

Program Change Request

Date Submitted: 03/02/18 4:18 pm

Viewing: BS-PHYS-2/MAS-HP-2 : Bachelor of Science in Physics/Master of Health Physics

Last approved: 11/29/17 11:13 am

Last edit: 03/08/18 9:12 am

Changes proposed by: zsulliv1

Requestor	Name	Sally Laurent-Muehleisen Sarah Pariseau	E-mail	sparisea@iit.edu
Origination Date	2018-3-2	2017-11-29		
Is this an interdisciplinary program?	No			
Academic Unit	Physics		College	
College of Science				
Program Title	Bachelor of Science in Physics/Master of Health Physics			
Effective Academic Year	2018 - 2019	Effective Term	Fall 2018	
Academic Level	Undergraduate			
Program Type	Co-Terminal Degree			
Degree Type	Bachelor of Science/Professional Master's(BSMAS)			
CIP Code	40.0801 - Physics, General.			
Is there more than one Academic Unit proposer?	No			
Second CIP	51.2205 - Health/Medical Physics.			
Program Code	BS-PHYS-2/MAS-HP-2			
Program Attribute				
Total Program Credit Hours	148	157		
Rationale for change in program credit hours.	As the first co-terminal program proposed it had not yet been determined that there could be 9 credit hours overlapping between degrees. The Physics Department has identified several graduate level courses that should be eligible to apply to a BS degree that are requirements or electives for the Masters in Health Physics. Hence, we are requesting that this co-terminal program be brought into alignment with the others and allow the BS degree to count up to 9 credit hour out of the classes listed below.			

In Workflow

1. **PHYS Chair**
2. **Academic Affairs**
3. **SI Dean**
4. **Undergraduate Studies Committee Chair**
5. Undergraduate Studies Committee Vote
6. Undergraduate Studies Committee Chair
7. Graduate Studies Committee Chair
8. Graduate Studies Committee Vote
9. Graduate Studies Committee Chair
10. Faculty Council Chair

Approval Path

1. 03/07/18 1:10 pm Grant Bunker (bunker): Approved for PHYS Chair
2. 03/08/18 8:45 am Sarah Pariseau (sparisea): Rollback to PHYS Chair for Academic Affairs
3. 03/08/18 8:56 am Grant Bunker (bunker): Approved for PHYS Chair
4. 03/08/18 9:13 am Sarah Pariseau (sparisea): Approved for Academic Affairs
5. 03/19/18 3:26 pm Xiaofan Li (lix): Approved for SI Dean

History

1. Nov 29, 2017 by Sarah Pariseau (sparisea)

Program Narrative and Justification

2. Nov 29, 2017 by Sarah Pariseau (sparisea)
3. Nov 29, 2017 by Sarah Pariseau (sparisea)

Narrative description of how the institution determined the need for the program. For example, describe what need this program will address and how the institution became aware of that need. If the program is replacing a current program(s), identify the current program(s) that is being replaced by the new program(s) and provide details describing the benefits of the new program(s). If the program will be offered in connection with, or in response to, an initiative by a governmental entity, provide details of that initiative.

Narrative description of how the program was designed to meet local market needs, or for an online program, regional or national market needs. For example, indicate if Bureau of Labor Statistics data or State labor data systems information was used, and/or if State, regional, or local workforce agencies were consulted. Include how the course content, program length, academic level, admission requirements, and prerequisites were decided; including information received from potential employers about course content; and information regarding the target students and employers.

Narrative description of any wage analysis the institution may have performed, including any consideration of Bureau of Labor Statistics wage data related to the new program.

Narrative description of how the program was reviewed or approved by, or developed in conjunction with, one or more of the following: a) business advisory committees; b) program integrity boards; c) public or private oversight or regulatory agencies (not including the state licensing/authorization agency and accrediting agency); and d) businesses that would likely employ graduates of the program. For example, describe the steps taken to develop the program, identify when and with whom discussions were held, provide relevant details of any proposals or correspondence generated, and/or describe any process used to evaluate the program.

What are the enrollment estimates?

Year 1	Year 2	Year 3
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Attach Additional
Program
Justification
Document(s)

Academic Information

Advising

Since quality advising is a key component of good retention, graduation, and career placement, how will students be mentored? What student professional organizations will be formed? How will the department work with the Career Services office to develop industry connections?

Program Resources

Which program
resources are
necessary to offer
this program?

