Date Submitted: 12/01/21 3:05 pm

Viewing: 10KP5183BS : Nuclear, Plasma, and Radiological Engineering, BS

Last approved: 11/18/21 5:09 pm

Last edit: 02/15/22 10:37 am

Changes proposed by: Becky Meline

Catalog Pages Using this Program	Nuclear, Plasma, and Radiological Engineering: Plasma & Fusion Science & Engineering, BS Nuclear, Plasma, and Radiological Engineering: Radiological, Medical & Instrumentation Applications, BS Nuclear, Plasma, and Radiological Engineering: Power, Safety & Environment, BS

Proposal Type:

In Workflow

1. **U Program Review**
2. **1973 Head**
3. **KP Committee Chair**
4. **KP Dean**
5. **University Librarian**
6. **Provost**
7. **Senate EPC**
8. Senate
9. U Senate Conf
10. Board of Trustees
11. IBHE
12. HLC
13. DMI

Approval Path

1. 12/02/21 4:16 pm
   Deb Forgacs (dforgacs):
   Approved for U Program Review
2. 12/02/21 9:56 pm
   Rizwan Uddin (rizwan):
   Approved for 1973 Head
3. 02/03/22 11:40 am
   Brooke Newell (bsnewell):
   Approved for KP Committee Chair
4. 02/03/22 11:47 am
   Candy Deaville (candyd):
   Approved for KP Dean
5. 02/03/22 11:56 am

John Wilkin (jpwilkin): Approved for University Librarian
6. 02/03/22 4:16 pm Kathy Martensen (kmartens): Approved for Provost

History

1. Dec 14, 2018 by Deb Forgacs (dforgacs)
2. Apr 25, 2019 by Deb Forgacs (dforgacs)
3. Aug 12, 2019 by Deb Forgacs (dforgacs)
4. Feb 26, 2020 by Brooke Newell (bsnewell)
5. Mar 31, 2020 by Deb Forgacs (dforgacs)
6. Nov 16, 2021 by Becky Meline (bmeline)
7. Nov 18, 2021 by Kathy Martensen (kmartens)
8. Nov 18, 2021 by Kathy Martensen (kmartens)

Major (ex. Special Education)

This proposal is for a:
Revision

Administration Details

Official Program Name	Nuclear, Plasma, and Radiological Engineering, BS

Sponsor College	Grainger College of Engineering
Sponsor Department	Nuclear, Plasma & Rad Engr
Sponsor Name	Tomasz Kozlowski ~~Kozlwsoki~~
Sponsor Email	txk@illinois.edu
College Contact	Jonathan Makela ~~Brooke Newell~~
College Contact Email	jmakela@illinois.edu ~~bsnewell@illinois.edu~~
College Budget Officer	Tessa Hile
College Budget Officer Email	tmhile@illinois.edu

List the role for rollbacks (which role will edit the proposal on questions from EPC, e.g., Dept Head or Initiator) and/or any additional stakeholders. *Purpose: List here who will do the editing work if proposal needs rolled back. And any other stakeholders.*

Brooke Newell, bsnewell@illinois.edu, GCOE; Becky Meline, bmeline@illinois.edu, NPRE

Does this program have inter-departmental administration?

No

Proposal Title

Effective Catalog Term	Fall 2022

Provide a brief, concise description (not justification) of your proposal.

Removed Liberal Education Electives, updated number of free elective hours, and moved footnotes (when possible) into the Program of Study Table (to improve accessibility).

List here any related proposals/revisions and their keys. *Example: This BS proposal (key 567) is related to the Concentration A proposal (key 145) and the Concentration B proposal (key 203).*

Program Justification

Why are these changes necessary?

After careful analysis of programs of studies, various requirements, and course selection for students in The Grainger College of Engineering, we have decided to provide additional flexibility to all engineering undergraduate students by increasing the number of free elective hours in all engineering programs. While the actual number of credit hours for free electives varies by program, within thecollege - 8 programs currently provide only 6 credit hours for free electives while an additional 2 have less than 10 - only 4 programs have more than 10 free
elective credits. This lack of free elective credit hours limits students' abilities to efficiently pursue minors, certificates, and other educational opportunities and potentially limits those opportunities only to students coming in with significant AP credit or similar.

