PHYSICS GRADUATE PROGRAM
SMU - DALLAS, TX
STUDENT HANDBOOK
2017-2018

Department Chair: Ryszard Stroynowski
Graduate Director: Pavel Nadolsky

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Contents

1 Information for New Students 4
1 Before Arrival 4
2 On Arrival 4
3 Department Routines 6

II Department and Graduate Program Information 6
4 Current Department Personnel (2017) 6
5 Grad-Related Department Committees (2017) 6
6 Graduate Student Association 7
7 Email and Department Computing Accounts 7
8 Core Proficiency Exam 8
9 Course Registration and Credit-Hour Requirements 8
10 Core Course Sequence 9

11 Courses and Course Information 9
11.1 Core Courses ........................................... 10
11.2 Non-Core Courses ........................................ 10
11.3 Recommended Non-Physics Courses ................. 11

12 Financial Support 11
13 PhD Research 11
14 Mandatory Training 13
15 Health Insurance 13
16 Health and Fitness 14

III University and Employment Information 15
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 Campus Map</td>
<td>15</td>
</tr>
<tr>
<td>18 Salary and Direct Deposit Information</td>
<td>15</td>
</tr>
<tr>
<td>18.1 W-4 forms for the Internal Revenue Service</td>
<td>15</td>
</tr>
<tr>
<td>19 International Student and Scholar Services (ISSS)</td>
<td>15</td>
</tr>
<tr>
<td>19.1 Obtaining your I-9</td>
<td>15</td>
</tr>
<tr>
<td>IV Policies and Procedures</td>
<td>17</td>
</tr>
<tr>
<td>V City/Region Information</td>
<td>20</td>
</tr>
<tr>
<td>20 Transportation</td>
<td>20</td>
</tr>
<tr>
<td>21 Outdoor Activities</td>
<td>21</td>
</tr>
<tr>
<td>22 Shopping</td>
<td>21</td>
</tr>
</tbody>
</table>

**About this Handbook**

This is an informal compilation of information that the SMU Physics Department Graduate Committee hopes will be useful for our graduate students, especially those in their first year. See the SMU Graduate Programs Catalog, available online at [www.smu.edu/catalogs](http://www.smu.edu/catalogs), for official general information about graduate programs at SMU. Please let a member of the Graduate Committee know if any of the information here is out of date or simply wrong or misguided, or if there is additional information you think it should include.
Part I

Information for New Students

1 Before Arrival

- You should receive a letter with your 8-digit SMU ID number in the mail, along with your SMU email address. If you do not, you may pick up a copy from the Department Administrator on arrival. This letter contains information for setting a university password to use your email and to log into my.smu.edu. You will use my.smu.edu (formerly access.smu.edu) for a variety of tasks, including searching the course catalog, registering for courses and maintaining your personal records.

- Submit a photograph for your SMU Identification (ID) card to idcard.smu.edu. Use your ID number and password to log in.

- You might want to sign up for the a Dallas Area Rapid Transit (DART) pass before arriving; see section 2. It can take a couple weeks to be approved, so by signing up in advance it could be ready for use on arrival. You'll need to wait until after the first week of August, and register for classes first, which you can also do in advance; see section 2.

- We have recently begun offering incoming graduate students to take our PhD core proficiency exams on arrival. We don't count this exam against your two official attempts, but if you pass, it allows you to get this over with early. It also provides us with useful information about your level of preparation. We encourage you to prepare for it. For information on the exam dates, content, and previous tests, see www.physics.smu.edu/web/grad/quals.

- Let our Department Administrator or someone on the graduate committee know when you are planning to arrive at SMU.

2 On Arrival

The Physics Department is located in Fondren Science Building (FOSC) at 3215 Daniel Avenue, Dallas TX 75275. See the map in Section 17. On arrival to the department:

- Introduce yourself to our Graduate Director, and to our Physics Department Administrator and Grant Administrator (Physics Office, FOSC 102). (See Personnel in Section 4.) Confirm with the Dept Admin that your signed Payroll Authorization Form (PAF) was submitted electronically to SMU. Also, pick up your ID and password if you did not receive these in the mail. Finally, International Students should pick up a signed Campus Work Eligibility Form, which you will bring to the ISSS document check-in for their signature (see below), and return to our Admin to be attached to your PAF.

- Check with the Department Admin that you are signed up for the Annual Teaching Assistant Seminar, which takes place during the week or two before classes start (usually, but not always, the Friday just before). If not, register at www.smu.edu/Provost/CTE/Programs/TA_Training where you can also find a program schedule.

- International students must attend an additional training session at the end of the TA Seminar. While there, if your first language is not English, you should sign up for ESL 6001, a noncredit English seminar for TAs that is very helpful for the majority of international students. See smu.edu/esl/6001_6002.asp for information on the course, including an online application form. Our students’ experience with this
course has been positive. It helps the students to build the essential command of English for teaching and research.

- All new grad students must attend an all-day Dedman College Graduate Student Orientation in the week before classes begin. Please see [http://www.smu.edu/graduate/CurrentStudents/Orientation](http://www.smu.edu/graduate/CurrentStudents/Orientation) for details and a schedule.

- International students must attend a document check-in and orientation session run by the International Student and Scholar Services (ISSS) office. Please see [www.smu.edu/international/isss/GraduateStudentOrientation](http://www.smu.edu/international/isss/GraduateStudentOrientation) for specific times, a list of documents to bring, and to register. Bring your Campus Work Authorization Form. The orientation is run on two separate dates shortly before classes begin, with the document check-in in the morning beforehand. See Part [19](#) for more information about ISSS.

