Welcome to the Department of Physics and Astronomy Graduate Program at The University of Texas at San Antonio!

The Department of Physics and Astronomy of the University of Texas at San Antonio provides opportunities for advanced studies and world-class research leading to the Doctor of Philosophy degree in Physics. The PhD degree in Physics is awarded, by the University of Texas at San Antonio, to candidates who have 1) displayed an in-depth understanding of the subject matter and 2) demonstrated the ability to make a significant contribution to research in their field of specialty. This document describes the Policies and Procedures for the PhD in Physics.

We hope that it provides you with helpful information. Much of the information included here can be found in the Graduate Catalog or the Physics & Astronomy website.

Please be sure to check with the Graduate Advisor regarding information about program-specific policies and procedures.

We hope that you have a rewarding experience and wish you success!

~Department of Physics and Astronomy
GRADUATE FACULTY IN THE PHYSICS PHD PROGRAM

The Core Faculty members of the Physics PhD program are divided into three campuses:

The Department of Physics & Astronomy at the University of Texas at San Antonio

Arturo Ayon, PhD                                         Rafael López-Mobilia, PhD
Lorenzo Brancalion, PhD                                  Kelly Nash, PhD
Andrey Chabanov, PhD                                     Xomalin Peralta, PhD
Chonglin Chen, PhD                                       Dhiraj Sardar, PhD
Liao Y. Chen, PhD                                        Eric Schlegel, PhD
Zlatko Koinov, PhD                                       Miguel Yacaman, PhD
Xochitl Lopez-Lozano, PhD                                Christopher Packham, PhD
Marcelo Marucho, PhD

Southwest Research Institute, Division of Space Science and Engineering

Frederic Allegrini, PhD                                   Marilia Samara, PhD
Daniel Boice, PhD                                         David McComas, PhD
Mihir Desai, PhD                                          Philip Valek, PhD
Jerry Goldstein, PhD                                      Jack H. Waite, PhD
Jörg-Micha Jahn, PhD                                      Stefano Livi, PhD

The Department of Physics & Astronomy at the University of Texas at Brownsville

Matt Benacquista, PhD                                     Soma Mukherjee, PhD
Teviet Creighton, PhD                                     Richard H. Price, PhD
Mario Diaz, PhD                                            Volker Quetschke, PhD
Phillip Dukes, PhD                                        Malik Rakhmanov, PhD
Natalia Guevara, PhD                                      Joseph Romano, PhD
Andreas Hanke, PhD                                         Ahmed Touhami, PhD
Fredrick A. Jenet, PhD                                     Karen Martirosyan, PhD
Soumya D. Mohanty, PhD

Affiliated Research Faculty

Geoffrey Crowley, PhD (ASTRA)
Randolph Glickman, PhD (UTHSCSA)
John B. Gruber, PhD
Necip Guven
Benjamin Rockwell, PhD (AFRL, Fort Sam Houston)
John Taboada, PhD (TRI Inc)
Robert Thomas, PhD (AFRL, Fort Sam Houston)
ORGANIZATION & ADMINISTRATION OF DOCTORAL PROGRAM

The Physics doctoral program is administered through the Doctoral Studies Committee (DSC). The DSC is comprised of five core faculty. The DSC elects its own chairperson, who is then appointed by the Department Chair to be the Graduate Advisor of Record for the Physics PhD program. The DSC reviews and recommends the academic policies and the degree requirements to the Graduate faculty. The DSC also recommends students for admission to candidacy for the PhD.

Once the student has advanced to candidacy, the Dissertation Committee, chaired by the student’s Dissertation Advisor, has the responsibility of monitoring the student, ensuring the student’s progress through the program in a timely manner.

The Graduate Advisor of Record for the Physics PhD program advises all doctoral students, supervises the maintenance of records, and represents the Physics and Astronomy Department as well as the Space Science and Engineering Division at SwRI in most matters relating to Physics doctoral students. Questions about degree requirements and academic policies should be directed to the Graduate Advisor of Record. Final authority for the Physics PhD program rests with the Office of the Provost and Vice President for Academic Affairs.

PHYSICS DEGREE REQUIREMENTS

Registration

Rules recommended by the DSC and approved by the core faculty, the Department Chair, the Graduate Council and the Office of the Provost and Vice President for Academic Affairs govern the registration of the doctoral students. Students register for available classes through the ASAP online system {some courses require departmental approval}. The student should discuss selection of lecture courses with the graduate advisor or his/her Dissertation Advisor, once this faculty member is selected. First year students are strongly encouraged to register for two of the core classes in the Fall semester and the remaining two core classes in the Spring semester.

The Graduate Advisor of Record or the Dissertation Advisor must approve the Program of Study (PoS). Students are therefore encouraged to review the PoS with their advisor and their dissertation committee periodically.

Course Requirements

The doctoral degree requires a minimum of 81 semester credit hours beyond the Baccalaureate Degree. The coursework in the Program of Study includes a Core Curriculum (12 hours) and advanced electives (27 hours) which could include graduate classes from other programs (e.g., chemistry, electrical engineering, etc.). Research hours, include Research Seminar (3 hours), Directed Research* (minimum of 6 hours), Doctoral Research (21 hours) and Doctoral Dissertation (12 hours), for a total of a minimum of 42 research credit hours and complete the Program of Study as well as one of the requirements to graduate. The choice of classes beyond the 12 hours of Core courses must be coordinated with the dissertation advisor.