The additional free elective credit hours added to the program of study are obtained through the removal of The Grainger College of Engineering's Liberal Education requirement, which required engineering students to take an additional 6 credit hours above-and-beyond the campus' General Education requirement from the Humanities & the Arts, Social & Behavioral Sciences, or a college-curated list of courses. Over time, the Liberal Education requirement has been revised within the college, successively relaxing restrictions and providing additional choice to students (i.e., removal of a sequencing requirement in 1999; addition of the college-curated course list in 2010). Simultaneously, the college-curated list of courses continued to expand to include courses from approximately 120 rubrics across campus (including within The Grainger College of Engineering), gradually removing constraints to allow greater flexibility of choice for students to take advantage of the many opportunities the campus has to offer. Still, in its current form, this additional college-level requirement constrains student choice and interferes with their ability to efficiently pursue minors, certificates, and other educational opportunities across campus unless those opportunities intersect with coursework in the Liberal Education requirement.

Simultaneously, the required engineering orientation course, ENG 100, will be granted 1-credit hour. Previously, this course was a 0-credit course. The allocation of 1-credit appropriately recognizes the time and commitment expected of all students who take this course. In the 1-credit version of ENG 100, content will be added to improve teamwork and interpersonal skills, including topics related to diversity, equity, and inclusion (DEI). The engineering accrediting agency, ABET, will soon be adding DEI requirements for accredited programs. This component of ENG 100 is therefore beneficial to all Grainger Engineering programs and students by providing a common framework on which additional DEI topics can build throughout a student's program of study.

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?

Yes

Required courses

Explain how the inclusion or removal of the courses/subjects listed above impacts the offering departments.

The current Liberal Education requirement is satisfied by a student completing 6 credit hours beyond those required by campus' General Education requirement from Humanities & the Arts, Social & Behavioral Sciences, or a college-curated list of courses (containing courses from over 120 rubrics across campus). An analysis of student course selection in the Liberal Education category indicates 25% of courses are taken in the College of Liberal Arts & Sciences, 20% from the College of Applied Health Sciences, 18% from Gies College of Business, 11% from the College of Agricultural, Consumer and Environmental Sciences, 11% from the College of Fine and Applied Arts, and 9% from The Grainger College of Engineering. Less than 2% of credits are taken in each of the remaining colleges and units across campus.

Although it might stand to reason that removal of the Liberal Education requirement would reduce the amount of credits Grainger Engineering students take outside of their home college, the data do not support that assertion. Specifically, despite the current Liberal Education requirement being set at 6 credit hours, the average number of credit hours completed from the Liberal Education course list upon graduation is 11.9. Through discussions with departmental and college advisors as well as students, students are making course selections not because the course satisfies the Liberal Education requirement, but because they are interested in the coursework offered outside of their home college, are pursing minors and other educational opportunities, and are looking to balance course loads between technical and non- technical courses. Taken together, the data and evidence from advisors and students suggest that students will continue to take the types of courses represented on the Liberal Education course list, even if not specifically required to do so.

Attach letters of support or acknowledgement from other departments.

Letters of Acknowledgement - Liberal Education Electives.pdf

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 Department of Nuclear, Plasma, and Radiological Engineering has undergraduate curriculum program education objectives (PEOs) that prepare our graduates to succeed in early career (two to five years post-graduation) professional activities in paths related to the NPRE discipline. These PEOs are:

1. To succeed as engineers in the 21st Century in a globally-connected technological environment in which best practices are shared internationally free of borders.
2. To advance in career paths associated with the NPRE disciplines, including commercial nuclear power, plasma sciences and technology, and radiological sciences related opportunities.
3. To pursue further academic growth, obtaining advanced degrees in disciplines related, but not limited, to the disciplines associated with NPRE technical areas.
4. To provide leadership to professional and societal communities in a general way and in ways specific to the NPRE disciplines.
5. To engage in life-long learning and professional development, staying abreast of the ever-evolving technological landscape related to the NPRE disciplines.
6. To contribute to society in a professional, responsible and ethical manner.