- All students should check in with the Human Resources office at Expressway Tower, an office building at the intersection of US-75 and SMU Boulevard. Their usual hours are 8:30am - 5pm, Mon to Fri. There you can complete your I-9 employment form (see Part [19.1](#)) and set up your payroll information. See [www.smu.edu/BusinessFinance/HR/Resources/NewEmployeeResources/I9Documentation](http://www.smu.edu/BusinessFinance/HR/Resources/NewEmployeeResources/I9Documentation) for details you can use for your I-9. International students will need to complete their document check-in at ISSS first. Check with our Admin that your signed PAF, and, for International Students, your signed Campus Work Eligibility Form, were submitted by our Dept Admin before heading over (see above).

- Visit Parking and ID Card Services (located in the Hughes-Trigg Student Center) to pick up your ID card and parking sticker if you have a car that you wish to park on campus. Their hours are the same as Human Resources, and may be extended on some days just prior to the start of the semester. See Sec. [19](#) and [www.smu.edu/parkingid](http://www.smu.edu/parkingid) for hours and more information.

- The university requires that you set up Direct Deposit to a bank account in order to be paid. You can now do this yourself from your [my.smu.edu](http://my.smu.edu) account. See [www.smu.edu/BusinessFinance/OfficeOfBudgetAndFinance/Payroll/InformationAndFAQs/DirectDepositofPaycheck](http://www.smu.edu/BusinessFinance/OfficeOfBudgetAndFinance/Payroll/InformationAndFAQs/DirectDepositofPaycheck) for more information.

- You will receive a desktop or laptop computer, Physics Department account, and password shortly after arrival. Until then, you may use your SMU ID number and university password to (a) log into the department’s public computers in FOSC 101 (the undergrad lounge) and elsewhere; (b) check your email on the university account at [webmail.smu.edu](http://webmail.smu.edu). This will allow you to access the web immediately on arrival.

- Sign up for your courses at [my.smu.edu](http://my.smu.edu). See [10](#) for more information and confirm your schedule with the Graduate Director. You will typically sign up for three three-unit courses. International students should also sign up for ESL 6001; see comments in this section.

- After enrolling in classes, you can sign up for a Dallas Area Rapid Transit (DART) pass at the [DART Transit Pass Site](http://www.smu.edu/graduate/CurrentStudents/Orientation) at Parking Services. After a one-time $5.00 fee, it is free every year for SMU students and allows you to use all DART buses and trains in the Dallas area. It comes in smartphone app or plastic card versions. (Note that Bus 768, which provides service between main campus, Expressway Tower (east campus) and Mockingbird train station is free for everyone, even without a pass.) You will be notified by email when your pass is ready; apparently this can take a couple of weeks. You can pick up the plastic card at Parking and ID Card Services in Expressway Tower.

- PerunaNet is SMU’s secured wireless network, available throughout most of campus, including (most of) FOSC. You may connect your laptop, smartphone or other wireless device using your SMU ID and university password; see [www.smu.edu/BusinessFinance/OIT/Services/Wireless](http://www.smu.edu/BusinessFinance/OIT/Services/Wireless). If you have trouble connecting, you can also use the unsecured guest network SMUGuest.
3 Department Routines

Weekly Department Seminar/Colloquium  The Department has a single, regular seminar/colloquium per week on Monday, 4pm-5pm. Coffee and snacks are served in FOSC 101 (next to FOSC 103) before the talk at 3:45pm. All graduate students are required to attend the weekly seminar. Additional seminars are sometimes scheduled during the semester to accommodate special guests or circumstances. These special seminars will be announced as they are scheduled, and also must be attended.

Weekly Department Lunch  During the semester, Fridays are reserved for a Department Lunch at the Umphrey-Lee Student Center (the main cafeteria on campus). Students eat at faculty and staff prices, typically about $6 each Friday. (Normal student meals cost more like $9–$10 per visit.) This is a chance to unwind at the end of the week, catch up with faculty and staff, and discuss issues, problems, and topics of common interest to all in the department.

Part II
Department and Graduate Program Information

4 Current Department Personnel (2017)

Department Chair  Ryszard Stroynowski
Department Administrator  Lacey Braux
Grant Administrator  Michele Hill
Grad Program Director  Pavel Nadolsky
GSA Representative  James Thomas

For the full directory see  [www.physics.smu.edu/web/people/](http://www.physics.smu.edu/web/people/)

5 Grad-Related Department Committees (2017)

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<thead>
<tr>
<th>Committee</th>
<th>Members</th>
</tr>
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<tbody>
<tr>
<td>Graduate Committee</td>
<td>Kent Hornbostel, Robert Kehoe, Pavel Nadolsky, Stephen Sekula</td>
</tr>
<tr>
<td>Computing Committee</td>
<td>Stephen Sekula</td>
</tr>
<tr>
<td>Library Committee</td>
<td>Kent Hornbostel</td>
</tr>
</tbody>
</table>

The Graduate Committee is charged with supervising the graduate program, including course content and sequencing, student life issues, qualification exam procedures and administration, graduate recruitment and application review, and other related activities. The Computing Committee addresses networking, programming, hardware, software, and operating system issues, including maintenance of current resources. The Library Committee recommends physics purchases for SMU’s science library, and manages the graduate student library (FOSC 38A), including purchase of new texts and references.
6  Graduate Student Association

The Graduate Student Association (GSA) offers funds to help with research related expenses. These include, but are not limited to, travel, lodging, registration fees, and printing materials. To apply for GSA funds contact your Physics Department GSA Representative, and fill out the appropriate forms located at www.smu.edu/Dedman/Academics/Departments/Math/Graduate/Grad%20Student%20Association

7  Email and Department Computing Accounts

University and Department Email  SMU email accounts will be set up by the university once you are assigned your 8-digit SMU ID. This email account will be provided by the university, and will look like UserID@smu.edu, where UserID is assigned by the Office of Information Technology.

