

# 10KP0121BS: PHYSICS, BS

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## In Workflow

1. U Program Review (dforgacs@illinois.edu; eastuby@illinois.edu; aledward@illinois.edu)
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10. Board of Trustees (none)
11. IBHE (none)
12. DMI (eastuby@illinois.edu; aledward@illinois.edu; dforgacs@illinois.edu)

## Approval Path

1. Thu, 03 Dec 2020 17:38:12 GMT  
Deb Forgacs (dforgacs): Approved for U Program Review
2. Thu, 03 Dec 2020 17:59:51 GMT  
Brian DeMarco (bdemarco): Approved for 1244 Head
3. Thu, 03 Dec 2020 18:34:35 GMT  
Brooke Newell (bsnewell): Approved for KP Committee Chair
4. Thu, 03 Dec 2020 19:26:19 GMT  
Candy Deaville (candyd): Approved for KP Dean
5. Thu, 03 Dec 2020 20:09:59 GMT  
John Wilkin (jpwilkin): Approved for University Librarian
6. Thu, 03 Dec 2020 21:14:56 GMT  
Kathy Martensen (kmartens): Approved for Provost

## History

1. Jan 17, 2019 by Deb Forgacs (dforgacs)
2. Apr 4, 2019 by Deb Forgacs (dforgacs)
3. Apr 6, 2019 by Deb Forgacs (dforgacs)
4. Apr 11, 2019 by Deb Forgacs (dforgacs)
5. Apr 23, 2019 by Deb Forgacs (dforgacs)
6. Aug 12, 2019 by Deb Forgacs (dforgacs)
7. Feb 26, 2020 by Brooke Newell (bsnewell)
8. Mar 31, 2020 by Deb Forgacs (dforgacs)

Date Submitted: Wed, 02 Dec 2020 21:11:36 GMT

## Viewing: 10KP0121BS : Physics, BS

Changes proposed by: Brian DeMarco

## Proposal Type

### Proposal Type:

Major (ex. Special Education)

### This proposal is for a:

Revision

Proposal Title:

**If this proposal is one piece of a multi-element change please include the other impacted programs here. *example: A BS revision with multiple concentration revisions***

Revision of program name from Engineering Physics, BS to Physics, BS.

This is part of the consolidation of the UIUC Physics programs in LAS and ENGR to one program in the Grainger College of Engineering.

(Related to proposal keys = 117, 548, 549, and 550)

**EP Control Number**

EP.21.045

**Official Program Name**

Physics, BS

**Effective Catalog Term**

Fall 2022

**Sponsor College**

Grainger College of Engineering

**Sponsor Department**

Physics

**Sponsor Name**

Brian DeMarco

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**College Contact**

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## Program Description and Justification

### Justification for proposal change:

The three nearly identical Physics undergraduate degree programs in the College of Liberal Arts and Sciences (“BSLAS in Physics, Sciences and Letters”, “BS in Physics, LAS Specialized Curriculum”, and “BS in Physics, Teaching Concentration”) at the University of Illinois will be consolidated with the existing “Engineering Physics” degree program in The Grainger College of Engineering (GCOE) to form a single “Physics” BS degree program to be offered by the Department of Physics. The BSLAS in Physics, Sciences and Letters and BS in Physics, LAS Specialized Curriculum are essentially the same degree as the Engineering Physics degree, while the BS in Physics, Teaching Concentration has recently had extremely low enrollment (currently, two) and the option of pursuing the Engineering Physics BS degree with a Secondary Education minor already exists. This consolidation plan will reduce student and parent confusion, provide better student support and cohesion, improve the student experience, and streamline operations for the Department of Physics. This phase-down is a cooperative administrative effort between the College of LAS and The Grainger College of Engineering.

### Corresponding Degree

BS Bachelor of Science

### Is this program interdisciplinary?

No

### Academic Level

Undergraduate

### Will you admit to the concentration directly?

No

### Is a concentration required for graduation?

No

### CIP Code

400801 - Physics, General.

### Is This a Teacher Certification Program?

No

### Will specialized accreditation be sought for this program?

No

## Admission Requirements

### Is this revision a change to the admission status of the program?

No

## Enrollment

**Describe how this revision will impact enrollment and degrees awarded.**

The overall enrollment in Physics programs and number of degrees awarded in Physics at the University of Illinois at Urbana-Champaign will not be affected by this change.

**Estimated Annual Number of Degrees Awarded**

**What is the matriculation term for this program?**

Fall

**What is the typical time to completion of this program?**

4 years

**What are the minimum Total Credit Hours required for this program?**

128

## Delivery Method

**Is this program available on campus and online?**

No

**This program is available:**

On Campus

## Budget

**Are there budgetary implications for this revision?**

No

**Will the program or revision require staffing (faculty, advisors, etc.) beyond what is currently available?**

No

## Resource Implications

### Facilities

**Will the program require new or additional facilities or significant improvements to already existing facilities?**

No

### Technology

**Will the program need additional technology beyond what is currently available for the unit?**

No

### Non-Technical Resources

**Will the program require additional supplies, services or equipment (non-technical)?**

No

## Resources

**For each of these items, be sure to include in the response if the proposed new program or change will result in replacement of another program(s). If so, which program(s), what is the anticipated impact on faculty, students, and instructional resources? Please attach any letters of support/acknowledgement from faculty, students, and/or other impacted units as appropriate.**

### Attach File(s)

Physics Academic Plan 2020 12-2-20.pdf

### Faculty Resources

**Please address the impact on faculty resources including any changes in numbers of faculty, class size, teaching loads, student-faculty ratios, etc. Describe how the unit will support student advising, including job placement and/or admission to advanced studies.**

There will be no changes to faculty resources such as numbers of faculty, class size, teaching loads, student-faculty ratios, or other metrics. There will be no changes to the unit resources and level of support for student advising, including job placement and admission to advanced studies.

