

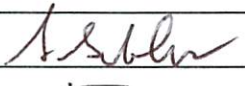
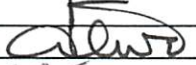
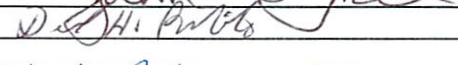
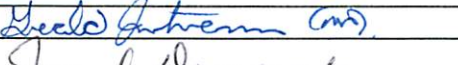
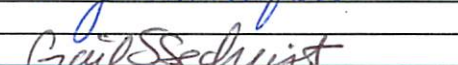
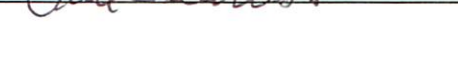
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LSC Use Only No:	LSC Action-Date:	UWUCC USE Only No.	UWUCC Action-Date:	Senate Action Date:
		08-74e.	AP-11/17/09	App 1/26/10

Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

Contact Person Devki Talwar/Stanley Sobolewski	Email Address talwar@iup.edu/sobolews@iup.edu
Proposing Department/Unit Physics	Phone 7-4590 or 7-2370

Check all appropriate lines and complete information as requested. Use a separate cover sheet for each course proposal and for each program proposal.

1. Course Proposals (check all that apply) ☐ New Course ☐ Course Revision ☐ Course Prefix Change ☐ Course Number and/or Title Change ☐ Course Deletion ☐ Catalog Description Change		
Current Course prefix, number and full title		Proposed course prefix, number and full title, if changing
2. Additional Course Designations: check if appropriate ☒ This course is also proposed as a Liberal Studies Course. ☐ This course is also proposed as an Honors College Course. Other: (e.g., Women's Studies, Pan-African)		
☒ X Catalog Description Change ☒ X Program Revision		
3. Program Proposals ☐ New Degree Program ☐ New Minor Program ☐ Program Title Change ☐ New Track ☐ Other		
Current program name BS in Physics Education		Proposed program name, if changing
4. Approvals		
Department Curriculum Committee Chair(s)		Date 4/6/09
Department Chair(s)		Date 4/6/09
College Curriculum Committee Chair		Date 04/06/09
College Dean		Date 04/06/09
Director of Liberal Studies *		Date 12/18/09
Director of Honors College *		
Provost *		Date 10/16/09
Additional signatures as appropriate: (include title)		Date 10-9-09
		Date 10-9-09
UWUCC Co-Chairs		Date 11-17-09

Received

APR 06 2009

Liberal Studies

Part I. Curriculum Proposal Cover Sheet (see above)

Part II. Description of Curriculum Change

Note: The revised catalog description applies to the Department's "**Bachelor of Science in Education – Physics**" program in the appropriate form. This includes both the description about the program and the list of courses and credits for the revised program.

Bachelors of Science in Education-Physics (*)

Liberal Studies: As outlined in Liberal Studies section with the following specifications: 51

Mathematics: MATH 125

Natural Science: CHEM 111-112

Social Science: PSYC 101

Liberal Studies Electives: 6cr, MATH 241, GEOS 101 or 103 or 105, no courses with PHYS prefix

College

Preprofessional Education Sequence: 31

COMM 103 Digital Instructional Technology 3cr

EDSP 102 Educational Psychology 3cr

Professional Education Sequence:

EDEX 301 Inclusive Secondary Settings 2cr

EDEX 323 Instruction of Eng Lang. Learners Special Needs 2cr

EDSP 477 Assessment of Student Learning 3cr

EDUC 242 Pre-Student Teaching Clinical Experience I 1cr

EDUC 342 Pre-Student Teaching Clinical Experience II 1cr

EDUC 441 Student Teaching 12cr

EDUC 442 School Law 1cr

EDUC 451 Teaching Science in the Secondary School 3cr

Major: 33

Required Courses:

PHYS 131 Physics I-C Lecture 3cr

PHYS 132 Physics II-C Lecture 3cr

PHYS 141 Physics I-C Lab 1cr

PHYS 142 Physics II-C Lab 1cr

PHYS 231 Electronics 4cr

PHYS 331 Modern Physics 3cr

PHYS 342 Thermal and Statistical Physics 3cr

PHYS 345 Optics 3cr

PHYS 350 Intermediate Experimental Physics I 3cr

PHYS 441 Analytical Mechanics 3cr

PHYS 451 Electricity and Magnetism 3cr

Controlled Elective

Physics Elective – Major's physics course with a course number 200 or greater 3cr

Other requirements

BIOL 111 Principles of Biology I 4cr 10

MATH 126 Calculus II Physics, Chem, Math 3cr

MATH 225 Calculus III Physics, Chem, Math 3cr

(#) Total Degree Requirements: 125

(*) See requirements leading to teacher certification, titled "3-Step Process for Teacher Education," in the College of Education and Educational Technology section of this catalog.

