

Summary of
Physics and Astronomy Department
Texas A&M University

GRADUATE STUDENT POLICIES

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I. Introduction

In addition to the University policies published in the Graduate Catalog and University Regulations and the graduate policies enforced by the Office of Graduate and Professional Studies (OGAPS), this document summarizes the departmental policies of the Physics and Astronomy Department for students pursuing advanced degrees. Since this document does not include the general University policies, in order to be completely informed of the overall policies one must consult the Graduate Catalog, the appropriate OGAPS Regulations, and/or University Regulations. **It is the responsibility of each GRADUATE STUDENT to ensure that they have met all Departmental, Graduate, and University requirements for their degree.**

II. Ph.D. Degree Plans

In constructing the Ph.D. or M.S. Degree Plan, the student should consult with their Advisory Committee Chair. The Committee Chair will normally be the same as the research advisor (see section V). The student will then electronically submit the Degree Plan (<https://ogsdps.tamu.edu/>). After approval by Physics and Astronomy Advising, the student will secure their Committee Chair's signature and return the hard copy to Physics and Astronomy Advising. Physics and Astronomy Advising will electronically approve the degree plan and notify the student and their research advisor chair that the chair will need to approve the document online. After the advisor has approved the degree plan online, it will automatically be sent to the student's committee for approval. It will then be approved by the Department Head before being forwarded to the Office of Graduate and Professional Studies (OGAPS).

For detailed requirements of the Office of Graduate and Professional Studies, the student should consult the Graduate Catalog. Assistance in preparing the Degree Plan may be obtained from Physics and Astronomy Advising.

A. The Ph.D. Degree Plan in Physics will include the following nine basic courses.

1. 601 Analytical Mechanics (3 credit hours). Prerequisites: PHYS 303 or equivalent; MATH 311 and 412 or equivalents; concurrent registration in PHYS 615
2. 603 Electromagnetic Theory (3 credit hours). Prerequisites: PHYS 304 or equivalent; PHYS 615
3. 606 Quantum Mechanics (3 credit hours). Prerequisites: PHYS 412 or equivalent; MATH 311 and 412 or equivalents; concurrent registration in PHYS 615
4. 607 Statistical Mechanics (3 credit hours). Prerequisites: PHYS 408 and 412 or equivalents; PHYS 615
5. 615 Methods of Theoretical Physics I (3 credit hours). Prerequisites: MATH 311, 407 and 412 or equivalents
6. 624 Quantum Mechanics (3 credit hours). Prerequisite: PHYS 606
7. 611 Electromagnetic Theory (3 credit hours). Prerequisite: PHYS 603
8. Two graduate courses chosen from three distribution electives: high energy, low energy and/or astronomy. Current options are as follows:

- A) High-energy: Nuclear Physics (625), Particle Physics (627), Quantum Field Theory (634), or Relativity and Cosmology (644)
- B) Low-energy: Atomic Physics/Quantum Optics (648, 649) or Solid State Physics (617, 631, 632); or,
- C) Astronomy: ASTR 601/PHYS 641, ASTR 603/PHYS 643, ASTR 605/PHYS 645, or ASTR 606/PHYS 646.

A grade of B or better on each course numbered 1 through 6 above is required in order to achieve PhD Qualification in Physics. See Section VI for details. This is in addition to the TAMU requirement that the average of all coursework appearing on the degree plan should correspond to a B average (3.0 GPA) and that the cumulative GPA should be a 3.0 or B average.

PHYS 633 (Advanced Quantum Mechanics), PHYS 634 (Relativistic Quantum Field Theory) and PHYS 616 (Methods of Theoretical Physics II) will not be required by the Department for all students, but will still be important and essential for many students. A student's advisory committee may require these courses on a student's Degree Plan.

In addition to these nine required courses, the student and/or his committee may add other specialty courses appropriate to his research area.

