



UNIVERSITY OF CENTRAL FLORIDA

# Department of Physics Graduate Program Handbook

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## **INTRODUCTION AND WELCOME**

The University of Central Florida Physics Department offers degrees at the masters and doctoral level. Our department places a strong emphasis on research. Research opportunities are available in condensed matter physics, nanostructure devices, surface science, optical physics, complex systems, biophysics, atomic and molecular physics, quantum information, physics education, and planetary and space sciences. Intra-campus partnerships with other schools, departments, and centers provide additional academic and research benefits for Physics graduate students, as well as outstanding post-graduate employment opportunities in industry.

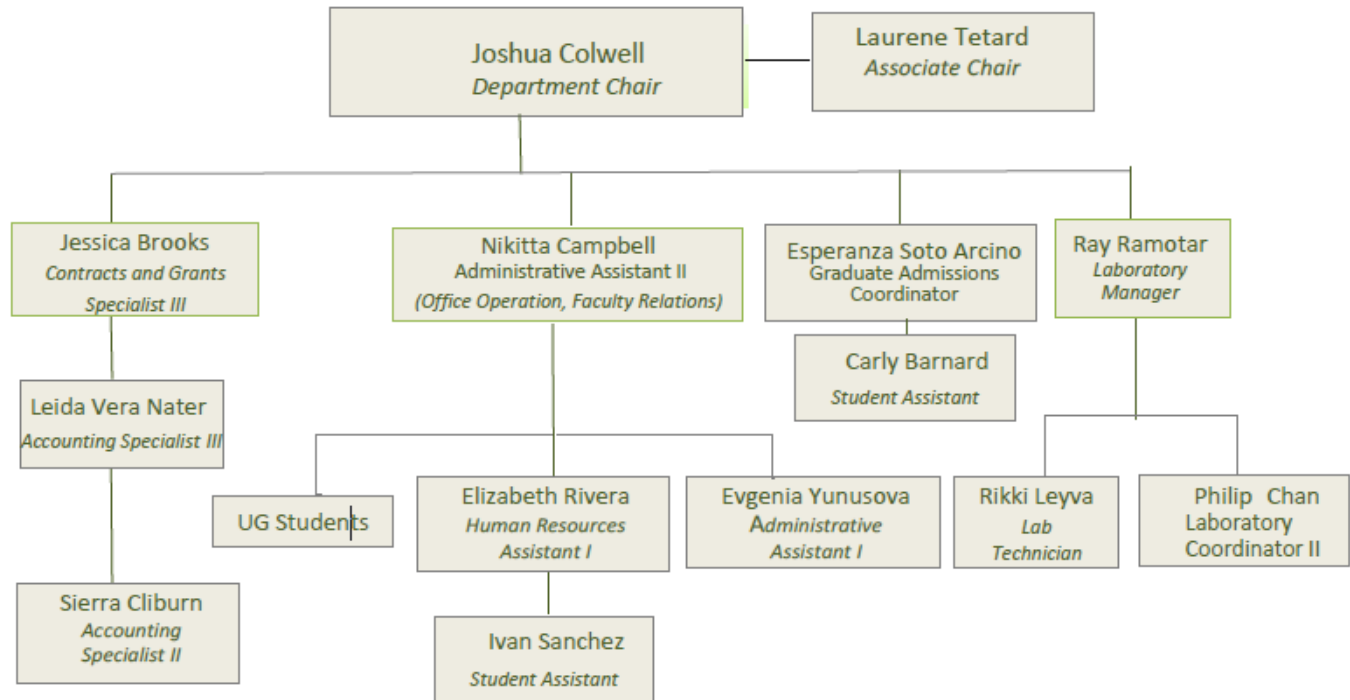
## **I. Mission Statement**

The mission of the Department of Physics is to provide the highest quality education, research, outreach, and service in physics to the people of the state of Florida, the nation, and the world.

To accomplish this mission, the Department offers a broad range of courses in physics, as well as in related areas such as astronomy and planetary science, from introductory physical sciences to advanced topics at the graduate level. Undergraduate student development is enriched by a strong research component, with students encouraged to engage in research projects with faculty members. Faculty in the Department carry out cutting-edge research in a variety of areas and have substantial productivity and external funding. The Department is also committed to reaching out to the Central Florida community to increase scientific literacy and to attract K-12 students to careers in science and engineering. Faculty members are strongly involved in service to professional societies, funding agencies, and other public and non-governmental entities.

## II. Organizational Chart: Department of Physics

# Physics Organizational Chart – Support Staff



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information go to:

<http://sciences.ucf.edu/deans-office-staff/>

<http://www.graduate.ucf.edu/offices/>

[People | Physics \(ucf.edu\)](#)

### III. Advising and Mentoring

All graduate students will be advised by the Graduate Program Director and the Graduate Admissions Coordinator upon entering the program. Full-time, regular faculty members of the Department of Physics serve as the students' advisors for students admitted with a Graduate Research Assistantship (GRA). The student's advisor will help the student in creating a Program of Study in addition to offering research opportunities. For formal matters, such as course waivers, credit transfers, and petitions, the student must always consult the Graduate Program Director. Students with a Graduate Teaching Assistantship will be advised by the Graduate Program Director on academic issues, tuition, petitions, etc. For advice on their teaching duties and assignments, students will be advised by the Associate Chair, the Undergraduate Program Director, and the Introductory Lab Coordinator.

The Dissertation Advisor (or Thesis Advisor, if in the MS - Thesis option) supervises the student's research work and should be identified before the student takes the candidacy exam. Dissertation and Thesis advising requires the mutual agreement of the student and the faculty member. The Graduate Program Director does not assign Thesis or Dissertation Advisors. The Dissertation or Thesis Advisor will also be responsible for academic advising, but the Graduate Program Director will still be available for students seeking advice. All regular Physics faculty members, as well as joint and secondary joint faculty members affiliated to the Physics Department with Graduate Faculty standing at UCF can supervise thesis or doctoral dissertations. Graduate Faculty Scholars may only serve as member, Co-Chair or Vice-Chair of a thesis or a dissertation Committee.

**It is the student's responsibility to identify a Thesis or Dissertation Advisor.** The Graduate Program Director will help the student in that task. However, it is expected that students will actively search for a Dissertation Advisor before taking the candidacy exam and prior to completing core courses. Students in the MS – Thesis option should identify an advisor and form their committee before enrolling in Thesis hours. Students are encouraged to contact faculty members of the Department of Physics to learn about their research projects and find out about research opportunities. Students can receive credit for research experience by enrolling in Directed Research hours before taking the candidacy exam.

All PhD students must have a Dissertation Advisor and a Dissertation Committee in place within three months of passing the written component of the candidacy exam or completing 30 credit hours of formal course work, whichever comes first. MS students choosing the Thesis option must have a Thesis Advisor within three months of completing 15 credit hours. If the student has not chosen an advisor, College of Sciences and College of Graduate Studies will place a hold on the student's account and registration in subsequent terms will be forcibly blocked. As a result, students who have not identified a Dissertation/Thesis Advisor may be removed from the program.

It is possible to change a Dissertation or Thesis advisor. Permission must be requested from the Graduate Program Director. A new advisor must be identified by the student before the end of the term during which the change will take place.



It is the advisor's role to supervise the research work performed by the student. In most cases the advisor will provide a theme or a research project that can be developed within a reasonable timeframe and using available resources. It is the student's responsibility to perform the research and follow the guidance provided by the advisor as well as the recommendations of the thesis or dissertation committee.

