Graduate Student Handbook

M.A., Ph.D.

Department of Physics
The University of Texas at Austin

by Faculty, Staff, & Students[1]

2024–2025 Academic Year

---

[1] Most recent Physics' *Graduate Student Handbooks* are available online at https://ph.utexas.edu/current-graduate-students/forms-documents. Send comments and/or suggestions to graduate@physics.utexas.edu.

Table Of Contents

Chapter 1: Introduction

1.1 Purpose of this Manual

This manual is intended to provide an overview and concise statement about how the Department of Physics at The University of Texas at Austin is organized and provides support for graduate students. The organization and operation of the Department are under the control of the departmental Budget Council, the faculty, and administered through the Chair of the Department and the policies are based on the *Rules and Regulations of the Board of Regents* [1]. Many of the *Regents' Rules* are further expressed and refined for the UT-Austin campus in both the *[Original] Handbook of Operating Procedures* and the *Revised Handbook of Operating Procedures* [2] (revision of these documents is a long-term project still in progress). Academic procedures and policies are given in the *General Information Catalog* [3], the *Undergraduate Catalog* [4], and the *Graduate Catalog* [5]. All of these resources are now available online (see the Bibliography at the end of this document for links). In addition, there are numerous policy issues discussed in handouts from offices such as The International Office and The Office of Human Resource Services. In the following, when discussing a specific topic, we will provide the references to the appropriate documentation. Much of this material is available in the library and also on the web and we will provide the links where they are available. A best first source of information and advice to new graduate students is the Graduate Program Administrator/Coordinator (see: Section 2.2.3).

1.2 General Comments

The Department of Physics is a large department, among the largest physics departments in the country. The University of Texas at Austin, as measured by total enrollment at a single campus (approximately 52,000), is among the largest in the country. The student body is diverse with most of the undergraduates from the State of Texas and most of the graduate enrollment from out-of-state. There are approximately 400 undergraduate majors and 200 graduate students. A large fraction of the teaching-load of the Department resides in foundational courses for non-majors. The research interests of the faculty span all of the areas of modern physics and some of these groups are among the best in the world. In addition, the University is in the center of the City of Austin—a growing, progressive urban center which is also home to two other smaller universities and a large community college system, the last is itself home to approximately 70,500 students. The purpose of this preamble is to make clear that there is a full range of options for housing, entertainment, and transportation. Similarly, there is a full spectrum of research opportunities. These are choices that have to be worked out over time. Special courses and seminars supporting these choices will be reviewed (see Section 3.3.5) but, in general, none of these issues will be covered in detail in this manual.

The University administrative units which most effect the lives of graduate students in our department are The College of Natural Sciences (CNS) and The Graduate School. The general division of issues between these units is obvious from their names. The College manages the undergraduate program and the budget of the Department. The Graduate School administers graduate programs and sets policy for graduate student programs (see: Section 2.2.3). In addition, University Health Services provides medical services, the UT Counseling and Mental Health Center provides mental health services, and The International Office provides support for international students. These units are administered by the Vice President for Student Affairs and the Vice-Provost for International Programs, respectively.

As part of UT Austin's commitment to a more diverse and welcoming campus, on 13 July 2020 it was formally announced that Robert Lee Moore Hall (RLM) would be renamed to the Physics, Math, and Astronomy Building (PMA). It is important to note this renaming as historically physics coursework and our affiliated department has been housed in RLM since the late 1960s. As such, prior documents, including past *Physics Graduate Student Handbooks*, may reference RLM, however, the UT community along with the Physics, Math, and Astronomy departments have been vocal in their support of its renaming to PMA. To view then Interim President Jay Hartzell's full message to the UT community that includes this renaming announcement see here. Furthermore, to view then Dean Paul Goldbart's message to the CNS community regarding this renaming is available here.

The Department of Physics is aptly housed in the Physics, Math, and Astronomy Building (PMA), located at the southeast corner of E. Dean Keeton Street and Speedway. There are two principal lecture halls and a lecture demonstrations support facility (see: Section 2.3.6) in Painter Hall at 24th Street between Inner Campus Drive and Speedway. In addition to facilities on the Main Campus, the University has a Research Campus nine miles to the north—the J.J. Pickle Research Campus. Several facilities which may be of special interest are located there, in particular: Applied Research Laboratories (ARL)—a defense-oriented contract research laboratory—and the Nuclear Engineering Teaching Laboratory.

1.3 On Being a Graduate Student

You are about to start on your program of graduate education. In many ways, this is an extension of the undergraduate experience. Also, it will be very different. The first big difference is that, in almost all cases, you will be wearing two hats—as a student and as an employee generally working in an instructional or research situation. For most of you the "employee working in an instructional or research situation" hat may be new. It also turns out that the student hat is probably more different than you may anticipate. Discussions with experienced graduate students are a good idea but remember that the grapevine is not always the most reliable source of information. If the issue is important to you, you should refer to this *Handbook* or ask the Graduate Program Administrator/Coordinator, Matthew Ervin (see: Section 2.2.3). Here we will review some general principles that should be helpful. Keep in mind that all people are unique and the following is only a general guide.

As a graduate student, in general we assume, that you are here to pursue a Ph.D. There are a few students who enter with the intention of ending their graduate education with a master's degree but that is a rarity. A fair fraction of students start with the intention of pursuing the Ph.D. but choose—usually for personal reasons—to end their studies with an M.A. Despite this reality, the University considers you to be a Master's candidate until you qualify for Ph.D. Candidacy. The process of Qualification demarks a major threshold in your academic program (Section 3.3.2 discusses the requirements). In a sense, your academic life in the program falls into two general categories: pre- and post-Qualification. Prior to qualifying, you generally take courses and begin to think about your subfield of specialization. This 'thinking' could be done in the form of working in a lab part-time, usually without support other than a TA position. Post-Qualification, you work on your dissertation and take a few highly-specialized courses in your field of interest or perhaps some advanced course outside your subfield—a requirement of The Graduate School and the program. You will generally be supported as a Graduate Research Assistant (GRA) but in some cases students continue as TAs or AIs for most of their graduate education.

Prior to Qualification, which must be accomplished in two years and a semester, you take required Core Courses together with a few Advanced Courses (see: Section 3.3.3). In all cases, expect that the course work will be much greater than that which you have experienced in any undergraduate course previously. This is especially true of the Core Courses. In fact, the full-time load of at least nine (9) credit hours, is generally met for incoming graduate students with a registration in one or two Core Courses. The remainder of the nine-hour registration is generally ‘softer’ courses such as Graduate Colloquy or a seminar course. All TAs are required to take 398T ”Supervised Teaching in Physics” (see: Section 3.3.4) in their first year. In addition, you will probably find the format and nature of the graduate courses different. The homework assignments will be quite difficult and time-consuming. There may be take-home exams. Generally, you are on your honor to complete these in a fashion that is consistent with the norms of the University’s Policy on Academic Honesty. Collusion or copying of answers from other students or from collections of problem solutions is inappropriate and, if proved, can lead to penalties including dismissal. Do your own work. In some cases, an instructor may encourage group work. Be sure to clarify with the instructor the level of collaboration that is allowed. For a helpful review of strategies for avoiding plagiarizing, see the document, “UT Austin Academic Integrity: A Brief Guide to Avoiding Plagiarism”. Additionally, the UT General Libraries maintains a tutorial on plagiarism here, and the Office of the Dean of Students has a website on Academic Integrity here.

Remember that almost all graduate students are employed for twenty hours per week in either a teaching or research position. The combination of classes and significant employment will consume most of your time.

During this pre-Qualification period, you will have to pick a research area and a faculty supervisor. There are courses such as the “Introduction to Graduate Research” seminar (see: Section 3.3.2) which are designed to help you in choosing. In addition, there are opportunities to work as a GRA in labs in the summer. This is particularly valuable for students in the first and second summer as a means of support but also because it introduces you to the research area of the lab. Students should seek such positions early in the Spring Term. In addition, faculty will assist students in finding summer appointments at National Laboratories such as Sandia, Los Alamos, Oak Ridge, and Livermore. Regardless, the selection of the research project and faculty supervisor is among the most important that a student can make and should be done with great care.

After qualifying, academic life is dominated by dissertation research. In a formal process the student petitions for Ph.D. Candidacy (see: Section 3.3.2). This is the step that establishes the student's Program of Work toward a Ph.D. and—more specifically—is the first formal step in preparing a dissertation. The dissertation topic is one jointly agreed upon by the student and his or her faculty supervisor who also serves as chair of the student's Ph.D. Committee that monitors the progress of the student's work. In most cases, there is support as a GRA for work on the dissertation topic—the faculty supervisor of the dissertation often will have a grant to support students' work. The preparation of a dissertation takes from three (3) to five (5) years beyond the Qualifier depending on a variety of factors.

After the student is admitted to Candidacy the nine-hours of registration are generally in dissertation courses, PHY X99, where X is 3, 6 or 9 (see: Section 3.3.3) depending on whether other courses are taken.

Now, having said all of the foregoing, we need to enter a caveat. The completion of any curriculum + research program does not guarantee a lifetime of gainful employment. Curricula have always represented a minimum-level of knowledge, a starting point. It is to that starting point that one must add the things beyond the bare minimum that will lead to your success in life. Some of these things may be additional classes, others may be workshops, and still others may involve individual study and/or growth of a more personal nature. We can help you find your individual way, and provide you with many resources you need to get there, but we cannot carry you over the finish line.

Finally, there is an excellent paper formerly housed on the Indiana University website by Marie desJardins, originally entitled, "How To Be A Good Graduate Student/Advisor", while it is not the final word on being a graduate student, it is an excellent place to begin. You are strongly encouraged to make yourself familiar with this work. It is included in your Orientation Packet and is also available in several versions, here. Moreover, you need to understand that to succeed in research requires the development of a new set of skills, including: imagination, asking question of your advisors, interacting with other people, etc. An article entitled, "So You Think You Have Skills," which appeared in *Science* (September 2012) has some wisdom on this aspect of graduate study. As does this article, by our own Nobel Laureate, the late Steven Weinberg, entitled, "Four Golden Lessons," which appeared in *Nature* (November 2003)—it goes to the essence of being a good researcher.

1.4 Student Responsibility

While the University faculty and staff members give students academic advice and assistance, each student is expected to take responsibility for his or her education and personal development. The student must know and abide by the academic and disciplinary policies given in the *Graduate Catalog* and in *General Information*, including rules governing quantity of work, the standard of work required to continue in the University, warning status and scholastic dismissal, and enforced withdrawal. The student must also know and meet the requirements of his or her degree program; must enroll in courses appropriate to the program; must meet prerequisites and take courses in the proper sequence to ensure orderly and timely progress; and must seek advice about degree requirements and other University policies when necessary.

The student must give correct local and permanent postal addresses, telephone numbers, and e-mail address to the Office of the Registrar and must notify this office immediately of any changes. Official correspondence is sent to the postal or e-mail address last given to the Registrar; if the student has failed to correct this address, he or she will not be relieved of responsibility on the grounds that the correspondence was not delivered. Students may update their addresses and telephone numbers online, here. UT System *requires* everyone (including graduate students) to use a UT mail account for all UT business.

The student must register by the deadlines given in the *Course Schedule* and must verify his or her schedule of classes each Term, must see that necessary corrections are made, and must keep documentation of all schedule changes and other transactions.

Students should familiarize themselves with the following sources of information:

University catalogs. The catalog of the University is the document of authority for all students. Any academic unit may issue additional or more specific information that is consistent with approved policy. However, the information in the catalog supersedes that issued by any other unit if there is a conflict between the two. The University reserves the right to change the requirements given in the catalog at any time.

The catalog consists of five issues: the *Undergraduate Catalog*, the *Graduate Catalog*, the *Law School Catalog*, the *Medical School Catalog*, and *General Information*. They are published online by the Office of the Registrar at http://registrar.utexas.edu/catalogs.

The *Undergraduate Catalog* is published in August of even-numbered years; the *Graduate Catalog* is published in August of odd-numbered years; the *Law School Catalog* is published in February of even-numbered years; the *Medical School Catalog* is published annually. These issues contain regulations and degree requirements that apply to undergraduate, graduate, School of Law, and School of Medicine students. Regulations are valid only for the academic years indicated by the dates in the title of each publication; for an explanation of the period for which degree requirements are valid, see the section "Graduation under a Particular Catalog" in each issue. The lists of available course offerings for each academic unit are correct at the time of publication but are subject to change. They are superseded by course offerings published each semester and summer session in the *Course Schedule*.

General Information, published every August, contains current and historical information about the University's organization and physical facilities. It gives important information about academic policies and procedures that apply to all students for the academic year indicated in the title of the publication. It includes the official academic calendar, admission procedures and residence requirements, information about tuition and fees, and policies on quantity of work, grades and the grade point average, credit by examination and correspondence, adding and dropping courses, withdrawal from the University, and scholastic probation and dismissal. *General Information* is meant to be used along with each of the other issues; each student must be familiar with the regulations given there and with those given in the issue that covers his or her degree program. It also describes the services of the Division of Student Affairs and the libraries and research facilities that support the University's academic programs.

The *Graduate Catalog* gives information about degrees offered by The Graduate School. It describes academic policies and procedures that apply to graduate students and lists courses and members of Graduate Studies Committees.

The Course Schedule. The *Course Schedule* is published by the Office of the Registrar and is available before registration for each semester and summer session at http://registrar.utexas.edu/schedules/. The *Course Schedule* includes information about registration procedures; times, locations, instructors, prerequisites, and special fees of classes offered; and advising locations.

The University Directory. The University directory gives physical and e-mail addresses and telephone numbers of students and faculty and staff members. Current directory information is available online at https://directory.utexas.edu/.

University website. The address for the University's home page is http://www.utexas.edu/. In addition to the publications described above, the website includes sites maintained by departments, colleges, graduate programs, museums, libraries, research units, and student-service offices.

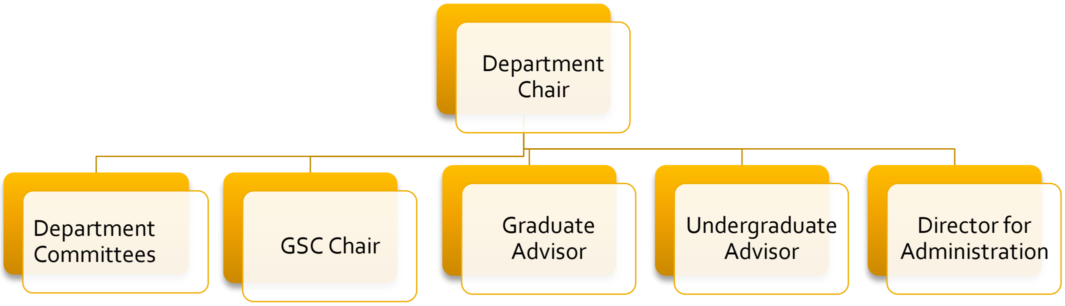
The Office of Graduate Studies is the central source of information for graduate students. Doctoral and master's degree evaluators provide information about procedures for submission of reports, theses, dissertations, and treatises, and the student services section assists with registration and related matters. Information for both prospective and current students is available at https://gradschool.utexas.edu/.

Graduate Advisors and Graduate Program Coordinator(s). The Graduate Advisor for each program is a faculty member designated to advise students and represent The Graduate School in matters pertaining to graduate study. He or she provides information about the program, including admission and degree requirements, and about fellowships, teaching assistantships, and research assistantships. The Graduate Program Coordinator, a staff member who assists the Graduate Advisor and other faculty members in the administration of the program, also provides services to students.

Chapter 2: Organization and Operation

2.1 Organization of the Department

The Department is managed by a Department Chair, three Associate Chairs, and an Assistant Director for Administration. The Department Chair is appointed by the Dean of the College of Natural Sciences for a four-year term, upon consultation with The Budget Council; the Associate Chairs are appointed by the Department Chair.



Presently, there are 13 faculty committees ranging from the Budget Council Advisory Committee to the Undergraduate Affairs Committee. These committees have a varying degree of importance in and impact on your life as a graduate student in the Department. Those which are of most importance to you are described in Sections 2.1.2, 2.1.3, and 2.1.4 below. All of the committees are listed in the next section.

2.1.1 Department Committees

Reporting to the Department Chair:

APS Bridge Program Committee
APS IDEA & Climate Committee
Budget Council Advisory Committee (BCAC)[2]
Colloquium Committee
Nominations Committee
Outreach Committee
Teaching Excellence Committee

Reporting to the Associate Chair for Graduate Education (GSC Chair):

Graduate Student Recruitment Committee
Graduate Studies Subcommittee
Graduate Welfare Committee

---

[2] The BCAC and Faculty Recruitment Committee report to the BC (Budget Council) as well as to the Department Chair.

Reporting to the Associate Chair for Undergraduate Education:

Undergraduate Affairs Committee
Undergraduate Advising Committee
Foundational Course Affairs Committee

2.1.2 The Graduate Studies Committee and Sub-Committee (GSC & GSSC)

The Graduate Studies Committee consists of the faculty of the Physics Department as well as a few faculty from outside the Department who are deemed qualified to supervise the dissertations of Physics students; the GSC is officially in charge of graduate academic affairs.

Since the GSC is so large, The Graduate Studies Sub-Committee (GSSC), which has one member from each research area, has been given many of the policy-making powers of the GSC. Waivers of requirements or extensions and transfers of credit are acted on by the GSSC in response to graduate student petitions. The Chair of both the GSC and the GSSC in Physics is Professor Andreas Karch, who is responsible for each student's registration, records, and progress. She is the Department's representative to the Vice-Provost and Dean of Graduate Studies. To communicate with the GSSC, contact the Graduate Program Administrator/Coordinator, Matthew Ervin (see: Section 2.2.3).

2.1.3 The Graduate Welfare Committee (GWC)

The Graduate Welfare Committee supervises the welfare of the Department's graduate students; it is currently chaired by Professor Peter Onyisi. Any issues of importance to graduate students as they are related to the nature of their employment, benefits, or academic program can be brought to the GWC. There are Graduate Student Representatives on the GWC and they are your best contact. A list of the students currently working with the Committee is available on the GWC website listed below. The students maintain a Grad Issues website and you may email them at: gradreps@physics.utexas.edu.

2.1.4 The Graduate Recruitment Committee (GRC)

The Graduate Recruitment Committee is currently chaired by Professor Deirdre Shoemaker, and is tasked with recruiting new graduate students. This Committee is also responsible for preparing for the Annual Graduate Recruitment Open House held each spring. Students' assistance with Recruitment Week is a great help.

2.2 Administrative Offices

Department of Physics administrative teams are located in the PMA 5.200 suite. Machine and Cryogenic Shops are located on the third floor of PMA. The following is a list of responsibilities for each broad class of administrative tasks and the people who perform them. There are often problems or questions that do not fit neatly into a particular niche. For cases like these, it is most efficient to ask either Matthew Ervin in the Graduate Office (PMA 7.326) or Eric Hayes Patkowski in the Department's Main Office (PMA 5.208). The Physics Department's website is also a good source of information on the subjects covered—as well as those not covered—in this section, especially the Administration Area.

2.2.1 Chair's Office

The Department Chair, Pablo Laguna, is responsible for teaching assignments. The Chair generally delegates authority for the assignment of TAs/AIs to the Graduate Program Administrator, who works under the Graduate Advisor and the GSSC Chair. The Department Chair is the final authority on departmental administration. Additionally, the role of the Department Chair includes oversight of the following: department governance; faculty recruitment/promotion & tenure/evaluation; program development; student and faculty retention; communication within the department, with university offices, and with external audiences; management of finances and staff; and facility management of spaces.

- **Department Chair**
  Professor Pablo Laguna, PMA 5.226, pablo.laguna@austin.utexas.edu
- **Director for Administration**
  John Lakavage, PMA 5.216, jlakavage@austin.utexas.edu
- **Assistant Manager**
  Cheryl Contreras, PMA 5.214, cheryl.contreras@austin.utexas.edu
- **Senior Events Program Coordinator**

Carolyn M. Dockery, PMA 5.228, Carolyn.Dockery@austin.utexas.edu

2.2.2 Appointments

There are generally two types of appointments for graduate students in the Department: *teaching appointments* with titles such as Teaching Assistant (TA) or Assistant Instructor (AI), and *research appointments* with the most common title in this group being Graduate Research Assistant (GRA). (Please, bear in mind that the University itself makes a series of more complex distinctions). Details of the job duties associated with these titles will be discussed elsewhere (see: Section 4.2). The Physics Human Resource Team processes all department assignments in Workday. Questions regarding the nature of your assignment or tuition should be directed to Matthew Ervin. Questions related to pay or benefits should be sent to hr@physics.utexas.edu. A great deal of useful information regarding Human Resources, Benefits, and Pay is located on our website under Physics Human Resources Guidance.

- **TA Assignments, Explaining Tuition**
  Matthew Ervin, Graduate Program Administrator, PMA 7.326, graduate@physics.utexas.edu
- **Processing Tuition Payments**
  Chris Carpenter, Financial Manager, financials@physics.utexas.edu
- **Human Resources, Assignment Processing, Benefits Questions**
  Kathryn A. Riley, Sr. Human Resource Coordinator
  Tonya East, Human Resource Representative
  Email: hr@physics.utexas.edu

2.2.3 Graduate Affairs Office

For all matters concerning graduate students, the Department of Physics' Graduate Affairs Office is the first place to go. The Graduate Studies Committee Chair, Professor Andreas Karch, is in charge of the graduate program's curriculum, evaluating student progress to degree, etc. The Graduate Advisor, Professor Richard Fitzpatrick, advises all graduate students on their courses and degree requirements. The Graduate Program Administrator/Coordinator serves as support staff. All graduate students not yet admitted to Ph.D. Candidacy (see: Section 3.3.2) and students with special programs or requirements must be advised before registering for any courses every Term.

- **GSC Chair & Associate Chair for Graduate Education**
  Professor Andreas Karch, PMA 9.320, Andreas.Karch@austin.utexas.edu
- **Graduate Advisor**
  Professor Richard Fitzpatrick, PMA 11.226, rfitzp@utexas.edu
- **Assistance Graduate Advisor**
  Professor John Keto, PMA 10.315, keto@physics.utexas.edu
- **Graduate Program Administrator/Coordinator**
  Matthew Ervin, Graduate Program Administrator, PMA 7.326, graduate@physics.utexas.edu

2.2.4 Undergraduate Affairs Office

The Undergraduate Affairs Office plays a similar role to that of the Graduate Affairs Office. Course scheduling and room reservations are coordinated here. Textbooks for faculty and TA's use in their classes are available here. Undergraduate students with a scheduling problem should be referred here. All course grades, graduate and undergraduate, are handled here. All teaching personnel should supply this office with their office hours (see: Section 5.5). The Course Instructor Surveys for all Physics courses are ordered by this office as well.

