



# Graduate Curriculum Approval Form Changes to Graduate Majors

Degree Program CIP Code	40.0801
Degree (i.e. M.A., Ph.D., etc.):	Ph.D.
Name of Major (e.g. Biology)	Applied Physics
Name of affected Concentration(s) (e.g. Botany)	Medical Physics
Proposed Effective Term (e.g Fall 2017)	Fall 2018
Faculty Contact	David A. Rabson
Email	rabson@usf.edu

APPROVALS	Name	Signature	Action	Date
Dept. Chair	David A. Rabson		<input checked="" type="checkbox"/> Approve <input type="checkbox"/> Not approved <input type="checkbox"/> Comments attached	1/29/18
School Committee Chair (if applicable)	Jennifer Lewis		<input checked="" type="checkbox"/> Approve <input type="checkbox"/> Not approved <input type="checkbox"/> Comments attached	2/5/18
College Committee Chair	Kathleen McCook		<input checked="" type="checkbox"/> Approve <input type="checkbox"/> Not approved <input type="checkbox"/> Comments attached	3/6/18
College Dean/ Associate Dean			<input type="checkbox"/> Approve <input type="checkbox"/> Not approved <input type="checkbox"/> Comments attached	
Concurrence <input type="checkbox"/> N/A <input type="checkbox"/> Needed	Dept: Chair:		<input type="checkbox"/> Concurs <input type="checkbox"/> Doesn't concur <input type="checkbox"/> Comments attached	
Grad Council	<input type="checkbox"/> Approve <input type="checkbox"/> Not approved <input type="checkbox"/> Tabled <input type="checkbox"/> Comments	Graduate Studies	<input type="checkbox"/> Approve <input type="checkbox"/> Disapprove	

**Summary of Changes – Select all that apply:**

Admissions Section:

- Change Priority Admission Deadlines
  - Fall: \_\_\_\_\_
  - Spring: \_\_\_\_\_
  - Summer: \_\_\_\_\_
  - To "fall admissions only"
- From Regular to Direct Receipt Admissions
- From Direct Receipt to Regular Admission
- Admission Requirements

Curriculum Requirements

- Current Curriculum Requirements
  - Core
  - Add New Concentration, Specialization, or Track\*
  - Delete Concentration, Specialization, or Track
  - Thesis/Dissertation
  - Comprehensive/Qualifying Exam
- Other: \_\_\_\_\_

\*Requires submission to APAC for comment/clearance

**Why are these changes necessary?**

For several years, the USF Department of Physics and the Departments of Radiation Oncology and Diagnostic Imaging at the Moffitt Cancer Center (MCC) have run a joint Ph.D. program training medical physicists. In January 2015, the program became one of 24 Ph.D. programs in the U.S. accredited by CAMPEP (the Commission on the Accreditation of Medical Physics Education Programs). We believe it is unique in combining core physics with research applied to the understanding, diagnosis, and treatment of cancer.

All Ph.D. graduates of the medical physics program have been accepted into highly competitive clinical medical-physics residencies or postdoctoral fellowships within a year of graduation, after which most have pursued clinical careers (see table below). Graduates of the program receive a Ph.D. in Applied Physics with

an emphasis in medical physics. While the “emphasis” determines their elective coursework and research direction, it is not encoded in USF systems as a concentration, nor is it listed as such on official transcripts.

Now that the program is accredited and attracting more applicants, we propose the creation of a formal concentration in medical physics.

**Attach the current Catalog Copy, with the requested revisions shown using Track Changes.** Catalog copy is not required for changes to the Admission Deadline. All other changes require Catalog Copy. To obtain the most current catalog, email [cdh@usf.edu](mailto:cdh@usf.edu).

Once College has approved, scan and email this Approval Form, and the revised Catalog Copy in Word to Graduate Studies by the deadline posted online <http://www.grad.usf.edu/graduate-council.php> . For questions, contact [cdh@usf.edu](mailto:cdh@usf.edu)

All of our medical-physics graduates have continued with a residency or postdoc, and most have pursued careers in medical physics, as detailed in the table below. Since 2014, the American Board of Radiology (ABR) has required a residency for certification in medical physics, and residency programs have recently accepted graduates only of CAMPEP-accredited programs (of which USF/Moffitt has been one, since 2015). Changing from “emphasis” to concentration is part of the formalization of medical-physics education. Since the medical-physics concentration will appear on the transcripts of our graduates, it will facilitate their match with highly-competitive residency programs.

<b>Name</b>	<b>Ph.D. Date</b>	<b>Residency /Postdoc</b>	<b>Current Position</b>	<b>Current Institution</b>
H. Abou Mourad	2005	Mayo Clinic	Therapeutic Medical Physics	Mayo Clinic, MN
Nataliya Kovalchuk	2008	Mayo Clinic	Clin Asst Prof Rad Oncology	Stanford University, CA
Daniel Opp	2009	Moffitt	Clinical Medical Physicist	Moffitt Cancer Center, Tampa, FL
Kevin Tatur	2009	Michigan	Senior Analyst	AGL Energy, Australia
Kujtim Latifi	2011	Moffitt	Faculty Medical Physicist	Moffitt Cancer Center and USF
Jakub Pritz	2011	UCSD	Owner	Aero Enterprises, Orange County CA
Cassandra Stambaugh	2015	Mayo Clinic	Medical Physicist	Tufts Medical Center, Boston, MA
Jasmine A. Oliver	2016	UF	Medical Physics Resident	UF Orlando Health, Orlando, FL
Balderaldeen AlTazi	2017		Graduated December 2017	(just graduated)
Muhammed Shafiq-ul-Hassan	2018		Graduate Student Graduation: May 2018	USF/MCC
Christopher Tichacek	2018		Graduate Student Graduation: Dec 2018	USF/MCC
Saeed Ahmed	2019		Graduate Student Graduation: May 2019	USF/MCC

## PHYSICS (APPLIED PHYSICS) PROGRAM

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

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#### 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)

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#### 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 applying for admission to the medical-physics concentration.

**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

**Requirements**

Core courses in theoretical and applied areas	15 hours
Lab or computer training	3 hours



Electives	12 hours
Industrial Practicum	3 hours
Dissertation Research (PHY 7980)	24 hours

**Core courses – 15 hours**

PHZ 5115	3	Mathematical Methods I
PHY 6346	3	Electricity and Magnetism I
PHY 6645	3	Quantum Mechanics I
PHY 6646	3	Quantum Mechanics II
PHY 6536	3	Statistical Mechanics

**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 4 graduate-level classes, of which at least 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

**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

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.

**Medical-Physics Concentration**

The Ph.D. program in Applied Physics with emphasis in medical physics 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 and 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):

(3)	Radiation Therapy Physics	PHY 6938
(3)	Radiation Physics and Dosimetry	PHY 6938
(3)	Radiobiology for Physicists	PHY 6938
(1)	Medical Physics Seminar	PHY 6938
(3)	Biomedical Image Processing	EEL 6935
(3)	Radiation Health Principles	PHC 6306 + PHC 7935
(3)	Medical Anatomy	GMS 6605 or BMS 5190
(3)	Computational Physics	PHZ 5156C

Qualification, admission to candidacy, and dissertation research are as for the general Ph.D. in Applied Physics.

**COURSES**

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

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