(#) See advisory paragraph "Timely Completion of Degree Requirements" in the section on Requirements for Graduation.

2. Summary of changes:

We have made the following changes in the "Bachelor of Science in Education – Physics" program: (i) Liberal studies credits are changed from 55 to 51 due to changes in the credits of MATH 125 and Liberal studies Electives, (ii) College required course credits have been changed from 29 to 31 due to the addition of EDEX 323, (iii) Major requirements are changed from 32 to 33 due to new PHYS 441 and 451 courses replacing PHYS 222, 223 and PHYS 322, respectively (iv) Controlled elective credits are changed from 2 to 3 (v) Other credit requirements are changed from 4 to 10 (adding BIOL 111 and MATH 225 Calculus III). We have deleted the courses PHYS 222 (2cr), PHYS 223 (2cr), PHYS 322 (2cr), PHYS 323 (2cr) and added 2 new courses i.e., PHYS 441 (3cr), and PHYS 451 (3cr).

2 (a) Comparison of current and proposed program.

Bachelor of Science in Education – Physics

Old Program

Bachelors of Science in Education-Physics(*)	
LIBERAL STUDIES: As outlined in Liberal Studies section with the following specifications	55
MATH 123	
Natural Science: CHEM 111-112	
Social Science: PSYC 101	
Liberal Studies Electives: 9cr	
MATH 241, BIOL 103 or 114 or 115, GEOS 111 or 113, no courses with PHYS prefix	29
College	
Preprofessional Education Sequence:	
COMM 103 Digital Instructional Technology	3cr
EDSP 102 Educational Psychology	3cr
Professional Education Sequence:	
EDEX 301 Inclusive Secondary Settings	2cr
EDSP 477 Assessment of Student Learning	3cr
EDUC 242 Pre-Student Teach Clinical Exp I	1cr
EDUC 342 Pre-Student Teach Clinical Exp II	1cr
EDUC 441 Student Teaching	12cr
EDUC 442 School Law	1cr
EDUC 451 Teaching Science in the Sec. School	3cr
Major:	
Required Courses:	32
PHYS 131 Physics I-C Lecture	3cr
PHYS 132 Physics II-C Lecture	3cr
PHYS 141 Physics I-C Lab	1cr
PHYS 142 Physics II-C Lab	1cr
PHYS 222 Mechanics I	2cr
PHYS 223 Mechanics II	2cr
PHYS 231 Electronics	4cr
PHYS 322 Electricity and Magnetism I	2cr
PHYS 331 Modern Physics	3cr
PHYS 342 Thermal and Statistical Physics	3cr
PHYS 345 Optics	3cr
PHYS 350 Intermediate Experimental Physics I	3cr
Controlled Electives:	
Physics Elective	2cr
Other requirements: Additional Math Course:	
MATH 124 Calculus II for Physics, Chemistry, and Mathematics	4cr 4

(#) Total Degree Requirements 120
 (*) See requirements leading to teacher certification, titled "3-Step Process for Teacher Education," in the College of Education and Educational Technology section of this catalog.
 (#) See advisory paragraph "Timely Completion of Degree Requirements" in the section on Requirements for Graduation.

New Program

Bachelors of Science in Education-Physics(*)		51
LIBERAL STUDIES: As outlined in Liberal Studies section with the following specifications:		
MATH 125		
Natural Science: CHEM 111-112		
Social Science: PSYC 101		
Liberal Studies Electives: 6cr		
MATH 241, GEOS 101 or 103 or 105, no courses with PHYS prefix		31
College		
Preprofessional Education Sequence:		
COMM 103 Digital Instructional Technology	3cr	
EDSP 102 Educational Psychology	3cr	
Professional Education Sequence:		
EDEX 301 Inclusive Secondary Settings	2cr	
EDEX 323 Inst of Eng Lang. Learners Special Needs	2cr	
EDSP 477 Assessment of Student Learning	3cr	
EDUC 242 Pre-Student Teach Clinical Experience I	1cr	
EDUC 342 Pre-Student Teach Clinical Experience II	1cr	
EDUC 441 Student Teaching	12cr	
EDUC 442 School Law	1cr	
EDUC 451 Teaching Science in the Sec. School	3cr	
Major:		
Required Courses:		33
PHYS 131 Physics I-C Lecture	3cr	
PHYS 132 Physics II-C Lecture	3cr	
PHYS 141 Physics I-C Lab	1cr	
PHYS 142 Physics II-C Lab	1cr	
PHYS 231 Electronics	4cr	
PHYS 331 Modern Physics	3cr	
PHYS 342 Thermal and Statistical Physics	3cr	
PHYS 345 Optics	3cr	
PHYS 350 Intermediate Experimental Physics I	3cr	
PHYS 441 Classical Mechanics	3cr	
PHYS 451 Electricity and Magnetism	3cr	

Controlled Elective
 Physics Elective – major's course 200 or higher 3cr
Other requirements
 BIOL 111 Principles of Biology I 4cr 10
 MATH 126 Calculus II Physics, Chemistry, and Mathematics 3cr
 MATH 225 Calculus III Physics, Chemistry, and Mathematics 3cr
 (#) Total Degree Requirements 125
 (*) See requirements leading to teacher certification, titled "3-Step Process for Teacher Education," in the College of Education and Educational Technology section of this catalog.
 (#) See advisory paragraph "Timely Completion of Degree Requirements" in the section on Requirements for Graduation.