Physics Department Computers  All requests for support or assistance in department computing should be directed to Guillermo Vasquez (guillermov@mail.smu.edu), our resident computing support expert and member of SMU’s Office of Information Technology (OIT).

Generally, everyone will have their own desktop computer in their office or laptop. In addition to these, general use department servers include curie.physics.smu.edu and rubin.physics.smu.edu. The password for department server accounts should be the same as on your university password. If you wish to have access to your department server files on your desktop or laptop, you can speak with Guillermo Vasquez and ask for his assistance in setting this up. If you need an account on the physics servers, this request should also be sent to Mr. Vasquez.

(You may also see addresses such as userid@physics.smu.edu or userid@mail.physics.smu.edu in use in the department. These are aliases for UserID@smu.edu and exist for historical reasons; Physics used to run its own email server.)

Once you begin research, you may also request access to the SMU High-Performance Computing System, ManeFrame (and now ManeFrame 2), for your work. This involves a different account set up by the SMUHPC Administrator. Speak to a Department Computing Committee member for more information.

External Resources  In addition to University and Department-provided computing, we have a collaborative documentation site (a “wiki”) hosted on an external server. If you want access to this material (which includes helpful information for setting up printers, etc.) please visit http://astrohep.org/smu/dokuwiki/ and register for an account. The administrator will receive an email when you submit your registration, and based on how soon they can act you will have permission to access the site within about 24 hours.

Offices, Keys and Building Access  You will be assigned a desk in a shared graduate office before or shortly after your arrival. As soon as you know your office number, ask the Department Admin to request a key. Once the request is processed, which may take a few days, you may pick up your key at the Building Access Office in the Dawson Service Center (see the map in Section 17). The doors to Fondren Science are often locked late at night, on Sundays and holidays, but you can enter using your SMU ID card. Ask the Department Admin to add your ID the list authorizing after-hours access.

Kitchens, Tea and Coffee  There are department kitchens for your use with refrigerators and microwaves in FOSC 103, 206 and 38. There is also a kettle as well as steeping-ready hot water from the tap in FOSC 206 for making tea. There are also multiple Keurig single-cup coffee machines available in FOSC 38, 103, and 206 for which you must provide your own Keurig K-cups. These can be ordered in bulk, for about
$0.30-$0.50 per cup, from either the Keurig company website or Amazon.com, for example, or purchased for slightly more from grocery stores. Refillable K-cups can also be found on the web. The faculty who use these may have other sources to recommend.

**Graduate Student Library**  FOSC 38A serves as a de facto graduate student library. This space is equipped with modern video conferencing equipment and is now in high demand for meetings. If you wish to reserve the space, please speak to Lacey Breaux.

FOSC 38A is next to a kitchen and includes a large table and small whiteboard intended to provide a place for people to work together. It also contains the Graduate Library, a growing collection of texts and references for graduate student use, including most course texts and some prep books. Please keep these books and journals in the room. Let the department librarian know if there are other texts you’d find useful.

**Photocopiers and Printers**  The main department photocopier is in FOSC 103. Your SMU ID card will grant you access to this equipment. Combination printer/fax/copiers are in 38, 103 and 202. See the department Computing Committee for instructions on accessing these printers from your desktop.

## 8 Core Proficiency Exam

In order to advance to PhD candidacy, SMU requires students to pass a comprehensive core proficiency exam that must be passed before the fifth semester in the PhD program. In Physics, this takes the form of a four-part written exam at the advanced-undergraduate level. Topics include Mechanics, Quantum Mechanics, Electrodynamics and Statistical Mechanics. The exam is intended to determine the academic fitness of students to pursue a PhD, and to encourage them to review and consolidate their knowledge of basic physics before proceeding. Exams are given at least once per year and this academic year will occur in August 2017 and January 2018. Details about exam policies, guidelines for the specific exams, and copies of previous exams can be found at [www.physics.smu.edu/web/grad/quals](http://www.physics.smu.edu/web/grad/quals). The SMU Graduate Catalog also outlines general university-wide requirements.

Students are allowed two attempts to pass all four sections and must do so before the beginning of their fifth semester in order to remain in the PhD program. We currently offer students the opportunity to take the exam on entering the program to help assess academic strength and encourage students to come prepared for graduate study. This initial exam does not count against the two attempts, but students will not need to retake sections they pass.

## 9 Course Registration and Credit-Hour Requirements

Official course requirements for a Physics PhD include eight specified core courses, four elective graduate courses in physics, and at least 48 hours (or units) of graduate courses in total. Students typically take the core sequence of courses, discussed in the next section, during their first two years. In addition, they may take electives during their second year, and sometimes beyond that, according to their interests and in consultation with their research advisor. These may be in physics or related fields, such as math, statistics, engineering and computer science.

Students may also transfer in as many as 24 hours of graduate-level courses. Please discuss courses you wish to transfer in with the Graduate Director to determine how to obtain credit and whether these should replace courses in our core curriculum.

