tuition charged for candidates in each status. The ABD status agreement form and ABD status change form can be found at: <http://www.cmu.edu/es/forms/abd-process.pdf>.

3.7 Thesis Research and Annual Research Reviews

It is generally expected that students will find a thesis research supervisor before the end of their second year of graduate studies. A student must find a suitable advisor for full-time research no later than one year after admission to Ph.D. candidacy.

Starting no later than one year after being passed to Ph.D. candidacy, a student must hold a first annual review by the end of the spring semester. For example, students who were admitted to Ph.D. candidacy in the spring of 2011 must complete their 2011-2012 annual review before the end of the Spring'12 semester. The annual research review is repeated each academic year with the review meeting held before the end of each spring semester.

At the start of each spring semester, students who must complete a review by the end of that semester will be individually notified, together with their advisors. By March 1 each student, with the help of their advisor, must have submitted a list of tentative thesis committee members, including the outside member if possible. Information on forming a thesis committee can be found in the "Mellon College of Science Faculty Handbook". In the exceptional case that students are not able to complete the annual review for the current academic year, the students need to indicate that they have taken steps to schedule their review and provide the proposed date for the review.

The annual review needs to include:

- the presence of at least 3 of the tentative thesis committee members
- a presentation by the student which includes a discussion of research progress over the past year
- a discussion between the student and committee members on the progress and a plan for continuation of the student's research toward a Ph.D. thesis
- documentation of the annual review by the advisor, through the completion of a form which can be obtained from the Graduate Student Program Coordinator or the departmental website. The completed and signed form needs to be returned to the Graduate Student Program Coordinator. It is at the discretion of the thesis advisor to forward a copy of the annual review form to the student.
- the submitted form can be accompanied by a 1-2 page progress report prepared by the student or a copy of the student presentation

If a student graduates by the end of the spring semester, the thesis defense can replace the annual review. The registration for summer and fall classes can be put on hold for the student until the annual review is completed. Progress toward this goal will be monitored by the DGP.

3.8 Graduate Program Outcomes

The Graduate Program in Physics is designed to provide an environment that will allow students to build on their prior education and acquire state-of-the-art core physics skills and knowledge through course work and research-based activities, as well as grow from a student to a colleague. Upon graduation with a Ph.D. in Physics, students will:

- Have acquired detailed knowledge in the core physics subjects, including quantum mechanics, electrodynamics, and statistical mechanics, and be familiar with the structure of matter, as well as the corresponding interactions from the subatomic scale to cosmological distances;
- Be able to demonstrate mastery of advanced physics topics within their chosen subfield of research and apply experimental, observational, computational, and/or theoretical scientific methods to conduct independent research;
- Be able to understand, within a reasonable time frame, the needed background knowledge for a given scientific problem, while their physics knowledge base will allow them to recognize the physics fundamentals underlying a given problem;
- Have acquired problem-solving methodology and skills, including the analysis of uncertainties arising from the limitations of experimental data and models, as well as the critical use of scientific literature;
- Have developed skills to effectively communicate research results to professionals within their subfield and the broader physics community through both oral presentation and scientific publication;
- Have completed individually or as a member of a team an original research project that advances the understanding of nature.

3.8.1 Research Expectations

While engaged in full-time research toward a Ph.D. in Physics, graduate students are typically supported as a Research Assistant (RA) or a Teaching Assistant (TA) and are expected to follow certain guidelines. In particular, students are expected to:

- Be curious and passionate about their research project, demonstrating creativity in applying scientific ideas to solve the research problems at hand;
- Be self-motivated and dedicated to hard work, becoming the active driver toward an excellent Ph.D. thesis in a timely manner;
- Focus their efforts on the work needed to complete a Ph.D.;
- Communicate effectively with their advisor by pro-actively seeking advice, accepting constructive criticism, and being willing to adjust, as needed, their research methodology;
- Develop independence as their Ph.D. research progresses, taking it upon themselves to identify and find resources needed to solve problems;
- Assume responsibility for the advancement of the research group that they join, recognizing that science is a collaborative effort;

- Take responsibility for developing professional presentation skills, allowing them to communicate research findings to professionals within their subfield and the broader physics community, as well as being capable of producing well-written drafts for publications;
- Display overall professional behavior and follow all university guidelines regarding academic integrity and responsible conduct of research, as well as regulations governing safety and best practices in laboratory settings, in particular while operating equipment and handling potentially dangerous substances.