### Library Resources

**Describe your proposal's impact on the University Library's resources, collections, and services. If necessary please consult with the appropriate disciplinary specialist within the University Library.**

There will be no impact on the University Library resources.

Instructional Resources

**Will there be any reduction in other course offerings, programs or concentrations by your department as a result of this new program/proposed change?**

No

**Does the program include other courses/subjects impacted by the creation/revision of this program?**

No

## **Financial Resources**

**Will the unit need to seek campus or other external resources?**

No

**Are you seeking a change in the tuition rate or differential for this program?**

Yes

## **Program Regulation and Assessment**

**Briefly describe the plan to assess and improve student learning, including the program's learning objectives; when, how, and where these learning objectives will be assessed; what metrics will be used to signify student's achievement of the stated learning objectives; and the process to ensure assessment results are used to improve student learning. (Describe how the program is aligned with or meets licensure, certification, and/or entitlement requirements, if applicable).**

The current plan for program regulation and assessment will continue without changes under this proposal.

The Department of Physics Undergraduate Studies Office—together with guidance from the Undergraduate Studies Committee—will work to collect, compile, evaluate, and report on the learning outcomes for each course. This work will include, but not be limited to:

Informal Early Feedback:

Students in each major-specific course will be invited to participate in a survey to help the department and instructors evaluate the students' understanding of the course learning objectives, outcomes, and course goals. Summary reports will be made available to instructors and the department leadership.

Evaluation of Direct Student Learning:

Final examinations (i.e., questions and student work) will be collected for evaluation of learning outcomes. This will include evaluation of the assessments' usefulness in evaluation of learning outcomes, as well as the mastery of the outcomes by students. Anonymized student work will be used for the evaluation. Summary reports will be made available to instructors and the Department leadership.

Indirect Evaluation of Student Learning:

Indirect measures of student learning will include current enrollment, including demographic information.

Degree completion rates, including information regarding:

- Semesters to completion
- Degree program requirements
- Semesters to complete specified intra-degree program requirements
- Choke-points in degree completion progression
- Course updates and revisions
- Desirable new courses

Demographic trends

Is the career/profession for graduates of this program regulated by the State of Illinois?

No

## Program of Study

"Baccalaureate degree requires at least 120 semester credit hours or 180 quarter credit hours and at least 40 semester credit hours (60 quarter credit hours) in upper division courses" (source: <https://www.ibhe.org/assets/files/PrivateAdminRules2017.pdf>). For proposals for new bachelor's degrees, if this minimum is not explicitly met by specifically-required 300- and/or 400-level courses, please provide information on how the upper-division hours requirement will be satisfied.

All proposals must attach the new or revised version of the Academic Catalog program of study entry. Contact your college office if you have questions.

Attach a side-by-side comparison with the existing program AND, if the revision references or adds "chose-from" lists of courses students can select from to fulfill requirements, a listing of these courses, including the course rubric, number, title, and number of credit hours.

Catalog Page Text

Statement for Programs of Study Catalog

## Graduation Requirements

Minimum Technical GPA (<https://wiki.illinois.edu/wiki/display/ugadvise/Degree+Requirements/#DegreeRequirements-TechnicalGPAREquirement>):**2.0**

TGPA is required for Math and Physics courses. See Technical GPA (<https://wiki.illinois.edu/wiki/display/ugadvise/Degree+Requirements/#DegreeRequirements-TechnicalGPAREquirement>) to clarify requirements.

**Minimum Overall GPA:2.0**

**Minimum hours required for graduation:128 hours**

**General education:Students must complete theCampus General Education (<https://courses.illinois.edu/gened/DEFAULT/DEFAULT/>)requirements including the campus general education language requirement.**

### Orientation and Professional Development

Code	Title	Hours
ENG 100	Engineering Orientation <sup>1</sup>	0
PHYS 110	Physics Careers <sup>1</sup>	0
Total Hours		0

### Foundational Mathematics and Science

Code	Title	Hours
MATH 221	Calculus I <sup>2</sup>	4
MATH 231	Calculus II	3
MATH 241	Calculus III	4
MATH 285	Intro Differential Equations <sup>3</sup>	3
PHYS 211	University Physics: Mechanics	4
PHYS 212	University Physics: Elec & Mag	4
PHYS 213	Univ Physics: Thermal Physics	2
PHYS 214	Univ Physics: Quantum Physics	2

CHEM 102	General Chemistry I	3
CHEM 103	General Chemistry Lab I	1
CS 101	Intro Computing: Engrg & Sci	3
Total Hours		33

### Physics Technical Core

Code	Title	Hours
PHYS 225	Relativity & Math Applications	2
PHYS 325	Classical Mechanics I	3
PHYS 435	Electromagnetic Fields I	3
PHYS 486	Quantum Physics I <sup>4</sup>	4
or PHYS 485	Atomic Phys & Quantum Theory	

Total Hours 12

### Flexible Physics Core Electives

Code	Title	Hours
Flexible physics core electives. Choose three courses from a departmentally approved list below, with at least one being a lab course (PHYS 401,PHYS 402,PHYS 403,PHYS 404, orPHYS 406). The number of hours varies depending upon the courses chosen.		9-15

PHYS 326	Classical Mechanics II	3
PHYS 401	Classical Physics Lab	3
PHYS 402	Light	3 or 4
PHYS 403	Modern Experimental Physics	4 or 5
PHYS 404	Electronic Circuits	4 or 5
PHYS 406	Acoustical Physics of Music	4
PHYS 427	Thermal & Statistical Physics	4
PHYS 436	Electromagnetic Fields II	3
PHYS 460	Condensed Matter Physics	4
PHYS 470	Subatomic Physics	4
PHYS 475	Introduction to Biophysics	3 or 4
PHYS 487	Quantum Physics II	4