The Ph.D. Degree Plan for a student who has an M.S. degree normally includes all of the courses required for the Ph.D., except for any taken at Texas A&M University for the M.S. degree or any for which the student has taken and passed the Final Exam for the course at Texas A&M University, plus a sufficient number of credit hours in Physics 691 and other courses, to make a total of 64 credit hours.

The Ph.D. Degree Plan for a student who does not have an M.S. degree normally includes all courses recommended above for the Ph.D., plus a sufficient number of credit hours in Physics 691 and other courses, for a total of 96 credit hours.

B. The Ph.D. Applied Physics Degree Plan will include the following ten basic courses, plus sufficient additional credits of electives or research hours to total 64 or 96 credit hours, as per the TAMU requirement for students obtaining a Ph.D. with or without an MS degree:

1. 601 Analytical Mechanics (3 credit hours). Prerequisites: PHYS 303 or equivalent; MATH 311 and 412 or equivalents; concurrent registration in PHYS 615

2. 603 Electromagnetic Theory (3 credit hours). Prerequisites: PHYS 304 or equivalent; PHYS 615
3. 606 Quantum Mechanics (3 credit hours). Prerequisites: PHYS 412 or equivalent; MATH 311 and 412 or equivalents; concurrent registration in PHYS 615
4. 607 Statistical Mechanics (3 credit hours). Prerequisites: PHYS 408 and 412 or equivalents; PHYS 615
5. 615 Methods of Theoretical Physics I (3 credit hours). Prerequisites: MATH 311, 407 and 412 or equivalents
6. One course in Classical or Quantum Physics. See list below for details.
7. Four elective courses chosen in consultation with the student's committee

A grade of B or better on each course numbered 1 through 5 above is required in order to achieve PhD Qualification as an Applied Physics candidate. See Section VI for details. This is in addition to the TAMU requirement that the average of all coursework appearing on the degree plan should correspond to a B average (3.0 GPA) and that the cumulative GPA should be a 3.0 or B average.

The list of elective courses satisfying item 6 above is currently as follows:

PHYS 611 (EM II)	ATMO 601 (Fund. Of Atmospheric Dynamics)
PHYS 617 (Solid State Physics)	CHEM 633 (Principles of Inorganic Chemistry)
PHYS 624 (QMII)	CHEM 649 (Mol. Quantum Mechanics)
PHYS 625 (Nuclear Physics)	CHEM 673 (Symmetry/Group Theory)
PHYS 648 (Q. Optics and Laser Physics)	ECEN 635 (EM)
PHYS 619 (Modern Comp. Physics)	ECEN 657 (Quantum Electronics)
AERO 602 (Theory of Fluid Dynamics)	GEOP 611 (Geomechanics)
MATH 605 (Math. Fluid Mechanics)	MEMA 601 (Theory of Elasticity)
MATH 614 (Dynamical Systems & Chaos)	MEMA 612 (WAVE Propagation in Solids)
MEMA 604/MATH 604 (Math. Foundations of Continuum Mechanics)	NUEN 607 (Plasma & Thermonuclear Eng.)
	OCNG 618 (Accoustical Oceanography)

C. Astronomy Ph.D. track: Currently the Department offers an alternative Astronomy track for the Physics Ph.D. This track includes 6 astronomy courses (Radiative Transfer, General Relativity and Cosmology, Stellar Interior and Atmospheres, Galactic Astronomy, Extragalactic Astronomy, Astronomical Instrumentation and Statistics) in addition to 4 core physics courses (Electricity & Magnetism 1, Quantum Mechanics 1, and any two of Mathematical Methods, Statistical Mechanics, and Analytical Mechanics). Students are required to obtain B or better in

all 10 of these courses to achieve PhD Qualification. Please consult the Astronomy faculty advisors for more details on this program.

III. Thesis Master's Degree Plan

The Thesis **M.S. Degree Plan in Physics** normally includes the following graduate courses.