3.8.2 Performance Measures

While enrolled in the graduate program, students must demonstrate an appropriate level of progress toward graduation with a Ph.D. in Physics, including the following performance measures:

- Demonstrate mastery of knowledge in the core physics subjects, including quantum mechanics, electrodynamics, and statistical mechanics, by performance on course exams and assignments;
- Demonstrate ability to apply skills acquired from core courses to research-field-specific problems through performance in special-topics and breadth courses;
- Demonstrate the ability to apply core knowledge and problem-solving skills by suitable performance on the written Qualifying Exam;
- Demonstrate the ability to comprehend and critically analyze scientific literature, including the ability to evaluate the validity of information, by suitable performance on the Ph.D. Special Oral Exam;
- Demonstrate an appropriate level of understanding of their dissertation topic and make suitable progress on their research as part of research course work and during a formal annual thesis review;
- Demonstrate the ability to create new knowledge in their chosen subfield of physics and to communicate effectively, both orally and in writing, through a Ph.D. dissertation and successful Ph.D. defense.

3.9 Teaching and Language Requirement

All graduate students are required to perform classroom or laboratory teaching for at least one semester before receiving a Ph.D. in Physics. Students will benefit from the practice gained by explaining complex physics concepts in an understandable way and by responding to questions. If a student's native language is not English, a certification of proficiency in spoken English is necessary before the student will be allowed to perform the required classroom teaching. Graduate students are required to have a certain level of fluency in

English before they can instruct in Pennsylvania, as required by the English Fluency in Higher Education Act of 1990. Through this Act, all institutions of higher education in the state are required to evaluate and certify the English fluency of all instructional personnel, including teaching assistants and interns. The full university policy can be reviewed at: <http://www.cmu.edu/policies/documents/EngFluency.html>.

To obtain certification, non-native English speakers must pass an International Teaching Assistant (ITA) test (a mandatory screening test for any non-native speaker of English), administered by the Intercultural Communication Center (ICC) at CMU. A student must reach as a minimum an ITA test score of “Restricted II” (former Category 3) which allows for restricted TA assignments such as teaching in a laboratory course. In addition to administering the ITA test, the ICC helps teaching assistants who are non-native English speakers develop fluency and cultural understanding to teach successfully at Carnegie Mellon. A variety of support facilities are available at the ICC to improve the student’s command of the English language. Visit the ICC website for additional information: <http://www.cmu.edu/icc>.

3.10 Thesis Committee and Thesis Defense

The purpose of a doctoral thesis committee is to judge the validity, originality, significance, and proper presentation of the candidate’s doctoral thesis. To that end, the committee shall examine the thesis submitted by the candidate, conduct the public oral final examination on the thesis, prescribe corrections or revisions to the thesis before or at the time of the examination, and certify to the Dean its finding on the acceptability of the thesis in its final form.

Normally, the members of the thesis committee shall be nominated by the thesis advisor with the agreement of the candidate, and their appointment approved by the Department Head or the faculty member designated to supervise the Department’s doctoral programs. Ultimate responsibility for the appointment of a thesis committee rests with the Department.

The doctoral thesis committee shall consist of no fewer than four members, and shall include the thesis advisor, as well as the “departmental sponsor” if there is one. With respect to a departmental sponsor, the thesis advisor need not be a faculty member in the Department, or even in the University. When the thesis advisor is, however, not a regular or research faculty member at Carnegie Mellon University, the Department Head or the faculty member designated to supervise the Department’s doctoral programs shall appoint, in consultation with the thesis advisor and the candidate, a regular or research faculty member in the Department to serve as the candidate’s departmental sponsor. It shall be this departmental sponsor’s responsibility to monitor the candidate’s work and to assist him or her, the thesis advisor, and the Department in assuring that it conforms to the candidate’s doctoral program.

At least half of the members of the committee shall be regular or research faculty members in the Department in which the degree is to be conferred; one of these, who must be a regular faculty member with the rank of Assistant Professor or higher, shall chair the committee. If qualified under the preceding provision, the thesis advisor will ordinarily chair the committee; the same is applicable to the departmental sponsor if there is one.

At least one member of the committee shall be a “visitor”, i.e., a person not affiliated with the Department in which the degree is to be conferred nor with any Department participating in the candidate’s thesis research; the thesis advisor may not serve as “visitor”. To be eligible to be a “visitor”, a person should be familiar with academic standards and procedures and be especially qualified to judge some aspect of the thesis. A “visitor” may come from another Department at Carnegie Mellon, from some other university, or from outside academic institutions altogether.

A vacancy on the doctoral thesis committee need only be filled if the remaining members would not constitute a valid committee. When a vacancy is filled, care shall be taken that the new committee member has the time and opportunity to participate effectively in the performance of the committee’s functions.