#### **IV. PhD Degree**

The following applies to the regular Physics PhD program, and not to the Planetary Science track. For Planetary Science track program information, please go to the Planetary Sciences Handbook <https://sciences.ucf.edu/physics/graduate/planetary-sciences-program/> or to their website at <http://planets.ucf.edu/academics>

## A. Steps to Completion

The student has seven (7) years from the time of admission to the graduate program (MS or PhD) to complete the degree. To review the 7 years rule policy, go to [http://www.students.graduate.ucf.edu/policy/seven\\_year\\_rule/](http://www.students.graduate.ucf.edu/policy/seven_year_rule/)

There is a natural sequence of events that occurs during the doctoral program. For a typical student they involve the following milestones, in chronological order:

- Create a Plan of Study. The Plan of Study should be on file with the College of Graduate Studies by the end of the third major term of enrollment (based on full-time enrollment) and prior to the change to candidacy status.
- Complete core courses and take the written component of the candidacy exam by the end of the 2<sup>nd</sup> semester.
- Identify a Dissertation Advisor and select a Dissertation Committee after successfully passing the written component of the candidacy exam.
- Register for research hours and begin work on the Dissertation Proposal.
- Complete required electives.
- Complete required CITI module and RCR workshops by the end of the second semester (before the candidacy exam).
- Once a Dissertation Advisor and Dissertation Committee have been selected and approved, submit and present a Dissertation Proposal no later than one year (or earlier) after passing the written component of the candidacy exam.
- Obtain Candidacy Status after passing both written and oral component of the candidacy exam (the oral component is a part of the Dissertation Proposal).
- Register for Doctoral Dissertation Hours and earn at least 15 dissertation credit hours.
- Apply for graduation after completing all degree program requirements, obtaining 69 credit hours and register for the last 3 credit hours.
- Defend and graduate before the end of the sixth year, after completing a total of 72 credit hours required by the program for all PhD's. Up to 9 credit hours of courses that are 7 years or older may be petitioned of, and approved by, the UCF College of Graduate Studies to be used towards a graduate plan of study.

Assuming a student has attended continuously for the first two years, the student will have accumulated 48 credit hours. This will leave only 24 credit hours to complete the required total of 72 credit hours. The 24 credit hours can be completed within a period of 2 or 3 years, assuming students are enrolled full time and have continuous attendance. This will allow students to complete 15 credit hours of Doctoral Dissertation, focus on their research work, prepare their Dissertation Defense, and complete all remaining requirements for graduation.

Graduate students are expected to engage in research as early as possible. Registering for Directed Research during the first two years, preferably during the summer semesters, is the best way to do that. Students interested in Directed Research need to identify a faculty member who is willing to supervise a research project or plan that can be executed during the semester. At the end of the semester, the student must present a report and have his or

her performance evaluated by the supervisor. This experience helps students to find the field in which they want to concentrate their studies and facilitates the identification of a dissertation adviser. In several cases the work carried out during a Directed Research course has led to publications and even presentations in professional meetings by students.

## B. Course Requirements

The courses offered in the doctoral program are divided into three groups: Core, Electives, and Doctoral Dissertation hours.

### 1. Core Courses

Students are required to complete six core courses totaling 18 credit hours. The typical term when the course is offered is indicated in *italic*. The courses are:

- PHY 5346 Electrodynamics I (3 credit hours). *Fall*
- PHY 5606 Quantum Mechanics I (3 credit hours). *Fall*
- PHY 6246 Classical Mechanics (3 credit hours). *Fall*
- PHY 5524 Statistical Physics (3 credit hours). *Spring*
- PHY 6347 Electrodynamics II (3 credit hours). *Spring*
- PHY 6624 Quantum Mechanics II (3 credit hours). *Spring*

The objective of the core courses is to provide a solid, general foundation in advanced physics. Most core courses are essentially theoretical, focusing on fundamentals but using a more sophisticated mathematical treatment than that usually seen in undergraduate physics courses.

### 2. Electives

Elective and research courses are determined by the student's chosen specialization. The doctoral program in Physics distinguishes three specializations, namely: General Physics, Condensed Matter Physics, and Optical Physics. Elective courses have a different objective than the core courses. They can either provide an in-depth view of a topic within the student's specialization area or help broaden the student's general education. Some are offered on a biannual basis and others are one-time opportunities that usually go under the denomination of "Special Topic". Students are required to complete a total of 39 credit hours in electives.

UCF has a policy that all students must complete a total of 27 credit hours of formal course work. Students can fulfill this requirement by completing 18 credit hours of core courses and at least four courses (12 credit hours) must be formal courses, exclusive of Independent Study and Directed Research. From the 12, 9 credit hours of electives can be in formal courses and 3 credit hours in a methods course that has been approved by the department. Students can choose three courses from the recommended electives listed below and one of the following methods courses:

- PHZ 5156 Computational Physics (3 credit hours)
- PHY 5937 Nano- Electronics (3 credit hours)
- AST 5765C Advanced Astronomical Data Analysis (3 credit hours)

Below, we provide a list of electives recommended for each specialization (the number of credit hours is indicated in parentheses).

## **General Physics**

The General Physics Specialization emphasizes strong preparation in physics fundamentals. It is intended to prepare students for careers in theoretical physics teaching at the college level. Several active research programs exist in the department to accommodate such students.

### ***Recommended Courses***

- PHY 5933 Selected Topics in Biophysics and Macromolecules (3 credit hours)
  - PHY 6600C Theory and Computation of Molecular Wave Functions (3 credit hours)
  - PHY 6667 Quantum Field Theory I (3 credit hours)
  - PHY 6938 Special Topics: Electrodynamics III (3 credit hours)
  - PHY 6938 Special Topics: Selected Topics in Scattering Theory (3 credit hours)
  - PHY 7669 Quantum Field Theory II (3 credit hours)
  - PHY 7919 (Doctoral) Directed Research
  - PHZ 5156 Computational Physics (3 credit hours)
  - PHZ 5304 Nuclear and Particle Physics (3 credit hours)
  - PHZ 5405 Condensed Matter Physics (3 credit hours)
  - PHZ 5505 Plasma Physics (3 credit hours)
  - PHZ 6234 Atomic Physics (3 credit hours)
  - PHZ 6420 First Principles Computational Methods in Condensed Matter Physics (3 credit hours)
  - PHZ 6426 Condensed Matter Physics I (3 credit hours)
  - PHZ 6428 Condensed Matter Physics II (3 credit hours)
  - COT 6600 Quantum Computing (3 credit hours)
  - OSE 5312 Light Matter Interaction (3 credit hours)
  - OSE 6347 Quantum Optics (3 credit hours)
- Other courses from Physics, Math, Optics, Materials Science, and Engineering require approval by the student's adviser and the Graduate Program Director.

## **Condensed Matter Physics**

The Condensed Matter Physics Specialization is intended to prepare students for careers in materials physics, nanoscale science and technology, semiconductors, and soft condensed matter physics. It emphasizes strong experimental preparation with hands-on courses in advanced materials characterization and processing instrumentation. Related research programs at UCF include magnetic nanostructures, soft condensed matter, electronic and optoelectronic devices, and nanoscale characterization.

### ***Recommended Courses***

- PHY 5933 Selected Topics in Biophysics of Macromolecules (3 credit hours)
- PHY 6600C Theory and Computation of Molecular Wave Functions (3 credit hours)
- PHY 6667 Quantum Field Theory I (3 credit hours)
- PHY 6938 Selected Topics in Scattering Theory (3 credit hours)

PHY 7669 Quantum Field Theory II (3 credit hours)  
PHZ 5156 Computational Physics (3 credit hours)  
PHZ 5405 Condensed Matter Physics (3 credit hours)  
PHZ 5432 Introduction to Soft Condensed Matter Physics (3 credit hours)  
PHZ 6426 Condensed Matter Physics I (3 credit hours)  
PHZ 6428 Condensed Matter Physics II (3 credit hours)  
PHY 6420 First Principles Computational Methods in Condensed Matter Physics (3 credit hours)  
COT 6600 Quantum Computing (3 credit hours)

Other courses from Materials Science, Physics, Optical Science and Engineering, Electrical Engineering, or Industrial Chemistry require approval of the student's adviser and the Graduate Program Director.

### **Optical Physics**

The Optics Specialization coordinator is David Hagan, PhD, College of Optics and Photonics. Students are recommended to take at least one of the following courses.

OSE 5115 Interference and Diffraction (3 credit hours)  
OSE 6111 Optical Wave Propagation (3 credit hours)

Select at least one of the following laboratory courses.

OSE 6455C Photonics Laboratory (3 credit hours)  
OSE 6526C Laser Engineering Laboratory (3 credit hours)

The remaining courses (up to three) may be selected from other graduate courses in Optics see [www.creol.ucf.edu](http://www.creol.ucf.edu).

These courses do not exhaust all possibilities. The complete list of electives offered by the Physics Department and other units at UCF can be found in the Graduate Catalog. Students are encouraged to register for courses offered outside the Physics Department but should always consult first their academic advisers or the Physics Graduate Program Director. Courses which do not have any connection with Physics, or that fall into specialties that are not relevant to the student's research field, may not be considered toward the degree completion.