### Mathematics Elective

Code	Title	Hours
Mathematics elective, chosen from a departmentally approved list below:		3
CS 357	Numerical Methods I	3
CS 450	Numerical Analysis	3 or 4
MATH 415	Applied Linear Algebra	3 or 4
MATH 417	Intro to Abstract Algebra	3 or 4
MATH 453	Elementary Theory of Numbers	3 or 4
MATH 412	Graph Theory	3 or 4
MATH 413	Intro to Combinatorics	3 or 4
MATH 414	Mathematical Logic	3 or 4
MATH 482	Linear Programming	3 or 4
MATH 347	Fundamental Mathematics	3
MATH 348	Fundamental Mathematics-ACP	4
MATH 424	Honors Real Analysis	3
MATH 441	Differential Equations	3 or 4
MATH 442	Intro Partial Diff Equations	3 or 4
MATH 444	Elementary Real Analysis	3 or 4
MATH 446	Applied Complex Variables	3 or 4
MATH 447	Real Variables	3 or 4
MATH 484	Nonlinear Programming	3 or 4



MATH 489	Dynamics & Differential Eqns	3 or 4
MATH 402	Non Euclidean Geometry	3 or 4
MATH 403	Euclidean Geometry	3 or 4
MATH 423	Differential Geometry	3 or 4
MATH 432	Set Theory and Topology	3 or 4
MATH 481	Vector and Tensor Analysis	3 or 4
MATH 461	Probability Theory	3 or 4
MATH 463	Statistics and Probability I	4
MATH 450	Numerical Analysis	3 or 4

## Technical/Professional Option Electives

Code	Title	Hours
<b>Technical/professional option electives for the option selected, chosen from a departmentally approved list of Technical/Professional Option Electives (or a list designed for a departmentally approved custom option) below. The number of hours varies depending upon the option chosen.</b>		<b>12-22</b>

### Acoustical Physics

ECE 210	Analog Signal Processing	4
ECE 473	Fund of Engrg Acoustics	3 or 4

Choose 2 classes from the following:

ECE 310	Digital Signal Processing	3
ECE 417	Multimedia Signal Processing	4
ECE 473	Fund of Engrg Acoustics	3
ECE 402	Electronic Music Synthesis	3
PHYS 402	Light	3 or 4

### Astrophysics

ASTR 210	Introduction to Astrophysics	3
ASTR 350	The Big Bang, Black Holes, and the End of the Universe (ORASTR 406: Galaxies and the Universe)	3
ASTR 404	Stellar Astrophysics	3
ASTR 405	Planetary Systems	3
ASTR 414	Astronomical Techniques	4

### Atmospheric Science

ATMS 201	General Physical Meteorology	3
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Choose 4 classes from the following:

ATMS 301	Atmospheric Thermodynamics	3
ATMS 302	Atmospheric Dynamics I	3
ATMS 304	Radiative Transfer-Remote Sens	3
ATMS 305	Computing and Data Analysis	3
ATMS 306	Cloud Physics	3
ATMS 314	Mesoscale Dynamics	3
ATMS 405	Boundary Layer Processes	4

### BioPhysics

CHEM 104	General Chemistry II (ORCHEM 204)	3
CHEM 105	General Chemistry Lab II (ORCHEM 205)	1
CHEM 232	Elementary Organic Chemistry I (ORCHEM 236)	3 or 4
CHEM 233	Elementary Organic Chem Lab I	2

Choose 2 classes from the following:

BIOP 401	Introduction to Biophysics	3
MCB 450	Introductory Biochemistry (ORMCB 354: Biochemistry and Physical Basis of Life)	3
PHYS 498	Special Topics in Physics (Quantitative Biology)	4

### Business

ENG 471	Seminar Energy & Sustain Engrg	1
IE 420	Financial Engineering	3 or 4
SE 400	Engineering Law	3 or 4

TE 100	Introduction to Innovation, Leadership and Engineering Entrepreneurship	1
TE 360	Lectures in Engineering Entrepreneurship	1
TE 333	Creativity, Innovation, Vision	4
TE 461	Technology Entrepreneurship	3
TE 450	Startups: Incorporation, Funding, Contracts, & Intellectual Property	3
TE 466	High-Tech Venture Marketing	2
<b>Computational Physics</b>		
CS 173	Discrete Structures (ORMATH 213: Basic Discrete Structures)	3
CS 225	Data Structures	4
Choose 3 classes from the following:		
CS 357	Numerical Methods I	3
CS 420	Parallel Progrmg: Sci & Engrg	3 or 4
CS 418	Interactive Computer Graphics	3 or 4
CS 450	Numerical Analysis	3 or 4
PHYS 298	Freshmen/Sophomore Special Topics in Physics (Computational Physics)	2
PHYS 498	Special Topics in Physics (Computation in Physics)	3
<b>Electrical and Computer Engineering</b>		
ECE 110	Introduction to Electronics (ORECE 205: Electrical and Electronic Circuits)	1 to 3
ECE 120	Introduction to Computing	4
ECE 210	Analog Signal Processing	4
Take 1 class from the following:		
ECE 310	Digital Signal Processing	3
ECE 330	Power Ckts & Electromechanics	3
ECE 385	Digital Systems Laboratory	3
PHYS 404	Electronic Circuits (orECE 342: Electronic Circuits)	4 or 5
<b>Energy/Sustainability</b>		
ATMS 201	General Physical Meteorology	3
ATMS 302	Atmospheric Dynamics I	3
ECE 205	Electrical and Electronic Circuits	3
ENG 471	Seminar Energy & Sustain Engrg	1
NRES 210	Environmental Economics	3
Choose 1 class from the following:		
ECE 333	Green Electric Energy	3
NPRE 402	Nuclear Power Engineering	3 or 4
NPRE 412	Nuclear Power Econ & Fuel Mgmt	3 or 4
NPRE 470	Fuel Cells & Hydrogen Sources	3
NPRE 475	Wind Power Systems	3 or 4
<b>Materials Science</b>		
MSE 206	Mechanics for MatSE	4
MSE 280	Engineering Materials	3
MSE 401	Thermodynamics of Materials (ORPHYS 427: Thermal & Statistical Physics)	3
Choose 1 class from the following:		
MSE 304	Electronic Properties of Matls	3
MSE 402	Kinetic Processes in Materials	3
MSE 403	Synthesis of Materials	3
MSE 405	Microstructure Determination	3
MSE 406	Thermal-Mech Behavior of Matls	3
<b>Nuclear Physics</b>		
NPRE 402	Nuclear Power Engineering	3 or 4
PHYS 470	Subatomic Physics	4
Choose 2 classes from the following:		
NPRE 435	Radiological Imaging	3