* Directed Research can only be taken until a student advances to candidacy.
PROGRAM OF STUDY

A. Core Curriculum (12 credit hours)
   PHY 5103  Classical Mechanics I
   PHY 5203  Electrodynamics I
   PHY 5303  Statistical Mechanics
   PHY 5403  Quantum Mechanics I

B. Advanced Physics electives (27 credit hours from the following)
   PHY 6103  Classical Mechanics II
   PHY 6113  Fluid Mechanics
   PHY 6123  Plasma Physics and Magnetohydrodynamics (MHD)
   PHY 6203  Electrodynamics II
   PHY 6303  Quantum Mechanics II
   PHY 6313  Solid State Physics
   PHY 6323  Nonlinear Optics and Lasers
   PHY 6403  Fundamentals of Space Physics
   PHY 6413  Fundamentals of Astronomy
   PHY 6503  Mathematical Physics I
   PHY 6513  Mathematical Physics II
   PHY 6523  Computational Physics
   PHY 6613  Methods of Experimental Physics
   PHY 6623  Space Physics Laboratory

Topics courses may be repeated for credit as the topics vary. The student should consult her/his Graduate Advisor if in doubt.
   PHY 7403  Topics in Biophysics and Biomedical Physics
   PHY 7503  Topics in Experimental Physics
   PHY 7603  Topics in Condensed Matter Physics
   PHY 7703  Topics in Space Physics
   PHY 7803  Topics in Theoretical Physics
   PHY 7903  Topics in Astrophysics
   PHY 7973  Special Topics in Physics

C. DOCTORAL RESEARCH (42 credit hours from among the following)
   PHY 7001-3  Directed Research (minimum 6 hours; prior to completing qualifying exam)
   PHY 7013  Research Seminar (3 hours)
   PHY 7101-3  Doctoral Research (21 hours; after successfully completing qualifying exam)
   PHY 7111-3  Dissertation (12 hours)

The final Program of Study must be approved by the student’s Dissertation Committee, Dissertation Advisor, Doctoral Studies Committee, and submitted via the Department Chair to the Dean of the Graduate School. Students should review the PoS with their advisor and, once it is formed, with their dissertation committee at least once a year. Students should provide the PoS to the GAR before the beginning of each academic year.

The good progress of each student is followed by the advisor but also by the Chair of the Doctoral Studies Committee through periodic audit of the POS. If a student fails to make good progress, the student’s advisor as well as the student will be required to meet with the chair of the DSC.
Seminar Requirements
In order to promote general awareness of research activities and to share ideas between members of the Physics program, all students and faculty are expected to regularly attend Physics and SwRI graduate program functions. Annual attendance is required at the following:
   1. The Physics and SwRI Orientation.
   2. Physics and SwRI Seminar Series – every seminar given.
Since the level of students’ PhD activity is mostly based on their research proficiency, all students are expected to attend as many seminars as possible beyond the required Research Seminar class that is taken for credits.

Seminar Credit Requirements
The Research Seminar course (PHY 7013) is a 3 hour course and the credit hours are earned in the semester when the student officially enrolls for the class. However in order to receive full credit a student must attend at least three semester of PHY 7013. For example, a student could sign up in semester one, but is required to attend the seminars for at least two consecutive semesters after that. Failure to do so will result in an “incomplete” grade or an “F” grade which would prevent graduation of the student or cause dismissal from the program, respectively.

SUGGESTED COURSE SEQUENCE FOR THE PHD PROGRAM

<table>
<thead>
<tr>
<th>YEAR</th>
<th>TERM</th>
<th>PROGRAM OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fall</td>
<td>2 Core Courses (Stat. Mech. And Class. Mech.) + Research Seminar (9 hours)</td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>2 Core Courses (Quantum I and Electrod.) + 1 Adv. Elective (9 hours) and attendance of Research Seminars</td>
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<tr>
<td></td>
<td>Summer</td>
<td>Directed Research (3 hours)</td>
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<tr>
<td></td>
<td></td>
<td>Complete the comprehensive requirement</td>
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<tr>
<td>2</td>
<td>Fall</td>
<td>3 Adv. Electives or 2 Adv. Electives + 3hrs Direct. Research (9 hours) and attendance of Research Seminars</td>
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<tr>
<td></td>
<td>Spring</td>
<td>Identification of Supervising Professor, Research topic and Qualifying committee.</td>
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<tr>
<td></td>
<td>Summer</td>
<td>2 Adv Elective + 3hrs Doctoral Research (9 hours)</td>
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<tr>
<td></td>
<td></td>
<td>3 hrs Doctoral Research (3 hours)</td>
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<tr>
<td></td>
<td></td>
<td>Passing Oral Qualifying Exam and advance to candidacy.</td>
</tr>
<tr>
<td>3</td>
<td>Fall</td>
<td>2 Advanced Electives + 3 hrs Doctoral Research (9 hours)</td>
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<tr>
<td></td>
<td>Spring</td>
<td>1 Advanced Elective + 6 hrs Doctoral Research (9 hours)</td>
</tr>
<tr>
<td></td>
<td>Summer</td>
<td>3 hrs Doctoral Research (3 hours)</td>
</tr>
<tr>
<td>4</td>
<td>Fall</td>
<td>1 Advanced elective + 3 hrs Doctoral Research + 3 hrs Dissertation (9 hours)</td>
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<tr>
<td></td>
<td>Spring</td>
<td>Dissertation (9 hours)</td>
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<tr>
<td></td>
<td></td>
<td>Dissertation completed &amp; successfully defended by the end of summer of 4th year</td>
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</tbody>
</table>

Non-Credit Requirements
The following is a summary of requirements that must be completed in order to obtain the PhD degree in Physics.
   1. Continued attendance at Physics and SwRI Seminars.
   2. Meet the requirements to advance to the Oral Qualifying Exam.
   3. Selection of Advisor and Research topic by end of fall semester, second year.
   4. Advance to candidacy (i.e., pass the oral qualifying exam) by the summer of the second year.
   5. Completion of Annual Progress Reports.
   7. Completion of written dissertation.
Independent Study

Up to six hours of independent studies are allowed and can be used in place of Advanced Elective courses. However, the recommendation is to limit the number of coursework taken as independent study to a minimum. Students based at UT Brownsville cannot use this mechanism to avoid the minimum number of credit hours required to be taken from courses taught by UTSA core faculty.