- **Undergraduate Advisor & Associate Chair for Undergraduate Education**
  Professor Greg O. Sitz, PMA 10.313, gositz@physics.utexas.edu
- **Associate Chair for Foundational Physics Education**
  Professor John Markert, PMA 13.314, markert@physics.utexas.edu
- **Undergraduate Program Coordinators**
  Jonathan Pereira and Melva J. Harbin, Academic Program Coordinators, PMA 7.328, ugaffairs@physics.utexas.edu

2.2.5 Purchasing

The purchasing of materials and supplies at the University is handled by the Department's Purchasing Group. In the case that you are required to purchase lab equipment or class supplies for a class in which you assist, process your request for class supplies through the Laboratory & Supply Office (Section 2.3.5) and all other purchases for departmental purposes through the Purchasing Office by utilizing the Purchasing Request System. Graduate students should have approval from their supervising faculty member when requesting purchases on grant accounts. A great deal of useful information regarding Purchasing is located on our website under Physics Purchasing and Payment Guidance; all requests are made through the Purchasing Request System.

- **Purchasing & Payment Processing Staff**
  Brant Jangard, Senior Procurement Officer
  Gloria Martinez, Departmental Buyer
  Email: purchasing@physics.utexas.edu

2.2.6 Travel

All travel for official departmental & university business must be submitted utilizing the Request for Travel Authorization (RTA) **prior** to traveling. All travel while employed in any teaching or research title, whether for personal or for official business, must have prior approval. This includes travel during the intersessions and travel paid by any funding source. You must retain copies of **itemized** receipts for reimbursement. You are responsible for scanning all receipts and uploading them into the Travel Reimbursement Request System upon return from travel. All travelers are responsible for following the procedures found on the Physics Travel website.

- **Travel & Payment Processing Staff**
  Dale R. Campbell, Accountant I
  Gloria Martinez, Departmental Buyer
  Email: travel@physics.utexas.edu

2.2.7 Mail & Package Delivery

U.S. mail, campus mail, and packages are delivered to the Department daily. The correct mailing address is:

Name of Recipient
Department of Physics
The University of Texas at Austin
2515 Speedway, C1600
Austin, TX 78712–1192

This address also works for UPS, Federal Express, and Airborne and may require an additional physical building address of 2515 Speedway. The address for campus mail is:

Name of Recipient
Department of Physics
Campus Mail C1600

Graduate student mailboxes are located in the Graduate Lounge. Package delivery and pickup is in PMA 5.202C. Campus mail and U.S. mail that is processed by the University is for *official business only*. Personal mail and packages of all kinds should be sent to your local home address. Personal mail cannot be sent through University mail but must be placed in mailboxes located on the street outside the building (on Dean Keeton Street).

- **Mail & Package Delivery**
  Eric Hayes Patkowski, Administrative Associate, PMA 5.204, PhysicsABS@physics.utexas.edu

2.2.8 Office Assignments

Although space is limited, all students have office space provided either by their Research Supervisor or by the Department. In almost all cases, graduate students share an office space and are assigned a desk. In some cases, graduate students share a desk. Assignments are made by Ben Costello in the Laboratory and Supply Office on the 8th floor of PMA (see Section 2.3.5).

- **Office Assignments**

Ben Costello, Project Specialist, PMA 8.306, costello@utexas.edu

2.2.9 Clerical, Fax, and Copying Services

Standard office support such as test preparation, special typing, fax machine (512) 471-9637, copying facilities, and web support are provided by the Department's Main Office. Allow at least two days for copying of quizzes during the Term and at least five days (or more) for copying of final exams and mid-terms. Copying machines are available and can be used for official purposes. Preparation of the calendar of events is also carried out in this office. All events for the calendar should be submitted to Eric Hayes Patkowski by Thursday of the week prior to the event. Room reservations for events should be made through Eric as soon as you become aware of the need. Events scheduled by Eric include: qualifying exams, dissertation defenses, and guest lectures.

- **Copying, Web Support, & Calendar Coordination**
  Eric Hayes Patkowski, Administrative Associate, PMA 5.208, PhysicsABS@physics.utexas.edu

2.3 Research Support (Facilities, Resources, and Shops)

2.3.1 General Overview of Special Equipment and Facilities for Research

Modern facilities for graduate study and research include a large-scale cryogenic laboratory; nuclear magnetic and electron paramagnetic resonance laboratories; extensive facilities for tunneling and force microscopy and nanostructure characterization, SQUID magnetometry, and electron spectroscopy; well-equipped laboratories in optical spectroscopy, quantum optics, femtosecond spectroscopy and diagnostics, and electron-atom and surface scattering; and facilities including two table-top 100-terawatt lasers for strong-field physics, studies of wakefield electron acceleration, and a pulsed 50T magnetic field for studies of laser heating of magnetized plasmas, and two petawatt lasers (one Ti-sapphire providing 30J in 30fs and another glass laser at 200J in 150fs). The department is a member of LASER NET, a DOE supported consortium of laser laboratories for high energy density plasma physics. The Center for Gravitational Physics conducts research in conjunction with several Gravitational Wave Observatories (ground-based US LIGO, Italian/French Virgo, Japanese Kagra, and the space-based ESA/NASA mission LISA). Plasma physics experiments are conducted at the major national tokamaks in Boston and San Diego. Experiments in high-energy heavy ion nuclear and particle physics are conducted at large accelerator facilities such as the large hadron collider and ALICE at CERN, the STAR detector on the RHIC collider at Brookhaven National Lab, neutrino production at FERMI National Laboratory (Illinois), and Germany's Deutsches Electron Synchrotron.

Theoretical work in plasma physics, condensed matter physics, acoustics, nonlinear dynamics, relativity, astrophysics, statistical mechanics, and particle theory is conducted within the Department of Physics.

Students have access to excellent computer and library facilities, including computers at TACC including Ranger, a multiprocessor computer at 504 Tflops and Stampede which provides 3.5 Pflops in a computer cluster and 7+ Pflops of coprocessor support.

The Department maintains and staffs a machine shop, student workshop, low-temperature and high-vacuum shop (all described in Section 2.3.2, below), and an electronics design and fabrication shop (See Section 2.3.3).

2.3.2 The Mechanical Section

Machine Shop. The Physics Machine Shop provides support for faculty and students when machined and welded items are needed. The shop has the capability to produce almost any machinable item for materials such as stainless, copper, brass, aluminum and plastics. There are also computer-controlled machine capabilities to produce the more complicated pieces. The shop location is PMA 3.206 and students, faculty, and staff can submit designs for construction to the shop supervisor in PMA 3.205.

- **Machine Shop**
  Kenny Schneider, Shops Supervisor, PMA 3.205

Cryogenics Shop. Labs needing liquid nitrogen and helium along with compressed gases nitrogen, argon, carbon dioxide, hydrogen and helium can purchase these items here. Helium leak detection available for vacuum chambers and components requiring UHV. Vacuum pumps needing maintenance or repair are also handled here. Other services include metal evaporation. There are two technical staff members in the cryogenics shop PMA 3.104 to assist you.

- **Cryogenics Shop**
  Kenny Schneider, Shops Supervisor, PMA 3.205

Student Machine Shop. Students wanting to machine parts for their instruments can do so in the student shop (PMA 3.210). There is equipment available to machine most items along with a foot shear, pan break, punch press, roll, bead blaster and oxy-acetylene for soldering. Safety is the main concern for students operating equipment. A shop safety manual along with shop rules must be read and understood before operating equipment, see Appendix A and B. Danny Boyd, the student shop supervisor, is available to help with design and operation of machinery. Students supply their own tooling.

- **Student Machine Shop**
  Danny Boyd, Student Shop Supervisor, PMA 3.210

2.3.3 Electronics

Electronics Repair. The UT Physics Department Electronics Shop is responsible for the maintenance and repair of all electronic equipment in the Department with the exception of computers. Computer repair and maintenance is handled by the CNS [Computer] Help Desk, Section 2.3.3. In addition, if repair is not economical or prudent due to obsolescence, lack of documentation or unavailability of replacement parts, the shop will assist in the replacement of equipment. The shop stocks test instruments and some replacement parts for use by faculty and students in their limited storage space.

- **Electronics Design, Test, and Repair**
  [For more information see Kenny Schneider, Shops Supervisor, PMA 3.205].

2.3.4 CNS ITS Help Desk

The College of Natural Sciences Office of Information Technology (CNS OIT) provides computer support for faculty, staff, and graduate students via the CNS Help Desk. The computer support includes networking within the physics domain, departmental administrative staff computers, computational machines, research group's computers as requested, provisioning of faculty and staff e-mail services, and other associated computer related services. The College supports the computer-based homework and testing system called Quest. In Appendix C, are the frequently asked questions associated with the use of the services provided. Also visit the CNS OIT website at https://cns.utexas.edu/information-technology or contact the help desk at https://cns.utexas.edu/information-technology/help-desk.

2.3.5 Laboratory & General Supplies

Supplies for classrooms and laboratories, including lab manuals and grade books, are available in the Laboratory Supplies Room. All emergencies should be reported here: Fire extinguishers, first aid kits, a telephone, quick action, and assistance are available here. Students are expected to provide their own notebooks, lab manuals, and other expendable supplies such as film. These are available at the University Co-Op on Guadalupe Street or elsewhere. Other equipment is checked out by students from the Laboratories Supply Room.

- **Laboratory & General Supplies**
  Ben Costello, Laboratory Supplies Shop Supervisor, PMA 8.306

2.3.6 Lecture Demonstrations

The Physics Lecture Demonstrations Office provides demonstration support for introductory Physics courses taught in Painter Hall. It provides web-based demonstration ordering. It utilizes the Physics Instructional Resource Association (PIRA) classification scheme. This office has also been the source of the world famous Physics Circus (begun in 1978), and the Traveling Physics Circus (which received the first ever College of Natural Sciences Outreach Award).

- **Lecture Demonstrations**
  Aida Torabi, Lecture Demonstrations Supervisor, PAI 2.48A

2.4 Centers and Research Groups

Research at the Department of Physics is organized around broadly identified research groupings and Centers. Centers are administrative units generally with support staff. The following is a general description of the activities of the research being done in each group or Center. Within each group or Center, details of the research interests of individual faculty can be found by visiting the Department of Physics web page at https://ph.utexas.edu/research.

2.4.1 Atomic, Molecular, and Optical Physics

Atomic, Molecular, and Optical (AMO) Physics deals with the structure and dynamics of atoms and molecules and their interactions with the electromagnetic field. Research in AMO physics extends from the regime of extremely low temperature gases to the other extreme of high-field matter light interactions, spanning approximately fifteen orders of magnitude in energy. Current work in the AMO group is in the areas of ultra-cold atoms and Bose-Einstein condensates, atom optics, quantum control, quantum optics, scattering of molecules from surfaces, neutrino rest mass from beta decay, molecular beam slowing, formation and study of nano-particles, molecular scattering and sonoluminescence, tabletop accelerators, laser fusion and relativistic shock waves. The research is inherently multi-disciplinary, and members of the AMO group have developed close collaborations with faculty in condensed matter physics, nonlinear dynamics, high energy physics, and plasma physics, and even beyond the physics department.

The group currently has eight faculty, five post-docs, and approximately thirty graduate students, and runs an active seminar series with coffee and donuts.

2.4.2 Condensed Matter

Condensed matter physics is mainly concerned with the properties of matter in the solid state. Much modern research focuses on the properties of artificial materials in which atoms are put together in new ways either at the atomic level or on nanometer length scales. Many properties of solids are associated with the quantum motion of electrons from atom to atom. Many of the most robust and dramatic properties are due to the grouping of many electrons into a rigid macroscopic degree of freedom that occurs, for example, in superconductors and magnets.

Problems currently being examined include the electrical transport proper-ties of carbon nanotube 'quantum wires', transport and magnetic properties of thin films of ferromagnets, magnetic properties of materials in non-equilibrium structures, magnetization reversal in nanometer scale magnets, scanning electron microscopy, high-sensitivity magnetometry and coherence effects in light-absorption in semiconductors with self-assembled quantum dots.

The group has eight faculty, six postdoctoral fellows, and approximately thirty graduate students and runs two active seminar series.

2.4.3 Experimental High Energy Physics (Center for Particles and Fields [CFP])

Both experimental research in particle physics is included in the work done by members of the Center for Particles and Fields. On the experimental side, the program includes cutting-edge experiments in four areas: proton-proton collisions at the highest available energy at the CERN Large Hadron Collider (LHC), relativistic heavy ion collisions at the CERN LHC, neutrino experiments at Fermilab and in an underground laboratory in France, and ultra-precise measurement of the anomalous magnetic moment of the muon. These experiments explore the fundamental properties of quarks and leptons and of the interactions between them.

The group has seven faculty members, ten research associates, approximately twelve graduate students, several undergraduate students, and a laboratory manager.

2.4.4 Nonlinear Dynamics and Biophysics (Center for Nonlinear Dynamics [CNLD])

Research in the Center for Nonlinear Dynamics concerns complex dynamics, instabilities, chaos, and pattern formation in systems driven far from thermodynamic equilibrium. Diverse systems exhibit remarkably similar, sometimes even universal behavior. Studies in the Center of solid, fluid, chemical, granular, low-temperature gas, chemical, and biological systems involve laboratory experiments, numerical simulations, and theoretical analyses. Problems currently being examined include instabilities at fluid interfaces, dynamics of fluidized beds, spatial patterns and shock waves in granular flows, pattern formation in chemical reaction-diffusion systems, internal waves, crack propagation in crystalline and amorphous materials, student flows, quantum chaos with ultra-cold atoms, nonlinear dynamics of Bose condensates, general methods of laser cooling, biopolymer mechanics, Brownian motion, cell mechanics, molecular motors, intracellular transport, super-resolution microscopy, biofilm formation, bacterial competition and biological membranes.

The group includes five faculty members, four postdoctoral research associates, about thirty graduate students, and a dozen undergraduates. The nonlinear dynamics group meets together on Mondays and

Wednesdays at 1 p.m.; on Mondays a seminar is presented, usually by a visitor, and on Wednesdays a student presents his or her research. These meetings are open to all and are listed on http://chaos.utexas.edu/talks.

2.4.5 Nuclear Physics (Center for Particles and Fields [CFP])

Our Relativistic Heavy Ion Physics (RHIP) group conducts experimental research using the STAR (Solenoidal Tracker At RHIC) detector at The Relativistic Heavy Ion Collider (RHIC) of the Brookhaven National Laboratory in New York. RHIC provides colliding beams of Au nuclei, each with kinetic energy of 100 GeV /nucleon, so that the total center-of-momentum kinetic energy is 40 TeV! A new generation of exciting and fundamental experiments are underway at RHIC.

Significant components of the STAR physics program include: a search for (1) a *color-deconfined state of matter*, (2) *evidence of chiral symmetry restoration*, and (3) the *study of matter as it may have existed during the early moments of the Universe*. The program is very interdisciplinary and spans cosmology, astrophysics, particle physics, nuclear physics, relativity, computer science, and mathematical physics. To learn more about STAR and RHIC go to http://www.rhip.utexas.edu.

Presently the group consists of one faculty member, three senior research scientists, one engineer, and six graduate students.

2.4.6 Plasma Physics (Institute for Fusion Studies [IFS])

The Institute for Fusion Studies is a national center of excellence engaged in both theoretical and experimental research in a broad spectrum of topics within the field of plasma physics.

Theory Group: The theory group conducts research in theoretical plasma physics and fusion energy science, with studies of magnetic plasma confinement, basic plasma processes, and related issues. Particular emphasis is placed on fundamental issues of long-range significance. The theory research being pursued at IFS is diverse, including plasma macro-stability, plasma turbulence and anomalous transport, energetic particle physics, numerical simulations, plasma-boundary interactions, and nonlinear plasma dynamics.

Experimental Group: The experimental group pursues research in transport and turbulence in magnetically confined plasmas and develops instrumentation to support this research. In one major project, we conduct experiments on the D-IIID tokamak in San Diego to improve understanding of electron thermal transport, turbulence, effects of magnetic islands, and plasma absorption of radio frequency waves. In a second project, the IFS is leading the US development of instrumentation for measurement of electron thermal energy in ITER, the international tokamak that will be the first device to produce net energy. Our research is ramping up at EAST, the world's largest superconducting tokamak and located in Hefei, China where we are primarily concerned with electron energy transport and direct measurement of the current density profile, which is a critical confinement parameter. In all of these, we emphasize theory/experiment comparison and theory motivated experiments. These projects offer numerous, excellent dissertation topics and opportunities for research assistantships. The experimental group cooperates closely with the theory group in research, seminars, course offerings, and administrative support.

The IFS also serves as a center for fusion science information exchange, nationally and internationally, by arranging visitor programs, courses, conferences and workshops. As part of this effort, it is the principal site in the United States for the exchange activities of the US-Japan Joint Institute for Fusion Theory.

The IFS has an extensive academic program, involving student education (course work, seminars, dissertation research) and postdoctoral training.

The present staff of the Institute comprises approximately 20 Ph.D. scientists (including physics faculty, research scientists, and postdoctoral fellows) and approximately 15 graduate students, in addition to computational staff and administrative personnel. The IFS actively supports numerous research collaborations with laboratories and universities in the US and other countries. IFS scientists regularly collaborate with other Physics Department faculty as well as scientists in other departments at the University.

2.4.7 Complex Quantum Systems (CQS)

Visit the center's website for more information on the Center for Complex Quantum Systems http://order.ph.utexas.edu/. The group holds a weekly seminar. It has nineteen faculty, seven postdoctoral fellows, and approximately fifteen graduate students.

2.4.8 Weinberg Theory Group

The Weinberg Theory Group is an Organized Research Unit engaged in a broad program of research in theoretical physics. For an overview of currently involved faculty & students please visit their website at: http://zippy.ph.utexas.edu/directory.html.

The work done by the group ranges from physics at the most fundamental level to computations relevant to current observations in particle physics, cosmology and gravitational waves. This research seeks a deeper understanding of the various challenges confronting Theoretical Physics. These challenges range from combining quantum mechanics and gravity including cosmology, to the phenomenology of particle physics. Making progress in these areas will require a many-pronged approach, using insight gained from existing concepts like holography, developing a deeper mathematical understanding including new tools in field theory and string theory, building models beyond the Standard Model in order to address open questions in particle physics, and making proposals to improve the sensitivity of experiments to new physics. The recent detections of gravitational waves have revealed an invisible part of the universe that tests our understanding of black hole physics, neutron starts and general relativity. Members of the group are actively involved in the analysis of this data.

The Theory Group has six weekly talks and all students are welcome to attend. The *Phenomenology Meeting* covers topics of interest to particle physics phenomenologists. The *Theory Group Seminar* features invited researchers from other universities presenting technical talks. The *Geometry and String Theory Seminar*, a collaboration between the Theory Group and Mathematics Department, focuses on subjects that interest both string theorists and mathematicians. The *Brown Bag Seminar* consists of informal talks on current research within the Theory Group. The *Holography Journal Club* meets to discuss recent papers related to holography.

2.4.9 Center for High Energy–Density Science (CHEDS)

High energy density (HED) science is the study of systems of matter and radiation at high temperatures (typically millions of degrees) and pressures (over a million atmospheres). Most of the systems of interest are dense plasmas requiring theoretical treatment beyond traditional plasma physics, and they are often extremely relativistic. Topics of study include laser wakefield electron acceleration, ion and proton acceleration from laser-matter interaction, high neutron flux production, efficient electron-positron pair production, nuclear fusion from gas clusters, extreme ultraviolet light production and spectroscopy, equations-of-state of materials at conditions found in planetary cores and stars, laboratory astrophysics, and extreme field physics, specifically the study of quantum processes in strong classical fields as found in black holes, hadron collisions or ultra-intense laser fields. Our research includes experimental studies at several ultrahigh intensity laser systems, numerical studies including massively parallel simulations using supercomputers like UT's 10PFlop Stampede system and theoretical studies of strongly coupled and/or relativistic plasmas and the development of quantum field theories.

The Center for High Energy Density Science (CHEDS) (https://web2.ph.utexas.edu/~utlasers/) includes over 40 people including four faculty, several staff scientists and post-docs, and several graduate students. CHEDS works closely with the plasma physics group, especially the Institute for Fusion Studies. CHEDS has three extremely-high-peak-power laser systems that drive matter to high energy densities, including the highest peak power system in the Americas—the Texas Petawatt Laser (http://texaspetawatt.ph.utexas.edu/). A major development of a multibeam capability is underway. The TXPW laser will be combined with a longpulse (~ns) 1000 J laser. Alternatively, a high-contrast TiSapphire laser (rebuilt from Trident at Los Alamos) will be available. The longpulse laser will be used to pump an amplifier to produce an intensity of 5 pW. CHEDS resources are principally utilized for experimental and theoretical research by four groups in the Department with many external collaborators. Researchers in CHEDS frequently conduct experiments at external laser and pulsed-power facilities including Sandia, Los Alamos, and Lawrence Livermore National Laboratories.

2.4.10 Center for Gravitational Physics (CGP)

The first detection of gravitational waves in September 2015 saw the dawn of gravitational wave astronomy and a new era for gravitational physics, one driven by observations. The Center for Gravitational Physics (CGP) (cgp.ph.utexas.edu) was established to create a focal point for researchers engaged in expanding our understanding of gravitational phenomena. Research involves gravitational wave astrophysics, numerical relativity, computational astrophysics, and neutron star and black-hole physics. The CGP's mission is enhanced through collaborations with the Weinberg Theory Group, the Department of Astronomy, and the Oden Institute for Computational Science and Engineering. Members of the center are part of the LIGO Scientific Collaboration, the Cosmic Explorer Consortium, and the LISA Consortium.

The Center has a Relativity seminar in addition to the Weinberg Theory Group's talks, the Cosmology Center Journal Club and a weekly CGP meeting. Students are welcome to attend.