Process for Development and Approval of NPRE Program Educational Objectives:

1. A subgroup of the NPRE Faculty drafts a revised set of PEOs consistent with desired impact of the NPRE BS degree program.
2. The proposed PEOs were presented to the full NPRE faculty for discussion and possible revision.
3. Following updates of the draft PEOs by the NPRE faculty, the proposed new PEOs are sent to the entire NPRE Advisory Board (Constituent Alumni Industry Advisory Board) for their input and comment. In order to provide sufficient exchange among the NPRE Board members, a conference call is held to systematically discuss the proposed PEOs. This discussion may result in additional changes to the proposed set of PEOs. In the case of the 2013 Constituent Alumni Industry Advisory Board, a heavier emphasis on "leadership" and an independent statement about profession and ethical behavior also included to emphasize the importance of this objective.
4. All current NPRE BS students are invited to participate in a general discussion about the PEOs and to provide comments about their content and implantation. A discussion session was held with a representative number of students which provided further revisions in the PEO's particularly in terms of the wording regarding future professional practice. In addition, the local ANS student chapter was asked to review the PEOs for value and appropriateness.
5. The revised and vetted PEOs were again presented to the full NPRE faculty. Revisions during the other review steps were discussed as well as other suggestions from the various groups. The NPRE faculty voted unanimously to accept the final version of the revised PEOs.
6. The new NPRE PEOs were placed on the NPRE website so that they were available to the public and in particular the various constituencies of the NPRE BS degree program.

This process allows for assessment and improvements required to maintain the quality and vitality of the program. The central component in the process is the Faculty of the NPRE Department since they are directly responsible for setting the Program Educational Objectives, instituting changes in the courses and curriculum based on a careful analysis of the assessment data, and developing capable B.S. graduates who achieve the Program Educational Objectives.

The student outcomes are:

1. An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.
a) Identify, formulate, and solve engineering problems.
b) Advanced mathematics applied to nuclear engineering concepts.
c) Transport and interaction of radiation with matter.
d) Atomic and nuclear physics, quantum mechanics.
e) Computational solutions.
2. An ability to apply the engineering design process to produce solutions that meet specified needs with consideration for public health and safety, and global, cultural, social, environmental, economic, and other factors as appropriate to the discipline.
3. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
a) Develop and conduct experiments, analyze and interpret data, and use engineering judgment to draw conclusions.
b) Measure nuclear and radiation processes specifically.
c) Analyze and interpret data, using engineering judgement to draw conclusions from experimental data.
4. An ability to communicate effectively with a range of audiences.
5. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
a) Recognize ethical and professional responsibilities.
b) Make informed judgements.
6. An ability to recognize the ongoing need to acquire new knowledge, to choose appropriate learning strategies, and to apply this knowledge.
7. An ability to function effectively as a member or leader of a team that establishes goals, plans tasks, meets deadlines, and creates a collaborative and inclusive environment.

The relationship between the Program Educational Objectives and the Student Outcomes are maintained by the department. Student Outcomes represent process-oriented activities that either directly or in combination prepare students to satisfy all PEOs upon completion of the B.S. NPRE degree program.

The assessment process for student outcomes employed by the NPRE Department is as follows:

1. Work products for each 1-7 outcomes (including sub-outcomes) are determined by each instructor in consultation with the Associate Head for Undergraduate Programs

(Kozlowski). The frequency of this element of our process is approximately once every two years.
2.The level of mastery is determined by each instructor and review by the Associate Head for Undergraduate Programs. Generally, typically work products require levels of mastery at 75% or higher.
3. Instructors for the courses coupled to the 1-7 outcomes collect the associated work products and distill these into a numeric scores. This occurs each semester the course is taught.
4. The instructor determines the percentage of students obtaining mastery for each work product. This occurs each semester the course is taught.
5. The instructor generates a document that includes the performance of the student body in the course with respect to the outcome and the number of students that achieved mastery. This occurs each semester the course is taught.
6. These reports are forwarded to the Associate Head for Undergraduate Programs for review. This occurs each semester the course is taught.
7. Periodically, the Undergraduate Curriculum subcommittee reviews the reports. This is review then serves as a basis for modification of either the course or elements of the NPRE curriculum. The frequency of this element of our process is approximately once every two years.
8. The Undergraduate Curriculum subcommittee reviews the assessments work products periodically to ensure these continue to be appropriate for 1-7 outcome assessment. The frequency of this review is approximately once every two years. Instructors are consulted if this review determines that changes in work product(s) are warranted.