Transfer of Credits

Students matriculating with a Master’s degree or transferring from another PhD program in Physics may receive up to 30 hours credit, upon approval of the DSC and the Graduate School, provided the courses are comparable to UTSA courses. Typically, credit transfer (including grade) for the four core classes is allowed only from schools where a PhD program in Physics is in place. Students who transfer from schools that do not have a PhD program in Physics are required to either re-take the core classes or pass a placement exam for that class. Research credit hours (including seminars, directed or doctoral research) cannot be transferred. The following classes that have been used for Master’s Degree credit cannot be applied toward the PhD: Directed Research, and Independent Study.

Conditions for transfer of credit:

1. Students must complete the form “Transfer of Graduate Credit towards Doctoral Degree” (located on the graduate school website).
2. The courses must have been completed with a “B” or better.
3. Coursework must be from an accredited university and have not been used in another degree program.
4. An official transcript from the institution where the coursework was completed must be submitted.
5. All coursework must have been completed no more than six years before the degree was awarded.
6. Coursework is subject to approval of the appropriate Graduate Program Committee and academic College in which the program is administered.
7. Courses must be defined as graduate-level work at the institution where the credit was earned.

Excepting may be approved upon recommendation of the Graduate Advisor of Record and with the approval of the Graduate Program Committee, the Department Chair, and the Dean of the Graduate School.

99-Hour Credit Limitation

The 75th Texas Legislature placed a 99-hour limit on the number of doctoral semester credit hours a student can obtain while receiving and/or being eligible for funding support. This regulation states that any student that exceeds 99 doctoral semester credit hours will be subjected to an increase in tuition by being charged the out-of-state rate.

Selecting a Dissertation Advisor

This is the most important action taken by the students in the program. During the first semester of residence, students have the opportunity to attend an introductory orientation to learn about research opportunities in individual faculty groups. In addition, students are urged to meet with individual faculty to discuss research interests as early as the first semester. By the end of the first summer in the program every student should have identified a faculty member who is willing to advise the student and to supervise research for the dissertation. In order to make appropriate progress toward completion of the PhD, it is important that the student initiates his/her research as soon as possible, no later than the middle of the second year.

A student must submit to the Graduate Advisor of Record the form P1 selecting a Dissertation Advisor with the signed consent of that faculty member. All students are expected to have been approved for a supervisor by the middle of the second year. If extenuating circumstances have prevented a student from arranging a Dissertation Advisor by that time, the student can petition the DSC for up to a maximum of one semester additional time. A student who is not awarded additional time, or who has not been approved for a Dissertation Advisor following
completion of the additional time will not be continued in the PhD program. The student may then petition the Department Chair for approval to transfer to the masters program. See Master’s Degree Option.

**Attendance Requirement**

Students must attend classes as required. For Doctoral Research a minimum of 4.5 hours per week per credit hour is required. If a student cannot attend classes or fulfill research commitments and does not notify the Chair of the DSC, then his/her stipend may be suspended, and procedures will begin to ascertain whether or not the student should be dismissed from the Doctoral Program.

**Leave of Absence:**

Continuous registration as a doctoral student is required unless a formal leave of absence is granted by the dean of the college in which the student’s program is administered. A leave of absence may be granted for military duty or medical reasons. A leave of absence may be granted for other reasons if additional approval is obtained by the Vice Provost and Dean of the Graduate School. No degree examinations may be taken while a student is on a leave of absence. If the student has not yet advanced to candidacy for the doctoral degree, this request must be approved in advance of the leave by the graduate adviser. If the student has advanced to candidacy, the application must be approved in advance by the graduate adviser and the graduate associate dean of the college and dean of the graduate school.

A leave of absence is required for Fall and Spring semesters (and/or Summer if doctoral program mandates Summer enrollment). Under no circumstances may a leave of absence be applied retroactively.

A leave of absence will prevent the student from receiving student funding from his/her program and may affect ability to receive financial aid or loans and/or to defer payments on loans. Students should contact the Office of Financial Aid with questions regarding financial aid or loan status.

A student returning from a leave of absence must enroll for the following Fall or Spring semester or provide a written request for a leave of absence extension (a leave of absence may not exceed one year throughout the student’s degree program). A student without an approved leave of absence who fails to register each semester will be considered to have withdrawn from candidacy for the degree. Approval of a Petition for Reinstatement will be required for reinstatement. For more information, visit the graduate school website.

**Annual Progress Report**

In order to assess student progress toward the Physics degree, an annual written progress report will be submitted to the DSC each year by the student and the Dissertation Advisor. This report should be submitted by September 1st and will be reviewed by the Physics DSC by September 1st.

**The Qualifying Examination**

The purpose of the Qualifying Examination (QE) is to determine if the PhD student has acquired the knowledge expected of a doctoral candidate in the area of physics and test the soundness of the research approach and skills. The QE has two parts: a first comprehensive requirement and an oral qualifying exam. Both parts need to be fulfilled in order to advance to candidacy. Satisfying the requirements for comprehensive requirement is a pre-requisite to advance to the oral QE.
Comprehensive Requirement.

- A student must obtain a minimum of 2 “A” grades + 2 “B” grades in the four core classes (Classical Mechanics I, Statistical Mechanics, Electrodynamics, Quantum Mechanics I) in order to advance to the oral qualifying exam.
  - If after the first year a student fails to meet this requirement, he/she will have to pass a written exam
    - Scenario # 1. 1 “A” and 3 “Bs” in the four core classes. The student has to pass at least one of the written exams in any of the three core topics where the student received a “B”. A student can take one, two or all three written exams, but he/she will be required to pass at least one.
    - Scenario # 2. No “As” and 4 “Bs” in the four core classes. The student has to pass at least two of the written exams in any of the four core topics where the student received a “B”. A student can take one, two, three or all four written exams, but he/she will be required to pass at least two.

- For students who are required to take the written exam, it will be administered in four parts (one for each core class) at the beginning of August of each year.

- Students who do not achieve a grade of “B” or better in a core class(es) will not be allowed to take the written exam for that/those core topics and will be required to re-take the class (or classes) and achieve a proficiency level of “B” or better.

