

FLORIDA ATLANTIC UNIVERSITY™

Graduate Programs—PROGRAM CHANGE REQUEST

UGPC APPROVAL _____

UFS APPROVAL _____

CATALOG _____

DEPARTMENT: PHYSICS

COLLEGE: CESCOS

PROGRAM NAME:

BS PHYSICS/PROFESSIONAL SCIENCE MASTER IN MEDICAL PHYSICS (BS PHYSICS/PSMMP)
EFFECTIVE DATE

(PROVIDE TERM/YEAR)

FALL 2016

PLEASE EXPLAIN THE REQUESTED CHANGE(S) AND OFFER RATIONALE BELOW AND/OR ATTACHED:

THE PROPOSED: **BS PHYSICS/PROFESSIONAL SCIENCE MASTER IN MEDICAL PHYSICS (BS PHYSICS/PSMMP)** IS AN ACCELERATED PROGRAM THAT COMBINES THE 4-YEAR **BS** IN PHYSICS WITH THE TWO YEAR **PSM** IN MEDICAL PHYSICS. STUDENTS ACCEPTED IN THIS PROGRAM WILL HAVE REDUCED TIME OF STUDIES BY ONE ACADEMIC YEAR.

 Faculty contact, email and complete phone number:
 Dr. Theodora Leventouri, leventou@fau.edu
 561-297-2695

 Consult and list departments that might be affected by the change and attach comments.
 No Department will be affected by the proposed program.

Approved by:

Department Chair: _____

College Curriculum Chair: _____

College Dean: _____

UGPC Chair: _____

Graduate College Dean: _____

UFS President: _____

Provost: _____

Date:
1/19/2016

Email this form and syllabus to UGPC@fau.edu one week before the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website prior to the meeting.



Dr. Th. Leventouri
Professor of Physics
Director, Medical Physics Program
Department of Physics
Director, Center for Biomedical and Materials Physics

777 Glades Road
Boca Raton, FL 33431
Tel: 561.297.2695
Fax: 561.297.2662
leventou@fau.edu
www.physics.fau.edu

Curriculum Committee PSMMP program

Chair: Dr. Th. Leventouri

Members: Dr. S. Pella DABR, Z. Ouhib DABR, C. Shang DABR, Dr. G. Kalantzis

Proposed Combined NEW BS/PSMMP program

Committee Chair: Dr. Th. Leventouri

Members: Dr. A. Lau, Dr. G. Kalantzis, Dr. C. Beetle, Dr. K. Sorge

Combined Bachelor of Science/Professional Science Master with Major in Physics

This accelerated, five-year program leads to both a Bachelor of Science (B.S.) and a Professional Science Master (PSM) degree. Students apply to the B.S./PSM program in the first semester of their junior year and begin taking graduate courses after completion of their junior year (summer prior to senior year); those courses would apply to both the B.S. and PSM degrees. The combined degree program is 161 credits, 120 for the undergraduate degree and 41 for the graduate degree. Up to 12 credits of graduate work taken in the senior year can be counted toward both the undergraduate and graduate degrees. Students must maintain a minimum GPA of 3.0 in upper-division and graduate courses. Because of the accelerated nature of the program, students should take the GRE by the end of their first semester in their junior year.

Prerequisite Coursework for Transfer Students

Students transferring to Florida Atlantic University must complete both lower-division requirements (including the requirements of the Intellectual Foundations Program) and requirements for the college and major. Lower-division requirements may be completed through the A.A. degree from any Florida public college, university or community college or through equivalent coursework at another regionally accredited institution. Before transferring and to ensure timely progress toward the baccalaureate degree, students must also complete the prerequisite courses for their major as outlined in the *Transfer Student Manual*.

All courses not approved by the Florida Statewide Course Numbering System that will be used to satisfy requirements will be evaluated individually on the basis of content and will require a catalog course description and a copy of the syllabus for assessment.

Requirements and Eligibility

In addition to the University and Charles E. Schmidt College of Science requirements, students seeking a B.S./PSM degree in Medical Physics must complete the following courses.

Undergraduate Physics Core

All students seeking a major or minor degree in physics are required to complete the same introductory physics and mathematics sequences as well as an introductory natural science sequence outside the department. Currently, students may opt for introductory sequences in either biology or chemistry, but the undergraduate advising committee may approve alternative sequences, even retroactively, on a case-by-case basis.

To meet University degree requirements, students in any physics program must also complete 32 additional lower-division general education credits in courses outside the Charles E. Schmidt College of Science.

Bachelor of Science with Major in Physics

(Minimum of 120 credits required)

The Bachelor of Science (B.S.) degree program is the flagship of the department's undergraduate curriculum. It is designed to help students prepare for careers in physics, related sciences or closely related fields such as engineering. The emphasis is on analytical methods in contemporary theoretical and experimental physics. Students considering graduate work in physics or related areas are strongly encouraged to complete this program.

Prerequisite Coursework for Transfer Students

Students transferring to Florida Atlantic University must complete both lower-division requirements (including the requirements of the Intellectual Foundations Program) and requirements for the college and major. Lower-division requirements may be completed through the A.A. degree from any Florida public college, university or community college or through equivalent coursework at another regionally accredited institution. Before transferring and to ensure timely progress toward the baccalaureate degree, students must also complete the prerequisite courses for their major as outlined in the [Transfer Student Manual](#).