2.5 Other Academic Resources

2.5.1 PMA Library

The Physics-Mathematics-Astronomy (PMA) Library, located on the ground floor of PMA, is one of several branch libraries of the University's library system. The library's website, www.lib.utexas.edu. is your source for scholarly information for teaching and research. Holdings of all campus libraries are listed in the online catalog available from the website. Many of the books and journals you will need are either housed in PMA or are available online from your home or office. Other branch libraries that you may find useful are the Geology Library (GEO 302), the Life Science Library in the Tower (MAI 220), and the Chemistry Library in Welch Hall (WEL 2.132). The Main Library is the Perry Castaneda Library (PCL) on 21st and Speedway. To use resources from off campus you must set up your browser to go through the library's proxy server. The library provides bibliographic databases for all areas of study, including IN SPEC for physics. The library system matches the University in size and complexity; it is useful to visit the PMA library for an orientation tour. PMA staff welcomes the opportunity to meet all new students and help with your information needs. Please visit or email pma@lib.utexas.edu.

- **Physics-Mathematics-Astronomy Library**
  TBD

2.5.2 Center for Teaching and Learning

The primary purpose of the Faculty Innovation Center is to assist the teaching staff, both faculty and TAs, of The University of Texas at Austin in providing instruction services that improve teaching to transform learning. The Center integrates pedagogy, instructional technology, and assessment promoting effective and innovative instructional and evaluation practices in support of the University's core purpose and values.

To accomplish this mission, the Center provides both basic and advanced information about the teaching/learning process through an array of formats, including group seminars, classes, self-study materials and individual consultation on specific questions. Special services for TAs and AIs are available through the Graduate Student Instructor Program, including a newsletter, special workshops, and the Graduate Student Instructor Program. Information about these special programs is available here.

- **Center for Teaching and Learning**
- **Graduate Student Development Program**

2.5.3 Information Technology Services (ITS)

Information Technology Services provides services and support to students, staff and faculty at UT Austin. Their mission is deliver secure, responsive, high-quality, customer-oriented services and support. Their division of User Services provides user support including technical support, training and consulting services. They operate the ITS Help Desk and the Student Microcomputer Facility, and the ID center. For more information visit http://it.utexas.edu/.

2.6 Tuition Benefits

2.6.1 TA / AI & GRA Tuition Reduction Benefit

The Office of Graduate Studies administers the Tuition Reduction Program. It supports graduate students in their role as TAs and AIs. Under this program TAs and AIs receive Tuition Reduction indexed to the number of hours of their appointments.

More information about the Tuition Reduction Benefit is on The Graduate School website.

2.7 Insurance

2.7.1 Graduate Student Academic Employment Insurance

For insurance purposes, the university considers 20 – 29 hours per week to be part-time and 30+ hours per week full-time. Graduate students appointed to work in a student academic title for at least 20 hours a week for at least 4.5 months are eligible to have AcademicBlue UT Student Insurance Plan (UTSHIP) paid for by the university. Detailed information on these and other benefits are provided through Human Resource Services' Graduate Student Employee Insurance Orientation (in development). For more detailed information regarding graduate student insurance, please consult: https://hr.utexas.edu/student/student-employee-insurance-benefits.

2.7.2 Summer Insurance Coverage for TAs and AIs

If you're a Teaching Assistant or Assistant Instructor who worked 20 hours a week during the Spring Term (16 January through 31 May), you are eligible to have the university pay your insurance coverage for the summer months.

2.7.3 Summer Insurance Coverage for GRAs

If you're a Graduate Research Assistant during the summer in a benefits eligible position, the cost of insurance is paid by the university. If you're not working in a benefits-eligible position during the summer months, your insurance premium is not paid.

2.7.4 International Student Health Insurance

The University of Texas Board of Regents requires that all international students have medical insurance. For this reason, enrollment in the AcademicBlue UT Student Health Insurance Plan (UTSHIP) is automatic at the time of registration, and the cost of the policy is included in the student's tuition and fee bill.

Students may be eligible to waive the cost of the student health insurance plan if they are able to present an alternative insurance policy that meets the basic requirements of the AcademicBlue UT Health Insurance Plan. Insurance waivers are now administered online at: https://global.utexas.edu/isss/advising-services/insurance/waivers.

If the hiring department has not begun to process your assignment by the 11th class day of the Term (3rd class day during the summer), your waiver will be voided and you will be billed for the AcademicBlue UT Student Health Insurance Plan (UTSHIP).

2.8 Grievance Policy for Graduate Students

The graduate student grievance policy described below is outlined on The Graduate School's Grievances webpage: https://gradschool.utexas.edu/academics/policies/grievances.

"Graduate students have the right to seek redress of any grievance related to academic or nonacademic matters. Every effort should be made to resolve grievances informally between the student and the faculty member involved or with the assistance of the graduate adviser, Graduate Studies Committee chair, or department chair."

If the grievance cannot be resolved informally, students have recourse through the formal grievance procedures described below.

2.8.1 Academic Grievances

Many graduate student grievances are related to the student's academic responsibilities and thesis/dissertation research, and meeting the requirements for their graduate degree. (Examples include adherence to degree requirements, changes in supervising committee membership, situations involving program termination.) When these grievances cannot be resolved at the departmental level, **The Graduate School** will handle the formal grievance process, which is outlined in *The Handbook of Operating Procedures*, (Section D).

A graduate student must submit a formal written grievance to The Graduate School within 6 months of the acquisition of knowledge of the grievance. The Grad School will notify the chair of the GSC, the department chair or program director, and the dean of the college when a grievance is filed. A brief synopsis of the formal grievance process is outlined below:

1. Following the submission of a formal grievance, every effort should be made to resolve the grievance at the level of the Graduate Studies Committee Chair, in consultation, if necessary, with the GSC or an executive subcommittee of the GSC.
2. If the grievance remains unresolved, the GSC Chair has two options:
    a. If the GSC Chair believes that further review of the grievance will duplicate the review and decision already completed, then the GSC Chair will notify The Graduate School and the grievance becomes an appeal to the Graduate Dean (to be conducted beginning with step 4 below).
    b. If further review is warranted, the GSC Chair will convene an ad hoc panel of 3–5 GSC faculty members to carry out the review.
3. Findings of the ad hoc panel will be reported to the student and the GSC in writing, and copies will be retained in the files of the Chair of the GSC.
4. If the grievance still remains unresolved, the grievance may be appealed to the Vice Provost and Dean of The Graduate School who may convene an ad hoc committee to review the case.
5. The ruling of the Vice Provost and Dean of The Graduate School will be sent to the student, the GSC Chair, the Chair of the *ad hoc* panel (if any), the Graduate Advisor, the Department Chair and the college Dean.

Exception to the academic grievance policy:

Grade disputes. Grade disputes are handled according to departmental review policies (not through The Graduate School). The order of review is course instructor, graduate advisor, department chair or director of the program, and the dean of the college. The decision of the dean is final.

Associate Dean, James H. Cox, is The Grad School contact for questions/concerns about academic grievances: neikirk@mail.utexas.edu

2.8.2 Non-Academic Grievances

1. *Discrimination*: Grievances involving any form of discrimination or harassment should be filed directly with the Center for Access and Restorative Engagement, https://www.utexas.edu/care/. See *The Handbook of Operating Procedures'* Nondiscrimination Policy.
2. *Misconduct*: General guidelines indicate that an internal resolution should be pursued in cases of student or faculty/staff/supervisor misconduct. Otherwise:
    - Issues involving student misconduct should be handled through Student Judicial Services. SJS investigates alleged violations of institutional rules and implements any disciplinary action.
    - Issues involving faculty, staff or supervisor misconduct should be presented first to the department chair, then to the college Dean, and then to The Graduate School (if necessary, in that order).

2.8.3 Employment Disputes Involving TAs and AIs

Such grievances may include issues related to academic freedom of individual TAs/AIs, non-renewal of a TA or AI, withholding of salary or promotion. When there is a grievance, the teaching assistant or assistant instructor may request the informal assistance of the Faculty Grievance Committee and Hearing Panel, or a formal complaint can be filed with the chairperson of the A4 Faculty Grievance Committee. As of the 2020–2021 academic year, the Faculty Council is revising their Grievance Policy. For the most up-to-date information please see their website.

2.8.4 Employment Disputes Involving GRAs

Whenever possible, grievances should be resolved informally between the GRA and the employing faculty member. Employment disputes by GRAs should be handled according to departmental review policies. The order for review for employment disputes is:

1. The faculty member employing/supervising the GRA
2. The Graduate Advisor
3. The Department Chair or head of the hiring unit that employs the GRA
4. The dean of the college

The decision of the dean is final.

2.8.5 University Ombuds Office

The University Ombuds Office is available to students, faculty, and staff to listen to your concerns in a safe setting and confidentially discuss interpersonal difficulties, university policies, university bureaucracy, and conflict resolution techniques. They help you identify options so you can seek resolution. The Office of the Student Ombuds is always available as a resource. Please, note: The University Ombuds Office does not share information with the Department's Graduate Affairs Office (or any other departmental office). You may always feel free, at your discretion, to share any of your concerns regarding the department and our graduate program with your Graduate Administrator/Coordinator directly at any time, as well.

Chapter 3: Graduate Curriculum

3.1 Organization of the Graduate Program

The graduate program in Physics is under the control of the Graduate Studies Committee (GSC) in Physics. This Committee is composed primarily of the faculty of the department of Physics with faculty from other departments in science and engineering who have special interest in physics. This group is so large that a smaller group, the Graduate Studies Sub-Committee (GSSC) handles the policy issues (see Section 2.1.3). The chair of the GSC and GSSC is Professor Andreas Karch, the Graduate Advisor is Professor Richard Fitzpatrick and the staff person that assists them is the Graduate Program Administrator/Coordinator, Matthew Ervin (see Section 2.2.3).

Physics GSC List

(revised: 1 November 2023)

Aaronson, Scott J. (CS)
Alvarado, José R.
Andeen, Timothy R.
Baldini, Edoardo.
Boddy, Kimberly K.
Breizman, Boris.
Burby, Joshua.
Caceres, Elena
Chelikowsky, James R.
Chen, Hsin-Yu.
Coker, William Rory.
Demkov, Alexander A.
Distler, Jacques.
Ditmire, Todd.
Downer, Michael W.
Fischler, Willy.
Fitzpatrick, Richard.
Florin, Ernst-Ludwig.
Freese, Katherine.
Galitzki, Nicholas.
Gentle, Kenneth W.
Gilpin, William.
Giustino, Feliciano.
Gordon, Vernita.
Hegelich, B. Manuel.
Heinzen, Daniel J.
Hunter-Jones, Nick.
Ippoliti, Matteo.
Kaplunovsky, Vadim.
Karch, Andreas.
Keto, John. W.
Kilic, Can.
Kravitz, Scott.
Kunz, Paul D.
Laguna, Pablo.
Lai, Keji.
Landsberger, Sheldon. (ME)
Lang, Karol.
Li, Xiaoqin “Elaine”.
MacDonald, Allan H.
Marder, Michael P.
Markert, Christina.
Markert, John T.
Matzner, Richard A.
Morrison, Philip. J.
Onyisi, Peter.
Orbach, Raymond L. (ME)
Paban, Sonia.
Raizen, Mark G.
Reichl, Linda E.
Shapiro, Paul R. (Astro)
Shih, Chih-Kang “Ken”.
Shoemaker, Deirdre.
Sitz, Greg O.
Tenerani, Anna.
Thirumalai, Devarajan. (Chem)
Thomas, Deepa.
Tsoi, Maxim.
Tutuc, Emanuel. (ECE)
Yao, Zhen.
Zimmerman, Aaron.

3.2 Graduate School Academic Policies

In addition to the policies set by the GSC in Physics, there are those established by The Graduate School that affect graduate students in their pursuit of master’s and doctoral degrees. Some of the important ones are presented here. More details are available in the Bibliography located at the end of this *Handbook* (items 5 & 6).

3.2.1 Course Load

Maximum Course Load. The maximum course load for a graduate student is fifteen (15) semester hours in a long-session semester or twelve (12) semester hours in a twelve-week summer session. A heavier course load must have the recommendation of the Graduate Advisor and the approval of the graduate dean. It is permitted only under exceptional circumstances.

Full-Time Course Load. There is no minimum course load for graduate students; however, The Graduate School recognizes nine (9) semester hours during a long-session semester and three (3) hours during a Summer Term as a minimum *full-time* course load. Individual graduate programs may require more. The graduate program in Physics does not pay tuition beyond nine (9) hours in each of the Fall and Spring Terms and three (3) hours in the Summer Term.

Agencies that grant loans or provide for educational funding may establish different definitions of full-time status. The student should be familiar with the regulations of any agency to which he or she has an obligation.

Under various circumstances, graduate students must register for and must remain registered for a full-time load. The definition of a full-time load that is used in each case is given below.

> *Holders of Graduate School-administered fellowships and scholarships:* Nine hours each semester and three hours in the Summer Term (in any combination of Summer- Terms).
>
> *Graduate student academic employees:* Nine hours each semester and three hours in the summer session (in any combination of summer-session terms). A "Graduate student academic employee" is a graduate student who is also employed by the University under one of the following titles; teaching assistant, assistant instructor, graduate research assistant, academic assistant, assistant (graduate), and tutor (graduate).
>
> *Students receiving certain student loans:* Nine hours each semester and three hours in the summer session (in any combination of summer-session terms).
>
> *Students living in University housing* should consult the Division of Housing and Food Service for course-load regulations.
>
> *International students:* Nine hours each semester. An international student must consult with International Student Scholar Services and must have the written permission of his or her dean to take fewer than nine hours. No minimum load is required in the summer. Some approved courses in English as a second language do not carry University credit, but each course is considered the equivalent of a three-hour course for purposes of the course load requirement. Students may enroll in these courses with the approval of their Graduate Advisor.
>
> *International study and research:* Students may enroll in international study and research (ISR) when they conduct research or student independently abroad. A student enrolled in international study and research is considered a full-time student. Doctoral candidates may not use registration in ISR to circumvent the continuous registration requirement described on page 20. When a doctoral candidate receives approval to enroll in ISR, however, that enrollment is an acceptable substitute for registration in dissertation hours, except in the final semester, when enrollment in the dissertation writing course (x99W) is required. More information about international study and research is available from the Study Abroad Office.

3.2.2 Warning Status and Academic Dismissal

To continue in The Graduate School beyond the first semester or Summer Term, the student must maintain a graduate grade point average of at least a B (3.00). A graduate student whose grade point average falls below 3.00 at the end of any semester or Summer Term will be warned by the Office of Graduate Studies that his or her continuance in The Graduate School is in jeopardy and placed on probation. The student must attain a graduate grade point of at least 3.00 during the next semester or summer session he or she is enrolled or be subject to dismissal; during this period, the student may not drop a course or withdraw from the University without the approval of the Graduate Advisor and the Graduate Dean. Graduate students cannot be funded on student titled positions (*e.g.*, GRA, TA, or AI) while on probation.

3.2.3 The Fourteen-Semester Rule

Prior to Fall 2019, The Graduate School maintained a strict 14 semester limit for obtaining the Ph.D. degree. While The Graduate School no longer enforces this rule, departments can choose to continue the limit. Physics is now discussing whether to continue a similar limit.

3.2.4 The 99-Hour Rule

This is the rule that students at UT Austin with over 99 doctoral hours may be subject to the payment of nonresident tuition. The rule affects graduate students entering in Fall 1999 or later. The doctoral hours are credit hours acquired by a student reaching a certain stage in his or her studies. This stage is reached by (1) acquiring a Master's Degree (from UT or elsewhere) or (2) completing 30 hours of graduate work at the University, whichever comes sooner. A student will be able to study at UT Austin as a full-time student for seven complete academic years, including summers, before being affected by the 99 hour rule. For students staying beyond seven years there are a few exemptions given if the reason for going beyond 99 hours was programmatic.

3.2.5 English Certification Program for International TAs and AIs

The State of Texas requires that all public universities in Texas provide a program to ensure that courses are taught clearly in English. In order to comply, UT Austin and the Texas Intensive English Program (TIEP) conducts the International Teaching Assistant (ITA) English Certification for TAs and AIs required of all International students who will hold positions with student contact. The English Certification process includes an Oral English Assessment and an ITA Teaching Workshop. In addition, some individuals may be required to take an ESL course, for details see the ITA web page at https://global.utexas.edu/english-language-center/resources/international-teaching-assistants.

3.3 Department Policies

3.3.1 Registration Processes

The registration schedule and courses offered for each semester are given in the Course Schedule available on the Registrar’s website.

Registration for new graduate students is online using UTDirect. Students may register after mandatory advising by the Graduate Advisor in the Graduate Office, PMA 7.326. The Department places an Advising Bar on the record of all Pre-Candidacy students, this bar prevents you from registering until it is cleared by the Graduate Program Administrator/Coordinator following your completion of advising.

All Pre-Candidacy graduate students must also be advised before registering. Regular advising is held in the middle of each long semester before the first registration access period. A sign-up sheet is posted outside PMA 7.326 and an email sent out to the Gradlist detailing the advising schedule. After being advised (and having their Advising Bar lifted), the student can register through the Registrar's online service via UTDirect. Details of times and procedures can be found at http://registrar.utexas.edu/students/registration. A student’s specific registration window(s) can be found on the Registration Information Sheet (R.I.S.) available from the same website. **Students must register for the courses and times that were approved at advising and any changes from the advised course schedule must have the prior approval of the Graduate Advisor and be communicated to the Graduate Program Administrator/Coordinator.**

Graduate students admitted to Ph.D. Candidacy can register without advising, though it is recommended that, as their Dissertation Defense approaches, they verify the completion of the requirements laid out on their Program of Work with the Graduate Advisor.

3.3.2 Graduate Degree Requirements

The Department offers two graduate degrees: a Master of Arts (M.A.) in Physics and a Ph.D. in Physics. The requirements for these graduate degrees follow:

Master of Arts in Physics (M.A.). The master's degree requires 30 semester-hours work, including 6 hours of thesis coursework (PHY 698A & 698B). The remaining 24 hours of technical courses must include at least 18 hours of physics and at least 6 hours of supporting work (usually outside the Department). The courses must generally be graduate courses taken for a grade, but up to 6 hours may be taken credit/no credit, and a maximum of 9 hours may be upper-division undergraduate courses provided no more than 6 of the hours are in one category, physics or supporting work. The Physics Department does not generally approve seminar, research (x90), or advanced topics courses for a master's program beyond three hours of PHY 386N ’Technical Seminar’.. All work must be completed within a six-year period.

M.A. Coursework Summary. The following table summarizes the hours required for the degree of Master of Arts in Physics:

Grouping / Course Type	Description	Hours Required
Major Courses	Physics Department Courses (6 in total). (Excluding: Seminar, Graduate Research [unless taken concurrently with 380N], Special Topics, and 398T).	18
Supporting Work	Out-of-Department Courses (2 in total).	6
Master's Thesis	PHY 698A & PHY 698B.	6
	Total:	30

Doctor of Philosophy in Physics (Ph.D.). There are three steps in the program leading to the Ph.D. degree. The first is the Qualifying Process, the second is Admission to Ph.D. Candidacy, and the last step is the preparation of a dissertation based on original research and its approval followed by a Final Oral Examination/Defense. The details of each step follow:

Qualifying Process [Step 1]. Prior to being admitted to Candidacy for the Ph.D. degree, the student must fulfill the following three requirements: (1) fulfill the Core Course requirement described below; (2) show evidence of exposure to modern methods of experimental physics; this exposure may have been gained in a research type senior-level laboratory course taken by the student as an undergraduate and approved by the Graduate Advisor, or by previous participation in an experimental program, or in PHY 380N, and (3) fulfill the oral examination requirement described below.

Core Course Requirement. During the first two years of graduate study, the student must complete four core courses: PHY 385K ”Classical Mechanics”, PHY 385L ”Statistical Mechanics”, PHY 387K ”Electromagnetic Theory I” or PHY 387L ”Electromagnetic Theory II”, and PHY 389K ”Quantum Mechanics I” or PHY 389L ”Quantum Mechanics II”. The student must earn a grade of at least B- in each course and a grade point average of at least B+ (3.33) in the four courses. The student may ask for the grade he or she earns in PHY 380N to be substituted for the grade in one of the core courses when the average is computed. A well-prepared student may seek to fulfill the Core Course Requirement by taking only the final examinations for one or two of these courses and earning the grade of at least B- rather than by registering for them; however, in this case, the student does not receive graduate credit for these courses and the grade on the final is used in determining the informal qualifier G.P.A. The student may only attempt the exam for a particular course once.

The Core Course Committees—In order to ensure coherence in the curriculum, and to make clear to students trying to make their way through the courses as quickly as possible what is expected of them, every year, each of the Core Courses will have a small three (3)-person committee, chaired by the faculty member who will next teach the course.

Composition—The committee will consist of the committee chair and two separate professors who are teaching or who have recently taught the same course. In the event that there are not enough faculty members who qualify under these conditions, then the chair of the committee, in consultation with the GSC Chair and the Graduate Advisor, shall choose a member or members who have a significant interest in the area of physics covered by the Core Course in question.

Duties—*Before the start of the academic year*: (1) Beginning with the syllabus from the prior year, each Core Committee will make updates, as needed, and produce, within the confines of this curriculum, a syllabus to be used in that Core Course during the ensuing academic year; and (2) they will submit said syllabus to the GSSC for approval at least one week prior to the First Class Day of the Fall Semester. *During each long semester*: (1) they will use the approved syllabus to produce a final exam for use, and said final exam will only cover the 75% of the course material not under the discretion of the instructor; (2) the committee will provide detailed, written solutions for all of the problems contained in the final exam they produce; and (3) the committee will submit said exam to the GSSC for approval no fewer than thirty [30] days prior to the first day of the Final Exam Period for that semester as published by the University.

Work Product—The syllabus produced by this committee and approved by the GSSC will be considered the only syllabus to be used during the said academic year by all of those who teach the course. In the event of a change in course assignments occurring after the committee has convened to produce the syllabus and final exams, the GSSC will make provision for approval of the discretionary material provided by the new instructor prior to the start of class. If time does not permit such provision, then the GSSC will approve such material prior to the end of the second-week of class. The final exams produced by this committee and approved by the GSSC will be administered to both registered students and those seeking Credit by Examination during the two official Final Examination Periods published by the University. The approved syllabus, final exams, and solutions will be filed with the Graduate Administrator/Coordinator who will secure them, and who will make the syllabus available to any and all students who request it.

Archive—All past syllabi, including sample final exam problems at the discretion of each committee, produced in this manner will be made centrally available to the students, in the Graduate Office, for use in studying for future examinations.