2(b) List of all associated course changes

Course Proposals Associated with Program Revisions

New #	Old #	Title	New Format	Old Format	Revision
PHYS 441	N/A	Classical Mechanics	3c-01-3cr	N/A	New Course
PHYS 451	N/A	Electricity & Magnetism	3c-01-3cr	N/A	New Course
BIOL 111		Principles of Biology I	3cr-3l-3cr		Added course
	PHYS 222	Mechanics I		2c-01-2cr	Deleted
	PHYS 223	Mechanics II		2c-01-2cr	Deleted
	PHYS 322	Electricity & Magnetism I		2c-01-2cr	Deleted
	PHYS 323	Electricity & Magnetism II		2c-01-2cr	Deleted

3. Need for the changes

From the physics departments' student assessment plan, it has become clear that the students do not make broad connections between the various sub-disciplines in our physics programs. Therefore, the department decided to restructure its Bachelor of Science in Education - Physics degree program. As a consequence of the restructuring of the Physics Departments course offerings, PHYS 222 Mechanics I (2cr) and PHYS 223 Mechanics II (2cr) are being combined into one new course PHYS 441 Classical Mechanics (3cr) and the course contents of PHYS 322 Electricity and Magnetism I (2cr) and PHYS 323 Electricity and Magnetism II (2cr) are being combined into PHYS 451 Electricity and Magnetism.

3 (a) Rationale/Justification

PHYS 441/541: Classical Mechanics

The proposed course will replace the existing PHYS 222 and PHYS 223 – a two semester sequence for a total of four credit hours which covers intermediate and advance levels of mechanics. The sequential course offerings in both semesters are not currently suitable or required for all the physics department programs and as a result it is impossible to insure adequate enrollment in both courses every year. The new dual level 3 credit PHYS 441/541 will be a required course for all physics majors (including physics education) but may be attended by anyone who meets the prerequisites. It will cover the classical mechanics of particles and systems, including Newtonian mechanics, oscillations, gravitation, the calculus of variations, Lagrangian mechanics, central force systems, non-inertial reference frames and rigid bodies.

PHYS 451/551: Electricity and Magnetism

The proposed course will replace the existing PHYS 322 and PHYS 323 – a two semester sequence for a total of four credit hours which covers Electricity and Magnetism at advances levels. The sequential course offerings in both semesters are not currently suitable or required for all the physics department programs and as a result it is impossible to insure adequate enrollment in both courses every year. The new dual level 3 credit PHYS 451/551 will be a required course for all physics majors (including physics education) and may be attended by anyone who meets the prerequisites. It will cover intermediate and advanced level of Electricity and Magnetism with topics including Electrostatic, Electric Fields in Matter, Magnetostatics, Magnetic Fields in Matter, Electrodynamics, Electromagnetic Waves, Potential and Fields.

Part III. Implementation. Provide answers to the following questions:

1. How will the proposed revision affect students already in the existing program?

For current students, the physics department will allow the new courses to count in lieu of the ones in the current catalog.

2. Are faculty resources adequate? If you are not requesting or have not been authorized to hire additional faculty, demonstrate how this course will fit into the schedule(s) of current faculty.

The change in the Mathematics sequence has been approved, and any impact on faculty resources has been examined by the Mathematics Department. The physics department consolidation will result in fewer courses necessary for the degree. This, in combination with a course, rotation sequence, will result in a decrease in required resources.

3. Are other resources adequate? (Space, equipment, supplies, travel funds)

Yes.

4. Do you expect an increase or decrease in the number of students as a result of these revisions?

If so, how will the department adjust?

There will be no change in the number of students.

Part IV. Periodic Assessment

Departments are responsible for an on-going review of curriculum. Include information about the department's plan for program evaluation:

The assessment of the proposed changes describe in this proposal will be performed as part of the Physics Departments' overall curriculum assessment policies.

The Secondary Science Education programs (Biology, Chemistry, Earth and Space Science, and Physics) are all evaluated through the National Council for the Accreditation of Teacher Education (NCATE) and the National Science teachers Association (NSTA). Criteria are identified in the document entitled Standards for Science teacher Preparation (2003). These can be found online at <http://www.ncate.org/ProgramStandards/NSTA/NSTASTandards.doc>. Student input is collected through the electronic portfolio and teacher work sample submitted at the end of the student teaching experience, and through discussions with candidates at the final Professional Day meeting each semester.