1. 601 Analytical Mechanics (3 credit hours). Prerequisites: PHYS 303 or equivalent; MATH 311 and 412 or equivalents; concurrent registration in PHYS 615
2. 603 Electromagnetic Theory (3 credit hours). Prerequisites: PHYS 304 or equivalents; PHYS 615
3. 606 Quantum Mechanics (3 credit hours). Prerequisites: PHYS 412 or equivalent; MATH 311 and 412 or equivalents; concurrent registration in PHYS 615
4. 607 Statistical Mechanics (3 credit hours). Prerequisites: PHYS 408 and 412 or equivalents; PHYS 615
5. 615 Methods of Theoretical Physics I (3 credit hours). Prerequisites: MATH 311, 407 and 412 or equivalents

Note that an advanced undergraduate course with a grade of B or better may be substituted for one of the graduate courses 601 (PHYS 302), 603 (PHYS 304), 606 (PHYS 412), 607 (PHYS 408), or 615 (MATH 601 and 602). If this is done, the student must take one additional graduate level course in physics.

6. A maximum of 8 hours of 691 or 685, combined up to 12, i.e., 8 hours of PHYS 685 and 4 hours of PHYS 691 or 5 hours of PHYS 685, 4 hours of PHYS 691; all MS thesis option degree plans must contain at least 1 hour of 691. A sufficient number of credit hours in other physics courses must be added to the Degree Plan to make a total of 32 credit hours.

A B average on all coursework and a B average on all courses on the Degree Plan are required for the M.S. degree in Physics. If a student makes a grade of C or lower in a basic course that is on his or her Degree Plan, it is recommended that the student repeat that course and attain a grade of A or B.

Note that the Graduate Catalog puts specific limits on the number of 685, 691, etc. hours that may be included on a M.S. Degree Plan.

IV. Non-Thesis Master's Degree Plan

The following departmental guidelines supplement the basic requirements specified in the Graduate Catalog for the non-thesis Master's Degree Plan in Physics. The physics courses for the Degree Plan usually include the following.

1. 601 Analytical Mechanics (3 credit hours). Prerequisites: PHYS 303 or equivalent; MATH 311 and 412 or equivalents; concurrent registration in PHYS 615
2. 603 Electromagnetic Theory (3 credit hours). Prerequisites: PHYS 304 or equivalent; PHYS 615
3. 606 Quantum Mechanics (3 credit hours). Prerequisites: PHYS 412 or equivalent; MATH 311 and 412 or equivalents; concurrent registration in PHYS 615
4. 607 Statistical Mechanics (3 credit hours). Prerequisites: PHYS 408 and 412 or equivalents; PHYS 615
5. 615 Methods of Theoretical Physics I (3 credit hours). Prerequisites: MATH 311, 407 and 412 or equivalents

Note that an advanced undergraduate course with a grade of B or better may be substituted for one of the graduate courses 601 (PHYS 302), 603 (PHYS 304), 606 (PHYS 412), 607 (PHYS 408), or 615 (MATH 601 and 602). If this is done, the student must take one additional graduate level course in physics.

6. OPTIONAL: PHYS 685 (Directed Studies) - Students may include up to the maximum eight hours allowed on non-thesis M.S. degree plans. The student will work in a research laboratory or on a theoretical project supervised by a tenured or tenure-track faculty member. Depending upon a student's career goals, this option is highly recommended as part of the M.S. program, although not required. A written project report is generally not

required for this option, but the student should discuss expectations with the faculty member when electing this option.

7. A sufficient number of credit hours in other elective physics courses must be added to the Degree Plan to make a total of 36 credit hours. Note that this may include a maximum of two hours of PHYS 681, Seminar.

A B average on all coursework and a B average on all courses on the Degree Plan are required for the non-thesis M.S. degree in Physics. If a student makes a grade of C or lower in a basic course that is on his or her Degree Plan, it is recommended that the student repeat that course and attain a grade of A or B.