The Oral Qualifying Examination. After satisfying the first two requirements above and within twenty-seven months of entering the program, the student must take the Oral Qualifying Examination. This examination consists of a public seminar presented before a committee of four Physics faculty members, one of whom is a member of the GSSC (see: Section 2.1.3). It is followed by a private oral examination. The student chooses the topic of the seminar. The seminar need not present original work; he or she is expected only to demonstrate sufficient command of a specialty to begin original research in that area. The topic is usually that which will become your dissertation. As part of the examination, the student will generally be expected to indicate a problem whose solution would be a satisfactory dissertation. The questions are directed toward clarifying the presentation and helping the committee determine whether the student has a solid grasp of the basic material needed for research in his or her specialization. The student passes the examination by obtaining a positive vote from at least three of the four faculty members on the committee.

Preparation for the Oral Qualifying Examination and the "Pizza Seminar". Students are strongly encouraged to explore specialties in which they might pursue dissertation research. The "Pizza Seminar", held weekly in both the Fall and Spring Terms, is designed to assist students in choosing their research fields and supervisors. Faculty from all research groups (see Section 2.4) will talk about their research interests as well as discuss possible research topics suitable for students. The atmosphere is informal; pizza is served to all attendees. The Pizza Seminar is offered as a regular graduate course PHY 396T "Particle Physics: Introduction to Research". In addition, individual faculty list information on research interests on the web.

For most areas, certain advanced courses (see: Section 3.3.3) are necessary to reach the level required for the qualifying examination. These courses and their prerequisites are also principal considerations in scheduling your courses during the first two years.

Admission to Candidacy [Step 2]. After passing the Qualifying Examination, students must apply for Candidacy before the end of the following semester. Formal admission to Ph.D. Candidacy consists of the submission and approval of the following:

1. ***Program of Work.*** The Program of Work comprises a list of courses that meets the requirements given below, and the prospective dissertation title. The Graduate Advisor must approve the Program of Work. The Program of Work for the Ph.D. is a paper form available on the Department's website.

   In addition to the Core Courses, each Program of Work for the Ph.D. degree must include at least four Advanced Courses in Physics (with a letter grade of at least B-), at least one of which must be in a specialty other than that of the student's dissertation. A list of acceptable Advanced Courses is available in the Physics Graduate Office, on the Department's website, and in Section 3.3.3, below.

   In general, Advanced Courses represent the consensus of the faculty working in a given sub-field of Physics at UT as to the basic information—beyond the Core—essential to every student's education in that sub-field. Such courses usually form a sequence, which may or may not represent the required order in which they must be taken. Advanced Courses occupy a status within the curriculum that requires them to be rigorous—often involving more than one of the standard methods of evaluation for student performance common within the field (*e.g.*, they require some combination of the following: homework, quizzes, mid-term[s], project[s], presentation[s], term paper, or final examination—this list is not to be taken as comprehensive). Finally, Advanced Courses are offered regularly, usually annually for the first two courses in a given sequence, with subsequent courses being offered periodically.

In order to provide greater flexibility particularly for multidisciplinary degrees, one (1) of the four (4) Advanced Courses may be selected from courses outside of the Department. The Out-of-Department course taken to fulfill the Advanced Course requirement must fulfill all of the following criteria:

- It must be approved by the GSSC via petition in the semester before it is taken;
- To be approved it must be rigorous in the same fashion as the Advanced Courses offered within the Department (described above);
- It must contain material or cover subjects in physics, whether or not said subject is offered by the Department itself; and
- It *must* be taken for a letter grade.

2. ***Dissertation Committee.*** The membership of the Dissertation Committee, proposed by the student with the approval of the Graduate Advisor, is submitted to The Graduate School for approval by the Graduate Dean through the Online Application for Candidacy available through The Graduate School's website. The Dissertation Committee consists of at least four (4) members, one of whom must be from outside the major program. The chair of the Dissertation Committee ordinarily serves as the supervisor of research. When the research supervisor is not a member of the Physics GSC, one such member should be appointed as co-chair of the Dissertation Committee. If the supervisor is not a member of the Department of Physics faculty, at least two (2) of the committee members should be.

   Careful selection of your dissertation committee is important. Your dissertation committee should play a major role in advising you on your research, therefore you should pick faculty whose research is closely related and/or complimentary to your own. They also form your final examination committee for the defense of your dissertation. They will evaluate your progress during candidacy. At the 12th and 14th semester you will present a progress report on your research to them and they will provide milestones to help in finishing your dissertation prior to the 14th semester (see: Section 3.2.3). They will also help to arbitrate disputes you may have with your research supervisor.

3. ***Dissertation Proposal.*** A brief statement of the proposed dissertation must be submitted. (This statement is submitted as part of the Online Application for Candidacy described above.)

The Dissertation and Final Oral Examination [Step 3]. Once advanced to candidacy, the student must maintain continuous registration (including the "Dissertation" course) during the long semesters, but advising is no longer required to register. Students in Candidacy must be continuously enrolled in one of the dissertation courses (x99W). The student has three years to complete the dissertation and take any courses remaining on his or her Program of Work. If you have not completed the requirements within three years, further registration depends upon the recommendation of your Dissertation Committee and the Physics Department. If the Dissertation Committee finds that the student is making good progress towards the degree, an additional year of Candidacy is commonly granted. Beyond that, however, candidacy will be extended only with specific argument and special circumstances.

At the beginning of the semester in which the student expects to graduate, he or she must apply for graduation. There are multiple deadlines associated with graduation, among these is the Request for Final Oral Defense of the dissertation which requires the final abstract of the dissertation, drafts for the committee members, and signatures of the entire committee. The form must be filed with The Graduate School at least two weeks in advance of the Defense. There is also a deadline for submitting the dissertation, including signatures of each committee member, in the exact form dictated by The Graduate School. Be sure to review all the requirements carefully and confer with the members of your Dissertation Committee to confirm that they will be available when needed. If you have not taken all the courses listed in your

Program of Work, but have taken equivalent courses instead, you must formally request a change in your Program of Work. If you encounter or anticipate any problems, please see the Graduate Program Administrator/Coordinator as soon as possible to explore possible actions. Many of the forms are now available online. To learn more, please visit The Graduate School's website here.

Ph.D. Coursework Summary. The following table summarizes the hours required for the degree of Doctor of Philosophy in Physics:

Grouping / Course Type	**Description**	**Hours Required**
Core Courses	Four (4) Core Courses: PHY 385K—Classical Mechanics PHY 385L—Statistical Mechanics PHY 387K—Electromagnetic Theory I PHY 389K—Quantum Mechanics I	12
Advanced Courses	Three (3) In-Field Advanced Courses. + One (1) Out-of-Field Advanced Course.*	12
Dissertation	PHY 399W/699W/999W	3 *or more*
	Total:	27 *or more*
* With approval of the GSSC students may elect to replace one (1) advanced course with an out-of-department course.		

Milestones Agreements. The Graduate School has implemented an online advising tool so that Ph.D.-seeking graduate students can keep track of deadlines for degree requirements. Each Ph.D. program, will have a unique Degree Plan ID. The unique Degree Plan ID will be used to link a student to a degree plan and its timeline and degree requirements. Each entering Ph.D. student will be assigned to a Degree Plan ID and each Degree Plan ID will have associated with it a set of advising aids that will specify the timeline for meeting the major milestones for the degree and a checklist of specific degree requirements. An electronic signature page will verify that the student and Graduate Advisor have reviewed the milestones materials.

Each student will be assigned to a Degree Plan ID. The Graduate School will keep records that will show, a) that the student has confirmed that he/she has been advised of the requirements for their degree and the estimated timeline for completing the degree milestones, and b) a list of dates when they meet each milestone. The Graduate School will provide information on how graduate students can access this information.

The milestone forms used with The Graduate School's advising tool are attached. They mirror the requirements for the PhD listed at the department's web site at https://ph.utexas.edu/current-graduate-students/degree-information. We will review your progress in completing the milestones annually. To view your individual progress on milestones you can check here. This page also contains Step-by-Step instructions for fulfilling this requirement.

3.3.3 Physics Graduate Courses

Physics graduate courses may be categorized into four types: regular (including the Core and Advanced Courses), special topics, seminar, and research courses. The regular courses are lecture-type courses whose topics are more or less fixed. The special topics courses are lecture-type courses on the most advanced current topics and thus vary from time to time. The seminar courses are comprised of weekly seminars organized by each of the various research groups. These special topic and seminar courses are specified by the letter T, U, or S, respectively, attached to the end of the course number (*e.g.*, PHY 396T). The seminar courses are offered every semester, while the special topics courses are offered whenever faculty are available to teach a needed course.

There are three types of research courses; PHY x90 (x=1, 2, 3, 6, or 9 hours) ”Graduate Research”, PHY 698A&B ”Thesis”, and PHY x99W (x=3, 6, or 9 hours) ”Dissertation”. PHY 698A&B are for the master’s thesis (when taken in sequence, the total number of course credit hours is six [6] and **NOT** twelve [12]), while PHY x99W is for the doctoral dissertation (see Section 3.3.2). The Graduate Research course, PHY x90, can be taken anytime by a student and is thus appropriate to the preparation for their Oral Qualifying Examination. It does not count for the Ph.D. To take an x90 course, the student and their supervisor must fill out the Department’s x90 Graduate Research Form available both online and in the Graduate Affairs Office. The form includes a description of the research project to be undertaken and must be turned into the Graduate Program Administrator/Coordinator before you are allowed to enroll in the course, no exceptions are made to this requirement.

The regular graduate courses other than the four core courses (PHY 385K, PHY 385L, PHY 387K and PHY 389K) can further be divided into two sets: Advanced Courses and the rest. The following are the courses presently approved by the Physics GSC.

Advanced Courses: The advanced courses are designed to prepare students for specialization as well as to provide students outside their specialty with challenges to other fields of physics. Each student is required to take four advanced courses with no letter grade below B-. Current Advanced Courses and their schedule follow, organized by field (please note, the schedule is subject to change based upon faculty availability):

Atomic, Molecular, and Optical Physics

PHY 395	Survey of Atomic & Molecular Physics; *approx. every year*.
PHY 395K	Nonlinear Optics and Lasers; *approx. once every two years*.
PHY 395M	Laser Physics; *approx. once every two years*.

Condensed Matter Physics & Quantum Information[3]

PHY 392K	Solid State Physics I; *every Spring Term*.
PHY 392L	Solid State Physics II; *every Fall Term*.
PHY 392N	Many-Body Theory; *once every two years*.
PHY 392P	Advanced Optical Spectroscopy; *periodically*.
PHY 392Q	Density Functional Theory; *approx. once every two years*.

Particle Physics, Cosmology, Strings

PHY 396G	Cosmology; *offered annually*.
PHY 396K	Quantum Field Theory I; *every Fall Term*.
PHY 396L	Quantum Field Theory II; *every Spring Term*.
PHY 396J	Introduction to Elementary Particle Physics; *offered annually*.
PHY 396P	String Theory I; *every other Spring Term*.
PHY 396Q	String Theory II; *not regularly offered*.

Nonlinear Dynamics and Biophysics

PHY 382M	Fluid Mechanics; *every other Fall Term*.
PHY 382N	Nonlinear Mechanics; *every other Spring Term*.
PHY 382P	Biophysics I; *every other Fall Term*.
PHY 382Q	Biophysics II; *not regularly offered.*

Nuclear Physics

PHY 397K	Introduction to High Energy Physics & RHIC I; *not regularly offered*.
PHY 397L	Introduction to High Energy Physics & RHIC II; *not regularly offered*.

Plasma and Fusion Physics

PHY 380L	Plasma Physics I; *every Spring Term*.
PHY 380M	Plasma Physics II; *every Fall Term*.

Gravitational Physics and Relativity

PHY 387M	Relativity Theory I; *every Spring Term*.
PHY 387N	Relativity Theory II; *currently not regularly offered*.

---

[3] For students in Quantum Information, QFT I and II are also in-field.

Non-Specialized[4]:

PHY 380N	Experimental Physics; *every Fall and Summer Term*.
PHY 386K	Physics of Sensors; *currently not regularly offered*.[5]
PHY 387L	Electromagnetic Theory II; *currently not regularly offered*.
PHY 389L	Quantum Mechanics II; *currently not regularly offered*..
PHY 381N	Methods of Mathematical Physics II; *not regularly offered*.

3.3.4 PHY 398T “Supervised Teaching in Physics”

PHY 398T is a course in instructional methods and prior completion or concurrent registration of this course is required for appointment as a TA or an AI. It is departmental policy to have each TA enroll in PHY 398T during the first year of appointment. PHY 398T covers current methods of physics teaching with emphasis on laboratory teaching. Part of the course is a critical examination of your teaching techniques, with presentations by the TAs in laboratory and other teaching situations (for example, it provides some practice in preparing and giving a seminar).

3.3.5 Career Guidance and Professional Development

The Department offers PHY 386N “Technical Seminar”, for career guidance, particularly for industrial careers. In addition, The Graduate School offers several cross-disciplinary courses focusing on topics such as teambuilding and collaboration, academic and professional (grant) writing, teaching, ethics, consulting, technology, communication, networking, and entrepreneurship.

---

[4] With the exception of ”Physics of Sensors”, courses under this category cannot be used as an Out-of-Field Advanced Course by anyone.

[5] Only students in Particle Physics, Cosmology, Strings and Biophysics may take this course as an Out-of-Field Advanced Course.

Chapter 4: Job Responsibilities

4.1 Nature of the Teaching and Research Positions in the Department

4.1.1 Teaching

Before reviewing job responsibilities, it will be worthwhile to outline the types of teaching done by the Department. There are three general categories of courses offered by the Department: service, majors, and graduate courses. In each category there are laboratory, recitation or discussion sections and lecture classes. Another level of classification is whether the course is required for some degree plan.

The foundational courses are for non-majors and generally have an introductory sequence of two semesters and most have an accompanying laboratory class which is a required co-requisite. Most of these courses are required for some major or meet an area requirement in the Bachelor of Arts degree. There is a set of introductory major's courses in a three-semester sequence. The first two semesters are required for several other science majors as well. These courses also have a co-requisite laboratory course. The foundational courses constitute the major part of the Department's teaching duties and are the primary source of work for TAs as either graders of homework or leaders of discussion sections or laboratory instructors. Among the foundational courses that are not required for any degree are the Physical Sciences classes. These are small enrollment laboratory courses that introduce physics through inquiry-based techniques. These courses are generally taught by AIs (see: Section 4.2.2).

The upper-division major's courses are generally required for the B.S. or B.A. degree. These are lecture and laboratory format courses. The major tasks for Teaching Assistants are grading homework and quizzes or supervising and grading laboratories.

Graduate courses require assistance for grading of homework and quizzes. Graders for graduate courses must have completed the course before qualifying to grade that course.

The Department also provides a coaching service for all of our courses. At tables located in the corridor on level 5 of PMA, Teaching Assistants are available all day to assist students in a physics course with their class work. The primary users of this service are students in the foundational courses. Coaching is an unusual teaching format and how it operates is described in Section 5.7.

4.2 Job Duties of Graduate Student Assistants

4.2.1 Teaching Assistants

There are two types of duties assigned to TAs. TAs may be assigned to work with a faculty member grading or performing related work assisting the faculty member in teaching their courses. Another assignment for TAs is the teaching of laboratory courses or discussion sections in the service and major's courses. Some lab TAs are also required to coach as part of their duties.

The criteria for deciding which of these types of assignment a TA will receive is based on several factors. When applying to TA, you may indicate a preference. All past performance as a TA is also evaluated both by the students via the Course Instructor Survey and by the faculty supervisor. In the case of international students, there is the additional question of English language proficiency. All international students are tested for English language skills and Teaching Assistants with a deficiency will not be allowed to have duties that require contact with undergraduate students. It is important that all Teaching Assistants work to remove any language deficiencies as soon as possible (see: Section 3.2.6). International students will not be hired in their second year if they fail to acquire fully certified status on the English assessment (ITA Exam) within their first year.

TAs must be graduate students in good academic standing (see: Section 3.2.2). Teaching Assistants may not be the instructor of record in any course and a TA's teaching is under the supervision of a faculty member (see: Section 4.3.1).

4.2.2 Assistant Instructors

Assistant Instructor, AI, is a title reserved for more senior graduate student instructors. Assistant Instructors, although supervised by faculty, can be the instructor of record in a class. In the Department of Physics, AIs teach the Physical Science classes or are head TAs of several sections of laboratory courses. To become an AI, a graduate student must be in good standing, with no incompletes, must have completed the hours equivalent to a Master's degree, and successfully taken the PHY 398T course (see: Section 3.3.4) or have equivalent experience.

4.2.3 Graduate Research Assistants

Graduate Research Assistants are graduate students paid from contract funds to support a research project. These are generally advanced students, second year and further, and most students become Graduate Research Assistants before completing their Ph.D. Often the research is an important part of the graduate student's thesis or dissertation.

4.3 Supervision of Graduate Student Assistants

Student assistants are assigned to various duties such as laboratory teaching, grading or support of research. A student assistant may have more than one of these assignments at the same time. In each of these assignments, the student assistant will have supervision and thus an assistant with more than one assignment may have more than one supervisor. Of course, overall supervision rests with the Department Chair.

4.3.1 Supervision of Teaching Assistants

In all cases, a TA is directly supervised by a faculty member. If the assignment is a laboratory section, a particular faculty member is assigned to coordinate all the laboratories within the same course and this faculty member is the supervisor of all student assistants working on that course. In courses with many sections, a head TA may assist the faculty supervisor in these duties. Assistants assigned to teach a laboratory section, should get the name of the faculty supervisor for that section and contact him/her immediately about the first contact for the assistants in that course. All laboratory teaching assistants meet on Friday afternoons to coordinate their sections. This meeting is compulsory and all assistants should keep their time clear on their schedule to attend these meetings.

If the assignment is a discussion section, the assistant should immediately go to the web site: https://quest.cns.utexas.edu/. In addition, the assistant should contact the faculty supervisor of the assigned discussion section to make sure that his assignment is correct.

There are two types of grading assignments. For most graders, the duties consist of grading of homework or quizzes for a specific course. For TAs assigned to course grading assistance, the faculty member teaching the course is the assistant's supervisor. As soon as the course grading assignment is settled, the student assistant should contact the faculty member teaching the course to get the details of the job (see: Section 5.7). Some graders are assigned as computer assistants for the Department of Physics homework service. The Department has a large database of problems and computer-generated homework and quiz generation service. Students assigned to assist with the computerized homework service work under his or the faculty member that he designates supervision.

4.3.2 Supervision of Assistant Instructors

Although the Assistant Instructor can be the instructor of record in the class in which he/she is assigned, the Physical Science classes are coordinated by Dr. Antonia Chimonidou. Also, since the course is laboratory-based, each class period operates on the same schedule of material and uses the same pedagogical approach, inquiry-based instruction. Meetings every Friday afternoon are required for anyone assigned to teach a Physical Science class.

4.3.3 Supervision of Graduate Research Assistants

Graduate Research Assistants are supervised by the faculty member or senior research staff member who is the Principal Investigator of the research project which supports the student.

4.4 A Detailed Presentation of TA Workloads

This memo is intended to lay out Department policy regarding Teaching Assistant (TA) workload. It is meant to present guidelines and not a rigid set of rules with the understanding that individual instructors in particular courses may utilize different uses of TA's time and effort. ***However, faculty members are advised not to prescribe recurring weekly duties (including preparation) of more than 14 hours per week for a 20-hour appointment.*** *(Expectations for appointments not at 20 hours per week should be scaled proportionately)*.

A Full TA appointment ("Full" below) is expected to have 14 hours/week prescribed. This is understood to be an upper limit in terms of actual time prescribed per week averaged over the full semester. Note that the workload may vary from week to week. As an example a two week teaching lab will require grading in only one of the weeks. If a TA finds his/her average prescribed workload being greater than 14 hours, he/she should work with his/her faculty supervisor to decrease the workload. Continuing workload problems should be brought to the attention of the graduate advisor.

The Department of Physics has three general categories of positions: 1) Lab instruction, 2) Discussion sections, and 3) General grading. For the lower division courses, the lab structure is similar with either 2-hour or 3-hour labs. The discussion sections for the lower division courses are generally graded using QUEST, so the workload for discussion TAs is holding problem sessions and answering general physics questions for the students. For most of the upper division courses QUEST is not used and essay type problems require hand grading. Often, TAs do not hold discussion sections for these courses. TAs are not released from duties until the instructor has submitted final grades, or mutual agreement is reached between the instructor and TA. When we have a non-integer number of sections, we compensate for that by assigning an equivalent number of Coaching Hours.

Note: PHY 302, 303, 309, and 317 are two semester sequences in which the first semester ends in "K" and the second ends in "L". Each course in the two-semester sequence has its own lab (with the exception of 309) with one hour of course credit, these end in "M" and "N" respectively. PHY 301, 315, and 316 are one-semester courses with a one credit hour lab that ends in "L".

Lower Division Courses: PHY 301, 302, 303, 309 (no labs), 315, and 316.

Laboratory TA (positions are all Full appointments):

6 contact hours (2, 3-hour labs) per week. The number of students in the lab varies with the course. [As of Fall 2020 all labs for non-majors have been revised so that: all Mechanics Labs (102M, 103M, and 117M) share the same curriculum, and all E&M Labs (102N, 103N, and 117N) share the same curriculum (there are plans to consolidate the former under the single course number: 105M and the latter under: 105N)].

2 office hours per week.

2 coaching hours per week.

1 TA meeting which reviews the teaching of the lab per week. Labs are performed and common student difficulties with experimental techniques are reviewed and solutions discussed (normally 1 hour/week).

1 hour of preparation per week. This includes generating quizzes, brief homework assignments, and reviewing the lab manual. (Physics majors labs may require up to an additional hour of preparation each week).

4 hours of grading per week on average. The number of students per lab is compensated by lab difficulty, length of the lab report, and equipment resources. While PHY 115L and 116L have a course limit of 16, all others have 22 students/section. The labs with the greater number of students have shorter reports to limit the grading hours required. Various grading techniques (*e.g.*, rubrics, *etc*.) are also used to reduce the grading hours.

The above totals a maximum of 16 prescribed hours per week, but averages to ~12 hours/week over a 15-week semester in which there are only ~11 labs + one project or lab practical. Labs generally first meet in the third week of classes, the introductory labs require very limited grading, and there is also one week of make-up labs where only a few lab reports are graded.

Discussion TA (positions are Full appointments):

5–8 contact hours for discussion sessions. These sessions are arranged with the students at the beginning of the semester, except for PHY 303K and 303L where 4 discussion sections per lecture are listed in the course schedule. Full TAs are assigned 8 1-hour discussion sections.

2 office hours per week.

1 TA meeting (normally 1 hour/week).

3 hours of preparation per week.