- In case one fails the written exam can re-enroll in the core class(es) for a chance of getting the grade(s) needed to fulfill the 2 ”A” + 2 ”B” requirement AND (in case they fail) take the written exam once more. The core classes cannot be re-taken for credit.

- In any case a student cannot repeat each attempt more than once. If a students fails to achieve the 2 “A” grades + 2 “B” grades or pass the equivalent requirement for the written exam (Scenario # 1 or Scenario #2), he/she will not advance to candidacy and will be given the option to obtain a terminal MS degree.

- For students entering the program with a MS degree in Physics from another University or having taken the four required graduate core classes at other institutions, the requirement to take or not a written QE will be taken on a case by case basis by the admission committee.

- For students entering the program with a MS degree in Physics from the University of Texas at Brownsville the 2”A” + 2”B” rule will apply considering the equivalent core classes they have taken at UTB. The Physics program at UTB has already aligned its syllabi in graduate Classical Mechanics, Statistical Mechanics, Quantum Mechanics and Electrodynamics to the ones used at UTSA.

Oral Qualifying Exam.

Once a student has successfully completed requirement 1, he/she will advance to the oral qualifying exam. A student will schedule the oral QE after having selected a dissertation advisor and assembled a Qualifying Exam Committee (QEC). The oral QE should be scheduled within 12 months of the successful completion of the comprehensive requirement.

The oral QE will consist of the presentation of the student research plan and will test his/her depth of knowledge of his/her research field as well as his/her preparation to undertake the research project. The first part of the QE occurs in the form of a public seminar, while the second part is restricted to the QEC members. To fulfill the requirements for the oral QE, members of the QEC will be presented with a completed form of the proposal two weeks prior to the scheduled oral exam. Each committee member will test the examinee on the proposal and the doctoral student will be required to defend it. A majority passing vote by the committee is needed for the student to pass and advance to candidacy. The QEC may also suggest remediation steps to be taken by the doctoral student to correct deficiencies perceived during the oral portion of the exam. These will be put into written form and the Dissertation Advisor, the student’s Dissertation Committee, and the Physics GPC will oversee progress with a final report being sent to the QEC upon completion.
Upon successful completion of the oral QE the student will advance to candidacy (upon completion of the formal paperwork for the advancement to candidacy). If a student fails the oral QE, he/she will have six months to re-attempt it. In case the student fails it a second time, he/she will not advance to candidacy and will be given the option to obtain a terminal MS degree. The student also may pass conditionally, in which case the student may be required to take additional coursework or satisfy other requirements.

**Master’s Degree Option**

A doctoral student who has failed either component of the qualifying examination or the dissertation defense may petition the Department Chair for approval to transfer to the MS Program in Physics, to receive a Masters Degree. The student must complete all degree requirements for the MS degree, including the comprehensive examination.

**Interim Masters Degree**

Students who are admitted to doctoral programs directly from the bachelor’s-degree level (without the requirement of a master’s degree) and who want to take the Master’s degree as part of the program for the doctorate, must meet the following requirements:

1. Complete the appropriate set of 30 semester credit hours of coursework, matching to the satisfaction of the appropriate Graduate Program Committee, the 30 hours required for regular master’s degrees at UTSA in the specified area.
2. Pass a qualifying examination related to the above 36-semester-credit-hour program, administered under the standard UTSA regulations. (If the Doctoral Qualifying Examination has been administered and passed, this requirement has been met.)
3. Apply for award of the master’s degree at the time and in the manner prescribed for regular master’s degrees at UTSA
   a. Present to the graduate school, through COS-Dean’s office.
      i. An approved program of study for the master’s degree
      ii. Certification of having passed the Qualifying Examination (Form P5)
      iii. A transcript (or certification from the Office of the Registrar) showing a grade point average of 3.0 or better and current good academic standing.
      iv. Certification of removal of any conditions imposed on admission (if applicable)
   v. Courses counted as indicated above toward the master’s degree may also be included in the overall requirements for the doctorate degree. More information can be obtained at http://graduateschool.utsa.edu/current-students/interim-masters-degree/

**Advancement to PhD Candidacy**

Upon completion of the Qualifying Examination and receipt of the signed Approval form (P5) from the QEC and Dissertation Supervisor, the student will advance to candidacy for the PhD. The Physics DSC Chairperson will notify the student of his/her advancement to candidacy. If advancement to candidacy is not recommended by the QEC and the Dissertation Supervisor, the student will be notified by the Physics DSC within two days, and the student may make a written appeal to the Physics DSC within two weeks of the recommendation.

As soon as the student is notified of the recommendation to advance to PhD candidacy, the student should apply for advancement to candidacy. The application forms can be obtained from the Physics & Astronomy website. If you have questions regarding the forms consult with the Graduate Studies administrator in the Physics Department. The criteria for admission to candidacy are:

1. Completion of all required core course work.
2. Fulfillment of the Comprehensive Requirement and successful completion of the oral Qualifying Exam.
3. Approval by the Physics DSC, the Department Chairman, and the Dean of the Graduate School and the Office of the Provost and Vice President for Academic Affairs.

Any student who is admitted to the program to earn the PhD should be advanced to candidacy within two years after enrollment. Any student who has not been advanced to candidacy within two years can continue in the program only after individual review and recommendation by the Physics DSC to the Department Chairperson, and the Dean of the Graduate School. In the annual review the progress of the student will be listed as “Not Satisfactory”.