Proposed Bulletin Entry

Required Courses

Code	Title	Credit Hours
Physics Requirements (56)		
PHYS 100	Intro to the Profession	2
PHYS 123	General Physics I: Mechanics	4
PHYS 221	General Physics II: Electricity and Magnetism	4
PHYS 223	General Physics III	4
PHYS 240	Computational Science	3
PHYS 300	Instrumentation Laboratory	4
PHYS 301	Mathematical Methods of Physics	3
PHYS 304	Thermodynamics and Statistical Physics	3
PHYS 308	Classical Mechanics I	3
PHYS 309	Classical Mechanics II	3
PHYS 348	Modern Physics for Scientists and Engineers	3
PHYS 405	Fundamentals of Quantum Theory I	3
PHYS 406	Fundamentals of Quantum Theory II	3
PHYS 413	Electromagnetism I	3
PHYS 414	Electromagnetism II	3
PHYS 427	Advanced Physics Laboratory I	3
PHYS 440	Computational Physics	3
PHYS 485	Physics Colloquium	1
PHYS 485	Physics Colloquium	1
Health Physics Courses (31)		
PHYS 550	Instrumentation for Health Physics	3
PHYS 561	Radiation Biophysics	3
PHYS 571	Radiation Physics	3
PHYS 572	Introduction to Health Physics	3
PHYS 573	Standards, Statutes and Regulations	3
PHYS 575	Case Studies in Health Physics	3
PHYS 576	Radiation Dosimetry	3
Select a minimum of two courses from the following: 4		
PHYS 566	Environmental Health Physics	2
PHYS 574	Introduction to the Nuclear Fuel Cycle	2
PHYS 577	Operational Health Physics	2
PHYS 578	Medical Health Physics	2
Select a minimum of two courses from the following: 6		
MATH 525	Statistical Models and Methods	3
or CHEM 513	Statistics for Analytical Chemists	
SCI 511	Project Management	3
SCI 522	Public Engagement for Scientists	3
Mathematics Requirements (18)		
MATH 151	Calculus I	5
MATH 152	Calculus II	5
MATH 251	Multivariate and Vector Calculus	4
MATH 252	Introduction to Differential Equations	4
Mathematics Elective (3)		
Select three credit hours 1 3		
Chemistry Requirements (8)		
CHEM 124	Principles of Chemistry I with Laboratory	4
CHEM 125	Principles of Chemistry II with Laboratory	4
Computer Science Requirement (2)		

Code	Title	Credit Hours
CS 105	Introduction to Computer Programming	2
or CS 115	Object-Oriented Programming I	
Humanities and Social Science Requirements		(21)
See IIT Core Curriculum, sections B and C		21
Interprofessional Projects (IPRO)		(6)
See IIT Core Curriculum, section E		6
Free Electives		(3)
Select 12 credit hours		12
Select three credit hours 1		3
Total Credit Hours		148

1 Students may choose to share [MATH 525](#) or [CHEM 513](#) and apply it to their mathematics elective requirement instead of applying a graduate course as a third free elective.

Sample
Curriculum/Program
Requirements

Bachelor of Science in Physics/Master of Health Physics Curriculum

Semester 1	Credit Hours	Semester 2	Credit Hours	Year 1
PHYS 100	2	PHYS 221	4	
PHYS 123	4	CHEM 125	4	
CHEM 124	4	MATH 152	5	
MATH 151	5	CS 105 or 115	2	
		Humanities or Social Sciences Elective	3	
	15		16	
				Year 2
Semester 1	Credit Hours	Semester 2	Credit Hours	Year 2
PHYS 223	4	PHYS 240	3	
MATH 251	4	PHYS 348	3	
CS 105 or 115	2	MATH 252	4	
Social Sciences Elective	3	Social Sciences Elective (300+)	3	
Humanities or Social Sciences Elective	3	Social Sciences Elective (300+)	3	
Humanities 200-level Course	3			
	16		16	
				Year 3
Semester 1	Credit Hours	Semester 2	Credit Hours	Year 3
PHYS 300	4	PHYS 304	3	
PHYS 301	3	PHYS 309	3	
PHYS 308	3	PHYS 406	3	
PHYS 405	3	IPRO Elective I	3	
Humanities Elective (300+)	3	Free Elective	3	
	16		12	
				Year 4
Semester 1	Credit Hours	Semester 2	Credit Hours	Year 4
PHYS 413	3	PHYS 414	3	
PHYS 427	3	PHYS 440	3	
PHYS 485	1	PHYS 485	1	
PHYS 571	3	Math Elective, 300-level or above	3	
PHYS 576	3	PHYS 566, 574, 577, or 578	2	
Free Elective	3	PHYS 572	3	
		Graduate Professional Course	3	
	13		15	
				Year 5
Semester 1	Credit Hours	Semester 2	Credit Hours	Year 5
PHYS 550	3	PHYS 566, 574, 577, or 578	2	