All courses nominally use QUEST for grading and require little grading time for the TA. Some instructors will require help in generating assignments or exam reviews; this work should be accompanied by faculty supervision. This might include adding or exchanging problems on QUEST problem lists provided by the instructor. All exam problems should be provided by the instructor. TAs will also help in proctoring exams and uploading SCANTRON sheets for the hourly exams and the final.

Grading for non-QUEST courses:

Sections of PHY 309 for liberal-arts majors and PHY 315 for physics majors have non-QUEST grading. The workload for PHY 309 is 1 Full TA for 100–140 registered students and for PHY 315 is 1 Full TA for 40–50 students.

Upper Division Courses:

Labs: There are three upper division laboratory courses: PHY 338K Electronic Techniques, PHY 353L Modern Physics Lab ("Junior Lab"), and PHY 474 Senior Lab. All of these courses have advanced experiments that require TAs to provide direct individual instruction to the students in the assembly and troubleshooting of the experimental apparatus. TAs also provide maintenance and assist in the design and construction of new experiments.

Grading: The workload is 1 Full TA for 50–75 students, and 1.5–2 Full TAs for 60+ dependent on funding and availability. Instructors are expected to provide solutions to the homework for most problems. TAs hold 2 hours per week of office hours but usually do not hold discussion sessions.

Graduate Core Courses: PHY 385K Classical Mechanics, 385L Statistical Mechanics, 387K Electromagnetic Theory I, and 389K Quantum Mechanics I.

TAs must have taken the course previously and have scored an A in the course.

Instructors are expected to provide solutions to the homework for most problems.

TA should provide 2 office hours.

Grading workload is 1 Full TA for 15–25 students, 1 Half TA for 10 to 14 students.

Chapter 5: Teaching Tips

5.1 Classroom Procedure and Operation

There are three general teaching environments for graduate students in the Department of Physics: laboratory instruction, discussion section instruction, and grading. In all cases there will be a faculty member who supervises the instruction and that faculty supervisor is directly responsible for setting laboratory or classroom procedures, and these comments do not supersede these instructions. The guidelines described below should be followed unless directly countered by the faculty supervisor.

5.1.1 Pre-Semester Procedure

All new TAs must attend the College of Natural Sciences orientation during fall registration. This three-hour session is designed to welcome new TAs and outline general administrative and personnel policies of the University. In addition, all new TAs should meet with the Graduate Program Administrator/Coordinator during fall registration. This meeting is primarily administrative in purpose. We review departmental procedures and initiate the appointment and class assignment paperwork. In all cases, you should meet with your faculty supervisor before classes begin. For TAs assigned to discussion sessions for the introductory physics courses, there is a set protocol that is described in: https://quest.cns.utexas.edu/.

Laboratory and Discussion Sections. For those assigned to laboratories and discussion, there are generally no meetings with students the first week of classes, but whenever the first meeting occurs, you are to explain absence and grade policy, describe manuals and materials needed for labs, and generally introduce lab objectives.

Before meeting a class for the first time, an instructor must set the course objectives, prepare a syllabus, and guarantee that equipment, text materials, and space are available. For TAs, the Lab Supervisor is responsible for these procedures, although each TA is required to draw up a First Day Handout based on the syllabus (see: Section 5.1.2). [N.B., per State Law a copy of your First Day Handout including your syllabus MUST be turned in to the Undergraduate Affairs Office on or before the 7th Day of Class].

Although AIs are responsible in their courses for setting objectives, etc., in practice they follow established guidelines.

In the first meeting with your Supervisor, you are to make sure you understand the course objectives, how students are to meet them, and the level of ability expected of the students. As the labs develop and student work is graded, report any problems in meeting the standards or objectives to the Lab Supervisor.

Before the first class meeting: **Check the classroom and the Lab Supply Room on the 8th floor. Locate the nearest phone, and make sure emergency numbers are posted on it. Know where to find fire extinguishers, fire blankets, and chemical showers. Know how to cut electrical power for classroom circuits. Know how to get help in an emergency. Understand equipment checkout and return procedures, know who is liable for damage and how damage is assessed. Get a copy of the Lab Manual and a grade book from the Lab Supply Room. Review the semester calendar, the lab schedule, drop and add deadlines, and how make-ups and grades are to be handled. Prepare a First Day Handout.**

5.1.2 First Day of Class

At the first class meeting: **Distribute a written First Day Handout containing the rules and syllabus for the class. This handout is required. Review every item on it with the class. On the board, write your name, office, office hours, and phone number; the same information for the Lab Supervisor; the course name and unique number; and your grading policy. (This information must also be on the handout.) Inform students of the most effective way to get in touch with you. Take attendance, whether a roster is available or not. Review proper format, content, and style of lab write-ups. Explain how lab notebooks will be handled, graded, and returned. Explain your procedures for computing final grades (be sure you and your students know what they are!). Explain your make-up policy for missed labs. Review the academic calendar, noting drop deadlines and when all lab work is to be completed and handed in.**

Discuss lab safety. There must be no fooling around with dangerous equipment such as lasers, electrical equipment, etc. A safe lab is your responsibility. Inform the students about lab clean-up. Returning equipment does not end the cleaning chores. Loose paper and Polaroid film packs must be cleaned up before the next class. If the students do not clean up, you are responsible for cleaning up. Eating, drinking, and all use of tobacco are prohibited in labs and classrooms.

5.1.3 Classroom Procedures

Your Supervisor and Head TA are the best sources for the most effective methods for the particular course you teach. However, your ideas and suggestions are most welcome! For the sake of consistency, you are required to discuss any format which is different from the one described below or recommended by the Supervisor with the Supervisor and other TAs. Do not deviate markedly from the following format unless you and your Lab Supervisor have a clear picture of the alternative procedures and purposes and only if your Lab Supervisor approves.

Generally, start a lab session with a very brief (5-15 minutes) lecture-demonstration. Prepare it carefully; at the weekly lab meeting, be sure to review what portions of the experiment the Supervisor wants emphasized. The lecture is to be built around the equipment, and you should show clearly how it works. Discuss clearly any procedure which may be hazardous. Do not emphasize the physical theory behind the experiment. Often the laboratory exercise will precede the theoretical development in the lecture portion of the course. The laboratory lecture emphasizes observations and measurements; only theory essential to the development and reduction of results from observations is to be covered. If a student wishes to know more of the physical background theory, encourage him or her to read the text or other books and to see you during office hours.

After the lecture, your job begins! You circulate; you ensure that students are performing the exercises; you answer questions; you pose questions; you point out effects. At no time should you be seated or reading. Data taking will usually be completed prior to the end of the class time. Students are not to be dismissed or allowed to leave early. Students who finish early are to prepare the write-up or to study for the following week's lab. Be available for questions about these tasks.

5.2 Teaching Tips

A university is a place of learning. Your duty is to aid in the learning process. Good learning goes hand-in-hand with enthusiasm. You are fortunate to be able to help students learn ideas that are especially interesting. Moreover, you will learn physics from your students. Before going into class, review why that day's work is important and exciting, why it is beautiful and vital. Communicate this excitement to students. Help them see why physics is such a wonderful subject!

Each course and each session has a goal or objective. After consultation with the Lab Supervisor write down these educational objectives. Refer to these objectives often and have the students carry out only those activities which contribute to meeting these objectives. Discuss only items related to these goals or general class administration. Don't waste time displaying your knowledge or complaining. Revision and expansion of the objectives are to be done before the class begins, with the Supervisor and other TAs.

Uninterrupted lecture is terrible. Keep your lectures short; invite questions or ask the students questions; involve the students; demonstrate equipment; and remember, students learn about three or four new things in one sitting. Speak slowly and carefully, especially if you do not have a Texas accent. Write on the blackboard: Write neatly, and as you write, SPEAK ALOUD WHAT YOU ARE WRITING.

Demonstrate equipment, using large, well-marked versions of the same equipment the students use. Emphasize proper care and handling, and always discuss safety. As you circulate, ask questions, demonstrate interest, and point out observational oddities. Communicate your excitement about physics to the class.

5.3 Grading

Review the required format, content, and style of lab reports, and general grading criteria in the first-day handout and lecture. Criteria should be concise and clear, and you are to grade according to those standards. Be sure to sign the pages on which each day's data are recorded, and insist that data be recorded in ink. Allow for some flexibility in grading, but always require that students turn in all lab reports.

Promptly return graded lab reports to provide feedback and motivational stimulus: Return each graded lab report before the next report is due. Most labs require one report and one week for each experiment; some labs require that write-ups be done in the lab, while others permit students to work on the report out of the lab. All labs require that reports be submitted in some standard form, established by you and other TA / AIs with the Lab Supervisor.

On the first day of lab, you may want to hand out an example of a well-done write-up. You should emphasize the introductory sections and the importance of completing or planning them before coming to class. You may require items to be written before lab but, if you do, make sure that other TAs in the course do also. (Some labs use a two-notebook procedure.) You should make clear how long students are expected to work on write-ups.

Sometimes the course policy is to supplement lab report grades with quizzes, but quizzes should be given consistently by all TAs in the course if given at all. Quiz only on laboratory related objectives: laboratory skills, measurements, or observations. Don't set a classroom problem, and don't repeat the same quiz in different sections. Don't allow cheating.

Late lab write-ups are a constant source of difficulty. Policies can vary from not accepting late reports without a signed excuse to giving students partial credit for late work. The lateness policy must be consistent among all TAs in a lab course. Be sure that your students are constantly aware of it.

Indicate grades and comments in the notebooks. Maintain a record of attendance and all grades in a separate grade book (available from the Laboratory Supply Room [see: Section 2.3.5]). At the end of the semester, return or make available all class material. You must retain any course work not returned to the students for one semester.

At first it may seem that an excessive amount of time is spent in grading. The workload formula does allow ample grading time, and as you become experienced, your grading will become efficient. Do not spend too much time agonizing over grades. Many items must be assessed, and you should use a relatively coarse measure. But be sure to write thorough and clear comments.

5.4 Final Grades

Each student whose name appears on the grade sheet at the end of the semester will receive a letter grade, a symbol, or a "never attended" comment. A case of a student who attends but is not on the class roster should be reported to the physics Undergraduate Office (see: Section 2.2.4) as soon as possible, early in the semester.

The Department requires that you report grades on a normed and distributed scale: Students in all of your sections form a single population. Calculate the T-Scores for each student; it is important that student scores be distributed on the basis of performance, or else this mechanism will only introduce noise into the process. TAs assign letter grades in consultation with their Lab Supervisor; each AI assigns his or her own letter grades, assuming the class is average unless there are contrary indications.

The symbol X indicates a temporary delay in a grade, and the student must complete any course requirements within a stated period (about one semester) or the X becomes an F. The X symbol is only allowed in the following circumstances: (A) The student is compelled to miss a final examination because of illness or other nonacademic imperative reason, verified by a physician's statement or by other adequate verification. (B) The student has not been able to complete all the required assignments for reasons not attributable to lack of diligence. The student must have a passing average on already completed work and must have passed the final exam. (C) The student has failed the final exam but has at least a C average in all other work. In this case, the student may be permitted to take a reexamination at the discretion of the instructor. The new grade will be substituted for the original grade if the student earns at least a C; if the re-exam grade is less than a C, a final course grade of F must be recorded. Prior approval from your Lab Supervisor is always required, and you and the Supervisor must agree on how the X will be cleared. This information must be filed with the student office.

The symbol P is given only to an undergraduate student officially registered on a Pass/Fail basis as indicated on the grade sheet, and only if the student has made a D or better in the course. If the student has not made a D or better, the grade F is to be assigned.

Symbols assigned by the Registrar: The # symbol means that the Registrar was unable to assign a grade (report any mistakes to the physics undergraduate office; if the student's registration is questionable, send the student to his or her academic Dean). The symbols Q (drop without penalty) and W (withdraw from school) are assigned after a student has gone through proper channels. An instructor may not assign a W or Q unless the student obtained an approved drop or withdrawal after grade sheets were printed and the instructor receives the official withdrawal or drop notice from the Registrar.

Final lab grades are reported using eGrades, the online reporting system http://registrar.utexas.edu/staff/grades. Melva Harbin from the Undergraduate Office (see: Section 2.2.4) will email TAs regarding due dates for your online grade reports. You must set deadlines for the students to submit all their work so that you will have ample time to grade and to consult with the Lab Supervisor. A student may obtain his or her grades using UTDIRECT. You should not post individual grades on paper listings because the information needs to remain secure. You may want to post the grade distributions.

5.5 Office Hours and Communication

You are required to post and observe office hours. A 20-hour appointment includes two hours weekly for office hours. These hours are as great a responsibility as assigned classroom meetings. Office hours are beneficial: Students know that they can be sure to find you; you are protected from constant interruptions; and they provide a limit to the time spent with students. A convenient time for office hours is in the late afternoon, when most students don't have class conflicts. Office Hours MUST NOT be held in the Coaching Area or the Kodosky Reading Room. If you need a suitable location for Office Hours, contact the Undergraduate Affairs Office to schedule a room.

You must leave your local address, phone number, and schedule with the Physics Main Office and the Undergraduate Affairs Office. You may or may not choose to permit the Department to release this information. You may include your home phone number on the first class day handout. We suggest that you do not do so, but some TA/AIs do. Every graduate student in Physics has a mailbox, located on the 5th floor of PMA, across from the graduate office. This is the principal means by which the department and other students communicate with you. It is important that you check your mailbox every day. In addition, email is an efficient and useful technique of communication. You will get a Physics email account from the Computer Services Group. In addition, there is a listserv, the Gradlist, that supports communication with graduate students in the Department of Physics. You will be subscribed to it when you open your Physics e-mail account. You should check your email several times a day. You should also keep your address information with the University current by updating here: https://utdirect.utexas.edu/apps/utd/all_my_addresses/.

5.6 Graderships

The primary assignment of many TAs is to grade and to assist a faculty member in class. Most grading involves three types of papers:

> *Homework papers.* Primarily answers to problems. Some faculty allow students to work together, but some do not. Be sure that you know what the homework assignments are, when they are due, and whether students must work separately on the assignments.
>
> *Term papers.* Faculty members usually give rather general instructions. Usually, such essays must be the sole work of the student; in a few cases collaboration may be allowed. Grade for content; comment on style if the faculty member directs you to.
>
> *Exams.* Consisting of problems and essay questions. Discuss grading criteria with the faculty member in charge. Be sure you know how to solve each problem before starting to grade; students will have a wide variety of correct (and incorrect!) ways of answering a given problem.

There are several other requirements:

- In order to grade a graduate course, you must have previously made an A in the course.
- International students must be certified or conditionally certified in the English proficiency assessment in order to have contact with students.
- If you are allowed to have contact with students, you will typically be required to hold office hours, one per week for each 10 hours of appointment. You may not hold office hours at locations off campus or at the Union. If you need a space in which to hold office hours, please contact the Undergraduate Affairs Office to schedule a room.

The instructor for whom you work may require you to attend specific class sessions, to return homework and exam papers to the students, to write up answer keys (with the aid of the instructor, especially for exams) and make them available to students, or to do other tasks related to the course.

Meet with the instructor as early as possible in the semester to find out your obligations. It is a good idea for you know what your obligations are. At the end of the semester the Instructor will let me know how you performed and this information is kept in your employment file. Their review of your work can affect the priority and placement given to you in re-appointing you.

Every grader is obligated to:

- grade papers accurately, write full comments on the papers, keep full and accurate records of grades, and make sure the instructor has a copy of these grades.
- keep a copy of your grades for one year after the course has ended.

At the end of each semester, be sure that the instructor has a copy of your grades and that all your obligations have been satisfied. Do not leave town until all your duties have been fulfilled and, if your departure is before the end of your pay period, you must file a Request for Travel Authorization (RTA; see: Section 2.2.6), and have obtained the approval of your supervisor.

5.7 Coaching

Coaching is an important general service for all undergraduate courses, and students and faculty depend on this service. TAs are often assigned to coach as part of their duties. The coaching facility is in the hall on the 5th level of PMA, and coaching takes place Monday through Thursday, 9:00-6:00 and Friday 9:00 to noon. You must sign up in the Graduate Office for specific coaching hours once your course and teaching schedules are set. Coaching begins the first week of classes and goes through to the last class day.

Coaching is subtle and difficult, but it can be very rewarding. Coaching is one-on-one teaching, restricted to monitoring the student's progress toward problem-solving. It involves helping students with lecture, lab, text, or homework. Restrict aid on homework to answering questions about specific problems. Do not solve problems, but provide direction toward solutions. Do not lecture; if a student has no awareness of the subject matter, point out the appropriate passages in the text. Above all, encourage the student to find a solution, and instill self-confidence. A good coach can monitor the progress of several students working different problems. Maintain a good self-image. Admit when you don't know an answer, and seek someone who does. Students appreciate honesty.

Office Hours MUST NOT be held in the Coaching Area or the Kodosky Reading Room. If you need a suitable location for Office Hours, contact the Undergraduate Affairs Office to schedule a room.

5.8 Ethics & Compliance

5.8.1 The University Honor Code

The University's Honor Code reads as follows: *I pledge, as a member of the University of Texas community, to do my work honestly, respectfully, and through the intentional pursuit of learning and scholarship.*

- *I pledge to be honest about what I create and to acknowledge what I use that belongs to others.*
- *I pledge to value the process of learning in addition to the outcome, while celebrating and learning from mistakes.*
- *This code encompasses all of the academic and scholarly endeavors of the university community.*

5.8.2 The University's Non-Discrimination Policy

As laid out in *The Revised Handbook of Operating Procedures*:

> It is the policy of The University of Texas at Austin to provide an educational and working environment that provides equal opportunity to all members of the University community. In accordance with federal and state law, the University prohibits unlawful discrimination, including harassment, on the basis of race, color, religion, national origin, gender, including sexual harassment, age, disability, citizenship, and veteran status. Procedures for filing discrimination complaints on the basis of gender, including sexual harassment, are addressed by *HOP* 4-B2. Pursuant to University policy, this policy also prohibits discrimination on the basis of sexual orientation, gender identity, and gender expression.
>
> This policy applies to visitors, applicants for admission to or employment with the University, and students and employees of the University who allege discrimination by University employees, students, visitors, or contractors.

Definitions

1. **Discrimination**, is defined as conduct directed at a specific individual or a group of identifiable individuals that subjects the individual or group to treatment that adversely affects their employment or education because of their race, color, religion, national origin, age, disability, citizenship, veteran status, sexual orientation, gender identity, or gender expression.

2. **Harassment** as a form of discrimination is defined as verbal or physical conduct that is directed at an individual or group because of race, color, religion, national origin, age, disability, citizenship, veteran status, sexual orientation, gender identity, or gender expression when such conduct is sufficiently severe, pervasive or persistent so as to have the purpose or effect of interfering with an individual's or group's academic or work performance; or of creating a hostile academic or work environment.
3. **Verbal conduct** is defined as oral, written, or symbolic expressions that:
    - **personally describes or is personally directed at a specific individual or group of identifiable individuals; and**
    - **is not necessary to an argument for or against the substance of any political, religious, philosophical, ideological, or academic idea**

Constitutionally protected expression cannot be considered harassment under this policy. (See also: Section 13–204 of the *Institutional Rules on Student Services and Activities* [Appendix C to the *General Information Catalog*] for further information concerning harassment; and Sec. 11–501(b) for information concerning enhanced student penalties for offenses motivated by race, color, or national origin.)

5.8.3 Relationships with Students

General. Social interactions with students enrolled in your classes in which you have either an instructional or grading role should be very limited. Be friendly but firm: students appreciate firm and fair standards which are kept to. They develop good working and learning habits if taught by someone they respect. If special counseling is required, do not attempt to do it but direct the student to their academic dean's counseling office or the Counseling and Mental Health Center (Section 2.5.4). You are not permitted to use your position to intimidate a student nor to further a romantic intention. Nor should you allow a student to try to influence your grading through personal or social involvement.

Sexual Harassment. Sexual harassment is defined as either unwelcome sexual advances or other verbal or physical conduct, when: (1) Submission by a student is made explicitly or implicitly a condition for academic opportunity or advancement; (2) submission to or rejection of such conduct by a student is made a factor in academic decisions affecting that student; or (3) the intended reasonably foreseeable effect of such conduct is to create an intimidating, hostile, or offensive environment for the student. Sexual harassment is expressly prohibited, and offenders are subject to disciplinary action. However, the interaction of faculty and students, where harassment or conflict of interest is not a factor, is to be encouraged. To repeat: It is inappropriate for an instructor to form romantic or sexual relationships with students working under the instructor's direct supervision. Do not date or attempt to date students in your class. (See also: Section 5.8.7 Title IX & Texas Senate Bill 212 (SB 212) Compliance).

5.8.4 Disability and Access (D&A) for Teachers

On occasion, someone with special learning or access needs will be among your students. It is University policy to provide special accommodation to meet these student's needs. The University provides screening for students in this category. If a student requests accommodation, they must produce a letter from the Dean of Students indicating what the nature of their disability and suggesting appropriate accommodation. You should honor this student's request and provide a situation that as closely as possible meets the suggestion but is still appropriate to your class's circumstances. For more information, see: Section 6.2.4.

5.8.5 Religious Holidays

Students at the University of Texas are diverse and participate in a broad range of religious practices. Generally, the University holiday schedule allows for most Christian religions. In any case, the University supports students in the expression of their beliefs and encourage all faculty to accommodate legitimate requests for arrangements that allow for recognized religious practices.

5.8.6 Behavior Concerns Advice Line (BCAL) [512–232–5050]

Are you worried about a student in your class? (See: Section 6.2.3, below).

5.8.7 Title IX & Texas Senate Bill 212 (SB 212) Compliance

Please review the revised policy, laid out in *HOP* 3-3031, which reflects feedback from the campus community, recommendations from outside consultants at Husch Blackwell, and provisions that comply with the new federal regulations on Title IX. Beginning 1 January 2020, Texas Senate Bill 212 **requires** all employees of Texas universities, including faculty, report any information to the Title IX Office regarding sexual harassment, sexual assault, dating violence and stalking that is disclosed to them. Texas law requires that all employees who witness or receive any information of this type (including, but not limited to, written forms, applications, one-on-one conversations, and class assignments) must be reported. If you would like to speak with someone who can provide support or remedies without making an official report to the university, please email. For more information about reporting options and resources, please visit their website, contact the Title IX Office via email, here, or call 512–471–0419.

Although graduate teaching and research assistants are not subject to Texas Senate Bill 212, they are still mandatory reporters under Federal Title IX laws and are required to report a wide range of behaviors we refer to as sexual misconduct, including the types of sexual misconduct covered under SB 212.