Students should be aware that not all elective courses are offered on a regular, annual basis. It is important to consult with the Graduate Program Director to know about their frequency before making plans for a program of study. Also, it should be noted that new courses, usually focused on particular areas or subfields, are constantly being introduced into the program as "Special Topics" and may provide one-time opportunities for students.

Certain electives have pre-requisites. These tend to be fundamental core courses, such as Quantum Mechanics I and II, Statistical Mechanics, and Electrodynamics I and II.

### **3. Doctoral Dissertation Hours**

Doctoral Research is an elective that is taken while the student is working on the dissertation research project. Students can register for dissertation hours only after obtaining candidacy status.

Finally, the Doctoral Dissertation hours are used for the completion of the dissertation research project after it has been approved.

### **C. Degree Plan of Study**

Once the student enters the doctoral program, the student is required to develop a plan of study. Initially, the plan should comprise a sequence of courses, including core and electives that fit the student's interests. It should also be sufficiently flexible to accommodate some contact with research (through Directed Research) without delaying the completion of the core courses. Typically, students begin defining their interests and field of specialization in the second year. Thus, completing the maximum number of core courses during the first year gives the student more time to register into electives that are closer to his or her interests.

The plan of study should be developed in consultation with the student's academic adviser, as well as with the Graduate Program Director when necessary. Sometimes the adviser or the Graduate Program Director may suggest that the student take an undergraduate course to overcome certain deficiencies in his or her background. A limit of 6 credit hours of undergraduate courses (4000 level, usually) can be incorporated into the doctoral program of study. They require the consent of the Graduate Program Director and cannot be counted towards the total of 72 required credit hours.

Below, we present a table with the typical course sequence that a student entering the program in the fall term should follow.



## Example Plan of Study

### 1st Year

<b>Fall:</b>	<b>Spring:</b>	<b>Summer:</b>
PHY 5606 Quantum Mechanics I (3) PHY 5346 Electrodynamics I (3) PHY 6246 Classical Mechanics (3)	PHY 6624 Quantum Mechanics II (3) PHY 6347 Electrodynamics II (3) PHY 5524 Statistical Physics (3)	PHY 6938 Graduate Seminar (3) PHY 6918 Directed Research (3) Or PHY 6918 Directed Research (6)
Term/Accumulated: 9/9	Term/Accumulated: 9/18	Term/Accumulated: 6/24

### 2nd Year

<b>Fall:</b>	<b>Spring:</b>	<b>Summer:</b>
PHZ 5156 Computational Physics (3) or another Methods Course Electives (6) or PHY 6918 Directed Research (6)	Electives (3)  PHY 6918 Directed Research (6)	PHY 6918 Directed Research (6)
Term/Accumulated: 9/33	Term/Accumulated: 9/42	Term/Accumulated: 6/48

### 3rd Year

<b>Fall:</b>	<b>Spring:</b>	<b>Summer:</b>
PHY 6918 Directed Research or PHY 7919 Doctoral Research (3)	PHY 6918 Directed Research or PHY 7919 Doctoral Research (3)	PHY 6918 Directed Research or PHY 7919 Doctoral Research (3)
Term/Accumulated: 3/51	Term/Accumulated: 3/54	Term/Accumulated: 3/57

### 4th Year

<b>Fall:</b>	<b>Spring:</b>	<b>Summer:</b>
PHY 7980 Doctoral Dissertation (3)	PHY 7980 Doctoral Dissertation (3)	PHY 7980 Doctoral Dissertation (3)
Term/Accumulated: 3/60	Term/Accumulated: 3/63	Term/Accumulated: 3/66

### 5th Year

<b>Fall:</b>	<b>Spring:</b>
PHY 7980 Doctoral Dissertation (3)	PHY 7980 Doctoral Dissertation (3)
Term/Accumulated: 3/69	Term/Accumulated: 3/72

## D. Examinations

One or two exams are required upon entering the Physics doctoral program, depending on the student's background. Students who are non-native speakers of English and do not have a degree from a U.S. institution must pass the Versant English Test (or the SPEAK test prior to Spring 2018) before they will be permitted to teach as Graduate Teaching Associates (position code 9183) or Graduate Teaching Assistants (position code 9184). This test is offered by UCF Global – English Language Institute at least twice at the start of the Fall or Spring semesters and again mid-semester, and twice during the summer semester. New graduate students who are required to pass the Versant English Test will register to take it before the beginning of their admission term. The score obtained in the test will dictate the type of teaching assistantship that the student will be permitted to take and possibly the stipend. A low score bars the student from having direct instructional contact with students, and students with a low score therefore cannot be assigned as instructor of record or laboratory teaching assistant or hold office hours. The test can be retaken. Students who do not pass the Versant English Test may not be offered teaching assistantships for the second and following years. Refer to the “GTA Training Requirements” section VIII (Financial Support) of this handbook for additional information.

The second exam is taken by all incoming students and is a diagnostic test like the Physics subject GRE. This test has placement purposes only, allowing the Graduate Program Director and academic adviser to identify possible weaknesses in the students' background and help devise a suitable plan of study. There is no passing or failure.

## E. Doctoral Candidacy

The purpose of the written PhD candidacy exam is to test students' knowledge of the fundamental concepts in physics and their ability to solve problems at the upper-division undergraduate core level, considering that this is a necessary basis to successfully conduct research in any area of physics. All PhD students are required to pass a written candidacy exam to advance to the oral doctoral candidacy exam.

The doctoral candidacy exam is divided into written and oral parts.

### UCF Physics Written Candidacy Exam: Rules and Guidelines

1. **Subjects.** The written candidacy exam comprises four parts, one for each of the following subjects: 1) Classical Mechanics, 2) Statistical Physics, 3) Electromagnetism, and 4) Quantum Mechanics.
2. **Learning Objectives (LOs): content.** The topics that can be covered in the candidacy exam are specified by one document per subject, listing the books students can use as references, and a detailed list of learning objectives, grouped in categories.
3. **LOs: approval and publication.** The LOs documents must be made available to all graduate students at least three months in advance to the subsequent exam. The documents can be amended and must be approved by the departmental faculty.

4. **Subject Exam.** At any given offering of the exam, each student will be offered four problems for each of the subjects he / she is required to be examined on. The student must return the solution of three of these problems, of his / her choice.
5. **Passing Grade.** The passing grade for the candidacy exam is 50% averaged over all subjects with the minimum passing score for each subject being 30%. **NB: This will change in the Fall 2021.**
6. **Exam Frequency.** The candidacy exam is offered at least twice per year.
7. **Exam Time and Attempts.** The written exam is offered over a period of 4 days: one subject per day.  
Students will be allowed to attempt each subject within **a period of time that will be determined in the Fall 2021.**
8. **Accessibility Services.** Students who qualify for extended time or alternative accommodations must notify SAS and the department sufficiently in advance, for appropriate measures to be taken.
9. **Problems Composition.** The problems in each subject are determined as follows. Half of the problems are chosen by the candidacy committee out of a pool of no fewer than 16 problems for each subject, which must be made available to the students at least three months in advance to the exam, along with their solutions. The committee has the latitude to make minor modifications to these problems, as long as the learning objectives of the problems and the fundamental aspects of their solutions are unchanged. The suggested changes must be approved by a majority of the committee members. The other half of the problems are formulated by the committee, based on the subject learning objectives. These additional problems and their full solutions must be made available to all committee members at least two weeks in advance of the committee meeting, where they must be approved by a majority vote.
10. **Update of the problem pool.** At the end of the evaluation meeting that follows the exam, the new problems are included in the pool, and the modified old problems are appended to the original, as variants. The committee may also decide, by majority vote, to archive some of the pool problems. Archived problems and their solutions remain available to the students for training purposes. Any faculty member can recommend modifications to the existing problems in the pool or propose new problems, as long as they are accompanied by full solutions and conform to the required format. The committee will decide at the earliest opportunity whether to include the suggested problems in the pool, possibly after having modified them, and whether to accept the recommended corrections to the existing problems.
11. **Problem Format.** To be considered for the exam, or to be added to the pool, any problem must be accompanied by its solution in an editable electronic form, LaTeX (preferred) or docx, using the templates provided in Annex I. The pool of each subject must be kept under revision control in a separate Git repository.
12. **Grading and Feedback.** A grading rubric will be developed for every question. Provide the solutions and the rubrics to students after the exams have been graded. Give the graded exams back to students. A selective double grading will be adopted. **This item may change and will be finalized in the Fall 2021.**
13. **Tutoring.** All students who fail one or more subjects in a written candidacy exam will be provided with tutoring support for each failed subject. **This item may change and will**

**be finalized in the Fall 2021.**

14. To reduce any potential biases, each student will be assigned a written candidacy exam identification number (WCEID) the week after the registration email is sent. The student's WCEID will be assigned by the Graduate Candidacy Committee (GCC) support staff person and sent to the student via email. The student will use their assigned WCEID instead of their name in the written candidacy exam paperwork (and, if applicable, in the appeal).

