



Proposal to the Senate Educational Policy Committee

PROPOSAL TITLE: Revisions to the Major in the Sciences and Letters Curriculum: BSLAS Physics: Physics Concentration, College of Liberal Arts and Sciences

SPONSOR: Diane Musumeci, Associate Dean College of Liberal Arts and Sciences, 3-1350, musumeci@illinois.edu and Kevin T. Pitts, Professor of Physics, 333-3946, kpitts@illinois.edu.

COLLEGE CONTACT: Diane Musumeci, Associate Dean College of Liberal Arts and Sciences, 3-1350, musumeci@illinois.edu

BRIEF DESCRIPTION: We propose to add one new required course to this curriculum: PHYS 225 Relativity and Math Applications (2 hrs). The total number of hours for the program will be unchanged (120 hours). We are also updating course titles, removing courses that have been discontinued and updating the Supporting Technical Coursework.

JUSTIFICATION: The Physics Department has been actively evaluating its curricula. We found that the transition from the introductory sequence (PHYS 211-214) to the intermediate sequence (PHYS 325 and beyond) was too challenging and abrupt for many students. We therefore developed PHYS 225 two-hour “bridge” course to aid the transition from the introductory to intermediate course levels. In doing so, we moved special relativity from PHYS 325 to PHYS 225. We therefore want to add PHYS 225 to the Science and Letters curriculum.

This modification was implemented in the Engineering Physics program beginning in the fall 2009 semester. The core requirements of the LAS Science and Letters program should be the same as the Engineering Physics program, so this change would put the two programs back in step with one another.

PHYS 405 Electronic Circuits II has been discontinued and removed from the list of courses in the Flexible Physics Core Electives. We are adding CHEM 102, CHEM 103 and CS 101 to the list of Supporting Technical Courses. Those courses had always been part of the hours listed for the Supporting Technical Courses section, but were not listed in the Programs of Study. Also, since students cannot receive credit for MATH 241 and MATH 380, we have decided to remove MATH 380 from the list of courses in the Supporting Technical Course section.

In the current Science and Letters physics curriculum, the number of required technical hours (math+physics+technical option) is 66-74. This proposal would take the total number of technical hours required to 65-73.

BUDGETARY AND STAFF IMPLICATIONS: *(Please respond to each of the following questions. Place your response right after each item. See [Appendix A](#) for questions required of new degree program proposals as well additional notes regarding budgetary and staff implications.)*

- a. Additional staff and dollars needed
The course is already offered every semester. No additional funding is necessary.
- b. Internal reallocations (e.g., change in class size, teaching loads, student-faculty ratio, etc.)
Since it is a prerequisite for PHYS 325, the enrollment in PHYS 225 already includes all of the students in the LAS Science and Letters curriculum. Therefore, PHYS 225 enrollments will not change.
- c. Effect on course enrollment in other units and explanations of discussions with representatives of those departments
Since this course will be required for physics majors, it will not directly compete with any other courses. The change is reducing the number of free elective hours for students in the LAS Science and Letters curriculum.
- d. Impact on the University Library *(A letter of acknowledgement from the University Librarian must be included for all new program proposals.)*
No impact on the Library is envisioned.
- e. Impact on computer use, laboratory use, equipment, etc.
No impact on computer, laboratory or equipment usage is envisioned.

DESIRED EFFECTIVE DATE: Fall 2012

STATEMENT FOR PROGRAMS OF STUDY CATALOG:

Physics

<http://physics.illinois.edu>

Head of Department: Dale Van Harlingen

Department Office: 209 Loomis Laboratory of Physics, 1110 West Green, Urbana, (217) 333-3761

This major in Physics in the Sciences and Letters Curriculum allows students maximum flexibility to develop scientifically oriented careers in fields requiring a physics background through the Physics Concentration (below) or the [Physics Teaching Concentration](#). The Department of Physics also sponsors a major in the [Specialized Curriculum in Physics](#). See below. See also [Engineering Physics](#) in the College of Engineering. See the [Physics Department](#) for additional information.

Major in Sciences and Letters Curriculum

Physics Concentration

E-mail: undergrad-info@physics.illinois.edu

Degree title: Bachelor of Science in Liberal Arts and Sciences

Minimum required major and supporting course work normally equates to 65-73 hours

General education: Students must complete the [Campus General Education](#) requirements.

Minimum hours required for graduation: 120 hours

Departmental distinction: Graduation with distinction is awarded to students who complete 8 additional hours of 300- or 400- or 500-level physics courses or advanced courses in closely related technical subjects, and who have attained cumulative grade point averages as follows: distinction, 3.2; high distinction, 3.5; highest distinction, 3.8.

The Physics Concentration is a flexible program for students who plan to pursue technical or professional careers in areas requiring a sound grounding in physical science and mathematics. Students can use the concentration to prepare for employment immediately upon graduation or for continuing on to graduate study in a wide variety of fields. Students who are certain that they want to go on to graduate study in physics or in a closely allied field should also consider the LAS Specialized Curriculum in Physics. In some cases, however, the greater flexibility of the Science and Letters Curriculum may make it a better choice for graduate school preparation for those who want to pursue a combined major and minor, a double major, or double degrees. Students in the concentration must maintain an overall grade point average of at least 2.0 and also a grade point average of at least 2.0 in all required physics and mathematics courses. To be permitted to enroll in advanced physics courses in this concentration a student must maintain at least a 2.0 average in all attempts at science and mathematics courses taken at the University of Illinois.