For more information on Title IX Resources for students and employees alike, see: Section 6.2.5, below.

For Immediate Reporting:

Title IX Office:
512-471-0419, or
titleix@austin.utexas.edu

Title IX Coordinator:
512-232-3992, or
titleix@austin.utexas.edu

Online reporting:
https://titleix.utexas.edu/file-a-report

Chapter 6: Other Resources

6.1 Other Information Resources

6.1.1 The MyUT Portal & MyUT Austin App

MyUT is a responsive, personalized, and targeted web-based portal system that allows for a one-stop shop for students to access university resources and important information. Please take time to review this site in-full. MyUT is also an app called, MyUT Austin, you can download it from the App Store or Google Play.

6.2 Health & Safety Resources

6.2.1 University Health Services (UHS)

University Health Services serves to keep UT students healthy. They offer clinical services including general medical care, urgent care, Women's Health, Sports Medicine, and Allergy/Immunization clinics. Nurses staff a Nurse Advice Line at 475-NURSE 24 hours a day. UHS also provides a Pharmacy to fill prescriptions and carries over-the-counter medications, snacks and drinks. To learn more about UHS visit their website.

6.2.2 UT Counseling and Mental Health Center (CMHC)

The Counseling & Mental Health Center (CMHC) helps students with their personal concerns so that they can meet the daily challenges of student life. Staffed by psychologists, psychiatrists, social workers, and other licensed mental health professionals, the Center is open to registered U.T. students between 8:00 a.m. and 5:00 p.m., Monday through Friday. Their office is located on the 5th floor of the Student Services Building. The telephone number is 471–3515. To learn more visit their website.

> *The CARE Counselors for CNS*. Your CARE Counselors in the College of Natural Sciences are Nic Dahlberg, LPC and Andrea Ortega, LCW-S. The CARE counselors are available to help with a variety of issues, such as stress, test anxiety, racing thoughts, feeling unmotivated, and anything else that might be getting in your way.

Please, note: The CMHC and CARE Counselors do not share information with the Department's Graduate Affairs Office (or any other departmental office). You may always feel free, at your discretion, to share any of your concerns regarding the department and our graduate program with your Graduate Program Administrator/Coordinator directly at any time, as well.

6.2.3 Behavior Concerns Advice Line (BCAL) [512–232–5050]

Are you worried about a student in your class, bothered that your roommate has been acting differently, or concerned about the behavior of a co-worker or other person on campus? If so, contact the Behavior Concerns Advice Line (BCAL) at 512–232–5050 or submit your concerns using the online form.

6.2.4 Disability and Access (D&A)

D&A ensures students with disabilities have equal access to their academic experiences at the University of Texas at Austin by determining eligibility and approving reasonable accommodations. They also engage in outreach across campus in order to make campus a more inclusive, accessible, and welcoming environment for people with disabilities.

D&A is part of the Division of Campus and Community Engagement and their office is located on the fourth floor of the Student Services Building [SSB]. Take some time to browse through our website to find information on how to register with D&A, guidelines for documentation, and information about their accommodations and services. General resources for the UT community may be found on UT's Disability Resource page. For more information regarding this service for your students, see: Section 5.8.4.

6.2.5 Title IX Resources

The Title IX office has developed supportive ways to respond to a survivor and compiled campus resources to support survivors. As a full-time graduate academic employee you have access to both University Resources for Employees & Students. Additionally, each college has designated faculty or staff members who have comprehensive Title IX training. Your liaison is available to receive reports, provide resources, and coordinate professional development. A comprehensive list of Title IX Liaisons can be found here.

For information on Title IX and Texas Senate Bill 212 (SB212) Compliance as a university employee, please see: Section 5.8.7, above (where you will also find contact information to facilitate immediate reporting).

6.2.6 Employee Assistance Program (EAP)

The HealthPoint Employee Assistance Program (EAP) provides essential services to help you navigate life's changes and issues at work. These include, but not limited to: confidential counseling, consultations, medical referrals (including, but not limited to, alcohol counselling and smoking cessation), wellness & stress reduction resources, trainings, crisis response, and group services. EAP is open Monday–Friday, 8:00 a.m. to 5:30 p.m. (including the lunch hour), they can be reached via the web at the above link, via phone at: 512–471–3366 (after hours: 512–471–3399), and via email: eap@austin.utexas.edu.

6.2.7 Emergency Information

Part of the University's overall communications infrastructure for ensuring important information is available to the university community and the public in the event of a technical outage or emergency situation, the website: https://emergency.utexas.edu/ serves as a central resource for communications about the University in the event of an emergency.

The website provides information on emergency preparedness at the university as well as additional resources for communications and information during a technical outage or university emergency. When the university's main website is unavailable, updated information will be provided here.

6.2.8 UT Police Department (UTPD) [512–471–4441]

From crime prevention and safety programs and providing security for special events to acting as the University's Lost & Found, UTPD stands ready to assist faculty, staff, students, and visitors alike. Contact UTPD at: 512–471–4441 or visit their website.

6.2.9 Student Emergency Services

The Student Emergency Services office helps students and their families during difficult or emergency situations. Assistance includes outreach, advocacy, intervention, support, and referrals to relevant campus and community resources. **Please note that this office does not provide counseling services.**

Emergency situations include but are not limited to: A missing student; family emergency; fire or other natural disaster; student death (current or former); medical or mental health concern; academic difficulties due to crisis or emergency situations; and interpersonal violence (stalking, harassment, physical and/or sexual assault).

Student Emergency Services is also in charge of the Student Emergency Fund.

6.2.10 The BE SAFE website

Be Safe website lists many resources and services available at your fingertips. These include but are not limited to SURE Ride, SURE Walk, Campus Text Alerts, Voices Against Violence (512–471–3515), and UTPD Resources.

6.2.11 The LiveSafe App

The LiveSafe app is connected to UTPD, it is a free mobile app giving the UT community and guests immediate access to police dispatch via the communication tool most frequently used—text. LiveSafe is available in the App Store and via Google Play.

Appendix A: Student Machine Shop Safety Manual

A.1 General

1. Approved eye protection must be worn at all times in the shop area.
2. All injuries must be reported to the shop supervisor immediately.
3. Appropriate clothing is also required in the shop and when using shop equipment. Sandals and open toed shoes are prohibited. In addition, long sleeves are required when welding or observing someone weld. Loose clothing or long hair must be confined to prevent becoming entangled in the machines.
4. If you break a piece of tooling, discover broken tooling or machinery that is not operating correctly, notify the supervisor immediately. Students must comply with this rule in order to prevent injuries caused by broken or malfunctioning equipment. Hiding or concealing broken tooling only slows the replacement of that piece of tooling.
5. Tools and materials should not be left hanging over the edge of work benches or machinery because they may be knocked off causing injury or damage.
6. Hands are to be kept clear of moving parts while equipment is in motion. Machines must be completely stopped before handling moving parts or the work piece.
7. The safety guards are to be kept in place at all times, unless the shop supervisor gives you permission to remove them.
8. Only one person will operate a machine at any one time.
9. You may not wear gloves while operating machinery. Holding objects with a rag near moving machinery is also not permitted. Gloves, rags, etc. can be easily caught in machines that are in motion, pulling the operator into the equipment.
10. Machinery may not be left running unattended. You must be at the controls of the machine you are using whenever it is in motion.
11. Clean machines, benches and work areas immediately after each use. Use a brush to clean up chips; then use a vacuum, followed by a rag if needed to clean up the remaining small particles.
12. Ensure the safety of yourself and others by being aware of your surroundings. If you see someone committing an unsafe act, report it to the supervisor immediately. As the machine operator you are responsible for the safety of the people in your immediate area. It is your responsibility to look around and be sure that everyone within your range is wearing safety glasses. Likewise a welder must be sure not to start welding if people without welding helmets are watching him.
13. Keep the floor around your work area clean of cuttings and fluids such as cutting oil or water as to prevent slipping. If you spill any fluid you must clean it up immediately.
14. All chemicals brought into the shop must have a "Material Safety Data Sheet", which must be provided to the supervisor for the shop MSDS file.
15. All containers must be labeled as to their contents. Unlabeled containers of chemicals will be removed and disposed of. No chemicals or hazardous materials will be used until such usage meets all Office of Environmental Health and Safety regulations and also has approval of the shop supervisor.
16. Dispose of all chemicals and hazardous materials on job completion as required by the OEHS. Contact the Environmental Safety Office for disposal assistance at (471–3511).
17. If you have any questions about safety or the correct setup of any piece of equipment, do not hesitate to ask the supervisor for assistance.

18. Observers must not distract the operator of a machine as this may cause serious injury to the operator or the observers.
19. Observe the limitations of all machines.
20. Dirty shop rags must be placed in the red, covered metal container provided in the shop. Oily or otherwise contaminated rags littered around the shop are a fire hazard.
21. The machine shop is for physics projects and other departmental related projects only.
22. Whenever cutting or trying to clamp round stock in place, always use V-blocks and a vice in order to securely grip the material.

A.2 Hand Tools

1. Clean grease and oil from hands before using tools to prevent slipping.
2. To prevent injury or damage to your project use only tools that are in good condition.
3. Wear a face shield when using a chisel, and be sure no one is in the area where chipped material will be flying.
4. Use tools only for the job that they were designed for. Screwdrivers are for turning screws; hammers are for striking objects; parallel bars are for holding material in place until clamped; etc.
5. A chisel or punch head that becomes mushroomed should be given to the supervisor for repair. Mushroomed heads can chip off and cause injuries.
6. Cut away from your hands and body when using a knife or sharp object.
7. Check the hammer or mallet handle before using to be sure the handle fits tightly into the head of the hammer.
8. Use a wrench on nuts and bolts, not pliers.
9. Use open-end or adjustable wrenches that fit the nut snugly to prevent slipping and injuring fingers or damaging parts.
10. Use the correct size tool for the job. That includes screwdrivers.
11. All power tools must be turned off and have come to a complete stop before they can be set down by the operator. NO EXCEPTIONS.

A.3 Metal Working Tools

A.3.1 Drill Press

1. Check the drill press head and table for security and condition before starting.
2. A center punch will help locate the hole to be drilled in the correct place.
3. Select the correct speed for the material and size drill being used.
4. REMOVE THE CHUCK KEY IMMEDIATELY AFTER TIGHTENING OR REMOVING A DRILL. Leaving it in the chuck can injure someone if the machine is turned on.
5. All work pieces must be held securely for drilling by using either a drill vise or C-clamps. A work piece that moves when being drilled can break the drill, and injure the operator and destroy the work piece. Large work pieces must be set firmly against the left side of the drill press column so that if the drill "grabs" the work piece cannot spin and cause injury to the operator or others. If the drill grabs the work piece and it is yanked loose of the clamps and begins to spin, maintain downward pressure with the press and turn off the power. Do not retract the drill as this would allow the work piece to be thrown from the press and may cause serious injury.
6. Hands are to be kept clear of the revolving spindle, chuck, drill and chips.
7. Always ease up on the feed or drill pressure as the drill begins to break through the work piece. Heavy feed pressure will cause the drill to dig in, and could damage the material being drilled, break the drill, or cause the work piece to spin.

8. Drilling soft materials such as brass, copper, or plastic is done with a drill ground differently than drills used for steel.
9. When drilling large holes drill a pilot hole with a small drill such as 1/8 inch and then step up in size to prevent drill chatter.
10. Be sure the drill press is stopped before removing the work piece, chips or cuttings.

A.3.2 Electric Drill (Hand Held)

1. Center punch the hole to be drilled.
2. Tighten the drill using the chuck key and remove the chuck key immediately.
3. Hold the drill motor firmly, and keep hands away from the revolving spindle and drill.
4. Use a larger drill if a larger hole is needed. Using side pressure on the drill to "wobble" out the hole to increase the diameter will only damage the drill and cause it to break.
5. Apply straight and steady pressure on the drill, and ease up on the pressure as the drill begins to break through the material.
6. With the motor still running back out the drill as soon as the hole is drilled.
7. Turn off the drill and hold firmly until it comes to a complete stop before laying it on the work bench.

A.3.3 Bench Grinder

1. Adjust the work rest to within 1/16 inch of the wheel face.
2. Stand to the side of the grinder, not in line with the wheels, turning on a grinder and while the wheels are accelerating, this is the most common time for a damaged wheel to fly apart.
3. Do not allow hands to come in contact with the grinding wheel while it is in motion.
4. Dress the grinding wheel when it is worn uneven or out or round.
5. Hold the work firmly, and make grinding contact without bumping or impacting the grinder.
6. Use only enough pressure to assure grinding, but not heavy pressure as this will only cause overheating and grinder damage. If the work piece begins to get warm, quench it in water.
7. Grind only on the face of the wheel. Grinding on the side can cause the grinder wheel to explode due to heat stress buildup.
8. Keep the work piece in motion across the face of the wheel.
9. Stone type grinding wheels are not for grinding aluminum, brass, or copper because the soft metal becomes embedded in the stone, overheats, and can explode.

A.3.4 Friction Saw

1. The work piece must be securely clamped. NO EXCEPTIONS.
2. The friction saw, like the grinder, is for steel only. Aluminum and other soft metals will build up on the blade and cause it to overheat and explode.
3. Supervisor must be present while operating.

A.3.5 Disc Grinder - Portable

1. You must wear a face shield as well as safety glasses when using the disc grinder.
2. Always be aware of the direction you are throwing the stream of sparks. It is your responsibility to be sure you are not throwing them on other people, in the vicinity of those without eye protection, or on potentially flammable items.
3. Like all other hand tools, the disc grinder must be stopped (not moving) before it can be set down.

A.3.6 Buffer (Wire or Cloth)

1. Hold the work piece firmly with both hands.
2. Keep hands away from the buffer while it is in motion.

3. Hold the work piece below center (horizontal axis) of the wheel.
4. Apply buffing compound sparingly to cloth buffers.
5. Using excessive pressure will cause the work piece to overheat and damage the surface.

A.3.7 Micro Flat

1. NEVER use the micro flat as a table, chair or workbench. It is a precision measuring device and should be treated as such.
2. Always keep the flat covered unless it is in use.
3. Before use, wipe the dust and grit off the flat with your hand, not a rag, a brush, etc. Your hand can feel the grit and whether you have cleared all of it from the surface.
4. While using the flat, do not place any objects or tool besides the height gauge and/or the work piece on the flat. Other tooling could chip the flat if set down roughly or at the edge.

A.3.8 Engine Hoist

1. NEVER work under anything hanging from a crane, or on a jack. Use jack stands capable of supporting the amount of weight necessary.
2. You must ask the supervisor for permission to use the engine hoist.

A.3.9 Bandsaw - Vertical

1. Use only the correct blade for the material being cut (fine blade for steel, coarser one for aluminum).
2. CAUTION: Stand to one side while doing power-on testing of blade tracking. Should the blade come off the wheels or break, it could cause serious injury.
3. Adjust the blade guides and rollers properly, and adjust the speed. The upper saw guide should be 1/4 inch or less above the work piece.
4. Check the work piece to be sure it is free of defects (i.e. broken off tool bits, etc.).
5. Plan the cut so as to prevent backing out of a cut, as this will pull the blade off the wheels. Make relief cuts as needed.
6. Holding the work piece firmly, feed the work piece at a moderate rate.
7. Use a push stick when sawing small pieces.
8. When feeding a work piece into the bandsaw blade, your fingers should not be in line with the blade in case the work piece cuts faster than you expected.
9. A minimum of three teeth must be engaged in the work piece at all times or the teeth will be torn off the blade.

A.3.10 Bandsaw - Horizontal

1. All work pieces must be secured in the machine's clamp.
2. The movable jaw of the machine's clamp pivots about its center. Thus if your work piece extends less than half way through the jaws of the clamp, you must use a spacer on the other side of the pivot in order to prevent slipping.
3. Do not allow the machine to drop rapidly causing the blade to impact the work piece. Slowly lower the saw and let it gently engage the work piece.
4. A minimum of three saw teeth must be engaged in the work piece at all times. If less teeth are engaged then the force per tooth is so great that the teeth will tear off the blade.
5. Control the decent of the blade through the entire cut, do not allow it to cut through the material as fast as it can possibly go.
6. The horizontal bandsaw is a flood coolant machine; the fluid that flows over the blade is recirculated. If the fluid is not flowing, then inform the supervisor immediately and it will be refilled.

A.3.11 Engine Lathe

1. Roll up loose sleeves, and do not wear loose clothes such as sweaters or neckties while operating the lathe.
2. Be certain the work piece is set up securely and tightly when using chucks and collets.
3. REMOVE THE CHUCK KEY IMMEDIATLY AFTER EACH USE. If the lathe were accidentally activated while the chuck key was still in the chuck, the key would become a very fast-moving projectile and possibly cause serious injury.
4. Keep hands on the controls or at your side while the lathe is running.
5. Keep hands away from chips as they are very sharp and possibly hot.
6. Complete cuts that are close to the chuck or against a shoulder by hand feeding to prevent machinery or work piece damage.
7. Remove the tool holder and tool post before filing or polishing.
8. Never move the speed selector controls while the spindle is rotating.
9. Never push the reverse switch while a chuck is moving forward as this could cause the chuck to unscrew itself and fall off and cause serious injury.
10. Regulate the depth of cut according to the size and type of material.
11. Use tools that are properly ground for the particular job.
12. You may never check measurements or surface finishes of the work piece while it is spinning.
13. After you have chucked up your work piece and completed your tool setup, you must spin the chuck by hand to ensure that the jaws of the chuck and the work piece will not hit the carriage of the lathe or the tool rest.
14. Between Centers Turning.
    (a) Use the safety dog to drive work piece.
    (b) Clamp the tailstock securely.
    (c) Use only a live center
    (d) Counterbalance work piece on the faceplate if it is irregular in shape.
    (e) Stand to one side of the revolving faceplate to avoid being hit by flying objects.

A.3.12 Milling Machine

1. The milling machine is a precision piece of equipment so it is important not to damage the table. The table is not a workbench or a place to put tools.
2. Be sure you know how to stop the milling machine quickly before operating the machine.
3. Be sure the power feed controls are in their "Neutral" position before turning on the machine.
4. Handle cutters carefully. They are sharp. If they can cut metal, they can cut you.
5. Use a soft hammer or mallet to seat the work piece against the parallel bars or bottom of the vice.
6. Secure the work piece firmly in the vice or with appropriate clamps.
7. Check the work piece, milling machine table, and holding device for clearance of the quill during the cutting.
8. Set the machine for the proper depth of cut.
9. Select the correct spindle speed for the type of material and the cutter being used.
10. Select the proper direction of rotation for the cutter.
11. Feed the work piece against or opposite the direction of rotation of the cutter.
12. Keep hands on the controls while the machine is running.
13. Never try to feel the finished surface while the cut is being taken.

A.3.13 Sheet Metal Shear

1. Follow the manufacturer's specifications as to gauge the sheet metal that can be safely cut. Our sheer can cut up to .060 inch steel sheet or .080 inch aluminum sheet.
2. Keep fingers and measuring scales out of the way of the blade.
3. Do not cut round stock or anything except sheet metal in the sheer.
4. Place the sheet against the guide and then clamp it in position with the clamp on the machine.
5. The treadle is operated with one foot, and the other foot must be kept clear as the treadle comes down.
6. Return the treadle to the up position slowly with foot pressure. Do not let it make a rapid return.
7. Pick up the scrap pieces when you have completed cutting.

A.3.14 Sheet Metal Brake

1. Bend only sheet stock in the brake. No round stock.
2. Adjust the clamping bar correctly to suit gauge of metal being formed, and stand clear of all moving parts.

A.3.15 Throatless Cutter

1. Keep fingers clear of the cutter, and handle cut material carefully as it may have sharp edges.
2. Do not cut round stock with this cutter.
3. Pick up waste once you have completed your cut.

A.4 Welding Tools

A.4.1 Oxygen (Acetylene Welding)

1. Cylinders must always be fastened with a chain or other suitable device as a protection against falling or rolling.
2. Keep the welding equipment free of oil and grease, and away from oily rags. When oil comes in contact with oxygen it will explode.
3. If leaks are detected in the equipment, they are to be reported immediately to the supervisor.
4. Adequate ventilation is needed in the welding area before beginning.
5. Keep ALL flammable material away from the work area.
6. Wear the appropriate welding goggles. Assistants and observers must also wear welding goggles.
7. Release the regulator pressure screw and open the cylinders slowly.
8. Open the acetylene cylinder 1/2 turn maximum.
9. The normal pressure setting for acetylene is 5 psi with a maximum of 15 psi.
10. The oxygen cylinder valve should be opened all the way as it is a double seating valve.
11. The normal pressure setting for oxygen is 10 psi with higher settings used for torch cutting.
12. Point the torch away from yourself and observers before lighting the torch.
13. Use a friction torch lighter (flint striker) to ignite the torch.
14. Close the acetylene valve first if the torch backfires.
15. Keep sparks and flames away from the gas cylinders and hoses.
16. Close both cylinder valves and then release the pressure from the lines when you have finished the job.
17. Hot metals are to be quenched rather than left lying on the table hot, or mark with chalk the word 'HOT' if air cooling is desired.
18. Clean your work area when completed and put scrap metals in the appropriate container.

A.4.2 Electric Welding

1. Proper welding helmet, long sleeves or leather apron, long pants and leather gloves (or cotton gloves if TIC welding) are required to protect the welder and observers from eye and skin damage due to the intense ultraviolet (UV) radiation that emanates from the arc.
2. Do all welding in the welding area if at all possible. Shields and fire hazard precautions will need special attention if welding in other areas.
3. Check for adequate ventilation before welding.
4. Before you begin welding, you must set up the welding shields to protect others from the effects of the UV radiation on their eyes and skin. The shields are to be erected across the entrance to the welding area if the welding is being done in the welding area. If the work piece cannot be brought into the welding area then the shields must be encircling the welding being done.
5. Welding on zinc plated metals is hazardous to your health, and can be fatal. Do not weld on zinc plated metal (galvanized metal).
6. For assistance in setting up the welding equipment ask the supervisor.
7. After your weld is complete, quench the work piece in water or mark it "HOT." if an air cool is necessary.

A.4.3 Spot Welding

1. Open the water coolant valve to maintain a slow water flow.
2. Wear welding gloves and face shield when using the spot welder. Observers must be protected from flying sparks.
3. Prevent excessive "explosion" by proper preparation of work, correct setup, and operation of the spot welder.
4. Handle completed spot welded objects carefully as they may be hot and sharp.
5. The electrodes are hot and cool slowly after they have been used.
6. The electrodes should not be brought together unless a piece of stock is between them.
7. Should the electrodes need cleaning, ask the supervisor for help. Do not use a file.