**Dissertation Committee**

The Dissertation Committee has the responsibility for general supervision of the student’s research and ultimately for certifying to the Dean of the Graduate School that an acceptable dissertation has been submitted and that all degree requirements have been completed. The committee is selected by the student in consultation with his/her Dissertation Advisor and with approval of the Physics DSC, the Department Chairman, and the Dean of the Graduate School and should be appointed soon after the Qualifying Examination is passed. The dissertation committee consists of at least five faculty members: the QEC and the Dissertation Committee must include a majority of core graduate faculty; and must include an external member. Such member is recommended to be a PhD faculty member from an academic institution other than UTSA. Additional committee members can either be a core faculty member, from another department at UTSA or SwRI, or a second outside member. For students whose dissertation advisor is an adjunct faculty at SwRI or UTB, the dissertation committee MUST include at least one regular UTSA faculty member. The Dissertation Advisor chairs the committee. The formal approval of the Dissertation Committee is included in the Application for Advancement to Candidacy.

Although the supervising professor provides day-to-day guidance to the student, all members of the committee should be available for consultation, and the student should feel free to ask for advice. The Dissertation Committee also has general responsibility for monitoring the student’s research progress whereas the Physics DSC will continue to monitor progress through the Program of Study. The student should meet with the dissertation committee at least two times per year. During these reviews the student will provide a progress report to the dissertation committee. The dissertation committee will provide written feedback and suggestions to the student about his/her progress and submit a report to the Physics DSC for each of these meetings. If it is necessary to change the membership of the dissertation committee prior to completion of the dissertation, such procedure involves a petition to the Physics DSC and approval through administrative channels. The student should consult with the Graduate Advisor of Record before initiating any action. Changes in the committee should be completed well in advance of the final oral examination.

**Dissertation Proposal**

After passing the Qualifying Examination, the student must present a dissertation proposal to the Dissertation Advisor and the Dissertation Committee for approval. The dissertation proposal will in most cases coincide with the proposal written for the oral component of the qualifying examination, with revisions suggested by the QEC. The Dissertation Research Proposal should include a title/signature page, abstract, preliminary data, experimental design and methods including data acquisition and analyses, and expected results. A timeline should also be included in the section before the list of cited references. It is suggested that the students use the NSF Fast Track Guidelines for this proposal. The Dissertation Committee must sign the title/signature page of the approved Dissertation Research Proposal. This signed form page is submitted along with the Dissertation Proposal, the signatures of the Physics GPC Chair, and the Department Chair, to the Dean of the Graduate School.
Final Oral Examination (Dissertation Defense)
When the dissertation is in final form, (contact the Graduate School Office before writing the dissertation for instructions and guidelines), it is circulated to the Dissertation Committee. When all members of the committee agree, the final oral exam (defense of dissertation) should be scheduled. The request for scheduling of the final oral exam is to be submitted to the Physics DSC at least one month prior to the defense and should be advertised as extensively as possible to the public.

The defense of the doctoral dissertation consists of two parts. The first is a public seminar that is open to all faculty and students. The Graduate Studies administrator posts notices of the seminar one week prior to the exam. Immediately following the seminar, the student meets privately with the Dissertation Committee to answer any questions that the committee members may have. Once the dissertation is approved by the Dissertation Committee, the committee chairperson notifies the Department Chair and the Dean of the Graduate School of successful completion of the exam (defense) and that all degree requirements have been met using the appropriate form. This must be done no later than three weeks prior to the end of the semester.

The Graduate School Office provides guidelines on the format of the dissertation and all signature pages and forms for notification of successful completion of all degree requirements and submission of the dissertation to the library.
Progress toward the Degree

All students are expected to make reasonable progress toward the degree in a timely fashion. It is the responsibility of the students and their dissertation advisors that substantial progress towards the degree is made and monitored periodically. Each year the student and Dissertation Advisor must submit an annual written progress report by September 1st, and once a student has been advanced to candidacy for the PhD, the student must schedule periodic meetings with the Dissertation Committee.

If the student has not completed the dissertation within five years of admission to candidacy, the Physics DSC will recommend what actions, if any, are required and will then transmit its recommendations to the Department Chairman and the Dean of the Graduate School, who will decide the actions needed to be taken.

Recommended Sequence of Events for Completion of PhD Requirements

YEAR ONE
1. Arrival at UTSA – Meet Department Chair, Physics & SwRI core faculty & hear about faculty research programs at the PhD Student Orientation.
2. Meet with Physics Graduate Advisor of Record for the PhD Program.
3. Submit any graduate level classes to be transferred to the Physics DSC for preliminary approval & take placement exams (if necessary).
4. Complete requirements for unconditional admission (if necessary).
5. Fulfill requirement for the comprehensive portion of the qualifying exam before Fall semester of second year.
6. Select Dissertation Advisor before start of the second academic year.
7. Submit annual progress report by September 1st and meet with DSC.

YEAR TWO
1. Complete the majority of course work.
2. Form QEC/Dissertation Committee – at least 5 members, including one external member.
3. Initiate pilot research on dissertation work.
4. Write Qualifying Examination proposal.
5. Schedule, take & pass Oral Qualifying Examination administered by Qualifying Examination Committee before August.
6. Be recommended for Advancement to Candidacy by the Physics DSC.
7. Submit annual progress report by September 1st and meet with Dissertation Committee for annual progress evaluation.

YEAR THREE
2. Schedule at least two Dissertation Committee meetings (one in Fall; one in Spring).
3. Submit annual progress report by September 1st and meet with Dissertation Committee for annual progress evaluation

YEAR FOUR & BEYOND (if necessary)
1. Continue to meet with Dissertation Committee twice yearly.
2. Submit annual progress reports each September 1st and meet with Dissertation Committee for annual progress evaluation
3. Complete research.
5. Complete dissertation, get Dissertation Committee approval.
7. Work with the Department Graduate Studies Administrator to notify Graduate School Office and publish the time, date, place and title of Defense.
8. Follow formatting requirements, deadlines and final submission requirements for the dissertation found on the graduate school website ([http://graduateschool.utsa.edu/current-students/category/thesis-dissertation](http://graduateschool.utsa.edu/current-students/category/thesis-dissertation))
9. Personal copies of the Dissertation can be purchased through the ProQuest website at the time of electronic submission.