If a student is enrolled in the MS program in good standing (a minimum of 3.0 GPA) and wishes to take the PhD written candidacy exam earlier, the student may do so, provided the graduate director approves it. This needs to be documented with justification from the graduate director. This will be counted as the 1<sup>st</sup> attempt for the student.

**Appeals:** A student may appeal the results of the written candidacy exam. Appeals must include supporting documentation, if applicable, and will be reviewed. Appeals must be submitted within 1 week after distribution of exam scores. In general, research productivity will not be considered as a valid reason to appeal the results of the exam.

To appeal the results of the written candidacy exam, a student should:

1. Send an e-mail to [soto@ucf.edu](mailto:soto@ucf.edu) with subject title: "Appeal Written Candidacy Exam Results"
2. In the e-mail, include the assigned written candidacy exam identification number (WCEID), and petition (appeal)
3. Include supporting documentation, if any. The student must remove any personal identifiable information (name, UCFID, etc.) and instead, include the assigned written candidacy exam identification number (WCEID) at the top-right-hand corner of each page.
4. Allow the Graduate Curriculum & Affairs Committee (GCAC) 10 business days to review and respond to appeal.
5. After 10 business days from receipt of the appeal, the decision of the GCAC will be communicated in an e-mail to the student.

If for any reason the GCAC is unable to make a decision about the appeal and/or need additional information/clarification, the student will receive an e-mail request/notification. Once the student provides the additional information/clarification, the GCAC will have ten business days to review and consider the additional information/clarification before a decision is made and communicated to the student. The decision of the GCAC after reviewing an appeal is final.

The **oral part** combines an examination of the student's command of physics *and* their written Dissertation Proposal. It should be taken *no later than one year* after the written exam has been satisfied.

Although the candidacy exam has two independent parts, passing is only allowed if the student performs at the 50% level or better in both written and oral parts. In cases of failing

the exam during the allocated examination period of time (see item #7), the Graduate Program Director may suggest to the student to pursue a terminal, non-thesis option master's degree. The student usually satisfies the course work for a MS degree with accumulated hours. In cases where a terminal, non-thesis master's degree is not an option, the student may be dismissed from the program and/or may seek other options such as applying to another graduate program.

Students who fulfill all candidacy requirements and pass the candidacy exam will gain post-candidacy status.

### **Dissertation Committee**

A doctoral student's dissertation committee must consist of at least four members and be approved by the Graduate Program Director, Department Chair, and the College's Associate Dean of Graduate Studies. Of the four members, three of these must be approved graduate faculty in the Physics Department. That includes affiliated faculty members with joint and secondary joint appointments but excludes courtesy appointments. One member of the committee, typically the research supervisor, must serve as the chair. When the research supervisor is not a regular faculty member of the Physics Department, it is recommended that a co-chair with that qualification be appointed. The fourth member must be from either outside the program (cannot be affiliated to the Physics Department in any capacity) or outside the university.

For more details about the Dissertation Committee, please refer to the UCF Graduate Catalog: <https://graduate.ucf.edu/> > Graduate Catalog > Policies > Doctoral Program Policies > Dissertation Requirements > Dissertation Advisory Committee Membership

The dissertation committee must be identified by the time the student passes the candidacy exam.

### **F. Post-Candidacy Enrollment**

Prior to enrollment into PHY 7980 Doctoral Dissertation, the student must have passed the candidacy exam and have a dissertation committee reviewed and approved by the College of Graduate Studies. This form can be obtained from the Graduate Admissions Coordinator or online at <https://physics.cos.ucf.edu/graduate/forms-and-links/>

PHY 7980 Dissertation Research (15 credit hours minimum)

Doctoral students are required to complete a minimum of 15 credit hours of dissertation, prepared in consultation with a dissertation adviser. Doctoral students engaging in dissertation research must be continuously enrolled in at least three (3) hours of PHY 7980 every semester, including summers, until they successfully defend and submit their dissertation to the University Thesis Editor. The three hours of dissertation enrollment each semester reflects the expenditure of university resources, particularly if more than the minimum number of hours is required for completion of the dissertation.

## G. Graduate Research

Research is a fundamental part of the Physics Doctoral Program. Starting with Directed Research hours and then continuing with Doctoral Dissertation courses, students gain a solid experience in how to conduct competitive research programs in their fields of specialization. It is expected that they will adhere to the highest standards of conduct and act responsibly. Academic dishonesty and plagiarism are sufficient for the dismissal of the student from the Program. For additional information, refer to the College of Graduate Studies, graduate student forms and files, Student Services Records, Academic Honesty flyer at <http://www.students.graduate.ucf.edu/files/>

Students should also be aware that any laboratory or experimental work must comply with certain regulations and safety standards set by UCF. Students should discuss this subject with their research supervisor before starting any laboratory research activity. Additional information about required laboratory training and training registration may be found online at the UCF Environmental Health & Safety website at <http://www.ehs.ucf.edu/training/lecture.html>

It is expected that the research carried out during a doctoral program results in publications in specialized, peer-reviewed journals and in technical communications during professional meetings and conferences. While there is no publication requirement for the dissertation defense, it is expected that graduate students will publish a minimum of two papers by the time the student graduates, hence it is expected that at least one major paper about the subject of the dissertation should appear in a reputable journal or in a peer-reviewed conference proceedings within a short period after graduation. The dissertation committee may delay the defense until it is clear that the candidate is ready to submit his or her work to publication. Therefore, it is important that students try to publish not just major results, but also partial ones that are sufficiently novel and valuable contributions to their area of study.

The student is also expected to participate in a minimum of two professional conferences in their field of specialization. These events are important not just for communicating results, but also for making contacts that may help open future employment opportunities. Funding for participating in conferences, summer schools, and workshops is usually available from the supervisor's research grants. There are also some in-house sources, such as the events coordinated by the graduate student societies (GSPS and PWS). Find out more about these events by visiting their websites at <https://sciences.ucf.edu/physics/gspis/> and <https://sciences.ucf.edu/physics/wips/>.

The College of Graduate Studies offers a Graduate Travel Award that provides funding for master's, specialist, and doctoral students to deliver a research paper or comparable creative activity at a profession meeting. Students must be the primary author and presenter. More information can be found on the Graduate Studies website: <https://graduate.ucf.edu/funding/>  
> Presentation Fellowship.

Graduate Students Travel Funding is available to pay transportation expenses for graduate students who are delivering a research paper or comparable creative activity at a professional meeting. Contact the Student Government Association at 407/823-3291 for more information or go to <http://ucfsga.com>.

### **Human Subjects**

If the student chooses to conduct research that involves human subjects (i.e., surveys, interviews, etc.), he or she must gain Institutional Review Board (IRB) approval prior to beginning the study. Effective Summer 2020, the College of Graduate Studies will place **IRB submission** and **Closure checklists** on the GPS Degree Audit of all master's Thesis and Doctoral students for academic progress and degree certification purposes. If applicable, students who involve human participants in their research must show documentation from the IRB that their protocol was approved prior to data collection. In addition, students must show documentation that the thesis/dissertation study was properly closed before graduation. The documentation may be sent to the Graduate Admissions Coordinator at the time of filing their intent to graduate. If the student's research does not involve human participants, send an e-mail confirmation to [soto@ucf.edu](mailto:soto@ucf.edu) at the time of filing the intent to graduate. For access to the IRB submission form and sample consent forms, please visit the Office of Research website: [http://www.research.ucf.edu/Compliance/IRB/Investigators/pi\\_manual.html](http://www.research.ucf.edu/Compliance/IRB/Investigators/pi_manual.html)

### **Animal Subjects**

If the student chooses to conduct research that involves animal subjects, he or she must gain Institutional Animal Care and Use Committee (IACUC) approval prior to beginning the study. For access to the IACUC submission forms, please visit the Office or Research website: <http://www.research.ucf.edu/Research/OfficeOfAnimalWelfare.html>