A.5 Wood Tools

Before using any wood tools you must inspect your material for foreign metal objects, such as nails, screws, staples, etc.

A.5.1 Router (Portable)

1. Wear a face shield when operating the router.
2. Make certain the router bit is tightened before using the router.
3. The router cutter must be completely stopped before laying the router down on its side.
4. Do not stand the router on the cutter end when not in use.
5. Hold the router firmly with both hands before turning on the power.
6. Feed the router at a moderate rate; too slow a feed rate will cause burning of the wood, too rapid a rate will produce a rough splintery surface.

A.5.2 Saber Saw

1. Select the proper blade for the material to be cut, and secure the blade in the saw before plugging in the electric cord.
2. Use a relief cut on corners to prevent binding or pinching the blade which will cause the blade to break.
3. Hold the saber saw firmly against the work piece to prevent vibration or injury.
4. The saw should be placed on its side on the workbench when not in use.

A.5.3 Portable Belt Sander

1. Place the sander on its side before plugging the power plug into the outlet
2. Securely clamp the work piece before sanding.
3. Start the sander before touching it to the surface to be sanded.
4. Disconnect the power plug before changing the sanding belt.
5. The weight of the sander will apply adequate pressure to the sanding surface in most cases. Do not apply pressure that causes the sander to slow down.

A.5.4 Disk / Belt Sander

1. Check the belt or disk to make sure it is in good condition and not torn. The shop supervisor will replace worn belts or disks.
2. Keep fingers and hands clear of the moving or rotating surface.
3. Hold the work piece securely and use only moderate pressure.
4. Sand only on the downward motion side of the disk sander.
5. Move the work piece side to side on the sanding surface to prevent rapid wear of the belt or disc.

A.5.5 Table and Radial Circular Saw

1. You must ask the supervisor's permission to use the radial arm saw or the table saw.
2. Unplug the machine before handling or changing the blade.
3. Select the proper blade for the cut to be made. Check the blade to be free of cracks or nicks, and that it is sharp.
4. Limit the blade extension to ~ inch through the piece being sawed.
5. Use the ripping fence or the cutoff gauge when cutting material.
6. Keep a push stick immediately available and use it to keep fingers away from the saw blade.
7. Feed the work piece at a moderate rate, but not so fast the motor slows down.
8. When using the fence to rip cut a work piece the operator and all observers must not stand in line with the work piece because it can get pinched between the spinning blade and the fence causing it to kick back (be fired strait back out of the saw at a very rapid rate).
9. When cutting large or long pieces on the table saw, use an assistant to SUPPORT the edge or end of large or long pieces being sawed. The assistant does not "feed" the material into or pull it through the saw. This can cause the operator to loose their balance if the work piece moves more rapidly then they anticipated and the operator can fall into the saw.
10. Make sure the table saw has a blade guard, splitter, and anti-kickback device installed and operational before using the saw. Exceptions may be made for specialty cuts (e.g., dados). Check with the shop supervisor before disengaging or removing these guards.
11. You may not cut any work piece on the radial arm saw that is less than 12 inches in length.
12. The table and radial arm saws are for cutting wood materials only.

A.5.6 Jig Saw

1. Select the proper size and type of blade for the material to be cut.
2. Cut only stock that is flat on at least one side.
3. See the technician about setting the proper blade tension.
4. The jig saw foot should apply pressure to the work piece. The foot holds the work piece down on the table.
5. Turn the machine through by hand to check for proper operation before turning on the power.

A.5.7 Jointer

1. All guards will remain in place and properly operating before using the jointer.

2. Stand to the side of the machine when in operation.
3. Limit the depth of the cut to 1/16 inch maximum; the jointer is intended for light finish cuts only.
4. Use a push stick, and do not feed material less than 12 inches long through the jointer.
5. Never allow hand pressure on top of the work piece to be directly over or just past the cutter. If kickback should occur with the hand over the cutter, serious injury will result.
6. The work piece must be pushed far enough past the cutter knives before picking it up to allow the guard to return.
7. Feed the work piece at a constant moderate rate and into the rotation of the cutter.

A.6 Other Tools

A.6.1 Sand Blaster

1. All work pieces must be clean (free of grease, oil, etc) and dry.
2. You must ask the supervisor's permission to sand blast.
3. Discontinue use and inform the supervisor if the sand blasting machines gloves develop cracks, tears or holes.

A.6.2 Compressed Air

1. Wear safety glasses, goggles, or face shield when using the blow gun.
2. Blowing compressed air at your skin or that of others can inject air bubbles into the blood stream and cause death.
3. You are responsible for insuring that your use of the air hose does not injure others, (i.e., do not blow chips at someone without eye protection). LOOK FIRST.

A.6.3 Solvent Tank

1. Use of the rubber gloves provided is strongly recommended but not required.
2. Pre-clean the parts to remove excess grease, oil and other foreign substances so that the solvent is not instantly too contaminated to use. Note: the solvent is recirculated continuously.
3. When not in use the lid is to remain closed and not used as a table.
4. No additional solvents may be added to the solvent tank.
5. The supervisor is responsible for replacing the solvent.

A.6.4 Spray Painting

1. No spray painting will be done in this shop. It does not meet the Air Pollution Control District or OSHA regulations and requirements.
2. Check with the supervisor for alternatives if painting is required to complete your project.

A.6.5 Hydraulic and Arbor Press

1. Make certain work is solidly supported on the table and is aligned with the ram.
2. Make certain that accessories, ram or arbor, are properly positioned so as to prevent parts from slipping out when under pressure and endangering yourself or observers.

Appendix B: Student Shop After Hours Policy

B.1 Rules for Student Machine Shop for after hours and weekends

1. All shop safety rules will be strictly adhered to, see: Appendix A.
2. Only physics approved students, working as part of an official physics department group, are allowed in the shop. Each individual must provide, on the sign-up sheet, his or her name and an emergency contact (this will include the name, relationship, and phone number of a responsible party in the event of an accident).
3. No machinery will be operated and no work will be done unless there are two student members physically present in the shop. This will allow, in the event of an injury, for the second person to call for help by using the EMERGENCY PHONE and then render aid. See: EMERGENCY PROCEDURES, below.
4. Any breach of safety procedures will result in the loss of shop privileges.
5. Faculty sponsor must approve after hours work and provide a means of contact for the group.
6. Leave doors open while working in student machine shop.

B.2 Minor Emergencies

If treatment is required for minor accidents, University Health Services or any ERT can be contacted. Telephone numbers and locations will be posted on the door by sign-in sheet.

B.3 Emergency Procedures

In the event of a serious accident the second person performs procedures listed below:

1. Press the RED button on the EMERGENCY PHONE located on the left side of the doorway and under the large RED sign. This will put you in direct contact with the University of Texas Police Department (UTPD). This will also give UTPD the exact location (Robert Lee Moore/PMA) and the room number (3.210/student shop).
2. Explain the nature and severity of the emergency and if Emergency Medical Services (EMS) and/or the fire department are needed.
3. Render aid until emergency response teams arrive. The FIRST AID KIT is located on the wall by the sink.
4. Contact the faculty supervisor.
5. Ask EMS personnel which hospital the individual will be transported to.
6. Faculty Supervisor: Phone the emergency contact (from sign-up sheet) and tell them which hospital the student will be taken to.
7. Contact the student shop supervisor, Jack Clifford at 380-0670, and the shop supervisor, Allan Schroeder at 281-3261.
8. E-mail Allan Schroeder at als@physics.utexas.edu a detailed report covering the accident and procedures followed including as many names as possible.
9. Secure all shop entrance doors before leaving.

Appendix C: FAQs about Computer Support

Who provides computing support for Physics?

Answer: The College of Natural Sciences Office of Information Technology (CNS OIT) provides services via the CNS Help Desk. CNS OIT is a service group dedicated to supplying computing support for the college. In addition, some groups within Physics may have their own local support staff to help members of their groups. More information about the services provided by the CNS OIT are found here: https://cns.utexas.edu/information-technology.

How do I get a Physics account for web, computation, or general use?

Answer: We provide Linux accounts which can be used for computation, personal web pages, and general computing use. Pick up a new user account form from Matthew Ervin, Graduate Program Administrator/Coordinator. Fill out the form and have the associated research sponsor, Matthew Ervin, or the Department Chair sign the form. After having the form signed, please bring the form with correct identification to PMA 7.126. Unless there is a problem with your form, your account will be set up within one business day, often within about 15 minutes.

How do I get a Physics e-mail account?

Answer: We no longer provide physics e-mail accounts for students. Students should get a UT Mail account by going to: http://utmail.utexas.edu/.

How do I subscribe to the Physics department graduate email list?

Answer: You may sign up for this list by going to: https://utlists.utexas.edu/sympa/info/gradlist.

What computers are available for use?

Answer: Your LINUX account will work for accessing our 15 LINUX machines named linux1.ph.utexas.edu through linux15.ph.utexas.edu.

You may access all the LINUX machines remotely via SSH. You can also directly access a few of these machines in the Graduate Lounge in PMA 7.306.

Printing is available in PMA 7.306 for the LINUX machines. Note that printer usage is monitored for abuse.

How do I make a any other request for help in a computer related matter?

Answer: Go to the website http://www.cns.utexas.edu/help/.

How do I access the homework server machine?

Answer: Go to http://quest.cns.utexas.edu/.

Appendix D: Faculty Information

(revised: November 2023)

Alvarado, José R., Ph.D., Vrije Universiteit Amsterdam, 2013. Assistant Professor of Physics. *Biophysics. Soft matter, fluid mechanics, active matter*.

Andeen, Timothy R., Ph.D., Northwestern University, 2008. Associate Professor of Physics. *High Energy Physics. Experimental searches for new particles and interactions and investigation of electroweak symmetry breaking; high-speed electronics development for new, large scale particle detectors*.

Baldini, Edoardo, Ph.D., École Polytechnique Fédérale de Lausanne, 2017. Assistant Professor of Physics. *Experimental Condensed Matter Physics. Emergent phenomena in quantum materials*.

Boddy, Kimberly K., Ph.D., California Institute of Technology, 2014. Assistant Professor of Physics. *Theoretical Cosmology. Astro-particle physics, dark matter*.

Breizman, Boris, Ph.D., Budker Institute of Nuclear Physics, 1971. Research Professor of Physics. *Plasma and Fusion. Theoretical plasma physics, beam-plasma interactions*.

Burby, Joshua W., D.Sc., Princeton University, 2015. Assistant Professor of Physics. *Plasma and Fusion*.

Caceres, Elena, Ph.D., The University of Texas at Austin, 1996. Associate Professor of Physics. *String Theory and Gravity: gauge/gravity duality, supergravity solutions, and holography*.

Chelikowsky, James R., Ph.D., University of California, Berkeley, 1975. Professor of Physics & Chemical Engineering. Director, Center for Computational Materials, Oden Institute for Computational Engineering and Sciences. Condensed matter physics. *Materials physics. Electronic, optical and magnetic properties of materials. High performance computational algorithms for the quantum theory of materials*.

Chen, Hsin-Yu, Ph.D., University of Chicago, 2017. Assistant Professor of Physics. *Relativity & Gravitation*.

Coker, William Rory, Ph.D., University of Georgia, 1966. Professor of Physics. *Nuclear Physics. Theoretical nuclear physics, with emphasis on scattering and reactions of hadrons and nuclei at medium energies*.

Demkov, Alexander A., Ph.D., University of Arizona, 1995. Professor of Physics. *Condensed Matter Physics. Condensed-matter theory; physics of electronic materials, surfaces, and interfaces; thin films and devices; novel materials; quantum transport*.

Distler, Jacques, Ph.D., Harvard University, 1987. Professor of Physics. *Cosmology & String Theory. High-energy theory, mathematical physics, string theory*.

Ditmire, Todd, Ph.D., University of California, Davis, 1995. Professor of Physics. Director, Texas Center for High Energy-Density Science. *Advanced accelerator concepts, laser/plasma particle acceleration and interactions, strong field quantum field physics, advanced x-ray and gamma-ray radiation sources, experimental & computational relativistic plasma and particle physics, nuclear physics, ultrahigh intensity laser-matter interaction*.

Downer, Michael W., Ph.D., Harvard University, 1983. Professor of Physics. *Atomic, Molecular, & Optical Physics, Condensed Matter Physics. Atomic and molecular physics, atomic physics, femtosecond spectroscopy, condensed matter surfaces, high-field atomic and plasma physics*.

Fischler, Willy, Ph.D., Université Libre de Bruxelles, 1976. Professor of Physics. Director, Weinberg Theory Group, The Weinberg Institute. *Cosmology & String Theory, Relativity & Gravitation. Theoretical physics, particle theory, invisible axion and supersymmetry*.

Fitzpatrick, Richard, Ph.D., University of Sussex, 1988. Professor of Physics & Graduate Advisor. *Plasma and Fusion. Magnetic reconnection and gross plasma instabilities in fusion, terrestrial, and astrophysical contexts*.

Florin, Ernst-Ludwig, Ph.D., Technische Universität München, 1995. Associate Professor of Physics. *Biophysics, Nonlinear Dynamics. Experimental nonlinear dynamics, biophysics*.

Freese, Katherine, Ph.D., University of Chicago, 1984. Professor of Physics. Director, The Weinberg Institute. Director, Texas Center for Cosmology and Astroparticle Physics, The Weinberg Institute. *Astrophysics, Cosmology, & String Theory*.

Galitzki, Nicholas, Ph.D., University of Pennsylvania, 2016. Assistant Professor of Physics. *Experimental Cosmology. Astrophysical instrumentation, data analysis, polarimetry, cosmic microwave background, interstellar medium, dust*.

Gentle, Kenneth W., Ph.D., Massachusetts Institute of Technology, 1962. Professor of Physics. *Plasma and Fusion. Experimental plasma physics, particle and electron transport*.

Gilpin, William, Ph.D., Stanford University, 2019. Assistant Professor of Physics. *Biophysics, Nonlinear Dynamics. Chaos, data-driven modeling and statistical learning, mathematical biology, complex fluid flows and pattern formation*.

Giustino, Feliciano, Ph.D., École Polytechnique Fédérale de Lausanne, 2005. Professor of Physics. *Condensed Matter Physics. Electronic structure theory, materials design. High-performance computing*.

Gordon, Vernita, Ph.D., Harvard University, 2003. Associate Professor of Physics. *Biophysics. Experimental biological physics, multicellular systems, the role of physics and spatial structure in developmental and evolutionary systems, biological physics and engineering of membranes*.

Hegelich, B. Manuel, Ph.D., Ludwig-Maximilians-Universität München, 2002. Associate Professor of Physics. *High Energy-Density Science. Laser-plasma simulations and strongfield quantum field theory. Atomic, Molecular, & Optical Physics, Plasma and Fusion. Interaction of ultra-intense electromagnetic fields with matter; high-energy density physics; laser particle acceleration*.

Heinzen, Daniel J., Ph.D., Massachusetts Institute of Technology, 1988. Professor of Physics. *Atomic, Molecular, & Optical Physics. Atomic and molecular physics, laser cooling and atom trapping, Bose-Einstein condensation*.

Hunter-Jones, Nick, Ph.D., California Institute of Technology, 2018. Assistant Professor of Physics & Computer Science. *Condensed Matter Physics: Quantum Information*. *Quantum many-body physics, random quantum circuits, unitary designs, demonstrations of quantum advantage, noise in quantum systems, quantum complexity, quantum chaos and scrambling, thermalization, Hamiltonian simulation, topological phases*.

Ippoliti, Matteo, D.Sc., Princeton University, 2019. Assistant Professor of Physics. *Condensed Matter Physics: Quantum Information. Quantum dynamics and simulation*.

Kaplunovsky, Vadim, Ph.D., Tel Aviv University, 1983. Professor of Physics. *Cosmology & String Theory. Particle theory, string phenomenology*.

Karch, Andreas, Ph.D., Humboldt-Universität zu Berlin, 1998. Professor of Physics & Associate Chair for Graduate Education (GSC Chair). *Particle Theory*.

Keto, John W., Ph.D., University of Wisconsin-Madison, 1972. Professor of Physics. *Atomic, Molecular, & Optical Physics. Reactions and radiative processes of excited atoms and molecules, laser spectroscopy, nanoparticles*.

Kilic, Can, Ph.D., Harvard University, 2006. Associate Professor of Physics. *Particles and Fields. Theoretical particle physics, extensions of the Standard Model, collider phenomenology, dark matter models and searches*.

Kravitz, Scott, Stanford University, 2017. Assistant Professor of Physics. *High Energy Physics. Experimental particle physics, dark matter direct detection, machine learning, rare event searches*.

Kunz, Paul D., D.Sc., University of Colorado at Boulder 2013. Adjunct Associate Professor of Physics. *Atomic, Molecular, & Optical Physics*.

Laguna, Pablo, Ph.D., The University of Texas at Austin, 1987. Professor of Physics & Department Chair. *Relativity & Gravitation*.

Lai, Keji, Ph.D., Princeton University, 2006. Associate Professor of Physics. *Condensed Matter Physics. Experimental condensed matter physics, nanoscale electromagnetic imaging, complex oxides, nanomaterials, transport in low-dimensional systems*.

Lang, Karol, Ph.D., University of Rochester, 1985. Professor of Physics. Director, Center for Particles and Fields. *High Energy Physics. Experimental particle physics, rare kaon decays, neutrino interactions and oscillations, searches for neutrinoless double beta decay, axions, processes beyond the Standard Model, development of particle detectors and analysis techniques of complex data sets, medical nuclear imaging*.

Li, Xiaoqin "Elaine", Ph.D., University of Michigan, 2003. Professor of Physics. *Experimental Condensed Matter Physics. Quantum control, and nanophotonics. ultrafast spectroscopy and inelastic light scattering of metallic films and nanoparticles, van der Waals materials, semiconductor nanostructures, magnetic thin films*.

MacDonald, Allan H., Ph.D., University of Toronto, 1978. Professor of Physics. *Condensed Matter Physics. Condensed-matter theory with emphasis on electron-electron interactions*.

Mahajan, Swadesh M., Ph.D., University of Maryland 1973. Research Professor of Physics. *Plasma and Fusion.*

Marder, Michael P., Ph.D., University of California, Santa Barbara, 1986. Professor of Physics. Co-Director of UTeach. Director, Center for Nonlinear Dynamics. *Condensed Matter Physics, Nonlinear Dynamics and Complex Systems, Physics Education. Nonlinear dynamics, statistical physics of nonlinear dynamics and complex systems, physics and other solids*.

Markert Christina, Ph.D., Johann Wolfgang Goethe Universität, 2001. Professor of Physics. *Nuclear Physics. High energy nuclear physics, relativistic heavy-ion physics, the quark-gluon plasma (QGP) phase*.

Markert, John T., Ph.D., Cornell University, 1987. Professor of Physics. Associate Chair for Foundational Physics Education. *Condensed Matter Physics, Physics Education. Experimental condensed-matter physics, crystal growth, pulsed-laser-ablation thin-film deposition, high-Tc materials, magnetic materials, magnetic resonance, magnetic resonance force microscopy, interferometer/oscillator technologies*.

Matzner, Richard A., Ph.D., University of Maryland, 1967. Professor of Physics. *Relativity & Gravitation. General relativity and cosmology, manifolds with little symmetry, kinetic theory, conservation laws in general relativity, black hole physics and gravitational radiation*.

Morrison, Philip. J., Ph.D., University of California, San Diego, 1979. Professor of Physics. *Nonlinear Dynamics and Complex Systems, Plasma and Fusion. Plasma physics, mathematical physics, fluid dynamics, Hamiltonian dynamics, computational physics*.

Onyisi, Peter, Ph.D., Cornell University, 2008. Associate Professor of Physics. Chair, Graduate Welfare Committee. *High Energy Physics. Experimental investigation of electroweak symmetry breaking and searches for new particles and interactions, computing with large sets of structured data*.

Paban, Sonia, Ph.D., Universidad de Barcelona, 1988. Associate Professor of Physics. *Cosmology & String Theory. Quantum mechanics, particle phenomenology, string theory*. On Leave.

Raizen, Mark G., Ph.D., University of Texas, Austin, 1989. Professor of Physics. Sid W. Richardson Foundation Regents Chair #2 in Physics. *Atomic, Molecular, & Optical Physics, Nonlinear Dynamics and Complex Systems. Atom optics, quantum chaos.*

Reichl, Linda E., Ph.D., University of Denver, 1969. Professor of Physics. Director, Center for Complex Quantum Systems. *Statistical & Thermal Physics. Quantum chaos, superfluid and superconductor dynamics, scattering theory, matter-radiation interaction*.

Shih, Chih-Kang "Ken", Ph.D., Stanford University, 1988. Professor of Physics. *Condensed Matter Physics. Synthesis and characterizations of low dimensional quantum systems*.

Shoemaker, Deirdre, Ph.D., The University of Texas at Austin, 1999. Professor of Physics. Director, Center for Gravitational Physics, The Weinberg Institute. Chair, Graduate Recruitment Committee. *Relativity & Gravitation. Gravitational wave physics.*

Sitz, Greg O., Ph.D., Stanford University, 1987. Professor of Physics, Associate Chair for Undergraduate Education, & Undergraduate Advisor. *Atomic, Molecular, & Optical Physics. Experimental atomic and molecular physics; oriented molecules; surface scattering*.

Tenerani, Anna, Ph.D., Université Pierre-et-Marie-Curie/Università di Pisa, 2012. Assistant Professor of Physics. *Plasma Physics, Space Physics. Magnetic reconnection, turbulence in magnetized plasmas*.

Thomas, Deepa, Ph.D., Universiteit Utrecht, 2014. Assistant Professor of Physics. *Nuclear Physics. Experimental high energy nuclear physics, Quark Gluon plasma*.

Tsoi, Maxim, Ph.D., Universität Konstanz, 1998. Professor of Physics. *Condensed Matter Physics. Experimental condensed-matter physics, nanostructures, spintronics*.

Waelbroeck, François, Ph.D., The University of Texas at Austin, 1988. Research Professor of Physics. Director, Institute for Fusion Studies. *Plasma and Fusion. Magnetic reconnection, magnetic islands, the effect of flows on MHD modes*.

Yao, Zhen, Ph.D., Harvard University, 1997. Associate Professor of Physics. *Condensed Matter Physics, Physics Education. Nanostructures and mesoscopic physics, experimental physics*.