After completing core courses and electives, students typically sign up for 8000-level research courses in their
advisor’s name until reaching the required 48 hours. Until then, students must enroll in at least 9 units during the academic year to maintain their status as full-time students. Maintaining your status is crucially important for international students, who may have to leave the US if they do not. After reaching 48 hours, students should maintain their status by registering for the zero-unit course Phys 8049 (Graduate Full-Time Status) until graduation (plus an additional one-unit course; see below).

To satisfy the federal government, students must enroll for at least one unit during every semester and summer while at SMU. This is required for students to maintain their SMU health insurance and prevents social security taxes from being taken out of their pay. This includes students enrolled in PHYS 8049. The department offers some one-unit courses to facilitate this, such as the PHYS 8100 Research course.

It is extremely important for all students to register for each semester; apparently this can be easy to forget once research begins full-time. This is particularly true for international students, for whom failure to register can result in the loss of visa status, and in some cases, expulsion from the U.S.

Finally note that the university requires graduate students to maintain a B average.

10 Core Course Sequence

The department offers a set of ten core courses with an emphasis on particle physics, including Classical Mechanics (6321), Electrodynamics (7311 and 7312), Quantum Mechanics (6335 and 6336), Statistical Mechanics (6351), Introductory Particle Physics (5395), Experimental Particle Physics (7361), and Quantum Field Theory (7314 and 7315), as well as several elective courses. The core sequence runs on a two-year cycle, with some courses offered only in alternate years, as illustrated in Table 1. Students entering in even years follow the first sequence, odd years follow the second.

Table 1: The department graduate core course sequence. Non-core courses must also be taken to fulfill the total credit-hour requirements of the graduate program. Class slots marked Non-Core can be filled using classes within the physics program that meet graduate course credit requirements, such as Computational Physics, Mathematical Methods, Research, or other courses. These can also be graduate-level courses in related departments, such as Statistical Sciences.

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<thead>
<tr>
<th>Even-Numbered Years</th>
<th>Odd-Numbered Years</th>
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<tbody>
<tr>
<td>Fall</td>
<td>Spring</td>
</tr>
<tr>
<td>First Years</td>
<td></td>
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<tr>
<td>6335: QM I</td>
<td>6336: QM II</td>
</tr>
<tr>
<td>Second Years</td>
<td></td>
</tr>
<tr>
<td>7311: EM I</td>
<td>7312: EM II</td>
</tr>
<tr>
<td>Non-Core</td>
<td>Non-Core</td>
</tr>
</tbody>
</table>

11 Courses and Course Information

This material is copied from the Graduate Catalogs, available from [www.smu.edu/catalogs](http://www.smu.edu/catalogs). The course descriptions do not change too frequently, but the latest information should always be obtained from the catalog itself. Information here was copied in August of 2016. See the catalog for course prerequisites. The credit-hours for each course are provided in parentheses next to the course number in the descriptions below.
11.1 Core Courses

- **PHYS 5395 (3).** INTRODUCTION TO ELEMENTARY PARTICLES. Modern theories of elementary particles, including relativistic kinematics, Feynman diagrams, quantum electrodynamics, quarks, weak interactions, and gauge theories.

- **PHYS 6321 (3).** CLASSICAL MECHANICS. Topics in classical mechanics, including the mechanics of a system of particles, the two-body central-force problem, Lagrange's and Hamilton's formulations, the special theory of relativity, Hamilton-Jacobi theory, and continuous systems and fields.

- **PHYS 6335 (3) and 6336 (3).** QUANTUM MECHANICS. Fundamental principles of quantum theory with applications to one-dimensional problems, the free particle, and the hydrogen atom; the spinning electron. Perturbation theory with applications to atomic spectra; systems of identical particles; scattering theory; Dirac theory of the electron.

- **PHYS 6351 (3).** STATISTICAL MECHANICS. Derivation of classical and quantum statistical distribution functions; partition functions; the laws of thermodynamics; ensemble theory; applications to gases and solids.

- **PHYS 7311 (3) and 7312 (3).** ELECTROMAGNETIC THEORY. Boundary-value problems in electrostatics; dielectrics; magnetic media; Maxwell’s equations; electromagnetic waves; refraction and reflection; wave guides and cavities. Electromagnetic radiation; diffraction and interference; plasma physics; special relativity; dynamics of charged particles; multipole expansion. Prerequisite: PHYS 5393 or permission of instructor.

- **PHYS 7314 (3).** QUANTUM FIELD THEORY I. Classical fields; symmetry transformations and conservation laws; the quantum theory of radiation; relativistic quantum mechanics of spin-1/2 particles, second quantization and the theory of interaction fields. Covariant perturbation theory; collision phenomena in quantum electrodynamics; renormalization.

- **PHYS 7315 (3).** QUANTUM FIELD THEORY II. Path integral formulation; renormalization group; symmetry structure; formal aspects; nonabelian gauge theories.

- **PHYS 7361 (3).** ELEMENTARY PARTICLES II. Continues 7360 with emphasis on current topics.

11.2 Non-Core Courses

The following non-core courses are recommended to graduates to take when possible and when offered. These courses are listed because they have been offered routinely in recent years.

- **PHYS 7305 (3).** METHODS OF THEORETICAL PHYSICS. Mathematical methods; theory of analytic functions, evaluation of integrals, linear vector spaces, special functions, integral equations, tensor analysis, calculus of variations, group theory.

- **PHYS 3340/8300 (3).** COMPUTATIONAL PHYSICS. Introduction to the modeling of physical systems. Emphasis is on algorithm selection and implementation for simulating classical and quantum physics.