In the rare case that a student has a concern with one of the committee members at some point after the appointment of the thesis committee, it is up to the discretion of the thesis advisor to discuss the student’s concerns with the committee member in question. In consultation with the Department Head and DGP, it is possible to replace a committee member as long as the guidelines for the formation of a valid thesis committee are still followed.

The final examination may proceed only if the committee members present would, by themselves, constitute a valid thesis committee according to the preceding provisions. A member of the committee who is unable to be present at the final examination may, if she or he wishes, submit a written recommendation.

The thesis committee should be appointed no less than two months before the estimated date of the final examination. In order to permit an orderly performance of the committee’s functions, it shall be the responsibility of the candidate to keep the committee informed about the progress of his or her work, from the time the committee is appointed to the time the thesis is submitted. The committee may specify whether this should be done individually, or collectively by formal or informal presentations.

When the thesis advisor (and the departmental sponsor if there is one) is satisfied that the thesis is ready, it shall be submitted to the committee. The final examination shall be scheduled so as to provide the committee with two weeks to study the thesis between its submission and the date of the examination.

The formation of a valid thesis committee and the execution of a thesis defense are also governed by the MCS Doctoral Degree Policies as detailed in the “Mellon College of Science Faculty Handbook” at http://www.cmu.edu/mcs/fac_staff/handbook/doctoral.html.

3.11 Academic Probation

If a student does not maintain adequate academic performance, such as falling below a GPA of 3.0 for one semester, fails qualifying exams or does not meet the requirements for the annual reviews, the student can be put on academic probation. In this case, the student will meet with the Graduate Program Director and Department Head to discuss the situation and receive a letter from the Department Head stating a list of steps plus a time-line required

to be taken off academic probation. If the student fails to follow these requirements, the faculty will discuss the given case, vote and decide whether the student is allowed to continue in the graduate program in physics. Once the student has met the steps and requirements within the given time-line, he will be taken off probation and informed about this step through another letter by the Department Head. However, if the student fails to meet future academic requirements, she or he can be put back on probation. There is no limit on the number of times a student can be put on academic probation.

3.12 Statute of Limitations

The Physics Department statute of limitations follows the University Doctoral Student Status Policy as outlined at <http://www.cmu.edu/policies/DSS.html>. Students will complete all requirements for the Ph.D. degree within a maximum of ten years from original matriculation as a doctoral student. Once this time-to-degree limit has lapsed, the person may resume work towards a doctoral degree only if newly admitted to a currently offered doctoral degree program under criteria determined by that program.

Under extraordinary circumstances, such as leave of absence, military or public service, family or parental leave, or temporary disability, a school or college may, upon the relevant department's recommendation and with the written approval of the dean, defer the lapse of All But Dissertation status for a period commensurate with the duration of that interruption. Students, who are pursuing the Ph.D. degree as part-time students for all semesters of their program, as approved by their program, may also appeal to their program or department for extension of the time to degree limit.

3.13 The Ph.D. in Applied Physics

Besides the conventional Ph.D. program, Carnegie Mellon offers a degree in Applied Physics. Ph.D. thesis research that may appropriately be characterized as applied physics can be carried out either within the Physics Department or in conjunction with other branches of the University such as the Robotics Institute, the Data Storage Systems Center, the Materials Science and Engineering Department or the Electrical and Computer Engineering Department. Students in the applied physics program may find it necessary to prepare themselves in a technical area through courses in another department or through independent study. The Ph.D. Qualifying Examinations and the program of basic graduate courses in physics are required as outlined above but also flexible enough to accommodate the various options in applied physics.

3.14 The M.S. in Physics

The Master's of Science (M.S.) degree in Physics is awarded to students enrolled in the Ph.D. program typically after 2 years of course work. Note, the Physics Department does not offer an M.S. only program, and the M.S. degree is usually offered only to students

enrolled in the Ph.D. degree program. However, in exceptional circumstances applicants can be considered who intend to obtain only a M.S. degree, but in this case for admission without financial aid.

Candidates for the degree of M.S. in Physics must satisfactorily complete at least 96 units of courses with a B average (3.0) or better including the following:

1. At least 48 units of courses at the graduate level (700 level courses) in the Department of Physics.
2. At least 24 units of graduate or advanced undergraduate courses in physics or closely affiliated fields.
3. Six to 12 units of advanced physics laboratory (at the level of 33-340, Modern Physics Laboratory) or research in form of 33-776, Introduction to Research 1 or 33-997, Graduate Laboratory.