Zimmerman, Aaron, Ph.D., California Institute of Technology, 2013. Assistant Professor of Physics. *Relativity & Gravitation. General Relativity, black holes, gravitational waves, numerical relativity, strong gravity*.

Appendix E: Sample Forms & Documents

[1] Advising Form

[2] Degree Planning Checklist

[3] x90 Graduate Research Form

[4] Every Semester To Do List (Registration, Advising, and Tuition Bill Payment)

[5] Oral Qualifying Examination Form

[6] Ph.D. Program of Work

Today's Date: 8/17/2047

Advising Sheet for Fall 2047 Registration

Fill in the sheet (please print) and turn it in to Dr. Fitzpatrick during your advising time. Keep a note for yourself of the courses you will register for since you will be handing in this form. If you make a change in registration for a core course or degree-required course you should inform Dr. Fitzpatrick of the change via email, immediately. PLEASE WRITE CLEARLY, thank you.

Name: KEVIN SMITH **EID:** clerks2

Address: 12344 Organa Street; Capital City, Alderan 02000

Phone: 867-5309 **Email:** k-dog@physics.austin.us

Name of Supervisor **(leave blank if you do not have one):** Yoda

Field of Interest: Fundamental Theory

Proposed Course Work for Fall 2011*

Course #	**Unique #**	**Title of Course**	**Instructor**
PHY 385K	10000	Classical Mechanics	Skywalker
M381D	60000	Complex Analysis	Weil
PHY 398T	00300	Supervised Teaching in Physics	Coker

*Courses are listed on the back of this form. If you are taking PHY x90, please write in the name of the faculty member who will supervise your research. [You will also need to fill out an x90 Graduate Research Form].

After you have registered, check your schedule on UTDirect to make sure you are in the correct courses. The letter "Z" next to the course indicates that you are registered on a Credit/No Credit basis (some courses are only offered on this basis). You should **not** take any core or required course on the Credit/No Credit basis. Report any errors in registration immediately to Matt. You have until the 4th Class Day (1st Class Day in the Summer) to make changes to your schedule freely (to add or drop a class), between the 4th and the 12th Class Day you will need Professor Fitzpatrick's signature as well as that of the course's instructor. If you are in candidacy, you must be continuously registered in 399W, 699W, or 999W.

I have read and understand the preceding notices/policies: ______ (initial)

Graduate Advisor's Approval: ______

Course Offerings Fall 2047

COURSE #	UNIQUE	TITLE	TIME	ROOM	INSTRUCTOR
PHY 380L	57150	PLASMA PHYSICS I	TTH 3:30 to 5:00	PMA 5.114	SHVETS, G
PHY 380N	57155	EXPERIMENTAL PHYSICS	TTH 2:00 to 3:30	PMA 5.114	RAIZEN, M
PHY 382Q	57157	CELL AND MOLECULAR BIOPHYSICS [BIOPHYSICS II]	MWF 11:00 to 12:00	PMA 6.122	SHUBEITA, G
PHY 382S	57160	SEMINAR IN NONLINEAR DYNAMICS	MWF 1:00 to 2:00	PMA 11.204	FLORIN, E
PHY 385K	57165	CLASSICAL MECHANICS	MWF 10:00 to 11:00	PMA 6.120	NIU, Q
PHY 385L	57170	STATISTICAL MECHANICS	TTH 8:00 to 9:30	PMA 7.104	MACDONALD, A
PHY 385S	57175	SEMINAR IN STATISTICAL PHYSICS: STATISTCAL MECHANICS	TTH 3:30 to 5:00	PMA 5.104	REICHL, L
PHY 386K	57180	PHYSICS OF SENSORS	TTH 11:00 to 12:30	PMA 5.114	LANG, K
PHY 387K	57185	ELECTROMAGNETIC THEORY I	TTH 11:00 to 12:30	PMA 5.124	DOWNER, M
PHY 387M	57190	RELATIVITY THEORY I	TTH 2:00 to 3:30	PMA 5.118	MATZNER, R
PHY 388M	57195	GRADUATE COLLOQUY	W 3:00 to 6:00	PMA 4.102	RAIZEN, M
PHY 389K	57200	QUANTUM MECHANICS I	TTH 9:30 to 11:00	BEN 1.126	BOHM, A
PHY 391S	57230	SEMINAR IN PLASMA PHYSICS	F 2:00 to 4:00	PMA 11.204	BENGTSON, R
PHY 391T	57235	PLASMA PHYSICS: HIGH ENERGY DENSITY PHYSICS	TTH 12:30 to 2:00	PMA 5.120	DITMIRE, T
PHY 391U	57240	SEMINAR IN PLASMA THEORY	TTH 4:00 to 5:30	PMA 11.204	BERK, H
PHY 392L	57245	SOLID-STATE PHYSICS II	MWF 2:00 to 3:00	PMA 6.126	CHELIKOWSKY, J
PHY 392S	57250	SEMINAR IN SOLID-STATE PHYSICS	TTH 1230 to 200	PMA 7.104	DEMKOV, A
PHY 392S	57255	SEMINAR IN SOLID-STATE PHYSICS: CONDENSED MATTER	F 12:00 to 1:30	PMA 13.202	SHIH, C
PHY 393S	57265	SEMINAR IN RELATIVITY	TTH 3:30 to 5:00	PMA 6.124	MATZNER, R
PHY 395S	57270	SEMINAR IN ATOMIC AND MOLECULAR PHYSICS	F 4:00 to 7:00	PMA 5.104	FINK, M
PHY 396K	57275	QUANTUM FIELD THEORY I	TTH 3:30 to 5:30	PMA 5.116	KAPLUNOVSKY, V
PHY 396S	57280	SEMINAR IN PARTICLE PHYSICS	MF 4:00 to 5:30	WEL 3.260	DICUS, D
PHY 396T	57285	PARTICLE PHYSICS: INTRODUCTION TO RESEARCH	T 5:00 to 6:30	PMA 7.104	COKER, W
PHY 396U	57290	THEORY GROUP SEMINAR	TTH 2:00 to 3:30	PMA 7.104	PABAN, S
PHY 397S	57295	SEMINAR IN NUCLEAR PHYSICS	MF 4:00 to 5:30	PMA 5.124	HOFFMANN, G
PHY 398T	57310	SUPERVISED TEACHING IN PHYSICS	M 3:00 to 6:00	PMA 6.126	RILEY, P
PHY 190	57210	GRADUATE RESEARCH			
PHY 290	57215	GRADUATE RESEARCH			
PHY 390	57220	GRADUATE RESEARCH			
PHY 690	57225	GRADUATE RESEARCH			
PHY 698A	57300	THESIS			
PHY 698B	57305	THESIS			
PHY 399R	57315	DISSERTATION			
PHY 699R	57320	DISSERTATION			
PHY 999R	57325	DISSERTATION			
PHY 399W	57330	DISSERTATION			
PHY 699W	57335	DISSERTATION			
PHY 999W	57340	DISSERTATION			

Degree Planning Checklist
Ph.D. in Physics *(2021 curriculum)*

The Core Courses:

No grade below B- and an average grade of B+ is required for The Core. Up to two Core Courses may be fulfilled by taking the Final Exam, however, the grade on the final does not factor into the required average and the exam may only be attempted once. (Only one attempt is allowed for each course, and the examination must be taken no later than the third semester to leave time to take the course within the two-year period.)

☐ PHY 385K Classical Mechanics [Grade: ________]
☐ PHY 385L Statistical Mechanics [Grade: ________]
☐ PHY 387K Electromagnetic Theory I [Grade: ________]
☐ PHY 389K Quantum Mechanics I [Grade: ________]

The Modern Methods of Experimental Physics:

You must demonstrate acquaintance with modern methods of experimental physics. Physics 380N meets this requirement, as does laboratory work done while a graduate student. Other acceptable evidence must be considered individually. PHY 380N is required of all theorists. Experimentalists may use their grade in PHY 380N to replace a low grade in one of The Core Courses (in this instance 380N must be done outside your advisor's lab).

☐ PHY 380N Experimental Physics [Grade: ________]
OR ☐ Participation in Experimental Program (for experimentalists)

The Oral Qualifying Examination, Program of Work, & Application for Candidacy:

See separate page of instructions.

The Advanced Courses & Supporting Course Work:

Four Advanced Courses (see reverse for full listing):

☐ In-Field Advanced Courses: ________________________________
____
____
☐ Out-of-Field Advanced Course: ________________________________

The Dissertation & Its Defense:

Upon Advancing to Candidacy, you must be continuously enrolled in one of the following: PHY 399W, 699W, or 999W. Extensive information regarding both the final preparation and defense of the dissertation is available on The Graduate School's website.

☐ PHY X99W

Advanced Courses

Atomic, Molecular, and Optical Physics

PHY 395	Survey of Atomic & Molecular Physics; *approx. every year*.
PHY 395K	Nonlinear Optics and Lasers; *approx. once every two years*.
PHY 395M	Laser Physics; *approx. once every two years*.

Condensed Matter Physics & Quantum Information[6]

PHY 392K	Solid State Physics I; *every Spring Term*.
PHY 392L	Solid State Physics II; *every Fall Term*.
PHY 392N	Many-Body Theory; *once every two years*.
PHY 392P	Advanced Optical Spectroscopy; *periodically*.
PHY 392Q	Density Functional Theory; *approx. once every two years*.

Particle Physics, Cosmology, Strings

PHY 396G	Cosmology; *offered annually*.
PHY 396K	Quantum Field Theory I; *every Fall Term*.
PHY 396L	Quantum Field Theory II; *every Spring Term*.
PHY 396J	Introduction to Elementary Particle Physics; *offered annually*.
PHY 396P	String Theory I; *every other Spring Term*.
PHY 396Q	String Theory II; *not regularly offered*.

Nonlinear Dynamics and Biophysics

PHY 382M	Fluid Mechanics; *every other Fall Term*.
PHY 382N	Nonlinear Mechanics; *every other Spring Term*.
PHY 382P	Biophysics I; *every other Fall Term*.
PHY 382Q	Biophysics II; *not regularly offered.*

Nuclear Physics

PHY 397K	Introduction to High Energy Physics & RHIC I; *not regularly offered*.
PHY 397L	Introduction to High Energy Physics & RHIC II; *not regularly offered*.

Plasma and Fusion Physics

PHY 380L	Plasma Physics I; *every Spring Term*.
PHY 380M	Plasma Physics II; *every Fall Term*.

Gravitational Physics and Relativity

PHY 387M	Relativity Theory I; *every Spring Term*.
PHY 387N	Relativity Theory II; *currently not regularly offered*.

Non-Specialized[7]:

PHY 380N	Experimental Physics; *every Fall and Summer Term*.
PHY 386K	Physics of Sensors; *currently not regularly offered*.[8]
PHY 387L	Electromagnetic Theory II; *currently not regularly offered*.
PHY 389L	Quantum Mechanics II; *currently not regularly offered*..
PHY 381N	Methods of Mathematical Physics II; *not regularly offered*.

* With the exception of 'Physics of Sensors,' courses under this category cannot be used as an Out-of-Field Advanced Course by anyone.

** Only students in Particle Physics, Cosmology, Strings and Biophysics may take this course as an Out-of-Field Advanced Course.

---

[6] For students in Quantum Information, QFT I and II are also in-field.

[7] With the exception of "Physics of Sensors", courses under this category cannot be used as an Out-of-Field Advanced Course by anyone.

[8] Only students in Particle Physics, Cosmology, Strings and Biophysics may take this course as an Out-of-Field Advanced Course.

x90 GRADUATE RESEARCH FORM

This form will serve as a record for the Physics Department, the Professor, and the Student, of information regarding the joint, independent work of the Student and Professor. PLEASE WRITE CLEARLY, thank you.

Semester: FALL 2048

Course Number (circle one): **Unique Number:** 57220

PHY 190 PHY 290 [✓ PHY 390] PHY 690 PHY 990

Student: KEVIN SMITH **UT EID:** clerks2

Supervisor: YODA

TO BE FILLED OUT BY PROFESSOR OR STUDENT AND SIGNED BY BOTH.

Brief statement of work proposed: (initial objectives, some general tasks to be completed, etc.)

Do or do not, there is no try.

Student's Signature

Date: __________________

Supervisor's Signature

Date: __________________

Return completed form to the Graduate Coordinator in PMA 7.326 prior to registering for the class, a registration bar must be lifted before the system will allow you to add this class. That bar will be lifted by the Graduate Coordinator, if and only if, this form has been turned in signed.

Every Semester To Do List: U.S. Students
(Registration, Advising, and Tuition Bill Payment)

1) Check the Academic Calendar available on the Registrar's website here. Note important deadlines and due dates. *If you are a student in **Pre-Candidacy**, then please complete Step 2 and move onto Steps 4–5, as appropriate. If you are a student who has **Advanced to Candidacy**, then please complete Steps 3–5, as appropriate.*

2) **Pre-Candidacy Students start here:**
   a. Sign up for an advising time on the sheets posted outside PMA 7.326. Check your Registration Information Sheet (R.I.S.) on the Registrar's website for your registration access time (https://utdirect.utexas.edu/registrar/ris.WBX).
   b. Look over the Course Offerings in the *Course Schedule* also located on the Registrar's website (https://registrar.utexas.edu/schedules/242)
   c. Pick a few classes you need to take. (9 hours in the long term; 3 hours in the summer)
   d. Show up 5 minutes early to your assigned advising time.
   e. Meet with the Graduate Adviser and obtain his/her signature.
   f. Register/Pre-Register online via UTDirect.

3) **Advanced to Candidacy Students start here:**
   a. Check your Registration Information Sheet (R.I.S.) on the Registrar's website for your registration access time (https://utdirect.utexas.edu/registrar/ris.WBX).
   b. Look over the Course Offerings in the *Course Schedule* located on the Registrar's website (https://registrar.utexas.edu/schedules/242).
   c. Pick a few classes you need to take in consultation with your Ph.D. Program of Work.
   d. Register/Pre-Register online via UTDirect.

4) Tuition Waivers. *Please note, Texas Residents do not need an Out-of-State Tuition to waive.**

   Apply for an Out-of-State Tuition Waiver based upon your employment at the University at: https://utdirect.utexas.edu/acct/fb/waivers/index.WBX.

5) Confirm your registration via UTDirect

   Ensure that your Tuition Bill has payments and waivers to all the current amount of graduate, non-resident tuition for Natural Sciences ($9,081 as of Fall 2023), and then pay the remaining balance prior to the deadline. Please allow time for the department to pay the tuition ($4,608 as of Fall 2023). Current tuition rates are available at: https://tuition.utexas.edu.

**If you are a Texas Resident the payments must total the current amount of graduate, resident tuition for Natural Sciences ($4,608 as of Fall 2023).*

Every Semester To Do List: International Students (Registration, Advising, and Tuition Bill Payment)

1) Check the Academic Calendar available on the Registrar's website here. Note important deadlines and due dates. *If you are a student in Pre-Candidacy, then please complete Step 2 and move onto Steps 4–6, as appropriate. If you are a student who has Advanced to Candidacy, then please complete Steps 3–6, as appropriate.*

2) **Pre-Candidacy Students start here:**
   a. Sign up for an advising time on the sheets posted outside PMA 7.326. Check your Registration Information Sheet (R.I.S.) on the Registrar's website for your registration access time (https://utdirect.utexas.edu/registrar/ris.WBX).
   b. Look over the Course Offerings in the *Course Schedule* also located on the Registrar's website (https://registrar.utexas.edu/schedules/242).
   c. Pick a few classes you need to take. (9 hours in the long term; 3 hours in the summer)
   d. Show up 5 minutes early to your assigned advising time.
   e. Meet with the Graduate Adviser and obtain his/her signature.
   f. Register/Pre-Register online via UTDirect.

3) **Advanced to Candidacy Students start here:**
   a. Check your Registration Information Sheet (R.I.S.) on the Registrar's website for your registration access time (https://utdirect.utexas.edu/registrar/ris.WBX).
   b. Look over the Course Offerings in the *Course Schedule* located on the Registrar's website (https://registrar.utexas.edu/schedules/242).
   c. Pick a few classes you need to take in consultation with your Ph.D. Program of Work.
   d. Register/Pre-Register online via UTDirect.

4) Tuition Waivers

   Apply for an Out-of-State Tuition Waiver based upon your employment at the University at: https://utdirect.utexas.edu/acct/fb/waivers/index.WBX.

5) Apply for an International Student Insurance Waiver via the International Office's website at: https://utdirect.utexas.edu/apps/isss/insr/waiver/.

   Note: you will apply for the spring and summer insurance waiver when you register for spring classes.

6) Confirm your registration via UTDirect.

   Ensure that your Tuition Bill has payments and waivers totaling the current amount of graduate, non- resident tuition for Natural Sciences ($9,081 as of Fall 2023) and the International Student Insurance fee is no longer on your bill. Then pay the remaining balance prior to the deadline. Please allow time for the department to pay the tuition ($4,608 as of Fall 2023). Current tuition rates are available at: https://tuition.utexas.edu.

Instructions

Fill in lines 1, 2 and 3 on the Qualifying Examination Form.

For #3, you will need to reserve a room, please see Eric Hayes Patkowski after you have set a time with your committee. Also check-in with Eric a week and a half or so before the Examination so that he may include your talk in the weekly Physics Events Calendar.

#4. Fill in your examining committee:

- One member of this committee needs to be from the GSSC. The list can be found at https://ph.utexas.edu/about/committees#graduate-studies-sub-committee-gssc. Place an asterisk (*) by the GSSC member's name.

#5. Matt can help you fill in your grades. Please, be sure to include pluses and minuses.

For #6, One of the three items needs to be checked. If you took PHY 380N write in your grade for the course here.

Submit the completed form to Professor Fitzpatrick for his signature at least **one week** before you give your exam. Make four (4) copies for your committee members. Give the copies to your committee members when you give your talk. Please, give a copy of your abstract to Matt.

QUALIFYING EXAMINATION FORM

1. Student's Name: KEVIN SMITH

2. Title of Presentation: "Stuff About Stuff, and the Other Stuff In Between"

3. Time, Date and Place of Exam: 11/18/2049: PMA 4.120

4. **EXAMINING COMMITTEE**

SUPERVISOR: Master Yoda*
Mace Windu
Leia Solo
George Lucas

*Member of GSSC

5. Core Course Grades:

385K Classical Mechanics	B+
385L Statistical Mechanics	A-
387K Electromagnetic Theory	B
389K Quantum Mechanics	A+

6. Experimental Physics:

Senior-Level Laboratory	
Participation in Experimental Program	
Physics 380N	A

The Oral Qualifying Examination. Within twenty-seven months of entering the program, the student must take an oral qualifying examination. The examination consists of a presentation before a committee of four physics faculty members, one of whom is a member of the Graduate Studies Subcommittee. The presentation is open to all interested parties. It is followed by a question period restricted to the student and the committee. The questions during this session are directed to clarifying the presentation and determining whether the student has a solid grasp of the basic material needed for research in his or her specialization. The student passes the examination by obtaining a positive vote from at least three of the four faculty members on the oral qualifying committee.

Graduate Advisor ____________ Date ____________

I judge the candidate's performance in this presentation and subsequent oral examination to be:

Satisfactory ____________ Unsatisfactory ____________

Remarks:

Date: 5/15/2050

Physics Department
Program of Work for Ph.D. in Physics

SMITH, KEVIN clerks2

Name Last First Middle EID

11/18/2049

Previous Degree(s) and Date(s) Awarded Date Qualifying Exam Passed

"Physics and Stuff: Fresh Perspectives on Optical Illusions, Lasers, and Other Stuff"

Approximate Title of Dissertation or Treatise

List Major work below:

Semester/Yr.	Unique #	Course	Course Description	Professor	Grade/Status
[The Core]					
Fall 2047	10000	PHY 385K	Classical Mechanics	Skywalker	B+
Spring 2048	22222	PHY 385L	Statistical Mechanics	Vader	A-
Fall 2048	12121	PHY 387K	Electromagnetic Theory I	Windu	B
Spring 2049	30003	PHY 389K	Quantum Mechanics I	Yoda	A+
[Advanced, In-Field Courses]					
Fall 2050	44544	PHY 389L	Quantum Mechanics II	Yoda	A-
Fall 2051	09000	PHY 396K	Quantum Field Theory I	Lucas	B
Spring 2052	06000	PHY 396K	Quantum Field Theory II	Lucas	B+
[Dissertation Hours]					
Spring 2051 & Thereafter		PHY 399W	Dissertation	Yoda	

(See back to list Supporting work)

List Supporting work below:

Semester/Yr.	Unique #	Course	Course Description	Professor	Grade/Status
[Advanced, Out-of-Field Course]					
Spring 2051	86753	PHY 382M	Fluid Mechanics	Solo	A+

AUTHORIZATION OF PROGRAM: GRADUATE ADVISOR

I have reviewed and approve the Program of Work proposed. I recommend admission to candidacy for the doctoral degree.

Signature of Graduate Advisor

Bibliography

[1] *Regents' Rules and Regulations* (reissued 12/2004)
http://www.utsystem.edu/board-of-regents/rules

[2] *Revised Handbook of Operating Procedures*
http://www.policies.utexas.edu/policies

[3] *General Information Catalog 2024–2025*
http://catalog.utexas.edu/general-information/

[4] *The Undergraduate Catalog 2023–2025*
http://catalog.utexas.edu/undergraduate/

[5] *The Graduate Catalog 2022–2024*
http://catalog.utexas.edu/graduate/

[6] The Graduate School Student Services Office Academic Policies
https://gradschool.utexas.edu/academics/policies

[7] *Shop Safety Manual* (updated April 2002)
Hardcopy: Available in every lab in PMA and see: Appendix A.

[8] *Physical Science Laboratory Manual*
AI's teaching PS courses get manual from Lab Supply, PMA 8.306

[9] *Conceptual Physics* by Hewitt, 10th ed.
AIs teaching Physical Science courses get the text from the Undergraduate Coordinator, Melva Harbin in PMA 5.214

GSC Certification Form for Graduate Student Handbooks*

Graduate student handbooks describe graduate degree requirements, program expectations, and deadlines; and they are intended to supplement information published in the Graduate Catalog.

Graduate School policy requires that student handbooks be reviewed annually by the graduate program's Graduate Studies Committee in conjunction with the Graduate Catalog publication cycle.

The signature on this document acknowledges that the Graduate Studies Committee of the graduate program in Physics
has reviewed and approved the attached the handbook content for publication with Graduate Catalog.

12/18/23

GSC Chair/Graduate Adviser Date

---

*For the 2023 - 2024 and 2024 - 2025 Graduate Catalog cycles