NPRE 441	Radiation Protection	4
NPRE 446	Radiation Interact w/Matter I	3
<b>Optical Physics</b>		
ECE 455	Optical Electronics	3 or 4
ECE 460	Optical Imaging	4
ECE 465	Optical Communications Systems	3
Choose 1 class from the following:		
PHYS 402	Light	3 or 4
PHYS 404	Electronic Circuits	4 or 5
PHYS 436	Electromagnetic Fields II	3
<b>Law</b>		
CMN 211	Business and Professional Communication	3
JOUR 200	Introduction to Journalism	3
LAW 301	Introduction to Law	2 or 3
Choose 2 classes from the following:		
ESE 320	Water Planet, Water Crisis	3
NPRE 480	Energy and Security	3
PS 225	Environmental Politics & Policy	3
PS 273	Environment and Society	3
SE 400	Engineering Law	3 or 4
<b>Professional Option</b>		
MATH 415	Applied Linear Algebra	3 or 4
PHYS 326	Classical Mechanics II	3
PHYS 436	Electromagnetic Fields II	3
PHYS 427	Thermal & Statistical Physics	4
PHYS 487	Quantum Physics II	4
Choose 1 lab from the following (cannot count toward Flexible Physics Core):		
PHYS 401	Classical Physics Lab	3
PHYS 402	Light	3 or 4
PHYS 403	Modern Experimental Physics	4 or 5
PHYS 404	Electronic Circuits	4 or 5
<b>Solid State Electronics</b>		
ECE 110	Introduction to Electronics	1 to 3
ECE 444	IC Device Theory & Fabrication	4
PHYS 404	Electronic Circuits	4 or 5
PHYS 460	Condensed Matter Physics	4
Electives		
<b>Code</b>	<b>Title</b>	<b>Hours</b>
<b>Free Electives</b>		
The Grainger College of Engineering Liberal Education course list, or additional courses from the campus General Education lists for Social and Behavioral Sciences or Humanities and the Arts <sup>5</sup>		6
Free electives. Additional unrestricted course work, subject to certain exceptions as noted by the College, so that there are at least 128 credit hours earned toward the degree. The number of hours varies depending upon the total hours earned in both the Flexible Physics Core and the Technical/Professional Option and whether or not MATH 415 and PHYS 486 are taken in place of PHYS 485. <sup>6</sup>		13-37
<b>Total Hours of Curriculum to Graduate</b>		<b>128</b>

<sup>1</sup> External transfer students take ENG 300 instead.

<sup>2</sup> MATH 220 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.

<sup>3</sup> MATH 285 may be replaced by MATH 441 followed by MATH 442.

- 4 *If PHYS 486 is chosen, take prerequisite MATH 415, which may be used to meet free elective requirements. If PHYS 485 is taken, an additional free elective hour or a surplus flexible physics core course hour offsets the one-hour credit differential.*
- 5 *The Grainger College of Engineering approved liberal education course list can be found here (<https://wiki.illinois.edu/wiki/display/ugadvise/Degree+Requirements/#DegreeRequirements-GeneralEducationElectives>). Note that these credit hours could carry the required cultural studies designation required for campus general education requirements.*
- 6 *The Grainger College of Engineering restrictions to free electives can be found here (<https://wiki.illinois.edu/wiki/display/ugadvise/Degree+Requirements/#DegreeRequirements-FreeElectives>).*

## EP Documentation

### Attach Rollback/Approval Notices

Correspondence with sponsor ep21042434445.pdf

## DMI Documentation

### Attach Final Approval Notices

ClassSenMinUIUC022020.pdf

### Banner/Codebook Name

BS:Engineering Physics -UIUC

### Program Code:

10KP0121BS

### Degree Code

BS

### Major Code

0121

Key: 117

## **Summary of Joint Proposal by the College of Liberal Arts and Sciences and The Grainger College of Engineering to:**

- (1) Phase down the BSLAS in Physics (Sciences and Letters) effective Fall 2022;
- (2) Phase down the BS in Physics (LAS Specialized Curriculum) effective Fall 2022;
- (3) Phase down the BSLAS in Physics, Teaching concentration effective Fall 2022;
- (4) Consolidate the Physics curriculum into a single BS in Physics program housed in The Grainger College of Engineering;
- (5) Rename the BS in Engineering Physics in The Grainger College of Engineering to BS in Physics

### **Executive Summary**

We propose to consolidate the three nearly identical Physics undergraduate degree programs at the University of Illinois into a single BS Physics degree program within The Grainger College of Engineering. This plan will reduce student and parent confusion, provide better student support and cohesion, improve the student experience, and streamline operations for the Department of Physics.