The final oral examination will be taken by the dates announced each semester by the Office of Graduate and Professional Studies. It may not be taken prior to the mid-point of the semester or summer term in which the student will complete all remaining courses on the degree program. This exam will be given by the student's Advisory Committee. This exam covers the degree work, including basic concepts of physics. For those students engaged in advanced laboratory or theoretical work in one of the Department's research groups (optional item #6 above), the exam will normally include a presentation describing the research activities in which the student was engaged.

It should be noted that the Office of Graduate and Professional Studies will not accept Physics 691 in this program. A student with a non-thesis Master's Degree Plan on file, therefore, is not allowed to register for PHYS 691.

Students interested in pursuing a non-thesis Master's Degree Plan in Physics with an emphasis in Astronomy should consult with the Astronomy Faculty Advisor, Dr. Lucas Macri.

V. Student's Ph.D. or M.S. Advisory Committee

Each candidate for an advanced degree is required to have an Advisory Committee to supervise his or her graduate program.

M.S. Degree The committee is composed of a chair, normally the same as the student's research advisor, one Graduate Faculty member from the Physics and Astronomy Department and one member from outside the Department, for a total of three. The Graduate Catalog requires that this committee be selected and a Degree Plan approved **prior** to registration (or preregistration) for a third term, excluding summer terms, and no later than 90 days prior to the final oral examination or thesis defense. However, the Department encourages students to select an advisory committee as early in their studies as is possible. The committee oversees the final oral exam. See the previous section for details about the exam for the case of the non-thesis M.S. For the case of the Thesis M.S., the committee must approve a thesis proposal during the course of study, and administers the final oral thesis defense – in this case, the description of the oral exam is similar to that of the Ph.D. exam described below.

Ph.D. Degree The Advisory Committee is composed of a chair, again normally the research advisor, and at least two Graduate Faculty members from the Department and one from outside the Department, for a total of four - the three Department faculty members must include at least one theorist and one experimentalist, except for students in Astronomy. The Graduate Catalog requires that this committee be selected and a Degree Plan approved **prior** to registration (or preregistration) by the end of your fourth semester, excluding summers, and no later than 90 days prior to the preliminary examination. Otherwise, you will be unable to register for the fifth semester, including summer term; however, the Department encourages students to select an advisory committee as early in their studies as is possible.

The first step in selecting a committee is the choice of a research advisor and chair who may then assist in the selection of the other committee members. The committee should be closely involved in all aspects of the student's graduate education, classroom, and research. The functions of the committee include approval of the degree plan and research proposal, administration of the preliminary and final examinations, and approval of the thesis or dissertation.

The **preliminary exam** is one of the requirements for the Ph.D. degree. The TAMU rules for the preliminary examination, including the allowable timing of the exam, can be found in the Graduate Catalog. However, it is to everyone's benefit (particularly the graduate student) to take the preliminary exam early, rather than waiting until the last permissible date. A timely sequence would include joining a research group by the second year, completing the Qualification

sequence of courses, and then taking the preliminary exam in the third or fourth year in conjunction with writing the proposal. The oral portion of the preliminary exam is administered by the Advisory Committee, and normally focuses upon the student's defense of the dissertation proposal, which should be prepared in consultation with the research advisor and distributed to the committee in advance of the exam. Additional topics for the oral exam may include more fundamental questions on Physics and Astronomy related to the proposed dissertation research.

The **final oral exam** is one of the last requirements for the Ph.D. degree. TAMU rules for this exam such as required forms and allowable timing, may be found in the Graduate Catalog, and on the OGAPS website. The exam is taken after the written dissertation is completed. A typical sequence would be for the student to write the dissertation, work with the research advisor to refine it, then distribute the completed dissertation to the Committee to review in advance of the final exam. The final oral exam will include a presentation of the dissertation results with questions from the Advisory Committee. The Committee must separately approve the written dissertation (before or after the oral exam). Note that although University rules do not specify the ordering in which these events occur, in our Department (an indeed most Departments), the Committee will almost always expect to review the dissertation prior to the oral exam as explained here.