The assessment of student outcomes forms the basis of the NPRE Department continuous improvement process for the undergraduate curriculum. These are routinely reviewed by the Associate Head for Undergraduate Programs and by the Undergraduate Curriculum Subcommittee.

Suggestions for changes and improvements in the academic program are encouraged and sought from all members of the Department constituencies. Suggestions may be submitted formally or informally, or may develop from a general assessment of changes in the discipline due to local, national, or international policies or trends. Suggestions for changes or improvements are considered by the Faculty, typically in faculty meetings or in ad hoc subcommittees of the Faculty. Individuals or groups may develop substantive proposals for changes which would be implemented pending a positive response from the Faculty in consultation with the constituencies.

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.

Revised programs Nuclear, Plasma, and Radiological Engineering, BS Side by Side.xlsx

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 - Overview Tab

Text for Overview tab on the Catalog Page. This is not official content, it is used to help build the new catalog page for the program. Can be edited in the catalog by the college or department.

Statement for Programs of Study Catalog

Graduation Requirements

Minimum Technical GPA: 2.0

TGPA is required for NPRE 200 ~~NPRE 200~~ and NPRE 247. ~~NPRE 247.~~ See **Technical GPA** to clarify requirements.

Minimum Overall GPA: 2.0

Minimum hours required for graduation: 128 hours

General education: Students must complete the **Campus General Education** requirements including the campus general education language requirement. One of the SBS courses must be an introductory economics course (ECON 102 ~~(ECON 102~~ or ECON 103). NPRE 481 will satisfy a technical elective requirement in the Professional Concentration Area and the Campus General Education Advanced Composition requirement. ~~ECON 103).~~

Orientation and Professional Development

Course List

Code	Title	Hours
ENG 100	Grainger Engineering Orientation Seminar (External transfer students take ENG 300.)	1
NPRE 100	Orientation to NPRE	1
Total Hours		2

Foundational Mathematics and Science

Course List

Code	Title	Hours
CHEM 102	General Chemistry I	3
CHEM 103	General Chemistry Lab I	1

Code	Title	Hours
MATH 221	Calculus I (MATH 220 may be substituted. MATH 220 is appropriate for students with no background in calculus. 4 of 5 credit hours count towards degree.)	4
MATH 231	Calculus II	3
MATH 241	Calculus III	4
MATH 257	Linear Algebra with Computational Applications	3
MATH 285	Intro Differential Equations	3
PHYS 211	University Physics: Mechanics	4
PHYS 212	University Physics: Elec & Mag	4
Total Hours		29

Nuclear, Plasma, and Radiological Engineering Technical Core

Course List

Code	Title	Hours
CS 101	Intro Computing: Engrg & Sci (CS 124 may be taken instead of CS 101.)	3
ECE 205	Electrical and Electronic Circuits	3
ME 200	Thermodynamics	3
ME 310	Fundamentals of Fluid Dynamics	4
or TAM 335	Introductory Fluid Mechanics	
NPRE 200	Mathematics for Nuclear, Plasma, and Radiological Engineering	2
NPRE 247	Modeling Nuclear Energy System	3
NPRE 321	Introduction to Plasmas and Applications	3
NPRE 330	Materials in Nuclear Engineering	3
NPRE 349	Introduction to NPRE Heat Transfer	2
NPRE 441	Radiation Protection	4
NPRE 445	Interaction of Radiation with Matter	4
NPRE 449	Nuclear Systems Engineering and Design	3
NPRE 451	NPRE Laboratory	3
NPRE 455	Neutron Diffusion & Transport	4
NPRE 458	Design in NPRE	4
TAM 210	Introduction to Statics (TAM 211 may be taken instead of TAM 210. The extra hour may be applied towards the Professional Concentration Area electives.)	2
TAM 212	Introductory Dynamics (PHYS 325 may be taken instead of TAM 212 for students pursuing the PHYS minor.)	3
Total Hours		53

Professional Concentration Area

Course List

Code	Title	Hours
Professional Concentration Area		17

Free Electives

Course List

Code	Title	Hours
~~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~~	~~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.~~ ~~7~~	~~6~~	
Additional course work, subject to the Grainger College of Engineering restrictions to Free Electives, so that there are at least 128 credit hours earned toward the degree.	11	