If you have questions regarding human or animal subjects, please contact the UCF IRB Office at 407/823-2901. You may also e-mail [IRB@ucf.edu](mailto:IRB@ucf.edu)

### **Ethics in Research**

Researchers in every discipline have a responsibility for ethical awareness as the status of the profession rests with each individual researcher. It is important to be honest and ethical in conducting research as well as in taking classes. The ethical collection and use of information include, but is by no means limited to, the following: confidentiality, accuracy, relevance, self-responsibility, honesty, and awareness of conflict of interest. The University of Arizona's Code of Research Ethics provides our students with guidelines for responsible practice in research. This code of ethics can be found here: <http://facultygovernance.arizona.edu/resource/code-research-ethics>

### **Patent and Invention Policy**

UCF is authorized to manage, protect, and license inventions and work products developed by University Personnel. As per UCF Policy, "Graduate students are required to maintain

accurate and complete laboratory notebooks and/or other written documentation of invention(s) and creations of work. Prior to leaving UCF, students must submit the original copy of all and any such documentation including any reports, software codes, and/or any other outstanding items to their mentor, although students may retain a copy for their files.” The Office of Technology Transfer (OTT) identifies, assesses, protects, markets, and licenses commercially viable intellectual property developed at UCF. Additional information is available online from the Graduate Catalog: <https://graduate.ucf.edu/> > Graduate Catalog > Policies > General Graduate Policies > Ownership of Intellectual Property

## H. Graduation

In the semester of intended completion, the student must file an Intent-to-Graduate by the Academic Calendar Intent-to-Graduate deadline for that semester.

Further, the student should be aware of the various deadlines associated with completing the dissertation and filing the final, electronic copy with the University Editor. These deadlines are available from the Academic Calendar. In addition, the UCF Graduate Student Association frequently organizes workshops for dissertation formatting, library research, and writing essentials. Students are encouraged to enlist in these activities. The student should enroll in the **Thesis/Dissertation Webcourse** which provides guidelines for preparing, formatting, and submitting a Dissertation. To enroll, go to the graduate studies website at <http://www.graduate.ucf.edu/> > Students > Thesis & Dissertation (ETD)

Students who submit an intent-to-graduate but are missing degree requirements (with no indication of completion in process) will be either approved for graduation on a pending status or denied. It is the student’s responsibility to ensure that the requirements of their degree have been met; therefore, students are encouraged to review their plan of study regularly. The plan of study can be found online at <https://my.ucf.edu> > Student Self Service > View Graduate Plan of Study

When the student is ready for defending the dissertation, he or she should contact the members of the dissertation committee to set a date and a time for the defense. It is important that the defense occurs within the deadline set by UCF for a certain term. Failure to comply with such deadline immediately sends the official graduation to the next term. Once a day, time, and location have been arranged, send the final examination announcement (include the dissertation title, an abstract, and short bio) to the Graduate Admissions Coordinator.

The student is responsible for completing the Thesis and Dissertation release option via their myUCF account and verifying their dissertation committee is showing correctly prior to printing the Dissertation Approval Form (from the Thesis & Dissertation website at [https://ww2.graduate.ucf.edu/ETD\\_Student\\_Services/](https://ww2.graduate.ucf.edu/ETD_Student_Services/)). The Dissertation Approval form must be printed by the student prior to the defense date and the student will need to bring it with him/her for the committee to sign.

Dissertation defenses are public, and anyone can attend. After the presentation, the committee members are allowed to ask questions and make comments about the dissertation work. After



that, the candidate and the public are required to leave the room to the committee deliberation. The result, pass or fail, is then communicated in public to the candidate. The defense form must be signed by all, candidate, and committee members, and immediately taken to the Graduate Admissions Coordinator for further instructions. Finally, the Graduate Program Director will perform an exit interview with the student. The student is required to contact the Graduate Program Director regarding this exit interview. The completed and signed Exit Interview form must be returned to the Graduate Admissions Coordinator before graduation.

## **V. Master of Science Degree**

The Master of Science in Physics degree is flexibly designed to prepare students for the widest possible range of industrial careers or further study at the doctoral level, according to student interests and goals. With a 12- credit common core, the student's other 18 remaining required credit hours are planned in consultation with an academic adviser. These may include courses from other departments. Courses must be selected so that at least one-half of the required courses are taken at the 6000 level. Additionally, 3 hours of directed research or 6 thesis hours are required. Students pursuing a non-thesis master's degree must take at least one Directed Research course as part of their elective work. In this course students will work on a research project under the supervision of a faculty member and present a final report.

The following applies to the regular Physics MS program, and not to the Planetary Science track. For Planetary Science track program information, please go to the Planetary Sciences track handbook <https://sciences.ucf.edu/physics/graduate/planetary-sciences-program/> or to their website at <https://planets.ucf.edu/> >Academics

### **Minimum Hours Required for M.S.**

#### **30 Credit-hours Core Courses — 12**

##### **Credit hours**

All students are required to take:

- PHY 5346 Electrodynamics I (3 credit hours)
- PHY 5524 Statistical Physics (3 credit hours)
- PHY 5606 Quantum Mechanics I (3 credit hours)
- PHY 6246 Classical Mechanics (3 credit hours)

#### **Elective Courses — 18 Credit hours**

Elective selection is intended to be very flexible to meet student needs and interests. Electives may be chosen following one of the suggested specializations below, or a different program of study may be followed with academic advisor approval. Out of the 18 elective credit hours at least 12 credit hours of formal course work are required and not more than 6 credit hours of 5000-level elective courses are counted toward the degree. At least 6 credit

hours of thesis or 3 credit hours of directed research for the non-thesis option are required.

### **Materials Physics Specialization**

PHY 5715 Physical Basis of Life (3 credit hours)

PHY 5933 Selected Topics in Biophysics of Macromolecules (3 credit hours)

PHY 6347 Electrodynamics II (3 credit hours)

PHY 6624 Quantum Mechanics II (3 credit hours)

PHY 6938 Special Topics: Theory and Computation of Molecular Wave Functions (3 credit hours)

PHY 6938 Special Topics: Selected Topics in Scattering Theory (3 credit hours)

PHZ 5432 Introduction to Soft Condensed Matter Physics (3 credit hours)

PHZ 5505 Plasma Physics (3 credit hours)

PHZ 6420 First Principles Computational Methods in Condensed Matter Physics (3 credit hours)

PHZ 6426 Condensed Matter Physics I (3 credit hours)

PHZ 6428 Condensed Matter Physics II (3 credit hours)

EEE 5356C Fabrications of Solid-State Devices (4 credit hours)

Other courses from Physics, Math, Optics, Materials Science, and Engineering require approval by the student's adviser and the Graduate Program Director.

### **Optical Physics Specialization**

PHY 6347 Electrodynamics II (3 credit hours)

PHY 6624 Quantum Mechanics II (3 credit hours)

PHY 6938 Special Topics: Theory and Computation of Molecular Wave Functions (3 credit hours)

OSE 5115 Interference and Diffraction (3 credit hours)

OSE 5312 Light Matter Interaction (3 credit hours)

OSE 6111 Optical Wave Propagation (3 credit hours)

OSE 6347 Quantum Optics (3 credit hours)

OSE 6455C Photonics Laboratory (3 credit hours)

OSE 6526C Laser Engineering Laboratory (3 credit hours)

Other courses from Physics, Math, Optics, Materials Science, and Engineering require approval by the student's adviser and the Graduate Program Director.

### **Space Physics Specialization**

AST 6165 Planetary Atmospheres (3 credit hours)

AST 5151 Physics of Planetary Processes (3 credit hours)

AST 5334 Extrasolar Planets and Brown Dwarfs (3 credit hours)

AST 5038 Astrobiology (3 credit hours)

PHY 6347 Electrodynamics II (3 credit hours)

PHY 6624 Quantum Mechanics II (3 credit hours)

PHZ 5505 Plasma Physics (3 credit hours)

EAS 5315 Rocket Propulsion (3 credit hours)

EAS 6405 Advanced Flight Dynamics (3 credit hours)

EAS 6507 Topics of Astrodynamics (3 credit hours)  
EEL 5820 Image Processing (3 credit hours)  
EEL 6823 Image Processing II (3 credit hours)  
OSE 5041 Introduction to Wave Optics (3 credit hours)  
Other courses from Physics, Math, Optics, Materials Science, and Engineering require approval by the student's adviser and the Graduate Program Director.