Students in this concentration must choose an approved elective technical or professional option no later than the end of the second semester of the sophomore year. A set of pre-approved options is available via the departmental web site and from the departmental undergraduate studies office. Students may also design and follow a "custom option" subject to departmental approval. Students completing the Astrophysics option will earn a minor in Astronomy, if the appropriate Minor form is filed.

Entering freshmen typically take calculus, chemistry, rhetoric, and PHYS 110 during the first semester and begin the general physics sequence in the second semester. Students with advance placement in mathematics should begin the general physics sequence in the first semester. All students are strongly encouraged to take a Freshman Discovery Seminar sometime during the first year and plan ahead to allow space in their programs for undergraduate research.

Hours	Requirements
23-24	Fixed Physics Core
	PHYS 110 - Careers in Physics
	PHYS 211 - Univ Physics (Mechanics)
	PHYS 212 - Univ Physics (Elec & Mag)
	PHYS 213 - Univ Physics (Thermal Physics)
	PHYS 214 - Univ Physics (Quantum Phys)
	PHYS 225- Relativity & Math Applications
	PHYS 325 – Classical Mechanics I
	PHYS 435 - Electromagnetic Fields I
	PHYS 486 - Quantum Mechanics I or PHYS 485 - Atomic Phys & Quantum Theory
9-15	Flexible physics core electives. Choose three courses from a departmentally approved list , with at least one being PHYS 401, 403, or 404 . The number of hours varies depending upon the courses chosen.
21-22	Supporting Technical Courses
	MATH 221 - Calculus I ¹
	MATH 231 - Calculus II
	MATH 241 - Calculus III
	MATH 285 - Intro Differential Equations or MATH 286 - Intro to Differential Eq Plus
	CHEM 102 - General Chemistry I
	CHEM 103 - General Chemistry Lab I
	CS 101 - Intro to Computing, Eng & Sci
12	Elective Technical or Professional Option A set of technical or professional courses that addresses an intellectually coherent body of knowledge. At least 9 hours should be at the 200-level or higher. Required courses may not be included in the set. Students may select from a list of pre-approved options or design a custom option, subject to departmental approval.

1.Math 220-Calculus (5 hours) may be substituted with four of the five credit hours applying toward the degree. MATH 220 is appropriate for students with no background in calculus.

Twelve hours of 300- and 400-level courses in the major must be taken on this campus. All foreign language requirements must be satisfied. A Major Plan of Study Form must be completed and submitted to the LAS Student Affairs Office before the end of the fifth semester (60-75 hours). Please see your adviser.

Physics Teaching Concentration

No change at this time.

Specialized Curriculum in Physics

See the separate Senate document for revisions.

CLEARANCES:

Signatures:

Unit Representative:

Diane Kusume

College Representative:

Date:

11/11/11

Date:

Appendix A:
Physics Sciences and Letters Curriculum Comparison Chart

Proposed		Current	
Hours	Requirements		
23-24	Fixed Physics Core	21-22	Fixed Physics Core
	PHYS 110 - Careers in Physics (0hours)		PHYS 110 - Careers in Physics
	PHYS 211 - Univ Physics (Mechanics) (4hours)		PHYS 211 - Univ Physics (Mechanics)
	PHYS 212 - Univ Physics (Elec & Mag) (4hours)		PHYS 212 - Univ Physics (Elec & Mag)
	PHYS 213 - Univ Physics (Thermal Physics) (2hours)		PHYS 213 - Univ Physics (Thermal Physics)
	PHYS 214 - Univ Physics (Quantum Phys) (2hours)		PHYS 214 - Univ Physics (Quantum Phys)
	PHYS 225- Relativity & Math Applications (2hours)		
	PHYS 325 – Classical Mechanics I (3hours)		PHYS 325 - Mechanics and Relativity I
	PHYS 435 - Electromagnetic Fields I (3hours)		PHYS 435 - Electromagnetic Fields I
	PHYS 486 - Quantum Mechanics I (4hours) or PHYS 485 - Atomic Phys & Quantum Theory (3hours)		PHYS 486 - Quantum Mechanics I or PHYS 485 - Atomic Phys & Quantum Theory
9-15	Flexible physics core electives. Choose three courses from a departmentally approved list, with at least one being PHYS 401, 403, or 404. The number of hours varies depending upon the courses chosen.	9-15	Flexible physics core electives. Choose three courses from a departmentally approved list, with at least one being PHYS 401, 403, 404, or 405. The number of hours varies depending upon the courses chosen.
21-22	Supporting Technical Courses	24-25	Supporting Technical Courses
	MATH 221 - Calculus I ¹ (4hours)		MATH 221 - Calculus I ¹
	MATH 231 - Calculus II (3hours)		MATH 231 - Calculus II
	MATH 241 - Calculus III (4hours)		MATH 241 - Calculus III
			MATH 380 - Advanced Calculus ² (3hours)