- **PHYS 5337 (3).** INTRODUCTION TO SOLID STATE PHYSICS. Crystal lattices and the reciprocal lattice, the free-electron model of metals, crystal binding, lattice vibrations phonons, thermal properties of solids, and energy bands in solids.

11.3 Recommended Non-Physics Courses

The courses in this section are offered by other departments at SMU and in many cases have been taken by our graduate students to expand their knowledge and build expertise in areas related to our research: mathematics, statistics, and computation.

- **MATH 6370 (3). PARALLEL SCIENTIFIC COMPUTING.** An introduction to parallel computing in the context of scientific computation.


- **STAT 6328 (3). MATHEMATICAL STATISTICS.** Sufficiency and completeness. Unbiased, maximum likelihood and Bayes point estimators, minimizing risk. Confidence sets. Most powerful, uniformly MP and likelihood ratio tests. Large-sample approximations; contingency table analysis.

- **STAT 6336 (3). STATISTICAL ANALYSIS.** Emphasis on application of statistical principles in the design of experiments. Complete and fractional factorials, blocking, nesting, replication, randomization. Analysis of data from one and two samples assuming normal distributions and independent errors. Discussion of paired sample analyses and of nonparametric location tests.

- **STAT 6337 (3). STATISTICAL ANALYSIS.** Analysis of data from classical multifactor experimental designs with fixed and random effects. Multiple comparisons and contrasts of main effects and interactions. Introduction to regression analysis.

12 Financial Support

Prior to admission to candidacy, most PhD students will receive their stipend for work as Teaching Assistants (TAs), assisting faculty in lecture or lab courses. Assignments are made shortly before each semester. TAs may work up to 20 hours per week during the semester, though 15 hours is more typical. Support is only guaranteed during the fall and spring semesters, though most students who wish can find TA or research work during the summer.

Ideally, soon after admission to candidacy, students will transition to Research Assistant (RA) support working as part of an externally-funded research group, as discussed in Sect. [13]. TA positions are often available for students whose advisors who are unable to provide RA support.

Tuition and fees aid/support is provided by the department for PhD candidates. Do not be surprised to see such charges on your student account, as it takes time to process and pay these charges. However, if such charges remain for a long time on your student account, please see the department administrator for assistance. SMU does not allow tuition waivers for MS candidates.

13 PhD Research

Students who pass the core proficiency exam must then establish a PhD research advisor in consultation with that person. A PhD committee, consisting of two additional faculty, must also be established by the beginning of the fifth semester. This process should proceed in consultation with the research advisor and the Director of Graduate Studies, who can assist in the identification of committee members and insure work load-balancing amongst faculty members. Committee members are usually drawn from within Physics, though faculty from related programs are also eligible. The PhD advisor and committee guide research and
preparation of a thesis. In the last year of the PhD process, a final member must be added to the PhD committee and must be a faculty member from outside the department (an external member). The research advisor, two faculty from within the department, and one external member will conduct the PhD defense.

University guidelines state that students should complete and defend their dissertations within five years after being admitted to candidacy; that is, after passing their core proficiency exam. The Dean can extend this by one year.

The following is a rough outline for the process you will follow to select a research topic, find an advisor, and form a committee.

1. During the first two years you will be mainly occupied with courses and TA duties, but should also use this time to learn about research opportunities within the department. Methods include attending seminars and department lunches, talking with more senior grad students and post docs, sitting in on research group meetings, but mainly by talking with faculty. It’s a small department and faculty are usually happy to discuss their work, but it’s important for you to take the initiative; it’s ultimately up to you to decide what you’d like to work on.

2. It’s especially useful to arrange with one or possibly two faculty members to work on research during the summer after your first year. (Although you may wait until the third year to formally choose an advisor, it’s usually a good idea to begin as early as possible to work with someone on a trial basis; you may change later if you choose.) Some faculty may have funds to support you during the summer, but TA positions are also available. The Graduate Director or Chair can give you information. You should make arrangements for your summer by the middle of your second semester at the latest.

3. You should select, by mutual consent, an advisor who is willing to guide your dissertation research and has external funds to support your work. Having had some prior research experience together, as discussed above, will help a great deal here.

Ideally your advisor will have adequate funds to support you as a Research Associate (RA) until the completion of your dissertation, but it is unlikely that all students can be supported fully on RAs. During semesters when an advisor is unable to provide support, it is possible that a TA position or other sources of funds, such as university dissertation fellowships, will be available. The Chair and Graduate Director will work with you and your advisor to help, but it is important to know that entrance to candidacy does not guarantee support through to completion of your degree.

If you are having trouble finding an advisor by the end of your fourth semester, discuss this with the Graduate Director or Chair.

4. In consultation with your advisor and the Graduate Director, select two additional department members to serve on your thesis committee. Our intention is that, in addition to participating in your thesis defense, committee members will monitor your progress from an early stage, will be available as sources of collaboration, information and guidance, and a valuable source of recommendation letters if you choose.

5. Shortly after forming your core PhD committee, you will present to it a proposal for your PhD work along with a short, formal presentation open to the department. The proposal and presentation will allow you to communicate to your committee basic information about your area of research, the importance of your research subject, your goals, how you will achieve those goals, and to receive feedback. Thereafter, you will meet with your committee no less than once a year to review progress, which the committee chair will report to the department.

In order to continue in the program, you must successfully complete this proposal and presentation to the satisfaction of your committee no later than the end of your sixth semester.
6. Early in the semester in which you hope to graduate, inform the Graduate Director, who will then give your name to the Graduate Studies Office. If you are unsure whether you will finish that semester, it’s better to get on the list; you can defer later if you need to.