**FINANCIAL AID INFORMATION**

**Graduate Fellowships**
Students accepted into the program may receive support in three forms:
1. University support of ~$27,000 per year, including tuition and some fees; this stipend has both research and teaching responsibilities. The stipends are awarded competitively. The stipend is paid monthly contingent upon satisfactory progress toward the PhD degree. The stipend cannot be received simultaneously with other forms of support.

2. Teaching assistantship. With this support the students are expected to fulfill their teaching responsibility of 2 introductory laboratories per semester or equivalent teaching assignments.

3. Research assistantship. This form of support is typically provided by external funds available to individual advisor and the dollar amount may vary depending on the funding agency. The terms of this support depend on the type of funding (scholarship, fellowship, etc.) and the funding agency (e.g., NSF, NIH, DoE, etc.) This form of support requires the students to dedicate their time to research and their coursework.

Students receiving University support or research assistantships MUST be registered full time; 9 hours per long semester and 3 hours per summer. Students supported by external funds can be registered for a variable number of credit hours each semester. In order to receive any type of assistantship students MUST maintain good academic standings and they have to make good progress towards the obtainment of their degree.

Outside employment for students receiving University support is not permitted, except under conditions of substantiated hardship. Approvals for outside employment must be obtained from the Dissertation Advisor, the Doctoral Studies Committee (DSC), the Department Chair and the Office of the Provost and Vice President for Academic Affairs.

**Teaching Requirement**
During the first year, students who are not supported by an external grant will be required to provide Teaching Assistantships which may include at least two introductory Physics laboratory or recitation for various classes, and/or assisting an instructor in organized lecture classes (e.g., grader, tutor, etc.). The teaching duty effort will correspond to the equivalent of 19 hours/week.

Teaching assistantship is one possible way for students of receiving support for their studies. However, since the post-degree careers of Physics graduates are likely to involve some teaching, students are encouraged to be involved as Teaching Assistants before obtaining their degree.
GENERAL ACADEMIC REGULATIONS

Rules concerning registration, late registration, adding classes, dropping classes, and auditing classes are all found in the schedule of classes. Academic standing, cancellation of enrollment, withdrawal procedures, reinstatement in the University and student classification are also addressed in the Graduate catalog.

Grade Point Average
To remain in good academic standing a minimum grade point average of 3.0 (on a 4.0 scale) must be maintained in each of the following:
1. All coursework completed at UTSA
2. Graduate courses in the student’s major
3. Graduate courses in the student’s support field.

In computing grade point averages, grades from other institutions are not used.

Academic Probation and Dismissal

Academic Probation
Academic probation describes the standing of a student at the graduate level who is in one of the following categories:
1. A student who fails to achieve a grade point average in any term at UTSA of 3.0 or higher, irrespective of level of courses taken.
2. A student who received a grade of “D” in any course in a term.
3. A student who does not meet all requirements for unconditional or regular admission and who, by special action, is admitted on academic probation.
4. A student who has been reinstated following academic dismissal.
5. To graduate, all graduate students must have a grade point average of at least a 3.0 (on a 4.0 scale).

Academic probation is cleared only when none of the above criteria apply and when the student achieves an overall grade point average of 3.0 as a graduate student at UTSA. Students on academic probation are encouraged to discuss their status with their academic advisors.

Important!! A student on academic probation cannot be supported as a Teaching Assistant or as a Graduate Research Assistant.

Academic Dismissal
Academic dismissal occurs:
1. when a student at the graduate level earns a grade point average of less than 2.0 in any term
2. when a student at the graduate level earns a grade of “F” in any course
3. when a student at the graduate level is admitted on probation with conditions and fails to meet a condition
4. when a student at the graduate level who is on academic probation during a term would again be placed on academic probation under the provisions of academic probation set forth above. If, however, the student’s UTSA grade point average for the term is at least 3.0, he or she will continue on academic probation.

Important!! A student on academic dismissal cannot be supported as a Teaching Assistant or as a Graduate Research Assistant.
GUIDELINES FOR ADVANCEMENT TO CANDIDACY FOR THE PHYSICS PHD DEGREE

PROCEDURES FOR THE QUALIFYING EXAMINATION

I. CHRONOLOGY OF EVENTS

The Qualifying Examination is based on a comprehensive requirement based on the performance in the four core graduate classes as well as the student’s oral defense of a written research proposal. The chronology of events is:

1. The student fulfills the comprehensive requirement.

2. The Student selects a dissertation advisor, initiates his/her research project(s) and writes a proposal based on dissertation interests discussed with the advising professor in terms of general feasibility. The student and the advisor select potential faculty members for the examination committee. It is recommended that the qualifying examination committee be composed of faculty who will become part of the student’s Dissertation Committee. The chair of the qualifying examination committee must be a faculty member other than the Dissertation Advisor.

3. The student contacts the members of his/her qualifying examination committee to obtain their agreement to serve and then submits the names to the Physics GPC for approval.

4. The student writes an abstract (maximum of 200 words) and an outline (maximum of one page) of the proposal and distributes copies to the committee members. The committee members should inform the chair of the committee within three days of any significant reservations about the proposal. The student should consult with the chair of the committee after the third day.

5. The student writes the full proposal taking into consideration any of the initial concerns of the committee members.

6. The student distributes the full proposal to the committee members. Within seven days after receipt of the proposal the committee members inform the chair of the committee whether or not the proposal is acceptable for the purpose of the oral examination. The student consults with the chair for this information. If the proposal is not acceptable, the student re-writes the proposal based on recommendations from each of the committee members.

7. When the committee unanimously agrees that the proposal is acceptable, the committee members will sign the cover sheet and the student will forward the signed proposal to the Physics DSC and coordinate with the his committee and the administrative personnel the schedule of the oral examination. The student may discuss with the committee members areas of knowledge for which he/she will be held responsible during the examination.

8. During the oral examination, the committee examines the student on the written proposal and related areas to assess the breadth and depth of knowledge he/she possesses as a doctoral student.