### **Theory/Computational Physics Specialization**

PHY 6347 Electrodynamics II (3 credit hours)  
PHY 6624 Quantum Mechanics II (3 credit hours)  
PHY 6667 Quantum Field Theory I (3 credit hours)  
PHY 6938 Special Topics: Theory and Computation of Molecular Wave Functions (3 credit hours)  
PHY 6938 Special Topics: Selected Topics in Scattering Theory (3 credit hours)  
PHY 7669 Quantum Field Theory II (3 credit hours)  
PHZ 5505 Plasma Physics (3 credit hours)  
PHZ 6420 First Principles Computational Methods in Condensed Matter Physics (3 credit hours)  
PHZ 6426 Condensed Matter Physics I (3 credit hours)  
PHZ 6428 Condensed Matter Physics II (3 credit hours)  
COT 6600 Quantum Computing (3 credit hours)  
OSE 5312 Light Matter Interaction (3 credit hours)  
OSE 6347 Quantum Optics (3 credit hours)  
Other courses from Physics, Math, Optics, Materials Science, Engineering, and Computer Science require approval by the student's adviser and the Graduate Program Director.

### **Thesis Option — 6 Credit hours**

The Master of Science in Physics candidate who has chosen the thesis option is required to conduct a program of original scientific research or some investigation involving a creative element and to submit a written thesis detailing these investigations. An oral defense and examination of the thesis is required. These six credit hours count toward the 18 hours of required electives for the degree. An exit interview conducted by the Graduate Program Director is required after passing the thesis defense.

- PHY 6971 Thesis (6 credit hours)

### **Non-thesis Option — 3 Credit hours**

The Master of Science in Physics candidate who has chosen the non-thesis option is required to take 15 credit hours of electives from the list of elective specializations shown above and a minimum of three (3) credit hours of directed research. The credit hours obtained in directed research count toward the 18 hours of required electives for the degree. In the directed research course, students work on a research project under the supervision of a faculty member and are required to present a final report as well as a written comprehensive exit examination. The Graduate Program Director will arrange this exam. The exit exam is

followed by an exit interview.

- PHY 6918 Directed Research (3 credit hours)

## **Independent Learning**

Students pursuing a non-thesis master's degree must take at least one directed research course as part of their elective work. In this course, students will work on a research project under the supervision of a faculty member and present a final report.

## **VI. General Policies** (Refer to the UCF Graduate Catalog for the most updated information)

### **A. Student Rights and Responsibilities**

The Golden Rule is provided to answer any questions a student may have about the university rules and regulations, as well as outlines a student's rights and responsibilities. The Golden Rule can be found online at <http://www.goldenrule.sdes.ucf.edu/>. In addition, graduate students can find additional information about their responsibilities and graduate policies in the Graduate Catalog, found online at <http://catalog.ucf.edu/index.php> in the section marked Policies > General Policies.

### **B. Satisfactory Academic Performance**

Satisfactory performance involves maintaining the standards of academic progress and professional integrity expected in a particular discipline or program. Failure to maintain these standards may result in termination of the student from the program.

Students are required to maintain a 3.00 GPA in all coursework included in the program of study. Be aware that a B- (2.75) does negatively impact a GPA. While students are allowed to have six hours C+ (2.33) grades or lower (including U and I) in their program of study, this is the limit. Grades of D+ and lower will count against a graduate GPA but cannot be used toward completion of a degree requirement.

A program GPA below 3.00 at the end of any semester will result in a student being placed on "academic probationary" status. In this status, a student is not eligible for tuition waiver support or employment as graduate assistant (teaching or research). The students are given the next nine hours of their program coursework to improve their GPA to 3.00 or better. Further, exceeding 6 hours of C or lower grades, or a program GPA of 2.00 or lower, will result in removal from the program.

Students that fail a second attempt at the candidacy exam may be dismissed from the program at the end of the semester of their second attempt. The Graduate Program Director will meet with the student(s) to discuss available options prior to making a dismissal recommendation. Students that are dismissed from the program may seek alternate options as noted in the Graduate Catalog, General Graduate Policies.

4000-Level coursework is acceptable in a graduate program of study if taken while a graduate student but is limited to 6 hours and the grade must be that of a B- or higher. An approved 4000-level course is not counted toward completion of the program requirement, cannot be calculated in the graduate GPA, but can be used as an indication for good progress.

### **C. Satisfactory Academic Progress**

#### **Annual Progress Report**

At the beginning of each year, the students' progress will be evaluated by the faculty advisor and/or the Graduate Program Director. This annual assessment reviews the student's performance in course work, in research work, in assistantship positions, and in completing other program requirements. This annual assessment may also include an update to the students' Plan of Study.

The graduate student has seven years from the date of admission to the graduate program to complete the degree. Students nearing their 5<sup>th</sup> year will submit a 7-year Completion Plan upon request.

Graduate students must be enrolled for at least one semester of every three consecutive semesters to maintain active student status.

### **D. Full-Time and Continuous Enrollment**

Full-time graduate status is nine (9) hours during the Fall and Spring Semesters and six (6) hours during the summer semesters, until regular graduate course work is completed. There are two exceptions to this requirement:

- a. Students in their last semester who need less than 9 hours to complete their program unless they are receiving federal loans. These students are considered full-time for fellowships, employment, and tuition waiver purposes if they enroll into the hours required for program completion and file an intent-to-graduate.
- b. Graduate students who have finished all their coursework and are enrolled in Thesis hours (if applicable) or doctoral students that have passed their candidacy exam. These students are considered full-time for fellowships, employment, and tuition waiver purposes if they enroll in 6 credit hours of Thesis (PHY 6971) or 3 hours of Doctoral Dissertation (PHY 7980), respectively, for each term until degree requirements are completed (unless they are receiving federal loans)

Once a student has begun work on their thesis or doctoral dissertation, he or she must be continuously enrolled in thesis or doctoral dissertation course work for a minimum of six or three hours, respectively, each term, including summers, until the student completes and successfully defends the thesis or doctoral dissertation. Students wishing to enroll in

fewer than the minimum credit hours must have approval from the Graduate Program Director and their advisor. As per policy, “Students who need to interrupt their thesis or dissertation work for extenuating circumstances may submit a Special Leave of Absence request to the College of Graduate Studies. Submission and approval of the request must be obtained prior to the first day of classes for the term of non-enrollment.”

A student may be held to other enrollment requirements, as defined by financial awards, veteran status, employment, or other outside agencies.

#### **E. Transfer Coursework**

All transferred coursework must be approved by the Graduate Program Director. Transfer coursework is limited to 30 hours from a completed master’s degree. Students whose master’s degree was obtained abroad must have it officially evaluated to be equivalent to a master’s degree in the USA. The 7-year rule is not applied if the coursework is transferred in from a completed master’s degree. If a master’s degree is not received, then the student is limited to 9 hours of transfer coursework.

In addition, the course(s) must be formal course work (no thesis or research hours) and only courses with a grade of “B- “or higher are allowed to be transferred into a program of study.

#### **F. Incomplete Grades**

Students who received an incomplete (I) in a course are encouraged to resolve this incomplete as soon as possible; however, it must be resolved within one calendar year or prior to graduation certification, whichever comes first. Incompletes left unresolved will be changed to F (or a U in thesis, dissertation, or research report) if not resolved in the allowed time. Incomplete grades cannot be used towards completion of the program of study.

Incomplete grades are not counted as satisfactorily completed courses and are not recognized as such neither by Graduate Studies for fellowship purposes nor by Financial Aid. Students on financial assistance must check with the Financial Aid office to see if the receipt of an incomplete grade will affect their financial award.

#### **G. Withdrawal Policy**

If a student decides to withdraw from a course, they must do so by the semester’s withdrawal deadline. In doing so, the student is still liable for tuition and fees for the course. For a semester’s withdrawal deadline, refer to the Academic Calendar.

#### **H. Petitions and Grievances**

It is the student's responsibility to be informed of graduate policies and procedures; however, should a student wish to request an exception to a university or program policy, he or she must file a petition that outlines the nature of their request. Normally, petition is presented to the Graduate Program Director and/or committee, the college's Director of Graduate Services and the Associate Dean for Graduate Studies, and the Graduate Council for consideration.