In addition, students must satisfy the following requirements:

1. One year of residence as a full-time student is required and at least 72 of the units above have to be taken as student enrolled at CMU.
2. Candidates must pass Day 1 of the General Written Qualifying Exam on the Master's level but do not need to take the Special Oral Qualifying Exam.
3. There are no research or language requirements for the M.S. degree.

4 Additional Department Policies/Protocols

4.1 Financial Assistance

Nearly all graduate students in the Ph.D. programs receive financial support in the form of an assistantship (teaching or research) or fellowship. Teaching assistantships typically involve a work load of about 20 hours per week including classroom time, preparation and grading. Such teaching experience is considered a valuable part of a student's graduate training. The hours required are such that the student may pursue a full-time graduate program. Teaching assistantships provide a full-tuition remission and a monthly stipend for the nine-month academic year.

Performing the duties of a teaching or research assistant is part of graduate training. Such service, or its equivalent, is required of all candidates for graduate degrees, whether or not they receive stipends.

To maintain support from the department, all students whose native language is not English must either pass the International Teaching Assistant test administered by the Intercultural Communications Center or must be satisfactorily participating in the English training program prescribed for them.

During their thesis research, candidates for the Ph.D. degree are, in most cases, supported as research assistants by the research group with which they become associated in the second year of residence. Sometimes, a first-year graduate student will be offered a research assistantship. The principal duty of a research assistantship is to aid in the program of one of the department's research groups. The stipend and the time required are essentially the same as for a teaching assistantship.

Additional financial support is usually available for students wishing to participate in research projects or teaching during the summer months for which a student will receive the same monthly stipend.

Students accepting appointments with the Department of Physics are not allowed to be employed outside of the university during the academic year nor during the summer if they are being supported by the department or a research grant.

Graduate students who find themselves in need of immediate funds for emergency situations should contact the Office of the Dean of Student Affairs (see Appendix A), available on-line at <http://www.cmu.edu/student-affairs/index.html>, to inquire about an Emergency Student Loan.

4.2 Enrollment Process

The Physics Department follows the university protocol on enrollment for full-time graduate students.

Enrollment Verification: Enrollment Services is the only University office that can provide an official letter of enrollment, official transcript and enrollment verification. Enrollment verification can be requested online through The HUB at:

<http://www.cmu.edu/hub/transcripts/verifications/enrollment.html>.

Process for Taking & Returning from Leave of Absence:

<http://www.cmu.edu/hub/registration/leave.html>.

Process for Withdrawal from Program:

<http://www.cmu.edu/hub/registration/leave.html>.

4.3 Assistance for Individuals with Disabilities

The Office of Disability Resources at Carnegie Mellon University has a continued mission to provide physical and programmatic campus access to all events and information within the Carnegie Mellon community. We work to ensure that qualified individuals receive reasonable accommodations as guaranteed by the Americans with Disabilities Act (ADA) and Sections 503 and 504 of the Rehabilitation Act of 1973. Students who would like to receive accommodations must submit a Voluntary Disclosure of Disability Form, available at <http://www.cmu.edu/hr/eos/forms/voluntary-disclosure-of-disability.pdf>, to access@andrew.cmu.edu to begin the interactive accommodation process.

For more information please see <http://www.cmu.edu/hr/eos/disability/index.html>.

Students with disabilities are encouraged to self-identify with Equal Opportunity Services by contacting Larry Powell, 412-268-2013, lpowell@andrew.cmu.edu to access the services available at the university and initiate a request for accommodations.

4.4 Graduate Student Appeal and Grievance Procedures

<http://www.cmu.edu/graduate/policies/appeal-grievance-procedures.html>

Graduate students will find the Summary of Graduate Student Appeal and Grievance Procedures on the Graduate Education Resource webpage. This document summarizes processes available to graduate students who seek review of academic and non-academic issues. Generally, graduate students are expected to seek informal resolution of all concerns within the applicable department, unit or program before invoking formal processes. When an informal resolution cannot be reached, however, a graduate student who seeks further review of the matter is to follow the formal procedures outlined here. These appeal and grievance procedures shall apply to students in all graduate programs of the University. Students should refer to the department specific information in this handbook for department and college information about the administration and academic policies of the program. Additionally, students may confer with the graduate student ombudsman, Suzie Laurich-McIntyre, slaurichmcintyre@cmu.edu, on issues of process or other concerns as they navigate conflicts.