### **Background**

Physics currently offers three primary BS degree programs: Engineering Physics (283 students enrolled in Fall 2020), BSLAS Physics in Sciences and Letters (56 students), and the BS in Physics, LAS Specialized Curriculum (174 students). The Engineering Physics degree with a Minor in Secondary Education and the BSLAS in Physics, Teaching Concentration (2 students) are additional options available for students interested in high-school teaching as a career. The MATH/PHYS GPA graduation requirement for Engineering Physics and for taking advanced classes in the LAS Specialized Curriculum was recently changed to a 2.0. With this modification, the three main Physics BS degree programs are now closely aligned with only minor curricular differences.

The resources needed to educate students enrolled in a Physics undergraduate degree program, regardless of their home college, are largely provided and administrated by The Grainger College of Engineering (GCOE). The Physics faculty and staff who are responsible for delivering instruction, developing programming, and providing support to all Physics majors are part of the GCOE. All academic advising is also provided by the Department of Physics and the GCOE—the Physics Senior Advisor, Merissa Milton, provides academic advising to every undergraduate Physics major.

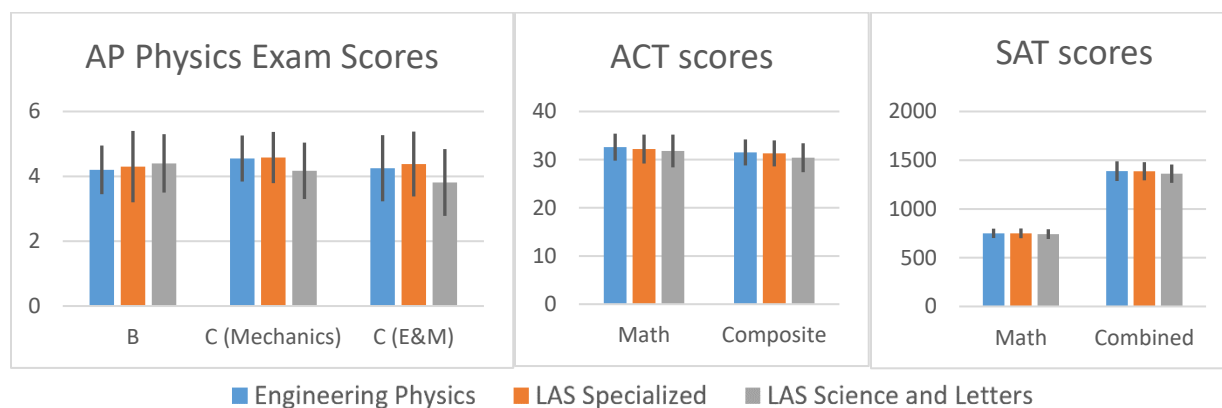
Resourcing for support services and access by students varies by their home college (LAS or GCOE). Each college provides technical assistance for their students, including late drops, late adds, credit/no-credit options, withdrawals, and probation. For LAS Physics majors at Illinois, these are the only services exclusively provided by LAS. The GCOE extends some of the support normally delivered only to GCOE students to LAS Physics majors, including the Center for Academic Resources in Engineering (CARE), International Programs in Engineering (IPENG),

Engineering Career Services (ECS), and the Engineering Career Fair. Some, but not all, of these services are duplicated within LAS. The expertise for providing support within LAS, however, lies with the Department of Physics. For example, LAS offers academic success workshops for LAS Physics majors, but those programs are developed and delivered by a staff-person (Assistant Director for Undergraduate Programs Elaine Schulte) from Physics, who is a GCOE and Physics employee.

## Proposal

We propose to consolidate the three principal Physics degree programs into a single Physics degree (with approximately a 500-student total enrollment) within The Grainger College of Engineering. The Physics degree in GCOE will not change—it is a rigorous program in fundamental Physics, offering courses in theoretical and experimental Physics, advanced laboratory techniques, and opportunities for undergraduate research. Folding all of the Physics students into GCOE will be accomplished by phasing out all LAS Physics programs and renaming the “Engineering Physics” degree to “Physics,” which will align the degree title with equivalent programs at all other research universities. Our goal will be to achieve this change while maintaining constant total enrollment through coordination with The Office of Undergraduate Admissions. An outreach campaign (involving communication with students, families, and high schools) will play a key role in this process, since there are three times more applications to the LAS programs compared with Engineering Physics. This difference is not surprising, given the placement of physics departments in Arts and Sciences at other universities in the US and the degree titles at Illinois.

The admission statistics (e.g., ACT, SAT, and AP exam scores) are the same (within variance) between all primary curricula (Fig. 1). Consolidating our degrees will therefore not affect access to Physics degrees. Furthermore, the demographic profile of students in these programs are roughly the same, with the exception of higher international enrollment in the LAS programs (Table 1).



**Figure 1.** Four-year average of admission statistics. The vertical black lines show the standard deviation for the student populations.

	Female	Caucasian	Asian American	Hispanic	Multi-racial	Out-of-state	International
<b>Engineering Physics</b>	17%	44%	21%	6%	5%	23%	21%
<b>LAS Physics (aggregated)</b>	16%	42%	13%	5%	4%	22%	34%

**Table 1.** Demographic information. The race/ethnicity categories show the fraction of students who self-report these identities. Less than 1% of the report as African American, Hawaiian, Pacific Islander, or Native American. The out-of-state fraction is determined for students who are US citizens or permanent residents.