All courses not approved by the Florida Statewide Course Numbering System that will be used to satisfy requirements will be evaluated individually on the basis of content and will require a catalog course description and a copy of the syllabus for assessment.

In addition to the undergraduate physics core described above, B.S. candidates must complete the following required courses:

Upper Division Physics Courses		
Survey of Modern Physics	PHY 3101C	4
Classical Mechanics	PHY 3221	4
Electromagnetism 1	PHY 3323	4
Electromagnetism 2	PHY 4324	3
Thermal and Statistical Physics	PHY 4523	4
Quantum Mechanics 1	PHY 4604	4
Physical Electronics	PHY 3722C	4
Undergraduate Laboratory I	PHY 4802L	1
Undergraduate Laboratory II	PHY 4803L	1
Third-Year Physics Seminar	PHY 3930	1
Mathematical Physics	PHZ 4113	4
Computational Physics	PHZ 3151C	4
Approved Electives		2x3
Total		44

Substitutions for required courses are allowed with prior approval from the department's undergraduate advising committee.

Professional Science Master with Major in Medical Physics

Degree Requirements starting fall 2016

Core Courses (15 credits)		
Radiation Physics	RAT 6686	3
Introduction to Radiation Biology	BSC 6834	3
Radiation Therapy Physics	RAT 6628	3
Medical Imaging Physics	RAT 6616	3
Introduction to Nuclear Physics	RAT 6687	3
Additional Required Courses (23 credits)		
Advanced Photon Beam Radiation Therapy	RAT 6629	3
Radiation Therapy: Clinical Practicum and Shadowing	RAT 6947	3
Radiation Protection and Safety	RAT 6888	3
Shielding and Commissioning	RAT 6376	3

Seminar in Medical Physics	RAT 6932	1
Graduate Research	PHY 6918	3
Master's Thesis	RAT 6975	7
Elective Course (3 credits) Choose one course from the following with advisor's approval		
Biostatistics	STA 5195	3
Computational Physics	PHZ 5156	3
Introduction to Dynamical Systems and Chaos 1	MAP 6211	3
Bioinformatics: Bioengineering Perspectives	BME 6762	3
Advanced Cell Physiology	PCB 6207	3
Special Topics (including Cell Structure and Function)	BSC 6936	3
Introduction to Biophysics	PHZ 5715	3
Total		41

Starting first semester of their Junior year students can take the prereq course PCB 3703 Human morphology and Function 3 credits, BSC 6834 Radiation Biology 3 c, RAT 6932 Seminar in the summer 1 c, RAT 6376 Shielding and Commissioning 3 c in summer. Senior year they can take, RAT 6628 Radiation Physics 3 c, RAT 6616 Medical Imaging Physics 3 credits, RAT 6687 Nuclear Medical Physics 3 c, one 5000 elective 3 credits, PHY 6918 Graduate Research 3 credits Total of 22 credits out of the 41 of the PSMMP program plus 3 credits preq.

A sample of PSMMP Academic plan follows:

5-year Sample Academic Plan BS/PSMMP

YEAR 1			YEAR 2		
FALL			FALL		
MAC 2311	Calculus 1	4	MAC 2313	Calculus 3	4
PHY 1090	1st Year Seminar	1	CHM 2045	Chemistry 1	3
			CHM2045L	Chem 1 Lab	1
			PHY 2049	Gen Phys 2	4
			PHY 2049	Gen Phys 2 Lab	1
SPRING			SPRING		
MAC 2312	Calculus 2	4	MAP 3305	Engin Math 1	3
PHY 2048	General Physics 1	4	CHM 2046	Chemistry 2	3
PHY 2048L	Gen Phys 1 Lab	1	CHM2046L	Chem 2 Lab	1
			PHY 3101C	Modern Physics	4
SUMMER					

Students interested in the BS/PSMMP combined program will be advised to take the Biology route in year 2 instead of the Chemistry route shown in this 5-year sample academic plan.

YEAR 3			YEAR 4		
FALL			FALL		
PHY 3321	Classical Mech	4	PHZ 3113	Math Physics	4
PHY 3323	Electromagn 1	4	PHY 4822L	Physics Lab 1	1
PHZ 3151C	Computational	4	RAT 6686	Radiation Physics	3
PCB 3703	Human Morph	3			
SPRING			SPRING		
PHY 4324	Electromagn 2	3		Thermal & Statistical	4
PHY 4604	Quantum 1 Physical	4	PHY 4523		
PHY 3722C	Electronics	4	PHY 4823L	Physics Lab 2	1
PHY 3930	3rd Year Seminar Intro to Radiation	1	RAT 6628	Radiation Therapy	3
BSC 6834	Biology	3			
SUMMER			SUMMER		
RAT 6376	Shielding and Commissioning	3	PHY 6918	Grad Research	3
			RAT 6947	Clinical Practicum	3
			RAT 6932	Sem in Med Phys	1
YEAR 5					
FALL					
RAT 6888	Radiation Protection & Safety	3			
RAT 6629	Advanced Photon Beam	3			
RAT 6687	Nuclear Medical Physics	3			
	Elective	3			
SPRING					
RAT 6616	Medical Imaging	3			
RAT 6975	Thesis Research	7			
	Elective	3			
SUMMER					