VI. Ph.D. Qualification

A. Students will achieve Ph.D. Qualification in Physics by completing six core courses (3 credit hours each) with a grade of B or better in each. These courses are:

1. 601 Analytical Mechanics. Prerequisites: PHYS 303 or equivalent; MATH 311 and 412 or equivalents; concurrent registration in PHYS 615
2. 603 Electromagnetic Theory. Prerequisites: PHYS 304 or equivalent; PHYS 615
3. 606 Quantum Mechanics. Prerequisites: PHYS 412 or equivalent; MATH 311 and 412 or equivalents; concurrent registration in PHYS 615
4. 607 Statistical Mechanics. Prerequisites: PHYS 408 and 412 or equivalents; PHYS 615
5. 615 Methods of Theoretical Physics I. Prerequisites: MATH 311, 407 and 412 or equivalents

6. 624 Quantum Mechanics. Prerequisites: PHYS 606

It is a requirement of the department that students on departmental support complete their Qualifying courses before taking elective courses, except for electives taken as a third course while completing the Qualifying sequence.

If a student's previous academic experience warrants, they may satisfy the Qualification requirement with respect to a particular course by taking the final exam for that course, together with the normally registered students. To qualify to take the final exam for a course, the student must have a 3.0 GPA. Students will obtain a Request to Take Final Exam form from Physics and Astronomy Advising. The form must be completed by the student, signed by the instructor of record, and returned to Physics and Astronomy Advising before the start of the semester. If a sufficient grade isn't achieved, then the course must be taken. Students are strongly urged to take the course rather than attempting the Final Exam unless they determine in consultation with the faculty member teaching the course that their academic background is very strong in that area.

B. Students will achieve Ph.D. Qualification in **Applied Physics** by completing five core courses (3 credit hours each) with a grade of B or better in each. These courses are:

1. 601 Analytical Mechanics - Prerequisites: PHYS 302 or equivalent; MATH 311 and 412 or equivalents; concurrent registration in PHYS 615
2. 603 Electromagnetic Theory - Prerequisites: PHYS 304 or equivalent; PHYS 615
3. 606 Quantum Mechanics - Prerequisites: PHYS 412 or equivalent; MATH 311 and 412 or equivalents; concurrent registration in PHYS 615
4. 607 Statistical Mechanics - Prerequisites: PHYS 408 and 412 or equivalents; PHYS 615
5. 615 Methods of Theoretical Physics I - Prerequisites: MATH 311, 407 and 412 or equivalents

It is a requirement of the Department that students complete their Qualifying courses before taking elective courses, except for electives taken as a third course while completing the Qualifying sequence..

If a student's previous academic experience warrants, they may satisfy the Qualification requirement with respect to a particular course by taking the final exam for that course, together

with the normally registered students. To qualify to take the final exam for a course, the student must have a 3.0 GPA. Students will obtain a Request to Take Final Exam form from Physics and Astronomy Advising. The form must be completed by the student, signed by the instructor of record, and returned to Physics and Astronomy Advising before the start of the semester. If a sufficient grade isn't achieved, then the course must be taken. Students are strongly urged to take the course rather than attempting the Final Exam unless they determine in consultation with the faculty member teaching the course that their academic background is very strong in that area.

C. Students in the **Astronomy Track** will achieve Ph.D. Qualification by completing the ten core courses (3 credit hours each) with a grade of B or better in each. These courses are listed in section II. Please consult the Astronomy faculty advisors for more details on this program.

VII. TA Appointments and Duties

Appointments

The Department selects incoming students for teaching assistantships on the basis of merit, while continuing students are also expected to show good progress towards the degree in order to be given high priority for a TA. The initial appointment is normally for a period of nine months. After the first academic year, the student is expected to progress toward choosing a research advisor and beginning the thesis or dissertation work and to seek support as a research assistant.