4.5 Policy Against Sexual Harassment and Sexual Assault

Sexual harassment and sexual assault are prohibited by CMU, as is retaliation for having brought forward a concern or allegation in good faith. The policy can be viewed in its entirety at: http://www.cmu.edu/policies/documents/SA_SH.htm. If you believe you have been the victim of sexual harassment or sexual assault, you are encouraged to make contact with any of the following resources:

- Office of Title IX Initiatives, <http://www.cmu.edu/title-ix/>, 412-268-7125;
- Sexual Harassment Advisors, found in appendix A of the Policy Against Sexual Harassment and Sexual Assault;
- Survivor Support Network, found in appendix B of the Policy Against Sexual Harassment and Sexual Assault;
- Sexual Harassment Process and Title IX Coordinators, found in section II of the Policy Against Sexual Harassment and Sexual Assault;
- University Police, 412-268-2323;
- University Health Services, 412-268-2157;
- Counseling & Psychological Services, 412-268-2922.

4.6 Maternity Accommodation Protocol

<http://www.cmu.edu/graduate/programs-services/maternity-accommodation-protocol.html>

Students whose anticipated delivery date is during the course of the semester may consider taking time away from their course work and/or research responsibilities. All female students who give birth to a child while engaged in course work or research are eligible to take either a short-term absence or formal leave of absence. Students in course work should consider either working with their course instructor to receive incomplete grades, or elect to drop to part-time status or to take a semester leave of absence. Students engaged in research must work with their faculty to develop plans for the research for the time they are away.

Students are encouraged to consult with relevant university faculty and staff as soon as possible as they begin making plans regarding time away. Students must contact the Office of the Dean of Student Affairs to register for Maternity Accommodations. Students will complete an information form and meet with a member of the Deans Office staff to determine resources and procedures appropriate for the individual student. Planning for the students discussion with her academic contact(s) (advisor, associate dean, etc.) will be reviewed during this meeting.

4.7 New Policies/"Grandfather" Policy

When graduate program policies or requirements are changed, it is because the department believes the new rules offer an improvement. Any such changes will be discussed at a town hall meeting with the graduate students. However, students currently enrolled whose degree program is affected by a change in policy may choose to be governed by the older policy that was in place at the time of their matriculation. In case degree requirements are changed and certain courses are no longer offered, the department will try to find some compromise that allows those students to satisfy the original requirements.

4.8 Vacations and Time-Off

Students with graduate assistantships are expected to continue with their research during academic breaks (including Summer months) with the exception of official University holidays noted below.

Paid time off for personal business or vacations generally is not included as part of a graduate's financial support. A supported graduate student who wants to take a short break (up to two weeks) must get approval for that break from his/her advisor and, if required by the terms of the student's support package, must make up the work. Supported graduate students wishing to take longer periods of personal time off must do so without financial support and must receive approval from their advisor at least five weeks prior to the requested time off. The advisor will notify the Department's Business Office of any such arrangements so that an appropriate adjustment in the student's support package can be processed.

Official University Holidays:

- New Year's Day
- Martin Luther King Day
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving Day
- Day After Thanksgiving
- Day Before Christmas
- Christmas Day
- Day Before New Year's Day.

A Appendix

Highlighted University Resources for Graduate Students and The WORD, Student Handbook

A.1 Key Offices for Graduate Student Support

A.1.1 Office of the Assistant Vice Provost for Graduate Education

<http://www.cmu.edu/graduate>; email: grad-ed@cmu.edu

The Office of the Assistant Vice Provost for Graduate Education, AVPGE, directed by Suzie Laurich-McIntyre, Ph.D., Assistant Vice Provost for Graduate Education, provides central support for graduate students in a number of roles. These include: being an ombudsperson and resource person for graduate students as an informal advisor; resolving formal and informal graduate student appeals; informing and assisting in forming policy and procedures relevant to graduate students; and working with departments on issues related to graduate students and implementation of programs in support of graduate student development.

The Office of the AVPGE often partners with the division of Student Affairs to assist graduate students with their Carnegie Mellon experience. Senior members of the student affairs staff are assigned to each college (college liaisons) and are often consulted by the Assistant Vice Provost for Graduate Education and departments on an individual basis to respond to graduate student needs.

The Office of the Assistant Vice Provost for Graduate Education (AVPGE) offers a robust schedule of professional development opportunities. Some are geared towards a specific population (masters students, PhD students at the beginning of their program, graduate students seeking tenure track positions, etc.) and others are open to all graduate students (time management, balancing, staying healthy). A full schedule of programs can be found at: <http://www.cmu.edu/graduate/>.