Should a student wish to file a grievance, he or she should first review UCF's Golden Rule (<http://www.goldenrule.sdes.ucf.edu/>) and the Academic Grievance Procedures in the Graduate Catalog <http://catalog.ucf.edu/index.php> > Policies > General Graduate Policies > Academic Grievance Procedure

## VII. Professional Development

Students may take advantage of several professional development opportunities on campus, such as grant-proposal writing workshops, graduate research fair, and others. Also, every year the Office of Graduate Studies sponsors several graduate Award Recognitions. Nominations typically happen in January. For additional information go to <http://www.graduate.ucf.edu/GradAwards/>

### Travel Support

The Division of Graduate Studies offers a Graduate Travel Award that provides funding for master's, specialist, and doctoral students to deliver a research paper or comparable creative activity at a professional meeting. Students must be the primary author and presenter.

<https://graduate.ucf.edu/presentation-fellowship/>

Graduate Students Travel Funding is available to pay transportation expenses for graduate students who are delivering a research paper or comparable creative activity at a professional meeting. Contact the Student Government Association at 407/823-3291 for more information or go to <http://ucfsga.com>.

### Instructor Training and Development

Graduate students who will work as Graduate Teaching Graders, Assistants, or Associate (GTA) are required to complete all three levels of online training prior to the first day of class for the semester they will be assigned as a GTA. In addition, students that will work as Associates (instructor of record) are further required to attend a one-day, face-to-face training session.

**Note:** International students please refer to the handbook section "IV.D-Examinations" for additional requirements, if applicable.

The Faculty Center for Teaching & Learning (FCTL) promotes excellence in all levels of

teaching at the University of Central Florida. To that end, they offer a voluntary program for the professional development of Graduate Teaching Assistants (GTAs) at UCF. Interested GTAs may enroll in “Preparing Tomorrow’s Faculty Program”. Additional information about this program can be found online at <http://www.fctl.ucf.edu/Events/GTAPrograms/PreparingTomorrowsFaculty/> or call 407/823-3544.

## **Career Services Student Development and Enrollment Services (SDES)**

<http://career.ucf.edu/>

Graduate career development issues are unique and include evaluating academic and nonacademic career choices, discussing graduate school effect on career choices, as well as learning, evaluating, and refining networking and interviewing skills. Whatever your needs, the offices of Career Services SDES offer services and resources to aid in the career exploration and job search of Master and Doctoral students in every academic discipline.

## **Graduate Student Association**

” The UCF Graduate Student Association (GSA) is the representative organization for UCF’s graduate student body.” All graduate students are automatically considered members of the GSA. To find out more about GSA and find out how you can get involved, go to:

<https://ucfsga.com/graduate-student-association>

## **Graduate Excellence Awards – College and University Level**

Each year, students can submit a portfolio for nomination of College and University level awards of excellence. These are intended to showcase student excellence in academic achievement, teaching, research, leadership, and community service.

These awards include the following:

- **Order of Pegasus**  
The Order of Pegasus recognizes exemplary performance by UCF students. It is the most prestigious and significant student award that can be attained at UCF. For more information, go to: <http://order.sdes.ucf.edu/>
- **Award for Excellence by a Graduate Teaching Assistant**  
For students who provide teaching support and assistance under the direction of a lead teacher. This award focuses on the extent and quality of the assistance provided by the student to the lead instructor and the students in the class. (Not intended for students who are instructor of record)
- **Award for Excellence in Graduate Student Teaching**  
For students who serve as instructors of record and have independent classroom responsibilities. The focus of this award is on the quality of the student’s teaching and the academic contributions of those activities.
- **Award for the Outstanding Master’s Thesis**  
Recognizes graduate students for excellence in the master's thesis. The focus of this



award is on the quality and contribution of the student's thesis research. Excellence of the master's thesis may be demonstrated by evidence such as (but not limited to): publications in refereed or peer reviewed journals, awards and recognitions from professional organizations, and praise from faculty members and other colleagues in the field. Students can only win the university award once.

- **Award for the Outstanding Dissertation**

Recognizes doctoral students for excellence in the dissertation. The focus of this award is on the quality and contribution of the student's dissertation. Excellence of the dissertation may be demonstrated by evidence such as, but not limited to publications in refereed journals, awards and recognitions from professional organizations, and praise from faculty members and other colleagues in the field.

For more information about these other awards, please go to:

<https://graduate.ucf.edu/awards-and-recognition/>

For more information about the Conference of Southern Graduate Schools (CSGS) thesis and dissertation awards, please see their website: <http://www.csgs.org/> > Awards.

### **Graduate Awards – Department Level**

The Department of Physics recognizes the remarkable scientific, educational, and service achievements of their graduate students on a semester and/or yearly basis. Graduate awards at the departmental level include Graduate Teaching Awards, Graduate Student Service Awards, and the Student of the Year Award. For additional information about these awards, go to: <https://sciences.ucf.edu/physics/graduate/graduate-awards/>

## **VIII. Financial Support**

The Physics Department offers financial support to incoming doctoral students in the form of Graduate Teaching Assistantships (GTAs). They are guaranteed in the Fall and Spring terms during the first year provided the student maintains good academic standing. They may also be offered during summer terms depending on the availability of positions and departmental funds. All Graduate Teaching Assistants are required to be full-time students and that means enrolling in at least 9 credit hours during Fall and Spring terms and 6 credit hours in the Summer if they have not yet passed the candidacy exam. After being one year in the program, the GTA positions are not guaranteed, but typically second year students who did not receive a Graduate Research Assistantship (GRA) receive a GTA position.

The maximum FTE (Full-Time Employment) a GTA can take is 0.50, corresponding to 20 hours/week. Stipends range between US\$ 15 to 20 per hour. All GTAs receive a full tuition waiver for matriculation fees up to 9 credit hours per term (when pre-candidacy) and up to 3 credit hours (post-candidacy). Non-matriculation fees are not included in the waiver. All graduate students with an assistantship and full-time status are considered in-state students. If a student does not maintain full-time status, he/she may

no longer be eligible for a graduate assistantship and out of state fees will not be waived.

It is important that all students communicate their interest in renewing their GTA to the Graduate Admissions Coordinator as soon as possible, but no later than one month before the beginning of the next term.

GTA positions are assigned usually two months before the beginning of classes. The assignments are based on academic standing, past performance, and availability of funds. Students who want to be considered for these positions must register at least two months in advance to minimize conflicts between their course schedule and teaching assignments.

Regular and affiliated faculty members of the Physics Department often pay graduate research assistants to work in their projects. These positions go by the name of Graduate Research Assistantships (GRAs) and carry an hourly rate like a GTA. Students are required to be in good academic standing to take GRAs. Tuition remission is provided by the hiring faculty as a tuition payment for matriculation fees for the GRAs and the rules are like those mentioned above for the case of GTAs. GRA positions can be renewed, depending upon mutual interest and the supervisor's funds availability.

Students are expected to make a transition from GTA to GRA by the time they pass the candidacy exam. In several cases this transition happens sooner when the student begins working with faculty member in a Directed Research course.

All prospective students who complete an application to the program before the priority deadline of January 15<sup>th</sup> are automatically considered candidates for UCF-sponsored fellowship opportunities. The Graduate Admissions Committee along with the Graduate Program Director will submit their fellowship nominations of selected and eligible candidates to the College of Graduate Studies for consideration.

### **International Students**

Several types of employment are available to international students, including on-campus employment. For more information about the types of employment available to international students, and the requirements and restrictions based in visa-type, please see the UCF Global's website: <http://global.ucf.edu/>

### **Assistantships and Tuition Waivers**

For complete information about university assistantship and tuition waivers, please see the UCF Graduate Catalog: <http://www.graduate.ucf.edu/currentGradCatalog/> > Financial Information

To be employed and to maintain employment in a graduate position, the student must be:

- In good academic standing
- Enrolled full-time

To be awarded and continue receipt of tuition remission (such as waivers), the student must be:

- In good academic standing
- Enrolled full-time
- Employed in a graduate position (GTA, GRA, GA) or receiving a university fellowship or (if employed off-campus) employed where payment is processed through Graduate Studies.

Doctoral students can be offered tuition support for a maximum of twelve semesters (for doctoral student beyond the master's degree) or twenty-one semesters (for doctoral students without a master's degree).