It is intended that students holding a TA not only perform their teaching duties diligently but also spend their remaining time vigorously pursuing their graduate studies. The student must therefore show substantial progress in coursework and/or research, and may not undertake outside jobs. Also, students supported on teaching assistantships, research assistantships, or fellowships are expected to take **only coursework relevant to their physics degree**. Registration for a course outside of the department in any semester requires written approval of the Graduate Advisor Chair. Approval for a student on TA will generally not be given until the student is qualified. Thereafter, the student's Research Advisor will be consulted.

TA positions are a limited resource, and for students beyond the first year the Department

employs a priority system for assigning these positions. Students should be aware that in a given term some or all of the lower priority applicants may not receive requested support. The following guidelines will be used by the Credentials Committee in establishing these priorities:

1. Academic Performance

All graduate students are expected to maintain a 3.0 GPR in the required courses. Students with GPR in required courses above 3.0 are given highest priority. A student who has six or more hours of C below a 3.0 GPR for more than one regular semester is unlikely to be supported.

2. Job Performance

All TAs must take their teaching responsibilities seriously. Lab and recitation TAs must be on time and prepared for each class meeting, and must cooperate fully with the instructor for the lecture portion of the course. This includes responding to emails and other communications in a timely manner. Each semester the faculty who were assigned TAs will be polled to identify students whose job performance was superior, as well as those whose performance was deficient. This information will be collected by the Credentials Committee. Students identified as showing poor performance will have a lower priority for TA allocation. When appropriate, the Credentials Committee will give a written warning to the student that their job performance must improve if support is to continue. The Department will provide help (mentoring, selection of TA assignment) to those students who need help in improving their teaching performance.

3. Research Progress

After the first academic year, students making good progress should make demonstrated steps toward finding a research group, for example meeting with potential advisors, or attending group meetings. For such students without a research group, the Graduate Advisor may work with the student to devise a plan of progress toward the degree as a condition of continued support. After the second academic year the student is expected to have found a research advisor to work with, and who will support their candidacy for a TA position thereafter, if necessary. Students not taking a full load of core courses are expected to be vigorously involved in research. In those cases where the Credentials Committee feels it is appropriate, it may ask the student's research advisor for a written

statement of progress and anticipated timetable for degree completion. Visible signs of progress include research proposal submission, prelims, publications, and research presentations. With input from the research advisor, the Credentials Committee may assign a lower priority to students not making adequate progress, or may establish a date of expected completion after which TA support will cease. Normally, even in cases of good progress a student seeking a M.S. degree will **not** be supported on a TA if they have been in our graduate program for more than three years; a student seeking a Ph.D. degree normally will not be supported if they have been in our graduate program for more than eight years.

The number of assistantships available for the summer session is usually much smaller than in the corresponding fall and spring semesters. Consequently, all of our graduate students are encouraged to seek other summer support in the form of full or part-time research assistantships or fellowships.

The awarding of research assistantships is left solely to the principal investigator(s) of the research grant or contract.

Duties

Most teaching assistants serve as recitation and laboratory instructors; a few serve as graders or have only recitation or laboratory assignments. The job descriptions in recitation and laboratory are as follows:

Recitation Instructor:

1. The recitation normally constitutes the first hour of the “lab” period in the introductory courses. This hour is devoted to helping the students develop their problem solving skills. Each weekly session normally covers the problems assigned in the course syllabus for the preceding week.
2. Prior to the start of the semester, each recitation instructor should contact the lecturer(s) for the sections of the course assigned to them in order to obtain a copy of the course syllabus and the lecturer’s instructions on the conduct of each recitation. The lecturer may be assigning a fraction of the students’ course grade to their recitation performance. If this is the case, you will need his or her guidelines on how to determine this grade. You will also have to keep detailed records of these grades as you assign them during the