Code	Title	Hours
Total Hours of Curriculum to Graduate		128

~~Footnotes~~

~~**12**~~

~~MATH 220%7C *may be substituted, with four of the five credit hours applying toward the degree.* MATH 220%7C *is appropriate for students with no background in calculus.*~~

~~**3**~~

~~*Students may elect to take CS 124%7CCode in place of CS 101%7C. CS 125%7C may be substituted for students entering prior to Fall 2022. And students may elect to take* TAM 211%7C *in place of TAM 210%7C. The extra hour will be applied toward the Professional Concentration Area electives.*~~

~~**4**~~

~~*Students may elect to take* PHYS 325%7C *in place of TAM 212%7C. This will facilitate students wishing to pursue the Physics minor to do so while minimizing the number of additional courses.*~~

~~**5**~~

~~*NPRE 481%7C will satisfy a technical elective and the Campus General Education Advanced Composition requirement.*~~

~~**6**~~

~~*The Grainger College of Engineering approved liberal education course list can be found here. Note that these credit hours could carry the required cultural studies designation required for campus general education requirements.*~~

~~**7***The Grainger College of Engineering restrictions to free electives.*~~

Corresponding Degree	BS Bachelor of Science

Program Features

Academic Level	Undergraduate
Does this major have transcripted concentrations?	No

What is the typical time to completion of this program?

4 years

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

128

CIP Code	142301 - Nuclear Engineering.

Is This a Teacher Certification Program?

No

Will specialized accreditation be sought for this program?

No

Delivery Method

This program is available:

On Campus - Students are required to be on campus, they may take some online courses.

Admission Requirements

Desired Effective Admissions Term

Provide a brief narrative description of the admission requirements for this program. Where relevant, include information about licensure requirements, student background checks, GRE and TOEFL scores, and admission requirements for transfer students.

Describe how critical academic functions such as admissions and student advising are managed.

Enrollment

Describe how this revision will impact enrollment and degrees awarded.

These changes will not impact enrollment.

Estimated Annual Number of Degrees Awarded

Year One Estimate	5th Year Estimate (or when fully implemented)

What is the matriculation term for this program?

Fall

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

Additional Budget Information

Attach File(s)

Financial Resources

How does the unit intend to financially support this proposal?

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

No

Attach letters of support

What tuition rate do you expect to charge for this program? e.g, Undergraduate Base Tuition, or Engineering Differential, or Social Work Online (no dollar amounts necessary)

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

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)

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.

These changes will not impact our faculty resources.

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 is no impact to the use of the Library collections, resources, and services.

EP Documentation

EP Control Number	EP.22.096
Attach Rollback/Approval Notices	ep22096_response from sponsor_20220214.pdf
This proposal requires HLC inquiry	No

DMI Documentation

Attach Final Approval Notices	
Banner/Codebook Name	BS: Nucl, Plasma, Rad Eng-UIUC
Program Code:	10KP5183BS

Minor Code	Conc Code	Degree Code	BS	Major Code
5183				

Senate Approval Date	
Senate Conference Approval Date	
BOT Approval Date	
IBHE Approval Date	
HLC Approval Date	
Effective Date:	
Attached Document Justification for this request	

Program Reviewer Comments

Key: 123

GREEN HIGHLIGHT = Course addition or requirement replacement
RED HIGHLIGHT = Course to be removed from listed requirements.
Yellow Highlight - Revision to requirement

Current Program of Study

Graduation Requirements
Minimum Technical GPA: 2.0 TGPA is required for NPRE 200 and NPRE 247. See Technical GPA to clarify requirements.
Minimum Overall GPA: 2.0
Minimum hours required for graduation: 128 hours

General education: Students must complete the Campus General Education requirements including the Campus General Education language requirement. One of the SBS courses must be an introductory economics course (ECON 102 or ECON 103).