	MATH 285 - Intro Differential Equations (3hours) or MATH 286 - Intro to Differential Eq Plus (4hours)		MATH 285 - Intro Differential Equations or MATH 286 - Intro to Differential Eq Plus
	CHEM 102 - General Chemistry I (3hours)		
	CHEM 103 - General Chemistry Lab I (1hour)		
	CS 101 - Intro to Computing, Eng & Sci (3hours)		
12	<p>Elective Technical or Professional Option</p> <p>A set of technical or professional courses that addresses an intellectually coherent body of knowledge. At least 9 hours should be at the 200-level or higher. Required courses may not be included in the set. Students may select from a list of pre-approved options or design a custom option, subject to departmental approval.</p>	12	<p>Elective Technical or Professional Option. A set of technical or professional courses that addresses an intellectually coherent body of knowledge. At least 9 hours should be at the 200-level or higher. Required courses may not be included in the set. Students may select from a list of pre-approved options or design a custom option, subject to departmental approval.</p>

**Senate Educational Policy Committee
Proposal Check Sheet**

PROPOSAL TITLE (Same as on proposal): Revisions to the Major in the Sciences and Letters Curriculum: BSLAS Physics: Physics Concentration, College of Liberal Arts and Sciences

PROPOSAL TYPE (Please select all that apply below):

A. **Program and degree proposals**

1. This proposal is for a graduate program or degree

Yes No

2. **Degree** proposal (e.g. B.S., M.A. or Ph.D.)

New degree — please name the new degree: _____

Revision of an existing degree — please name the existing degree to be revised:

3. **Major** proposal (disciplinary focus, e.g., Mathematics)

New major — please name the new major: _____

Revision of an existing major — please name the existing major to be revised:

4. **Concentration** proposal (e.g. Financial Planning)

New concentration — please name the new concentration: _____

Revision of an existing concentration — please name the existing concentration to be revised: Physics Concentration

5. **Minor** proposal (e.g. Cinema Studies)

New minor — please name the new minor: _____

Revision of an existing minor — please name the existing minor to be revised: _____

6. Proposal for renaming an existing degree, major, concentration, or minor

degree major concentration minor

Please provide the current name: _____

Please provide the proposed new name: _____

7. Proposal for terminating an existing degree, major, concentration, or minor

Please name the existing degree, major, concentration, or minor: _____

8. Proposal for a multi-institutional degree between Illinois (UIUC) and a foreign institution

Please name the existing Illinois degree or program: _____

Please name the partnering institution: _____

B. **Proposal for renaming existing academic units** (college, school, department, or program)

Please provide the unit's current name: _____

Please provide the unit's proposed new name: _____

C. **Proposal for reorganizing existing units** (colleges, schools, departments, or programs)

Change in status of an existing and approved unit (e.g. change from a program to department) — please indicate current unit name including status: _____

Transfer an existing unit

Please provide the current unit's name and home: _____

Please provide the new home for the unit: _____

Merge two or more existing units (e.g., merge department A with department B)

Please provide the name and college of unit one to be merged: _____

Please provide the name and college of unit two to be merged: _____

Terminate an existing unit — please provide the current unit's name and status: _____

D. **Other educational policy proposals** (e.g., academic calendar, grading policies, etc.)

Please indicate the nature of the proposal: _____

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

EP.12.17

Office of the Provost and Vice Chancellor
for Academic Affairs

Swanlund Administration Building
601 East John Street
Champaign, IL 61820



January 5, 2012

Gay Miller, Chair
Senate Committee on Educational Policy
Office of the Senate
228 English Building, MC-461

Dear Professor Miller:

Enclosed is a copy of a proposal from the College of Liberal Arts and Sciences to revise the Major in the Sciences and Letters Curriculum: BSLAS Physics: Physics Concentration.

This proposal has been approved by the Committee on Courses and Curricula in the College of Liberal Arts and Sciences. It now requires Senate review.

Sincerely,

A handwritten signature in cursive script that reads "Kristi A. Kuntz".

Kristi A. Kuntz
Assistant Provost

KAK/njh

Enclosures

c: A. Elli
D. Musumeci
K. Pitts

UNIVERSITY OF ILLINOIS
AT URBANA - CHAMPAIGN

Office of the Dean
College of Liberal Arts and Sciences
294 Lincoln Hall
702 South Wright Street
Urbana, IL 61801-3631



November 11, 2011

Kritsi Kuntz
Assistant Provost
Swanlund Administration Building
MC-304

Dear Kristi:

The Committee on Courses and Curricula, on behalf of the Dean's Cabinet, and Executive Committee has voted to approve the following proposals:

Revisions to the BSLAS Physics Concentration
Revisions to the Specialized Curriculum in Physics (BS in Physics)

Please address all correspondence concerning these proposals to me. These proposals are now ready for review by the Senate Educational Policy Committee for proposed implementation Fall 2012..

Sincerely,

A handwritten signature in cursive script that reads "Diane Musumeci".

Diane Musumeci
Associate Dean

enclosure
C: Professor Kevin Pitts