## **Student benefits**

Consolidating the Physics programs at Illinois will reduce confusion on the part of students and their parents, streamline operations, and offer students superior and more comprehensive services. Based on interactions between Physics faculty, advising and academic staff, students, and parents as well as surveys, it is evident that having three nearly identical Physics programs is confusing for prospective students and their families. Many potential students parse the Engineering Physics degree as being more applied and aimed at private-sector employment compared with the LAS programs, which is not correct. Incoming students also sometimes incorrectly believe that the LAS and Engineering programs involve different faculty and classes. Consolidating the three main Physics degrees into a single flexible curriculum will make advertising our undergraduate programs more straightforward and the application process simpler.

Merging the Physics programs into The Grainger College of Engineering will also streamline operations. The Physics Senior Advisor, Assistant Director for Undergraduate Programs, and Undergraduate Records Office Administrator support all LAS and GCOE Physics students, and therefore must interface with a broad range of staff, procedures, and policies across both colleges. Unifying our programs into the Department of Physics' home within The Grainger College of Engineering would simplify and reduce the overhead of advising students and enable better support for awards and scholarships and resolve difficulties created by differing expectations and academic processes between the colleges, such as those affecting students on academic probation. The students would also form a more integrated cohort and be able to share advice and experiences more coherently.

Finally, students would receive more comprehensive and appropriate services by consolidating Physics degree programs into GCOE. The agreement that allows LAS Physics students to access key GCOE support services (such as Engineering Career Services and the Career Fair) that are central to their education and future career is informal. This solution is not necessarily permanent and is dependent upon the goodwill of the GCOE leadership. Furthermore, LAS students are not allowed access to Women in Engineering (including the early move-in program), the Academic Redshirt in Science and Engineering program, and the Morrill Engineering Program. This situation creates a two-tiered system within our major and discourages participation by underrepresented minorities.

There is broad agreement that this plan best serves Illinois Physics students. Over the last year, several meetings involving college and department leaders Associate Dean for Undergraduate Programs in Engineering (Jonathan Makela), Associate Head for Undergraduate Programs in Physics (Brian DeMarco), Associate Dean for Life and Physical Sciences in LAS (Matthew Ando), Associate Dean for Curricula and Academic Policy in LAS (Kelly Ritter), and Associate Dean for Student Academic Affairs in LAS (Barbara Hancin-Bhatt) have been held to discuss these issues. The Department of Physics has also consulted with its Physics Student Advisory Board (composed of students elected by each cohort) and its external advisory board (constituted from senior leaders and alumni across academia and industry). There has also been consultation with the Office of

Admissions (Andrew Borst and Nancy Walsh) and the University Registrar (Megan Hazan and Deb Forgacs). There is strong consensus that consolidating the Physics programs into the GCOE best meets the needs of Physics students at Illinois.

### **Phase-down and teach-out plan**

We propose a relatively simple phase-down plan for closing the BSLAS Physics in LAS Sciences and Letters, the BS in Physics, LAS Specialized Curriculum, and BSLAS in Physics, Teaching Concentration: the admission targets are set to zero in Y1. Continuing students are not allowed to declare an LAS Physics major starting in Y1. Also starting in the first year, the Engineering Physics admission target will be increased by a commensurate amount in order to maintain a roughly fixed student population in Physics degrees.

By agreement with the GCOE, all students enrolled in an LAS physics degree program at the beginning of the phase-down period may directly transfer to Engineering Physics during the phase down. Students who start at Illinois during the phase-down period as a first-time freshman in a non-Physics degree program who are interested in pursuing a Physics degree will follow the standard Pre-Engineering Program pathway into the Engineering Physics degree program. External transfer students who transfer to Illinois in a non-Engineering major are ineligible to transfer into an Engineering program. Therefore, during the phase-down period, external transfer students interested in the Engineering Physics degree will need to directly transfer into that program (as is currently the case). Teaching out the LAS degrees for students who wish to remain in those programs is straightforward, since the curriculum involves the same classes that are taught for the Engineering Physics degree. Furthermore, capacity is already in place to accommodate these students.

In this plan, students will retain access to secondary education certification through the secondary education minor. Students in the Engineering Physics degree can complete this minor and obtain certification to teach. This option will not change under the consolidation plan.

Once admissions to the LAS Physics programs is eliminated, students will lose the opportunity to pursue double majors: the GCOE only permits dual degrees. This change will impact a limited number of students. Approximately 3% of our students pursue a double major; the most popular options are double majors in Physics and Astronomy or Math. Of those students, we estimate that

	<b>Fall 2021</b>	<b>Phase-down Y1</b>	<b>Y2</b>	<b>Y3</b>	<b>Y4</b>	<b>Y5</b>
<b>Engineering Physics admission target</b>	80	145	147	150	150	150
<b>LAS Physics admission target</b>	60	0	0	0	0	0

**Table 2.** Admission targets for the LAS Physics phase-down plan. Starting in Y1, no students are admitted to the LAS Physics degree programs and students continuing are not allowed to declare these majors. This table shows planned growth in the Physics enrollment.



fewer than five per graduating class would not have sufficient transfer or AP credit at matriculation to complete a dual degree in four years. The Astronomy department will be proposing an AstroPhysics BSLAS degree program to accommodate students interested a combination of Physics and astronomy, but who do not want to pursue a dual degree.

### **Physics @ Illinois Facts**

- Since its founding, the Department of Physics has been in the College of Engineering at Illinois; all faculty and staff in the Department of Physics are employees of The Grainger College of Engineering.
- The Department of Physics and The Grainger College of Engineering are responsible for administering and delivering all Physics courses at Illinois.
- There is no significant difference between the admission profiles of LAS Physics students and Engineering Physics students.
- All students enrolled in a Physics major at Illinois pay the same differential tuition; the proposed consolidation of degrees will not result in a tuition change for any students.
- Students in both LAS Physics and Engineering Physics programs are advised by staff in the Department of Physics in The Grainger College of Engineering.
- The requirements for the degree programs offered by the Department of Physics are largely equivalent; in practice, student academic records upon graduation from Illinois are nearly indistinguishable between LAS Physics and Engineering Physics students.