- semester and deliver a copy of the complete record (including a computed recitation grade for the semester) to the lecturer(s) no later than the first day of final exams.
3. The recitation instructors are to assist in proctoring exams when requested to do so by the professor who has the section(s) in lecture. They are also to assist, as requested, in the grading of the exams given in the lecture portion of the course.
 4. There are security and safety problems related to the students proceeding to the lab at the end of the recitation hour. It is the recitation instructor's responsibility to accompany the students and ensure that they remain outside the lab room until the lab TA is present if that is a different person from you. Note that the recitation, plus lab, is one continuous block of time. Unless you are instructed otherwise by the lecture professor, recitation should last a full 50 minutes and, after a 10-minute break, the lab should start promptly, 60 minutes after the recitation started. Under no circumstances are the students to be left in the laboratory room without the lab TA or instructor being present.
 5. If, for some reason, you cannot meet one of your recitations, it is your responsibility to arrange for a substitute, and to inform the course instructor in advance. The most likely candidates are other recitations TAs in the same course. As a last resort, you might try the lecturer for the section involved.

Laboratory Instructor:

In order to achieve a high level of laboratory instruction, the Department of Physics has adopted the following rules and guidelines for laboratory instructors.

1. Attend all scheduled instructional meetings involving your laboratory course.
2. Study the experiment to be done and be prepared to answer students' questions pertaining to it.
3. Be present in the laboratory during the entire laboratory period.
4. Grade laboratory reports and return them to the students at their next laboratory meeting.
5. In case you have to miss a laboratory meeting due to illness or any other legitimate reason, notify the laboratory coordinator or some other responsible individual as soon as possible in order that other arrangements may be made.

6. Do not “trade” laboratories on a temporary basis with another instructor except in those cases where it is necessary. In those cases where a trade is in order, clear it in advance with the laboratory coordinator.
7. Turn in laboratory grades to the lecture professor before final exams start.
8. In general, conduct yourself in a manner that will command the respect of your students.

VIII. Affiliations with Research Groups

The Department encourages graduate students to seek an affiliation with a faculty member of a research group at an early stage of their graduate education, with the aim of sampling the style and content of research in a specific area. Such affiliations may take place either in the summer or during the term, and may consist of a specific research project or a general participation in group research activities. Any such affiliations must be regarded as tentative, without prejudice for the student’s eventual choice of thesis project. While it may be hoped that such affiliations will stimulate a long-term interest, trial periods of work on research problems in widely differing areas, and with different professors, may constitute a useful and significant part of a student’s general graduate education. Neither student nor professor involved in such a research affiliation should feel any obligation to continue the relationship beyond the summer or term initially agreed upon, whether or not the student received financial support for his research activities.

IX. Research Assistants

Graduate students who enter the Department of Physics on Research Assistantships normally accept this position for a period of time specified in their award letter. This appointment is considered half time based on a forty-hour workweek. It is also assumed that the professor making the offer has encumbered the funds necessary to pay the student for the

timeframe agreed upon. First-year students given such support who are considering a switch to another research assignment (or teaching assignment, if available), should consult with the Graduate advisor regarding the possibility of such a switch. At the end of the appointment, students may choose to remain with their original major professor, or they may change major professors subject to availability of support. It should be noted, however, that when a student changes major professors, the student could take longer to receive his/her degree. Also, should a student feel that he/she is being required to do things outside the realm of normal Physics and Astronomy Department duties, the student is strongly encouraged to report such inequities to the Department Head who will turn the matter over to a grievance committee which will then perform a thorough investigation.

X. Minimum Course Load

To be considered full-time, graduate students must carry a 9-hour course load each fall and spring semester. This can be a combination of up to three academic courses (typically 3 hours each) and/or research hours. Students are encouraged to complete the required academic courses as quickly as possible. First-year students should consult the graduate advisors to select an appropriate set of fall or spring courses, which must normally include either two or three core courses from the intended curriculum.