9. Approval by a majority of the committee members is required for the student to pass the oral examination. Advancement to candidacy also requires approval of the supervising professor who substantiates the student’s potential for independent and productive research. The supervising professor makes this determination by the completion of the oral exam. Signatures of the committee members and the supervising professor are required on the Approval statement.

10. If the student fails the oral examination, he/she will be allowed to repeat the examination. The chair of the committee will give the student a written explanation for the basis of the failure and provide guidelines to prepare for the re-examination. Unless there are unusual circumstances, the re-examination must be completed within six months of the first examination. If the student fails the
re-examination, he/she will be dismissed from the PhD program. The Physics DSC will decide whether the student will be permitted to proceed towards a Master’s degree.

11. Upon successful completion of the Qualifying Examination and receipt of the signed Approval statement from the qualifying examination committee and supervising professor, the student be advanced to candidacy for the PhD degree. The DSC Chair will notify the student of his/her advancement to candidacy. If an unfavorable recommendation is made, the student will be notified by the DSC Chair in writing and the student may make a written appeal to the Physics DSC within two weeks of the recommendation.

II. THE STUDENT’S WRITTEN PROPOSAL

The student’s written research proposal will be in the same area as his/her dissertation studies. The student may give an original interpretation of literature data; propose a series of experiments to test a hypothesis, present a new theoretical approach to a problem. The format of the proposal is suggested to follow that of an NSF Fast Track grant proposal. The proposed research has to be original and conducive to peer-reviewed publication.

The proposal should have a cover page with a title and names of the student, dissertation professor, and committee members. When the committee has agreed that the proposal is acceptable for oral examination, the student should give a copy of the proposal with the cover page containing the signatures of the committee members to the Physics DSC along with the date scheduled for the oral examination. In the proposal, the cover page should be followed by an abstract, statement of the hypothesis to be tested, specific aims, background information from the literature, preliminary studies (if applicable), research design and methods to test the hypothesis, and a discussion of potential experimental outcomes of significance to the hypothesis. A bibliography should be included. Only background information and references most relevant to the proposal should be included. The complete written proposal should be limited to 10 single-spaced, typewritten pages excluding the cover page and bibliography. The bibliography should include titles and inclusive page numbers, and it may be typed single-spaced.

The faculty strongly emphasizes that the responsibility for the quality of the proposal in terms of originality, approach to solving the problem or testing the hypothesis, and significance rests completely with the student. The student prepares the written proposal entirely by him-or herself. The student may ask the supervising professor to read the proposal prior to submission to the examination committee. The supervising professor may suggest changes with respect to general organization of the document, English (grammar, spelling, etc.), and general aspects of the science. It is the responsibility of the examination committee to evaluate the scientific merits of the proposal.

III. THE ORAL EXAMINATION

The oral examination begins with an approximately thirty-minute presentation by the student in which he/she summarizes the proposal. The summary presentation is followed by questions from the committee members until they decide they can evaluate the student’s performance. The written proposal and related scientific areas will be the basis of the committee’s questions. A three-hour period should be scheduled for the examination.

IV. POSSIBLE OUTCOMES OF THE QUALIFYING EXAMINATION

Unconditional Pass: For an unconditional pass the student must pass the written comprehensive exam and there must be a majority passing vote of the 5-member QEC on the oral exam.

Pass with Conditions: The student also may pass conditionally, in which case the student may be required to take additional coursework or satisfy other requirements. The QEC may suggest remediation steps to be taken by the doctoral student to correct deficiencies perceived during the oral portion of the exam. These will be put into written form by a report from the Chair of the QEC to the Physics DSC and the student. The Dissertation Supervisor will oversee progress along with the student’s Dissertation Committee, and the Graduate Program
Committee with a final report being sent to the QEC upon completion. Application for Advancement to Candidacy is not allowed until all conditions have been satisfied.

Fail: Students that fail the written comprehensive exam will be allowed to retest once in the following QE. If the student does not pass the oral exam he/she will be allowed to repeat the examination within 60 days. For additional time the student should write a petition, approved by the QEC, to the GPC to justify the need for additional time. The Chair of the QEC will give the student a written explanation for the basis of the failure and provide guidelines to prepare for the re-examination. If the student fails either the written or oral exam on a second attempt, he/she will be dismissed from the PhD program. The Physics DSC will decide whether the student will be permitted to proceed towards a Master’s degree.

V. RESPONSIBILITIES OF THE STUDENT
1. Pass written comprehensive exam.
2. Request that the Physics DSC review his/her graduate record for approval to take the oral examination.
3. Discuss your ideas about a proposal and potential faculty members for a qualifying examination committee with your supervising professor.
4. Submit the names of the qualifying examination committee to the Physics DSC for approval and initiate the paperwork to appoint any external member to the graduate faculty(*).
5. Write an abstract and outline of a proposal for initial approval by the examination committee.
6. Write a complete, original proposal that is approved by the examination committee in terms of its acceptability for an oral examination.
7. Present a copy of the proposal with a signed cover page to the chairperson of the Physics DSC when the committee has approved the proposal.
8. Successfully defend the proposal in an oral examination by the committee.
9. Make sufficient progress in research to warrant a positive recommendation from your supervising professor.

(*) Appointment of an external member as a Special Member of the Graduate Faculty is approved by the Graduate Council. The graduate council meets the first Thursday of each month (except in June, July, August, September and January) and application for special memberships have to be filed with the Graduate School (through the Physics Department office) by the 15th of the month preceding the meeting of the Graduate Council.

VI. RESPONSIBILITIES OF THE SUPERVISING PROFESSOR
1. Provide the student with general guidance in preparation of his/her proposal.
2. Attend the oral examination of the student as a voting member of the committee.
3. Participate in the evaluation of the student for Advancement to Candidacy by substantiating, or not substantiating, the student’s potential for independent and productive research.
4. Provide guidance and supervision of the students towards a successful completion of their degree. This includes ensuring that the advised students proceeds in a timely manner through the program. The Advisor should be aware of the deadlines, procedures, and general procedures for the completion of the steps towards graduation.