The Office of the AVPGE also coordinates several funding programs, and academically focused seminars and workshops that advise, empower and help retain all graduate students, particularly graduate students of color and women in the science and technical fields. The fundamental goals of our programs have been constant: first, to support, advise and guide individual graduate students as they work to complete their degrees; second, to contribute to the greatest degree possible to the diversification of the academy. Visit the Graduate Education website for information about:

- Conference Funding Grants
- Graduate Small Project Help (GuSH) Research Funding
- Graduate Student Professional Development: seminars, workshops and resources
- Graduate Women Gatherings (GWG)
- Inter-university Graduate Students of Color Series (SOC).

A.1.2 Office of the Dean of Student Affairs

<http://www.cmu.edu/student-affairs/index.html>

The Office of the Dean provides central leadership of the meta-curricular experience at Carnegie Mellon. The offices that fall under the division of Student Affairs led by Vice President and Dean of Student Affairs Gina Casalegno, include (not an exhaustive list):

- Career and Professional Development Center
- Cohon University Center
- Counseling & Psychological Services (CAPS)
- Dining Services
- Housing Services
- Office of Integrity and Community Standards
- Office of International Education (OIE)
- Student Activities
- University Health Services

Graduate students will find the enrollment information for **Domestic Partner Registration** and **Maternity Accommodations** in the Office of the Dean of Student Affairs and on the website. The Office of the Dean of Student Affairs also manages the **Emergency Student Loan** (ESLs) process. The Emergency Student Loan service is made available through the generous gifts of alumni and friends of the university. The Emergency Student Loan is an interest-free, emergency-based loan repayable within 30 days. Loans are available to enrolled students for academic supplies, medication, food or other expenses not able to be met due to unforeseeable circumstances. The Office of Integrity and Community Standards also provides consultation, support, resources and follow-up on questions and issues of Academic Integrity: <http://www.cmu.edu/academic-integrity>.

A.1.3 Assistance for Individuals with Disabilities

<http://www.cmu.edu/hr/eos/disability/>

Students with disabilities are encouraged to self-identify with Equal Opportunity Services by contacting Larry Powell, 412-268-2013, lpowell@andrew.cmu.edu to access the services available at the university and initiate a request for accommodations.

A.1.4 Eberly Center for Teaching Excellence & Educational Innovation

<http://www.cmu.edu/teaching>

Support for graduate students who are or will be teaching is provided in many departments and centrally by the Eberly Center for Teaching Excellence & Educational Innovation. The Eberly Center offers activities for current and prospective teaching assistants as well as any graduate students who wish to prepare for the teaching component of an academic career. The Center also assists departments in creating and conducting programs to meet the specific needs of students in their programs. Specific information about Eberly Center support for graduate students can be found at:

<http://www.cmu.edu/teaching/graduatestudentsupport/index.html>.

A.1.5 Carnegie Mellon Ethics Hotline

The health, safety and well-being of the university community are top priorities at Carnegie Mellon University. CMU provides a hotline that all members of the university community should use to confidentially report suspected unethical activity relating to financial matters, academic and student life, human relations, health and campus safety or research.

Students, faculty and staff can anonymously file a report by calling 877-700-7050 or visiting <http://www.reportit.net> (user name: tartans; password: plaid). All submissions will be reported to appropriate university personnel.

The hotline is NOT an emergency service. For emergencies, call University Police at 412-268-2323.

A.1.6 Graduate Student Assembly

<http://www.cmu.edu/stugov/gsa/index.html>

The Carnegie Mellon Student Government consists of an Executive Branch and a Legislative Branch. This is the core of traditional student government, as governed by the Student Body Constitution. The Executive Branch serves the entire student body, graduate and undergraduate, and consists of one president and four vice-presidents. The Legislative Branch for graduate students, The Graduate Student Assembly (GSA) passes legislation, allocates student activities funding, advocates for legislative action locally and in Washington D.C. on behalf of graduate student issues and needs, and otherwise acts on behalf of all graduate student interests. GSA also contributes a significant amount of funding for conferences and research, available to graduate students through application processes managed by the Office of the Assistant Vice Provost for Graduate Education. GSA also plans various social opportunities for graduate students and maintains a website of graduate student resources on and off-campus at <http://www.cmu.edu/stugov/gsa/Resources>. Each department has representation on GSA and receives funding directly from GSAs use of the student activities fee for departmental activities for graduate students. The department rep(s) is the main avenue of graduate student representation of and information back to the graduate students in the department.