Once the Office has your name, you will be able to apply for graduation at [my.smu.edu]. There are various other forms to submit and deadlines to meet which you will need to keep track of. Please read through the information at [www.smu.edu/graduate/CurrentStudents/Graduation] and pay particular attention to the information at the Timeline link.

7. When your dissertation is nearing completion (the last year of your PhD candidacy), you and your advisor will schedule a thesis defense in coordination with your committee. Your advisor will also arrange for a final external committee member, usually chosen from another appropriate department from within SMU, though a member from outside is also possible (this requires approval from the Dean, so please speak with your advisor about this if you choose to pursue this option). Your thesis should be delivered to the committee no fewer than 30 days before the scheduled defense. Your defense will consist of a public and open presentation, typically about an hour long, and which includes questions by the committee, followed by a closed session with the committee. A typical thesis defense lasts about 90-120 minutes. The committee then conducts private deliberations and renders a decision on your defense. After the defense, the committee should submit a report to the Graduate Studies Office.

14 Mandatory Training

Within the first semester that you receive RA support, you must complete an online training program on the Responsible Conduct of Research. See [www.smu.edu/graduate/CurrentStudents] for information and a link to access it. You can spread the training out over several hours.

Students are also required to enroll in a 1-unit course entitled “How to Teach Physics.” This will provide instruction and feedback, as well as mentoring, in becoming a better teacher in the undergraduate course environment. It complements your assigned duties as a TA. The course number as of 2017 is PHYS 7170.

15 Health Insurance

SMU requires all full-time students to carry health insurance, and offers the Student Health Insurance Plan (SHIP). Students must explicitly waive or enroll in the SHIP. If you take no explicit action, you will be automatically enrolled. It is far better to actively enroll than to wait until the deadline passes and then be automatically enrolled, so please act as soon as you can to enroll in this program. You then have 30 days to cancel the insurance. The insurance premium will appear on your student account. Financial aid for their insurance, part of which comes from the Physics Department and part of which comes from Dedman College, will also post to your account. You will receive an insurance card in the mail. SHIP does not cover dental health — that is an additional expense that is not covered by the Department or the College.

You may enroll annually using [my.smu.edu] after you have registered for classes. You also have an option to enroll members of your immediate family each semester.

If you already have coverage, you may choose to waive SHIP. See [www.smu.edu/StudentAffairs/HealthCenter/Insurance] for more detailed information.
16 Health and Fitness

SMU offers free membership in the Dedman Center for Lifetime Sports (see map in Section 17) for both undergraduate and graduate students. The center has basketball courts, an indoor swimming pool, a climbing wall, a boulder wall, and an array of modern fitness equipment for cardio and weightlifting. It is located on the southeast corner of campus. Spending time here is a great way to relieve stress. More information can be found at [smu.edu/recsports/dedman/default.asp](http://smu.edu/recsports/dedman/default.asp)
Part III

University and Employment Information

17 Campus Map

A map of the campus can be found at sites.smu.edu/apps/campus-map.

18 Salary and Direct Deposit Information

Direct Deposit Please refer to [www.smu.edu/BusinessFinance/OfficeOfBudgetAndFinance/Payroll/InformationAndFAQs/DirectDepositofPaycheck](http://www.smu.edu/BusinessFinance/OfficeOfBudgetAndFinance/Payroll/InformationAndFAQs/DirectDepositofPaycheck) for the latest information.

SMU will deposit your salary and any reimbursement payments for work-related expenses via electronic transfers to your account in a US bank or another financial institution. Direct deposit is the only method by which SMU will disburse your salary. Such disbursements are made every two weeks, and the schedule is available from Lacey Breaux.

SMU requires every employee to enroll in direct deposit within 90 days of the employee’s hire or rehire date. You will need to open a US bank account before setting up direct deposit. International students need to apply for a Social Security Number (SSN) to open a US bank account.

18.1 W-4 forms for the Internal Revenue Service

At the end of each calendar year, SMU will issue a W-4 form that you will need to submit by April 15 of the next year to the Internal Revenue Service together with your tax declaration form. The “Deductions and Adjustments Worksheet” for your W-4 Form for taxes is available at [www.irs.gov/pub/irs-pdf/fw4.pdf](http://www.irs.gov/pub/irs-pdf/fw4.pdf)

19 International Student and Scholar Services (ISSS)

The International Student and Scholar Services (ISSS) office provides a variety of services for international students and is located in Blanton Building Suite 216; see the map in Section 17. Their website is [www.smu.edu/international/isss](http://www.smu.edu/international/isss). Walk-in hours are Mon to Thurs 9-11am and 2-4pm. (They may have modified hours the week before classes start; check their site.) They have posted an international student handbook at [www.smu.edu/media/ Site/international/isss/prearrival/ISSSHandbookFall%202012.aspx](http://www.smu.edu/media/ Site/international/isss/prearrival/ISSSHandbookFall%202012.aspx) which may have useful information.

It is VERY IMPORTANT for international students to check in with ISSS each time they are planning to go abroad in order to have the proper immigration paperwork filed and to be aware of any matters affecting their re-entry into the US.

19.1 Obtaining your I-9

Who must complete an I-9? The U.S. Citizenship and Immigration Services requires a Form I-9 to be completed by all SMU employees who are paid wages. New employees hired for regular staff or faculty, student employee, and temporary employee (staff and faculty) positions must complete the Form I-9.
**When must the form be completed?** New employees must come to the Department of Human Resources on the first day of employment to verify eligibility to work in the United States and complete the I-9. A Human Resources representative will be available for completion of this document during the hours of 8:30 AM – 5:00 PM, Monday through Friday.