**From:** [Pahre, Jennifer N](#)  
**To:** [Ritter, Kelly Allison](#)  
**Cc:** [Martensen, Kathy](#); [Lehman, Barbara J](#)  
**Subject:** Re: EP Physics Proposals -- A Question for the Sponsor  
**Date:** Wednesday, January 20, 2021 4:49:14 PM  
**Attachments:** [image001.png](#)  
[image002.png](#)

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Hi Kelly,

Thank you for your extremely timely response -- and Yes! This indeed answers the question, and in the way I had earnestly hoped.

I'll let you know if anything else comes up; it sounds like you're well-placed to get the information, if you don't already have it.

All best,  
Jennie

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**From:** Ritter, Kelly Allison <[ritterk@illinois.edu](mailto:ritterk@illinois.edu)>  
**Sent:** Wednesday, January 20, 2021 4:40 PM  
**To:** Pahre, Jennifer N <[jpahre@illinois.edu](mailto:jpahre@illinois.edu)>  
**Subject:** Re: EP Physics Proposals -- A Question for the Sponsor

Hi Jennie:

Thanks very much for writing, and I hope you and Bob are doing well also (and your delightful pets, too!). I forwarded your query below to my folks in Physics, since they will of course be the ones determining PHYS course enrollments, as they always have with that department in their college. This is what they (Brian DeMarco, who worked with Jonathan Makela and I on this proposal) said:

“Yes. Students in any college on campus can take physics classes, as long as we have sufficient capacity and they have met the pre-requisites. As Jennie mentions, introductory physics is required for many majors across several colleges. We serve those students (from LAS, ACES, FAA, etc.) now and will continue to do so: we increase our capacity in these courses to meet the demand from across campus.”

So, I think this answers your sub-committee's questions, but if not, please let me know. Brian and I (and Jonathan Makela) are pretty much on one another's speed dial these days, with our coordination of various programs across the colleges, so I'm happy to reach out again if other issues come up. I really appreciate your attempt to bring the proposal to the committee for a vote on Monday!

Sincerely,

Kelly

**KELLY RITTER**

*Associate Dean for Curricula and Academic Policy*

*Professor of English and Writing Studies*

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*Under the Illinois Freedom of Information Act any written communication to or from university employees regarding university business is a public record and may be subject to public disclosure.*

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**From:** "Pahre, Jennifer N" <jpahre@illinois.edu>

**Date:** Wednesday, January 20, 2021 at 2:32 PM

**To:** "Ritter, Kelly Allison" <ritterk@illinois.edu>

**Subject:** EP Physics Proposals -- A Question for the Sponsor

Hi Kelly,

I hope that your week is going well, and that you and your family remain healthy.

As you may recall, I'm the chair of subcommittee A of the Senate Educational Policy Committee. The four new Physics proposals (EP 21.042, 043, 044, and 045) have come to my subcommittee for review. I and my subcommittee members think that it makes good sense to consolidate the three nearly identical programs into a single Physics degree in the Grainger College of Engineering.

A couple members of my subcommittee had late-breaking questions, and thus I am reaching out. Our next Ed Pol meeting is this coming Monday. I am not sure if it will be possible to clear up these questions before then, but I'd like to try so that I can present your proposals with all pending questions answered to facilitate swift approval.

The questions all concern one issue: the ability of students in other colleges to take physics courses. For example, would LAS students be able to do so? Premed majors (and likely others) need physics as part of their preparatory curriculum. What about students in colleges other than LAS -- such as ACES?

I look forward to hearing from you.

All best,

Jennie

Jennifer N. Pahre  
Director of Undergraduate Studies  
Assistant Teaching Professor  
University of Illinois College of Law

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**I ILLINOIS**

College of Law

Jennifer N. Pahre

Director of Undergraduate Studies

Assistant Teaching Professor

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Pronouns: She/her/hers

Under the Illinois Freedom of Information Act (FOIA), any written communication to or from University employees regarding University business is a public record and may be subject to public disclosure.

# UNIVERSITY OF ILLINOIS

Urbana-Champaign • Chicago • Springfield

University Senates Conference  
378 Henry Administration Building  
506 South Wright Street  
Urbana, IL 61801

February 26, 2020

Kathy Martensen  
Assistant Provost for Educational Programs  
206 Swanlund, MC-304

Dear Kathy:

At its meeting on February 20, the University Senates Conference approved the proposed classification of minutes of the Urbana-Champaign Senate meeting of February 10. The Class I items are listed below.