PHYS 561	3	PHYS 575	3
PHYS 573	3	Graduate Professional Course	3
IPro Elective II	3	Humanities Elective (300+)	3
Free Elective	3	Free Elective1	3
MATH Elective, 300-level and above1	3		
	15		14

Total Credit Hours: 148

1 Students may choose to share [MATH 525](#) or [CHEM 513](#) and apply it to their mathematics elective requirement instead of applying a graduate course as a third free elective.

Specialization
Requirements

Master of Health Physics with Specialization in Radiochemistry

Course List		
Code	Title	Credit Hours
Required Courses		(24)
PHYS 550	Instrumentation for Health Physics	3
PHYS 561	Radiation Biophysics	3
PHYS 571	Radiation Physics	3
PHYS 573	Standards, Statutes and Regulations	3
PHYS 575	Case Studies in Health Physics	3
PHYS 580	Introduction to Radiochemistry	3
PHYS 581	Radiochemistry Laboratory	3
PHYS 582	Applications of Radiochemistry	3
Health Physics Elective		(2-3)
Select a minimum of one course from the following:		2-3
CHEM 509	Physical Methods of Characterization	3
or PHYS 539	Physical Methods of Characterization	
CHEM 512	Spectroscopic Methods II	2
PHYS 574	Introduction to the Nuclear Fuel Cycle	2
Non-Radiochemistry Electives		(6)
Select a minimum of two courses from the following:		6
CHEM 513	Statistics for Analytical Chemists	3
SCI 511	Project Management	3
or INTM 511	Industrial Leadership	
SCI 522	Public Engagement for Scientists	3

Minimum degree credits required: 32

Program Outcomes and Assessment Process

What are the learning goals for this program?

In what semesters will the data be collected to assess this learning goal, and by whom?

Provide the name of the rubric that will be used to assess the extent to which students are achieving this learning goal.

How often and by whom will the data be analyzed? What benchmarks or targets will be used to interpret your results?

Briefly describe the process that will be used to share the results with faculty and use these to motivate program improvement.

Attach Additional Assessment Document(s)

Co-Terminal Degree Requirements

Undergraduate Degree Requirements

Minimum credit hours **148** ~~157~~

Specialization required? No

Minor required? No

Required minimum GPA for admission 3.25

Number of shared credit hours allowed. **9** ~~0~~

Which courses may be shared?

PHYS 561 Radiation Biophysics, PHYS 571 Radiation Physics, PHYS 572 Introduction to Health Physics (all may count as a free elective in BS)
MATH 525 Statistical Models & Methods (counts for 300+ level math elective in BS) or CHEM 513 Statistics for Analytical Chemists (counts for 300+ level math elective in BS)

Proposed General Curriculum

List Major Course Requirements

List Mathematics Requirements

List Science Requirements

List Computer Science Requirements

List Humanities and Social Sciences Requirements

List Interprofessional Project (IPRO) Requirements

List Technical Elective Course Options

List Free Elective Credit Hours (if applicable) 12

Semester-by-semester plan of study for the degree program

Professional Master's Degree

Minimum credit hours **148** ~~157~~

400-level credit hour limit? Yes How many hours allowed? 6

500-600-level credit hour limits: Minimum: 25 Maximum: **999**

700-level credit hour maximum: **6**

Project course required? No

Comprehensive exam required? Yes

Seminar/Colloquium required? Not Required

Required Specialization? Optional

Specialization credit hour requirement:

Notes about the specialization/concentration requirement

Is there a general track for this degree?

Yes

Proposed General Curriculum

List Core Course Requirements

Specialization

Report to Faculty
Council

Reviewer
Comments

Sarah Pariseau (sparisea) (03/08/18 8:45 am): Rollback: Rolled back per request of G.Bunker
Sarah Pariseau (sparisea) (03/08/18 9:13 am): Edited course requirements list and sample curriculum to reflect the three shared courses.