**What are the acceptable documents to complete I-9?** New employees should consult the List of Documents Acceptable for Verification of Work Eligibility and Identity prior to the first day of work. The employee will be asked to present either one original document from List A confirming employment eligibility and identity, OR one original document from List B establishing identity AND one original document from List C establishing employment eligibility. The choice of which document(s) to present belongs entirely to the employee. All documents presented must be original and unexpired.

**Who must be re-verified?** If an employee indicates in Section 1 that he or she is an alien authorized to work until a specified date, then the employee’s work authorization must be re-verified on or before the date indicated by the employee. Every month, a list will be generated by the Department of Human Resources containing the names of all employees whose employment authorization will expire within the next 120 days. HR will send notification to the employee, advising the employee to present an unexpired document of his/her choice from List A or List C evidencing his or her continuing work authorization, no later than the date the current work authorization will expire.
Part IV
Policies and Procedures

Our baseline expectations for your academic performance and professional behavior are outlined in the Graduate Catalog for Dedman College of Humanities and Sciences with foundational expectations from the College discussed in that document in the chapter entitled “Degree Requirements.” Department-level requirements, which may go beyond what the College prescribes, are also outlined in a later chapter of that catalog.

In this section, we describe the processes in place in the department to assess your academics, research, and professionalism. Please familiarize yourself with them, as they will help you to successfully navigate your time here in our program.

Evaluation Timeline Each year, you will be required to fill out a “self-evaluation form” that provides you the opportunity to assess your progress in the department toward completing your foundational coursework and your progress toward the PhD through your research. This form will be provided to you by the Director of Graduate Studies and is required to be completed and returned to the Director no later than March 15 of each year. If you have given any presentations at professional meetings, published any papers, or conducted any other such professional activities in support of your progress toward the PhD, you will be expected to attach a copy of your Curriculum Vitae (CV) to the form. If you are uncertain how to prepare such a document, please speak with the Director of Graduate Studies, who can provide suggestions, guidance, and even examples as needed.

The faculty meet regularly, approximately once every other month during the fall and spring semesters. Your self-evaluation, as well as the evaluation of your performance by your (a) course instructors, (b) instructor overseeing your work as a teaching assistant (if applicable), and (c) your research mentor and PhD committee (if applicable), will be discussed after March 15 at the last faculty meeting of the year.

Based on the outcome of self-assessment and the assessment by your instructors and mentors, you will be provided a summary of your evaluations by the Director of Graduate Studies no later than spring commencement (typically in mid-May of each year). This will provide guidance on your progress in the program and advise you on how to improve your performance.

If serious deficiencies in performance are identified you will be given until the end of the subsequent academic year to remediate them. This should be sufficient time to address the classes of issues outlined below. If you are unable to address these issues in the given time, your continuation in the program may not be possible.

Failing the core proficiency exam after your official tries are passed is immediate grounds for termination in our graduate program.

Performance Assessment — Guidance and Expectations Your performance in the program will be assessed in the following categories, as applicable.

1. Academics: While enrolled in SMU courses you must earn grades that keep you in good standing in our program. Each instructor will outline their expectations for your contributions and performance in their class, and each instructor has the freedom to define such procedures via the syllabus for their course. You are expected to meet or exceed those expectations, so pay close attention to the course requirements. If you feel they are not clearly specified, speak with the instructor outside of class to establish those expectations.

[www.smu.edu/catalogs]
In addition, if you are serving as a teaching assistant you will be supervised by the course instructor. Your supervisor should, at the beginning of each semester, explain what duties are expected from you. If those duties and expectations are not clear, please follow-up with the class instructor.

2. **Research**: When you are engaged in research (typically after the first two years, but you may engage in short research projects with faculty prior to formally starting your PhD research), you are expected to set goals for your project(s), make progress toward those goals, document your progress and findings, and assess the findings and goals with each step forward. This is a very broad set of expectations, but each research mentor is different, and you are expected to meet with your research mentor regularly in order to establish expectations, goals, and methods for achieving those goals. As a graduate student, you are expected to take initiative with the guidance from your advisor.

Your performance in the research environment will be primarily assessed by your research advisor and check-pointed by your PhD committee.

3. **Professionalism**: In academic research and teaching you will be assessed based on your *professionalism* — your ability to act as a reliable colleague in the academic environment according to the established professional standards of the department. While such standards can vary depending on the persons with whom you are interacting (our department is culturally diverse), nonetheless there are a basic set of standards to which you are expected to adhere.

(a) You are expected to be academically honest. Your work should be your own. You should explicitly acknowledge contributions by others. You are not to use others’ work without attribution as your own. Your data should accurately reflect how it was collected, and should never be tampered with to change outcomes. We repeat this here because integrity of work, credit to those who do original work, and the accurate representation of your work are essential to science.

(b) You are expected to be collegial. This means respecting the ideas and work of others, whether you agree with them or not. Above all else, each person has valuable ideas to contribute to the success of our teaching and research. Disagreements can be resolved without anger, rude behavior, or intolerance. In addition, we often share offices or laboratory space. While our department is small and friendly, it’s also important to remember that everyone has important work to perform. Respect other people’s work time and privacy, and give them space if they request it. Keep extraneous noise to a minimum, keep your workplace clean and free from food, do not encroach on each other’s personal space. Talk to your peers to establish rules to help respect each other’s work time and privacy. Speak to the Director of Graduate Studies if there are any unresolved issues.