### **GTA Training Requirements**

If the student is hired in the position of Graduate Teaching Associate, Assistant or Graders, there are training requirements that must be met for the contract to be processed. Associates must also complete a face-to-face workshop and have completed at least 18 hours of graduate courses in the discipline they will be teaching. Students that are employed as Graders are required to complete the online legal module. These services are offered by the Faculty Center for Teaching and Learning (FCTL) and more information can be found at the following website: [https://funding.graduate.ucf.edu/GTA\\_Training\\_Requirements/](https://funding.graduate.ucf.edu/GTA_Training_Requirements/)

All 9184 GTA positions where students will be the "primary" instructor for the laboratory/discussion components of 'C' courses, are now asked to complete all the training required of 9183 positions, since they will be interacting with students on a regular basis.

International students who will be hired in GTA positions must be proficient at speaking English. This is determined by successfully passing the Versant English test with a score of 69 or better. This is a new test effective Spring 2018, and it is administered during the GTA orientation by the English Language Institute (ELI). For international student to register for or inquire about the Versant English test, please contact ELI at UCF Global: 407/823-5515 or the College of Graduate Studies at 407/823-2766.

All GTAs will be required to complete FERPA Training. Additional information about this requirement may be found online at <http://registrar.ucf.edu/training>

GTAs are required to attend a meeting at least one week prior to the start of classes for the semester the GTA is assigned TA duties.

### **GTA Performance Appraisal**

At the completion of each semester the student is employed as a GTA, the student's performance will be evaluated by the faculty supervisor and/or the Associate Chair for Academic Programs. The supervisor is typically the faculty member who coordinates the

sections of the course where the GTA is an instructor. These assessments will be used to review strengths and weaknesses in the student's performance in preparation for future employment. Student Perception of Instruction forms will be reviewed before the completion of a GTAs Performance Assessment. GTA Assessment are completed online, but forms can be found at [https://funding.graduate.ucf.edu/GTA\\_Performance\\_and\\_Assessments/](https://funding.graduate.ucf.edu/GTA_Performance_and_Assessments/)

## **IX. Other Important Information**

A desk in a shared office is provided to all graduate teaching assistants. A few personal desktop computers for their use are also available. All students admitted into the graduate program are required to create a Knights e-mail account. In addition, students employed by the department will be required to create an employee "@ucf.edu" e-mail account, which is listed on the departmental website directory. All graduate students are assigned a mailbox in PSB 466. Students need consent by the Office manager to use the copy machine and to receive departmental stationery and supplies.

The Department of Physics runs a weekly colloquium series open to all faculty and students. The schedule is available on the Department web page at <http://physics.cos.ucf.edu/> > Colloquia. Attendance to weekly colloquia is highly recommended, and Graduate students are expected to attend. An effort is made to try to bring speakers who can give a broad overview of a certain research area and talk in accessible terms about research in the forefront of their fields.

Several faculty members also run periodic group meetings and seminar series. Students are encouraged to contact faculty members to learn about their research projects and the positions they may have available in their groups.

## **X. Forms and Procedures**

Included below is information about several forms that will be useful to the students while they are completing their program requirements. In addition to websites where the forms can be found, procedures for filing each of these forms are also outlined.

These forms can be found on the following websites:

Physics Graduate Program Website:

<http://physics.cos.ucf.edu/graduate/forms-and-links/> Division of Graduate

Studies Website: <http://www.students.graduate.ucf.edu/files/>

COS Graduate Services Website: <http://www.cos.ucf.edu/graduate/current-students/forms/>

### **Request for Credit Hours Transfer Form**

Graduate students may request to transfer completed graduate coursework to their UCF graduate plan of study. This request must be submitted during their first semester in the graduate program. In addition to the transfer request form, students must complete the Initial Plan of Study form and seek approval from the Graduate Program Director and/or their advisor, if applicable. For transfer courses to be requested for use in a UCF degree, the official

transcripts from the institution where the courses were taken must be sent to UCF's College of Graduate Studies.

### **Traveling Scholar Form**

Students may request approval to enroll in a graduate course at another Florida States University System (SUS) institution and transfer the course to their UCF Plan of Study. Up to six credit hours may be obtained as a Traveling Scholar and students may not enroll as a traveling scholar in the semester of graduation. This form and a memo of support from the student's program must be submitted to the Director of Graduate Services prior to the start of classes for the semester of enrollment in the SUS course.

### **Thesis Committee Approval Form (*College Form*)**

A Thesis committee must be in place and approved by the Graduate Program Director, the Department Chair, and the Associate Dean of Graduate Studies prior to a student's enrollment into Thesis (PHY 6971).

Committee Composition:

- Chair (Requirements: regular\* Physics department faculty, doctoral degree)
- Minimum of three committee members (Requirements: doctoral degree)
- A majority must be members of the UCF Graduate Faculty and \* Physics department faculty
- At least one member must have served previously on a thesis or dissertation committee that graduated a student. If the Chair does not have this experience, another graduate faculty member who has this experience may serve in this role as Vice Chair.

\* Regular department faculty are tenured or tenure earning faculty or research faculty with permanent appointments; it includes joint and secondary joint appointments but not courtesy appointments or lecturers

### **Dissertation Committee Approval Form (*College Form*)**

Dissertation committees must be in place and approved by the Graduate Program Director, the Department Chair, and the Associate Dean of Graduate Studies prior to a student's enrollment into Dissertation (PHY 7980).

Committee Composition:

- Chair (Requirements: regular\* Physics department faculty, doctoral degree)
- Minimum of four committee members (Requirements: doctoral degree)
- At least three must be regular\* Physics department faculty
- At least one must be from outside the Physics department (no affiliation of any kind)
- A majority must be members of the UCF Graduate Faculty
- A co-chair among the regular\* Physics department faculty is recommended when the research supervisor acts as Chair and has a secondary joint affiliations status with the Physics department.

\* Regular department faculty are tenured or tenure earning faculty or research faculty with permanent appointments; it includes joint and secondary joint appointments but not courtesy appointments or lecturers

### **Graduate Petition Form**

Requests for exceptions to college or university policies are made by petition. The petition process includes required documentation from both student and program prior to its receipt in the COS Graduate Office.

In addition to the Graduate Petition Form, the student must supply their program with a clear statement of what exactly is being requested, why it is being petitioned and rationale for support.

If approved, the program supplies an additional letter of support and forwards the request to the COS Director of Graduate Services who reviews and submits to the Associate Dean for Graduate Studies.

If approved, the college supplies an additional letter of support and forwards the request to the UCF Graduate Council Subcommittee for Policy and Appeals.

If at any point the petition is denied, the student is given the option of having the petition considered at the next level; however, the Graduate Council provides the final decision regarding petitions. Denials at any level are accompanied with a written explanation.

### **Graduate Student Intent-to-Graduate Form**

Intents to Graduate must be filed by the Academic Calendar Intent-to-Graduate filing deadline for the semester that the student is intending to graduate. An intent to graduate may be filed online via your myUCF account. Log in to myUCF > Student Self Service > Graduate Students and choose “Intent to Graduate: Apply” from the drop-down menu.

The Graduate Advisor/Graduate Program Director confirms potential completion of degree or certificate program by confirming program/plan, checking audit (making any revisions), and signing the form. The audit (with needed corrections, if any) and form are forwarded to the Director of Graduate Services who verifies potential completion.

**Note:** If the program of study does not show that all requirements may be met by the end of the intended term, the application will either be approved pending or not processed.

Approved applications are forwarded to the Division of Graduate Studies for processing and notification is sent to the Registrar’s office that the student is intending to graduate. If it is determined that the student will not graduate, the COS Director of Graduate Services should be notified. The student will need to re-file their intent for the next semester they intend to complete the degree. Final certification is completed after grades have been released for the semester, and final transcripts are normally available about three to four weeks after certification.

Additional forms, specific to the Physics Graduate Program, can

be found at <http://physics.cos.ucf.edu/graduate/forms-and-links/> and include, among others:

- Department dissertation committee form
- Department dissertation proposal form
- Department exit interview form

## **XI. Additional Student Resources**

UCF Graduate Catalog (available online only)

<http://www.graduatecatalog.ucf.edu/>

COS Graduate Website for Students <http://www.cos.ucf.edu/graduate>

UCF Graduate Website for Students

<https://graduate.ucf.edu/students/>

Student Handbook: <https://graduate.ucf.edu/student-handbook/>

Academic Calendar: <https://calendar.ucf.edu/>

Library <http://library.ucf.edu/>

University Writing Center

<https://uwc.cah.ucf.edu/>

Counseling and Psychological Services (CAPS)

<http://caps.sdes.ucf.edu/>

Coronavirus updates <https://www.ucf.edu/coronavirus/>