A.1.7 Intercultural Communication Center (ICC)

<http://www.cmu.edu/icc>

The Intercultural Communication Center (ICC) is a support service offering both credit and non-credit classes, workshops, and individual appointments designed to equip non-native English speakers (international students as well as international students who attended high school and/or undergraduate programs in the U.S.) with the skills needed to succeed in academic programs at Carnegie Mellon. In addition to developing academic literacy skills such as speaking, reading and writing, students can learn more about the culture and customs of the U.S. classroom. The ICC also helps international teaching assistants (ITAs) who are non-native English speakers develop fluency and cultural understanding to teach successfully at Carnegie Mellon and provides ITA testing, required testing indicating a non-native speaking student has a language proficiency required before being allowed to work with undergraduates in classes, labs or individual meetings.

A.1.8 Office of International Education (OIE)

<http://www.studentaffairs.cmu.edu/oie/>

Carnegie Mellon hosts international graduate and undergraduate students who come from more than 90 countries. Office of International Education (OIE) is the liaison to the University for all non-immigrant students and scholars. OIE provides many services including: advising on personal, immigration, academic, social and acculturation issues; presenting programs of interest such as international career workshops, tax workshops, and cross-cultural and immigration workshops; supporting international and cultural student groups such as the International Student Union and the International Spouses and Partners Organization; maintaining a resource library that includes information on cultural adjustment, international education and statistics on international students in the United States; posting pertinent information to students through email and the OIE website, and conducting orientation programs.

A.1.9 Veterans and Military Community

<http://www.cmu.edu/veterans/>

Military veterans are a vital part of the Carnegie Mellon University community. Graduate students can find information on applying veteran education benefits, campus services, veterans groups at CMU, non-educational resources and international military service information through the Veterans and Military Community website. There are also links and connections to veteran resource in the Pittsburgh community. The Naval ROTC and Veteran Affairs Offices are located at 4615 Forbes Avenue, uro-vaedbenefits@andrew.cmu.edu, 412-268-8747.

A.2 Key Offices for Academic & Research Support

A.2.1 Computing and Information Resources

<http://www.cmu.edu/computing>

Computing Services provides a comprehensive computing environment at Carnegie Mellon. Graduate students should seek Computing Services for information and assistance with your Andrew account, network access, computing off-campus, campus licensed software, email, calendar, mobile devices, computer security, cluster services and printing. Computing Services can be reached at it-help@cmu.edu.

The Carnegie Mellon Computing Policy establishes guidelines and expectations for the use of computing, telephone and information resources on campus. The policy is supported by a number of guidelines graduate students should know. The policy and guidelines are available at: <http://www.cmu.edu/computing/guideline/index.html>.

A.2.2 Research at CMU

<http://www.cmu.edu/research/index.shtml>

The primary purpose of research at the university is the advancement of knowledge in all fields in which the university is active. Research is regarded as one of the university's major contributions to society and as an essential element in education, particularly at the graduate level and in faculty development. Research activities are governed by several university policies. Guidance and more general information is found by visiting the Research at Carnegie Mellon website.

A.2.3 Office of Research Integrity & Compliance

<http://www.cmu.edu/research-compliance/index.html>

The Office of Research Integrity & Compliance (ORIC) is designed to support research at Carnegie Mellon University. The staff work with researchers to ensure research is conducted with integrity and in accordance with federal and Pennsylvania regulation. ORIC assists researchers with human subject research, conflicts of interest, responsible conduct of research, export controls, intellectual property rights and regulations, and institutional animal care and use. ORIC also consults on, advises about and handles allegations of research misconduct.

A.3 Key Offices for Health, Wellness & Safety

A.3.1 Counseling & Psychological Services

<http://www.studentaffairs.cmu.edu/counseling>

Counseling & Psychological Services (CAPS) affords the opportunity for students to talk privately about issues that are significant for them in a safe, confidential setting. Students sometimes feel confused about why they are feeling upset and perhaps confused about how to deal with it. An initial consultation with a CAPS therapist will clarify options and provide a recommendation to the appropriate mental health resource at Carnegie Mellon or the larger Pittsburgh community. CAPS services are provided at no cost. Appointments can be made in person or by telephone, 412-268-2922.

A.3.2 Health Services

<http://www.cmu.edu/HealthServices/>

University Health Services (UHS) is staffed by physicians, advanced practice clinicians and registered nurses who provide general medical care, allergy injections, first aid, gynecological care and contraception as well as on-site pharmaceuticals. The CMU student insurance plan covers most visit fees to see the physicians and advanced practice clinicians & nurse visits. Fees for prescription medications, laboratory tests, diagnostic procedures and referral to the emergency room or specialists are the students responsibility and students should review the UHS website and their insurance plan for detailed information about the university health insurance requirement and fees. UHS also has a registered dietician and health promotion specialists on staff to assist students in addressing nutrition, drug and alcohol and other healthy lifestyle issues. In addition to providing direct health care, UHS administers the Student Health Insurance Program. The Student Health Insurance plan offers a high level of coverage in a wide network of health care providers and hospitals. Graduate students should contact UHS to discuss options for health insurance for spouses, domestic partners and dependents. Appointments can be made by visiting UHSs website or by telephone, 412-268-2157.