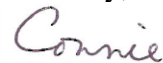
- EP.19.69 Establish a Major in Translational Medical Sciences in the Carle Illinois College of Medicine for the Degree of Master of Science
- EP.20.34 Establish a Minor in Disability Studies in the Department of Kinesiology and Community Health, College of Applied Health Sciences
- EP.20.44 Eliminate the BS MS in Industrial Engineering
- EP.20.45 Eliminate the BS MS in Mechanical Engineering
- EP.20.46 Revision of Curriculum Requirements for the Ph.D. in Civil Engineering to Add a 96-Credit Hour Option
- EP.20.47 Revision of Curriculum Requirements for the Ph.D. in Environmental Engineering to Add a 96-Credit Hour Option
- EP.20.48 Revision to the Master of Accounting Science (MAS) Degree Course Requirements
- EP.20.49 Revision to Taxation Concentration. Revision to the Master of Accounting Science (MAS) Degree Course Requirements
- EP.20.50 Revision to the Data Analytics Concentration. Revision to the Master of Accounting Science (MAS) Degree Course Requirements
- EP.20.51 Financial Reporting & Assurance Concentration. Revision to the Master of Accounting Science (MAS) Degree Course Requirements

- EP.20.52 Establish Joint Program in the Department of Animal Sciences for the BS/MANSC
- EP.20.53 Establish a Joint BS (CS+ANSC)/MANSC Program in the Department of Animal Sciences
- EP.20.54 Revise the BALAS in Classics, College of Liberal Arts and Sciences, to Eliminate the Five Ways Students Can Choose a Classics Major (Major in Classics (Without a Concentration) and the Four Concentrations in Greek, Latin, Classics, Classical Civilization, and Classical Archeology. Add Concentrations in Classical Languages and Classical Civilizations as the Only Two Options Students May Pursue a Classics Major
- EP.20.55 Revise the BALAS in Classics, College of Liberal Arts and Sciences, Classical Archeology
- EP.20.56 Revise the BALAS in Classics, College of Liberal Arts and Sciences, Classical Civilization
- EP.20.57 Elimination of the Undergraduate Minor: Classical Archaeology. In Conjunction with the Elimination of Three Other Undergraduate Minors in the Department of Classics: Classical Civilization, Greek, Latin; and the Creation of Two Minors: Classical Civilizations and Classical Languages
- EP.20.58 Elimination of the Undergraduate Minor: Greek Minor
- EP.20.59 Elimination of the Undergraduate Minor: Classical Civilization
- EP.20.60 Elimination of the Undergraduate Minor: Latin Minor
- EP.20.61 Creation of a new Undergraduate Minor: Classical Civilizations
- EP.20.62 Creation of a new Undergraduate Minor: Classical Languages
- EP.20.63 Revise the BALAS in Classics, Classical Civilizations
- EP.20.64 Revise the BALAS in Classics, Classical Languages
- EP.20.65 Revising EdD Degree Program Course and Exam Requirement
- EP.20.66 Revise the Minor in German, Department of Germanic Languages and Literatures
- EP.20.67 Revise the BALAS in Classics
- EP.20.68 Revise the BALAS in Classics: Latin

- EP.20.69 Establish a New Master of Science (M.S.) in Mental Health Counseling in the Department of Educational Psychology, College of Education
- EP.20.70 Proposal to Establish a New Bachelor of Science Degree with a Major in Plant Biotechnology (B.S. in Plant Biotech) in the Department of Crop Sciences, College of Agricultural, Consumer and Environmental Sciences
- EP.20.71 Revision to the Chemistry Minor
- EP.20.72 Urban Studies & Planning: Social Justice
- EP.20.75 Remove Art History PhD, Art Education PhD, and Education Policy, Organization, and Leadership MA, EdM, and CAS from a List of Programs Participating in the Writing Studies Floating Concentration
- EP.20.76 Create a new Minor in German Business and Commercial Studies
- EP.20.77 Computer Science & Philosophy, BSLAS (Revisions to the BSLAS in Computer Science & Philosophy, Department of Philosophy)
- EP.20.78 Computer Science Minor
- EP.20.79 New Proposal for BFA in Theatre: Arts & Entertainment Technology
- EP.20.80 Revising Requirements for BFA in Theatre: Scenic Design
- EP.20.81 Revising Requirements for BFA in Theatre: Sound Design & Technology
- EP.20.82 Revising Requirements for BFA in Theatre: Lighting Design & Technology
- EP.20.83 Revising Requirements for BFA in Theatre: Scenic Technology
- EP.20.84 Revising Requirements for BFA in Theatre: Costume Design & Technology
- EP.20.85 Revising Requirements for BFA in Theatre: Acting
- EP.20.86 Revising Requirements for BFA in Theatre
- EP.20.87 Revising Requirements for BFA in Theatre: Theatre Studies
- EP.20.88 Revising Requirements for BFA in Theatre: Stage Management
- EP.20.89 Revising Requirements in Theatre Minor, UG

- EP.20.90 Computer Science & Astronomy, BSLAS (Revise the BSLAS in Computer Science & Astronomy, College of Liberal Arts and Sciences)
- EP.20.91 Revising Requirements for BS in Civil Engineering
- EP.20.92 Revising Requirements for BS in Computer Engineering
- EP.20.93 Revising Requirements for BSAG in Agricultural and Biological Engineering
- EP.20.94 Revising Requirements for BS in Agricultural and Biological Engineering
- EP.20.95 Revising Requirements for BS in Agricultural & Biological Engineering: Agricultural Engineering
- EP.20.96 Revising Requirements for BS in Agricultural & Biological Engineering: Biological Engineering
- EP.20.97 Revising Requirements for BS in Computer Science
- EP.20.98 Revising Requirements for BS in Electrical Engineering
- EP.20.99 Revising Requirements for BS in Engineering Mechanics
- EP.20.100 Revising Requirements for BS in Engineering Physics
- EP.20.101 Revising Requirements for BS in Systems Engineering & Design
- EP.20.102 Revising Requirements for BS in Nuclear, Plasma, and Radiological Engineering
- EP.20.103 Revising Requirements for BS in Mechanical Engineering
- EP.20.104 Revising Requirements for BS in Materials Science & Engineering
- SP.20.09 Proposed Revision to the *Constitution*, Article II, Section 1.b; Article III, Section 1; and Article IV, Section 1

Sincerely,



Connie Sailor  
Administrative Aide

c: Ellen Foran,  
Renee Nagy  
Julian Parrott  
Jenny Roether  
Nathan Wilds