**PHYSICS (Applied PHYSICS) PROGRAM**

**Doctor of Philosophy (Ph.D.) Degree**

**DEGREE INFORMATION**

**Priority Admission Application Deadlines:**

**Fall:** February 1

**Spring:** September 1

International applicant deadlines:

<http://www.grad.usf.edu/majors>

**Minimum Total Hours:** 57

**Level:** Doctoral

**CIP Code:** 40.0801

**Dept. Code:** PHY

**Major/College Codes:** APD AS

**Approved:** 1999

**Concentration (optional):**

Medical Physics (MDP)

**CONTACT INFORMATION**

**College:** Arts and Sciences

**Department:** Physics

**Contact Information:** [www.grad.usf.edu](http://www.grad.usf.edu)

**MAJOR INFORMATION**

This major emphasizes the practical, engineering applications of theoretical and fundamental physical concepts. The major encompasses the areas of laser physics, materials physics, computational physics, environmental physics and sensors, biomedical physics and imaging science.

**ADMISSION INFORMATION**

Must meet University requirements (see Graduate Admissions), as well as requirements for admission to the major, listed below.

* three letters of recommendation
* a statement of purpose
* GRE General Test scores required, GRE Physics Subject Test scores recommended.

Applicants for admission to the Ph.D. program must indicate whether they are requesting the medical-physics concentration option.

**Students Entering with Prior Master’s Degrees from Other Institutions**

Some prior coursework toward the requirements outlined below may be counted. However, at least six courses approved by the Director of Graduate Studies must be completed at USF in a discipline related to the Ph.D. Degree.

**CURRICULUM REQUIREMENTS**

**Total Minimum Hours: 57 credit hours**

Core courses in theoretical and applied areas 15 hours

General Option or Concentration Option 18 hours

Dissertation Research (PHY 7980) 24 hours

**Core courses – 15 hours**

PHZ 5115 3 Methods of Theoretical Physics I

PHY 6346 3 Electromagnetic Theory I

PHY 6645 3 Quantum Mechanics I

PHY 6646 3 Applied Quantum Mechanics

PHY 6536 3 Statistical Mechanics

**General Option – 18 hours**

**Laboratory or Computer Experience – 3 hours**

**Laboratory experience: 0–1 classes:**

This may be met, for example, by submitting an experimental thesis or dissertation, by: an approved graduate-level elective; submitting an experimental thesis or dissertation; or through sufficiently rigorous relevant experience (e.g., prior courses, industrial employment, etc.). Contact the department for a current list of approved courses.

**Computational experience: 0–1 classes**

This may be met, for example, by the following: an approved graduate-level elective; submitting a computational thesis or dissertation; or through sufficiently rigorous relevant experience (e.g., prior graduate or undergraduate courses, industrial employment, etc.). Contact the department for a current list of approved courses.

**Electives – 12 hours**

At least an additional four (4) graduate-level classes, of which at least two (2) are in Physics

Any graduate-level classes (excluding research and seminars) not used to fulfill other requirements. Contact the department for a current list of approved courses.

**Industrial Practicum – 3 hours**

PHZ 7940 3 Industrial Practicum

Contact department for details

**Medical-Physics Concentration Option – 18 hours**

The Medical-Physics Concentration is administered jointly by the Department of Physics of the University of South Florida and the Medical Physics Faculty Group of the Moffitt Cancer Center. The Ph.D. degree program in “Applied Physics with an emphasis in medical-physics” has been accredited since 2015 by the Commission on the Accreditation of Medical Physics Education Programs, CAMPEP.

Students in the medical-physics concentration must:

1. Fulfill the course requirements for a Ph.D. in applied physics;

2. Fulfill the course requirements for medical physics per CAMPEP; and

3. Perform medical physics research leading to a dissertation and a minimum of two papers submitted to peer- reviewed journals before graduation.

For the medical physics concentration, the Radiotherapy Physics Clinical Practicum substitutes for the Industrial Practicum. Instead of the four electives for the general Ph.D. in Applied Physics, students take the following medical physics core courses, automatically satisfying the requirements in computation and laboratory experience (credit hours in parentheses):

PHY 6938 (3) Selected Topics in Physics: Radiation Therapy Physics

PHY 6938 (3) Selected Topics in Physics: Radiation Physics and Dosimetry

PHY 6938 (3) Selected Topics in Physics: Radiobiology for Physicists

EEL 6935 (3) Selected Electrical Topics: Biomedical Image Processing

PHC 7935 (3) Special Topics in Public Health: Radiation Health Principles

GMS 6605 (3) Basic Medical Anatomy

**Doctoral Qualifying Examination:**

The Doctoral Qualifying Examination consists of two parts: The Credentials Certification and the Dissertation Proposal. Following successful completion of these two parts, the student may submit the paperwork for doctoral candidacy. The student’s presentation of the Dissertation Proposal may occur at any time after successful completion of the Credentials Certification.

* *Credentials Certification*

The Student, in consultation with his/her research advisor, will assemble a supervisory committee consistent with the rules of the Office of Graduate Studies. It is the responsibility of the supervisory committee to evaluate the student’s academic and research accomplishments and potential according to departmental standards, and if these are met, to certify that the student may proceed to the next step. Contact the Department for details.

* *Dissertation Proposal –*

To become a Ph.D. Candidate, the student must present a written dissertation proposal and successfully defend that proposal to the supervisory committee. Contact the Department for details.

**Dissertation – 24 credit hours**

PHY 7980 (2-9) Dissertation: Doctoral

The candidate will conduct original and significant research, describe that research and the results in a doctoral dissertation and defend that dissertation in an oral presentation to the supervisory committee. The defense is open to the public and must be scheduled according to the regulations of the Office of Graduate Studies.

**COURSES**

See <http://www.ugs.usf.edu/course-inventory/>