A.3.3 University Police

<http://www.cmu.edu/police>

412-268-2323 (emergency only), 412-268-6232 (non-emergency)

The University Police Department is located at 300 South Craig Street, Room 199 (entrance is on Filmore Street). The departments services include police patrols and call response, criminal investigations, shuttle and escort services, fixed officer and foot officer patrols, event security, and crime prevention and education programming. Visit the departments website for additional information about the staff, escort and shuttle, emergency phone locations, crime prevention, lost and found, finger print services, and annual statistic reports.

Shuttle and Escort Services

University Police coordinates the Shuttle Service and Escort Service provided for CMU students, faculty, and community. Full information about these services, stops, routes, tracking and schedules can be found online at: <http://www.cmu.edu/police/shuttleandescort/>

Carnegie Mellon University publishes an annual campus security and fire safety report describing the university's security, alcohol and drug, sexual assault, and fire safety policies and containing statistics about the number and type of crimes committed on the campus and the number and cause of fires in campus residence facilities during the preceding three years. Graduate students can obtain a copy by contacting the University Police Department at 412-268-6232. The annual security and fire safety report is also available online at <http://www.cmu.edu/police/annualreports>.

A.4 The WORD

<http://www.cmu.edu/student-affairs/theword//>

The WORD is Carnegie Mellon University's student on-line handbook and is considered a supplement to the department (and sometimes college) handbook. The WORD contains campus resources and opportunities, academic policy information and resources, community standards information and resources. It is designed to provide all students with the tools, guidance, and insights to help you achieve your full potential as a member of the Carnegie Mellon community. Information about the following is included in The WORD (not an exhaustive list) and graduate students are encouraged to bookmark this site and refer to it often. University policies can also be found in full text at: <http://www.cmu.edu/policies/>.

Carnegie Mellon Vision, Mission

Carnegie Code

Academic Standards, Policies and Procedures

- Educational Goals

- Academic and Individual Freedom

- Statement on Academic Integrity

- Standards for Academic & Creative Life

 - Assistance for Individuals with Disabilities

 - Masters Student Statute of Limitations

 - Conduct of Classes

 - Copyright Policy

 - Cross-college & University Registration

 - Doctoral Student Status Policy

 - Evaluation & Certification of English Fluency for Instructors

 - Final Exams for Graduate Courses

 - Grading Policies

 - Intellectual Property Policy

 - Privacy Rights of Students

 - Research

 - Human Subjects in Research

Office of Research Integrity & Compliance
Office of Sponsored Programs
Policy for Handling Alleged Misconduct of Research
Policy on Restricted Research

Students Rights

Tax Status of Graduate Student Awards

Campus Resources & Opportunities

Alumni Relations

Assistance for Individuals with Disabilities

Athletics, Physical Fitness & Recreation

Carnegie Mellon ID Cards and Services

Cohon University Center

Copying, Printing & Mailing

Division of Student Affairs

Domestic Partner Registration

Emergency Student Loan Program

Gender Programs & Resources

Health Services

Dining Services

The HUB Student Services Center

ID Card Services

Leonard Gelfand Center

LGBTQ Resources

Multicultural and Diversity Initiatives

Opportunities for Involvement

Parking and Transportation Services

SafeWalk

Survivor Support Network

Shuttle and Escort Services

Spiritual Development

University Police

Student Activities

University Stores

Community Standards, Policies and Procedures

Alcohol and Drugs Policy

AIDS Policy

Bicycle/Wheeled Transportation Policy

Damage to Carnegie Mellon Property

Deadly Weapons

Discriminatory Harassment

Disorderly Conduct

Equal Opportunity/Affirmative Action Policy

Freedom of Expression Policy

Health Insurance Policy

Immunization Policy
Missing Student Protocol
Non-Discrimination Policy
On-Campus Emergencies
Pets
Political Activities
Recycling Policy
Riotous and Disorderly Behavior
Safety Hazards
Scheduling and Use of University Facilities
Sexual Harassment and Sexual Assault Policy
Smoking Policy
Student Accounts Receivable and Collection Policy and Procedures
Student Activities Fee
Student Enterprises
Workplace Threats and Violence Policy
Statement of Assurance