(c) You are expected to be punctual. Time is a precious asset, and it is important to be on-time for events that are part of your work day.

(d) You are expected to meet or exceed expectations or goals that are set. This has been stressed above in Academics and Research, but in general, in our department, if you agree to do something then you are expected to complete your end of the agreement. This is also why it is important to understand what is expected in any situation and clarify those expectations, regardless whether it concerns your coursework, research, or an extra-curricular activity (such as helping organize a workshop). Ask the Director of Graduate Studies for advice on this or any other matter related to professionalism.

**Conflict Resolution**  Conflicts may occur in all settings of human endeavor. Here we outline the procedures for resolving conflicts that may arise, noting that the completion of the core courses and original scientific research are main requirements for earning PhD degrees.

1. **Academic Conflicts**: If a student feels that they have not been treated fairly in the classroom setting by an instructor, they should first discuss their concerns with the instructor. If this does not lead to a
satisfactory resolution, the student should then discuss their concerns with the Director of Graduate Studies, who will mediate the issue between the student and the instructor. If this fails to resolve the issue, then the student can bring this to the attention of the Department Chair. If the student still feels the issue has not been resolved, they can bring the issue to the attention of the Dean of the College.

2. Research Conflicts: Resolution of issues related to research should proceed along the same sequence of steps as with academic conflicts (see above). The vast majority of issues can be resolved through a dialogue within the research group and with the student’s advisor. Should the situation require an intervention of the Director of Graduate Studies or the Department Chair, both the mentor(s) and the student must proactively explore the steps needed to help the student to complete original research, the core requirement of the PhD program. In such situations it is appropriate for the student to discuss the goals and timeline for completing the PhD degree, financial support for the student if switching between the research groups, and any career-related and work-life related matters.

Any other conflict (such as those regarding issues of professionalism in a shared office) should be addressed by first trying to constructively resolve the matter between those involved in the conflict. If such resolution is not possible, then the issue should be brought to the attention of the research mentor (if it involves personnel within a singular research group or lab), the Director of Graduate Studies (if it involves conflict between graduate students), or the Department Chair (in other situations). Please adhere to the above guidelines so that conflict situations can be identified, documented, and resolved in a structured manner. This is essential to the functioning of any academic department.

University Guidelines  The University has a code of conduct and guidelines on professional behavior. If anything is unclear, please consult the SMU Student Conduct website for detailed information about policies: http://www.smu.edu/StudentAffairs/StudentConduct
Part V

City/Region Information

Dallas is a large city with several places to search for housing. A few things to consider:

1. Dallas is one of the largest metropolitan areas in the United States. Just because something is in Dallas does not mean it is close to campus.

2. The SMU campus is surrounded by two small cities, University Park and Highland Park, with high costs of living. Although they are convenient, it may be difficult to find housing that close to campus.

3. Additionally, when searching for housing, it would be recommended to look north of I-30 and south of I-635 to avoid long, traffic-related commutes to and from campus.

More specifically, there are areas to look for housing where the primary residents are young professionals. These areas have been more affordable in the recent past, so you will need to investigate costs carefully as you consider places to live.

- “The Village” is a large collection of apartments approximately 5 minutes from campus.
- There are also several apartments located between Mockingbird Lane and Lovers Lane that are readily accessible from campus.
- “Uptown” is a neighborhood approximately 10 minutes south of campus.
- Downtown Dallas has several options and provides access to nightlife and entertainment options within walking distance.

Most importantly, feel free to ask existing graduate students where they live and what housing options they suggest.

20 Transportation

Public Transportation  Dallas Area Rapid Transit (DART) bus and rail passes can be purchased at a discounted rate. Additionally, the DART 768 bus is free and runs regularly between Bishop Boulevard on the campus, to Expressway Tower east of I-75, and area apartment complexes and stores.

Commuting by Car  If you drive your own car and use tollways or municipal paid parking at the airports and other locations, it is recommended to buy a TollTag (a radio-frequency identification device) to pay the tolls and/or parking fees at a greatly discounted rate. Your toll tag can also be used to automatically open parking gates at SMU, if you buy a parking pass for the campus. More information about toll passes can be found at [www.ntta.org](http://www.ntta.org)

Airports  Love Field Airport is a smaller airport that is close to campus (about 15 minutes away). If coming to visit campus or looking at flights when moving, this is something to consider. This airport hosts many regional flights and is the main hub for less-expensive airlines like Southwest Airlines.
Since most of our research projects involve a component of travel within the United States and across the world, you will also become familiar with the region’s major airport: Dallas/Fort Worth International Airport (DFW, for short). By car, DFW Airport is about 45 minutes from campus. You can find dozens of direct flights each day to major airports across the United States and the world.

Public transportation, especially by light rail, is possible to both airports.

21 Outdoor Activities

Dallas has several outdoor attractions. The Katy Trail is a cycling/walking path that connects campus to Downtown. White Rock Lake is a small body of water that is surrounded by walking paths, and has access to recreational opportunities. Klyde Warren Park is a new green space in Downtown that is constructed atop Woodall Rogers Expressway. There are also ongoing efforts to improve the Trinity River, south of Downtown Dallas, called the “Trinity River Project.”

22 Shopping

The Dallas Metroplex is filled with areas to shop, both within the city limits and throughout all of the surrounding areas. Of note, there is an IKEA located at the end of the Dallas North Tollway in Frisco, TX. Be sure to speak with fellow students to find the best locations for shopping for clothes, food, furniture, etc.