Specify the frequency of the evaluations.

The program is evaluated every three years by PDE and every five years by NCATE. The secondary science education programs submitted a new NCATE accreditation application in fall 2008 and are awaiting program approval. We are currently approved by PDE.

Part V. Course Proposals

Two new courses are proposed by the physics department for this program change.

Part VI. Letters of Support or Acknowledgement

e-mail from chair of Biology department, acknowledging the addition of BIOL 111 to the PYED program.

Stan

Please consider this message a positive response to your request. We'll be happy to have the Physics Ed majors in BIOL 111. Thanks, CL.

Dr. Carl S. Luciano
Professor and Chair
Department of Biology
Indiana University of Pennsylvania

----- Original Message -----

From: "Stanley Sobolewski" <sobolews@iup.edu>

To: "Luciano, Carl S" <Carl.Luciano@iup.edu>

Sent: Friday 27 October 2006 2:52 PM

Subject: Change in Physics Education Major BIO 103 to BIO 111

> Dr. Luciano:

>

> The Physics Department is changing the program requirements for the

> Physics

> Education Program. We are removing BIO 103 and replacing it with BIO 111.

> The number of students is very small, 3 or 4 per year, so neither course

> should be affected very much. The intent of this e-mail is to let you

> know

> of the change - and, if required, your permission for the change. I

> believe

> that Holly Travis had discussed this with Barkley Butler - who I

> understand

> is the "lead instructor" for BIO 111. If there are any questions or

> problems, feel free to ask me or Ken Hershman, Physics Department Chair.

>

> Stan Sobolewski

> Associate Professor of Physics

> Coordinator of Physics Education.

Bachelor of Science in Education–Middle Level Program – Math Concentration (*)

Middle Level Education/Mathematics Concentration

Special Ed. 120/6 In Class Hours 241/251 Contact Hours 8.5/19.5 In Class Hours Needed 19/29 Contact Hours Needed
E.L.L. 36/8 In Class Hours 73/7 Contact Hour 8.5/6.5 In Class Hours Needed 17/13 Contact Hours Needed

Liberal Studies: As outlined in Liberal Studies section with the following specifications: Humanities-History: fulfilled by required courses in major Mathematics: MATH 152/MATH 157 (recommended) 1 1/2 Natural Science: BIOL 103, SCI 105 & GEOS 101-102 (recommended) Social Science: GEOG 104, ECON 121 & PLSC 101/111 Liberal Studies Electives: 0cr			52
College:			No 28
Preprofessional Education Sequence:			Contact Hours
COMM 103	Digital Instructional Technology (EDEX 103)	3cr	(32 SPED / 4 ELL)
EDSP 102	Educational Psychology	3cr	60 SPED / 24 ELL
Professional Education Sequence:			
EDEX 301	Education of Students with Disabilities in Inclusive Secondary Settings	2cr	60 SPED / 4 ELL
EDSP 477	Assessment of Student Learning: Design and Interpretation of Educational Measures	3cr	36 SPED / 24 ELL
EDUC 242	Pre-Student Teaching Clinical Experience I	1cr	
EDUC 342	Pre-Student Teaching Clinical Experience II	1cr	60 SPED
EDUC 441	Student Teaching	10 1/2 cr	
EDUC 442	School Law	1cr	8 SPED / 8 ELL
EDUC 499	Teaching in a Multicultural Setting	2cr	
Major:			21
Required Middle Level Courses:			
MIDL 112	Instructional Theory and Planning	3cr	6 6
MIDL 215	Adolescent Development/Classroom Management	3cr	11 SPED / 7 ELL
MIDL 221	Literature in the Middle Grades 241/73	3cr	6 SPED / 6 ELL
MIDL 222	Reading Instruction and assessment	3cr	6 SPED / 2 ELL*
MIDL 311	Social Studies Instruction and Assessment	3cr	12 12
MIDL 312	Science Instruction and Assessment 251/77	3cr	4 SPED / 2 ELL*
MIDL 425	Language Arts Instruction and Assessment	3cr	6 4
Math Distribution Requirements:			24
MATH 153	Elements of Algebra	3cr	
MATH 317	Probability and Statistics	3cr	
MATH 413	Methods of Teaching Mathematics in Middle level	3cr	
MATH 420	Patterns and Functions	3cr	
MATH 456	Geometry	3cr	
MATH 458	Logic and Logic Games	3cr	
MATH 471	Algebra for Elementary and Middle	3cr	
One Elective	MATH 457, MATH 459 or MATH 461	3cr	
Total Degree Requirements:			125

123

attached