VII. RESPONSIBILITIES OF THE EXAMINATION COMMITTEE
1. The qualifying examination committee should be composed by the same members that form the Dissertation Committee. The QEC will consist of at least 5 members including at least 2 Physics core graduate faculty members, and the dissertation advisor. At least one member (but no more than 2) should be external to the Program. The presence of internationally renowned scientists in the QEC is encouraged. The chair of the qualifying examination committee must be a faculty member other than the Dissertational Advisor.
2. The committee determines the initial feasibility of the proposal based on the student’s abstract and outline. The chair informs the student of the committee’s decision within three days after receipt of the abstract and outline by the committee members.

3. The committee determines the acceptability of the complete written proposal for the oral examination. The chair informs the student of the committee’s decision within seven days after receipt of the written proposal by the committee members. If the committee decides the proposal is not acceptable, the student must re-write the proposal based on recommendations from each member of the committee.

4. The committee examines the student on the written proposal and related areas. The chair of the committee acts as moderator for the examination.

5. Upon completion of the examination, the committee evaluates the performance of the student and decides whether or not the student passed the examination. Passage of the exam requires a positive vote from a majority of the committee members. Advancement to candidacy also requires approval of the supervising professor.

6. The chair of the committee will inform the student of the committee’s decision immediately after the committee’s deliberations.

7. The chair of the committee will inform the chairperson of the Physics GPC of the committee’s decision and give him/her the signed Approval statement.
Procedures for Submitting a Doctoral Dissertation

The following are the steps to be followed by doctoral students in submitting a doctoral dissertation. Students should visit The Graduate School’s Thesis/Dissertation webpage (http://graduateschool.utsa.edu/current-students/category/thesis-dissertation/) for current formatting requirements, including templates, formatting workshops, deadlines, preliminary draft process, and final submission requirements.

1. After passing the qualifying exam, the student should begin working with his/her Dissertation Supervisor and Dissertation Committee. The criteria for the membership of the committee are outlined in the Academic Policy and Procedure booklet. The student is eligible at this time to begin his/her doctoral dissertation research. He/she should enroll in the appropriate doctoral research courses with the Dissertation Supervisor as the instructor.

2. The student should enroll in a total of at least twelve semester credit hours of the appropriate doctoral dissertation course with the Dissertation Supervisor as the instructor over the total time that the student works on the dissertation. Students should enroll in at least one doctoral dissertation course each semester that they are working on the writing of the dissertation itself. Students are required to be enrolled in a doctoral dissertation course the semester in which the dissertation is defended and submitted for final approval. The final transcript will have a grade for only 12 hours of doctoral dissertation, no matter how many additional hours the student takes.

3. The student should submit a preliminary draft of the dissertation on regular paper to The Graduate School by the preliminary draft deadline for certification that the dissertation conforms to the format prescribed in the Guide for the Preparation of Doctoral Dissertations at The University of Texas at San Antonio and the formatting template. The preliminary draft deadline and process is posted on The Graduate School’s website.

4. The student should successfully defend the dissertation. He/she should allow at least a month before the end of the semester to deal with any changes or corrections to the dissertation requested by the Dissertation Committee, and then arrange with the Graduate Secretary in the Biology Department Office to process the necessary paperwork. The date and time of the dissertation defense must be announced at least one week prior to the scheduled defense of the dissertation.

5. The student must obtain the required signatures, except for the Dean of The Graduate School’s signature, on the signature page of each copy of the dissertation prior to submitting the final printed copies to The Graduate School. At this time the signatures of all Dissertation Committee members should also be obtained on the Certification of Completion of Dissertation Requirements for Doctor of Philosophy Degree.

6. The student must make any required format changes to the dissertation and complete The Graduate School’s final requirements:

   a. **Two Final Printed Copies**: The two required final copies of the dissertation must be printed on paper that meets the following guidelines: plain white, 100% cotton, acid free, 20 or 24 pound weight (a guide to paper sources can be found on The Graduate School’s website). Other copies, which the student will present to his/her Dissertation Supervisor or Committee members, may either be originals or copies. A signed signature page with original signatures must be included with each final printed copy submitted to The Graduate School.

   b. **ProQuest Electronic Copy**: The student must submit one electronic copy of the dissertation to the ProQuest website – more information on the electronic submission is available on The Graduate School website. Please note that the ProQuest electronic copy does not require signatures on the signature page.
c. **Survey of Earned Doctorates:** This survey is required of all students earning a Ph.D. and must be completed online. The link is available on The Graduate School’s website.

The two final printed copies, ProQuest electronic copy, and confirmation of the Survey of Earned doctorates must be submitted to The Graduate School **no later than 5:00 p.m. on The Graduate School’s final submission deadline.** Please visit The Graduate School’s website for current semester deadlines and requirements, as well as contact information for the Thesis/Dissertation Officer.

7. The student should then take the "Certification of Completion of Dissertation Requirements" to the Department Office to be placed in the student’s file.
OTHER SOURCES OF SUPPORT

All students are strongly encouraged to apply for fellowships to support their studies towards a PhD degree. External fellowship in general offer better financial terms and are much more PRESTIGIOUS for the students‘ resume. Here is a list of possible sources of fellowships for graduate students in Physics.

http://ndseg.asee.org/

http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=6201

http://www.npsc.org/

http://www.nationalacademies.org/grantprograms.html

http://www.pdsoros.org/

http://www2.krellinst.org/csgf/index.shtml

http://www.hertzfoundation.org/

http://grc.src.org/member/about/aboutgfp.asp

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

http://www.hfg.org/df/guidelines.htm

http://scholarships.fatomei.com/graduate.html

http://www.jkcf.org/scholarships/graduate-scholarships/

http://groups-beta.google.com/group/fellowships


http://www.iie.org/fulbright

http://epa.gov/ncer/fellow/
http://www.gemfellowship.org/

http://www.pdsoros.org/

http://www.hsf.net/