The summer full-time minimum load for graduate students is three hours per 5-week session or six hours per 10-week session. In most cases, these will be research hours.

Full-time registration is a University requirement for students while receiving support on a teaching or research assistantship. The requirement is also the same for students on Welch Fellowships and other Department or University fellowships. Students should also be aware of the University's continuous registration requirement. Consult the Graduate Catalog for details under Continuous Registration Requirements in the index. If a student does not plan to register in the fall or spring due to unusual circumstances, a Leave of Absence petition may be required.

The Physics and Astronomy Department expects all students to preregister during the designated preregistration period each semester. Preregistration is important to both the students

and Department since it allows the Department to finalize the list of course offerings and also to make the TA assignments in a timely manner.

XI. Academic Standards

A graduate student must maintain a grade point ratio (GPR) of at least 3.0 to receive an advanced degree. A student with a GPR below 3.0 is on academic probation according to the Graduate Catalog. When the GPR drops below 3.0, a student will be given a one-semester probationary period to bring it back up to 3.0 or above. If this is not achieved, the student must meet with their Graduate Advisor to determine whether the student should remain in the Physics graduate program. If the GPR cannot be returned to 3.0 or above within two consecutive semesters (fall or spring), the student will be considered by the Credentials Committee for dismissal from the Physics graduate program. A course in which the final grade is a C or lower may be repeated **ONCE** in order to replace the lower grade. If the second grade is higher, the original grade will remain on the permanent record but it will not be used to compute the cumulative and Degree Plan GPRs. In accordance with University rules, any further repeat would be treated as an additional grade that will be included along with the previous grade for GPR computations.

Failure to make reasonable progress in the other areas of graduate study, particularly research, is also grounds for a recommendation that a student be dropped from the graduate program. Such a recommendation is to be made by the Credentials Committee, with input from the students' research advisor.

XII. International Students English Language Requirement

International students entering the Physics and Astronomy Department must achieve "Certified" status in English as soon as possible; the Department cannot use students as recitation or laboratory instructors until they have been "Certified".

Incoming International Students take the English Language Proficiency Examination (ELPE) approximately two weeks before the start of classes. It covers four areas: Composition,

Reading, Listening, and Oral Skills. To become “Certified” the student must complete all four areas by either scoring 80, or above, on the ELPE, or by getting an A or B in the upper-level (300, 400, 500) corresponding course at the English Language Institute (ELI). The Physics and Astronomy Department policy is that a student must take the ELPE every semester until “Certified.” Department requirements for taking English courses until “Certified” are as follows:

Beginning of first term (semester) – Students who pass two or more parts of the ELPE are not required to take ELI courses. Students who pass none or only one part are required to take two ELI courses.

Beginning of second term (semester or summer) – Students who have passed a total of three areas of English proficiency (either via the ELPE or via ELI courses) are not required to take ELI courses. Students who have passed two or less areas are required to take two ELI courses. EXCEPTION: Students who have not achieved English Proficiency “Verified” status are required by the University to take at least one course in any area of the ELPE that they have not yet passed. (See English Language Proficiency Requirements in Graduate Catalog).

Beginning of third term (semester or summer) – Students who have not yet achieved “certified” status are required to take ELI courses in all areas of deficiency.

If in any semester a student elects not to take the ELI courses as required above, that student will not be eligible to receive financial support from the Department as a TA (financial support via RA is at the discretion of the professor providing support). In addition, a student will not be eligible for a TA after their first year if they are not "Certified."

XIII. Physics and Astronomy Department Graduate Advisors

Graduate Advisors

Joseph Ross (Faculty Academic Advisor)	Office: Room 448 MPHY
Sherree Kessler (Senior Academic Advisor I)	Office: Room 156 MPHY
Jill Lyster (Academic Advisor II)	Office: Room 154 MPHY
Lucas Macri (Faculty Advisor for Astronomy)	Office: Room M423 MIST