Orientation and Professional Development		
ENG 100	Engineering Orientation (External transfer students take ENG 300 instead)1	0
NPRE 100	Orientation to NPRE	1
Total Hours		**1**

Foundational Mathematics and Science		
CHEM 102	General Chemistry I	3
CHEM 103	General Chemistry Lab I	1
MATH 221	Calculus I (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.)2	4
MATH 231	Calculus II	3
MATH 241:	Calculus III	4
MATH 257	Linear Algebra w Computat Appl	3
MATH 285	Intro Differential Equations	3
PHYS 211	University Physics: Mechanics	4
PHYS 212	University Physics: Elec & Mag	4
Total Hours		29

Nuclear, Plasma, and Radiological Engineering Technical Core		
CS 101	Intro Computing: Engrg & Sci (Students may elect to take CS 124 in place of CS 101.)3	3
ECE 205	Electrical and Electronic Circuits	3
ME 200	Thermodynamics	3
ME 310 or TAM 335	Fundamentals of Fluid Dynamics or Introductory Fluid Mechanics	4
NPRE 200	Mathematics for Nuclear, Plasma, and Radiological Engineering	2
NPRE 247	Modeling Nuclear Energy System	3
NPRE 321	Intro to Plasmas & Application	3
NPRE 330	Materials in Nuclear Engrg	3
NPRE 349	Intro to NPRE Heat Transfer	2
NPRE 441	Radiation Protection	4
NPRE 445	Radiation Interact w/Matter I	4
NPRE 449	Nuclear Syst Engrg & Design	3
NPRE 451	NPRE Laboratory	3
NPRE 455	Neutron Diffusion & Transport	4
NPRE 458	Design in NPRE	4
TAM 210	Introduction to Statics (Students may elect to take TAM 211 in place of TAM 210. The extra will be applied toward the Professional Concentration Area electives.)3,4	2
TAM 212	Introductory Dynamics4	3
Total Hours		53

Professional Concentration Area		
Total		17

Electives		
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 [6]		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.[7]		6

Footnotes

[1] *External transfer students take ENG 300 instead*

[2] *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.*

3 Students may elect to take CS 124 in place of CS 101. CS 125 may be substituted for students entering prior to Fall 2022. And students may elect to take TAM 211 in place of TAM 210. The extra hour will be applied toward the Professional Concentration Area electives.

[4] *Students may elect to take PHYS 325 in place of TAM 212. This will facilitate students wishing to puruse the Physics minor to do so while minimizing the number of additional courses.*

[5] *NPRE 481 will satisfy a technical elective and the Campus General Education Advanced Composition requirement.*

[6] *The Grainger College of Engineering approved liberal education course list can be found here. Note that thee credit hours could carry the required cultural studies designation required for campus general education requirement.*

[7] *The Grainger College of Engineering restrictions to free electives can be found here: https://wiki.illinois.edu/wiki/display/ugadvise/Degree+Requirements#DegreeRequirements-FreeElectives*

New Program of Study

Graduation Requirements
Minimum Technical GPA: 2.0 TGPA is required for NPRE 200 and NPRE 247. See Technical GPA to clarify requirements.
Minimum Overall GPA: 2.0
Minimum hours required for graduation: 128 hours

General education: Students must complete the Campus General Education requirements including the campus general education language requirement. One of the SBS courses must be an introductory economics course (ECON 102 or ECON 103). NPRE 481 will satisfy both a technical elective requirement in the Professional Concentration Area and the Campus General Education Advanced Composition requirement.

Orientation and Professional Development		
ENG 100	Engineering Orientation (External transfer students take ENG 300 instead)	1
NPRE 100	Orientation to NPRE	1
Total Hours		**2**

Foundational Mathematics and Science		
CHEM 102	General Chemistry I	3
CHEM 103	General Chemistry Lab I	1
MATH 221	Calculus I (Math 220 may be substituted. Math 220 is appropriate for students with no background in calculus. 4 of 5 credit hours count towards degree.)	4
MATH 231	Calculus II	3
MATH 241:	Calculus III	4
MATH 257	Linear Algebra w Computat Appl	3
MATH 285	Intro Differential Equations	3
PHYS 211	University Physics: Mechanics	4
PHYS 212	University Physics: Elec & Mag	4
Total Hours		29

Nuclear, Plasma, and Radiological Engineering Technical Core		
CS 101	Intro Computing: Engrg & Sci (CS 124 may be taken instead of CS 101.)	3
ECE 205	Electrical and Electronic Circuits	3
ME 200	Thermodynamics	3
ME 310 or TAM 335	Fundamentals of Fluid Dynamics or Introductory Fluid Mechanics	4
NPRE 200	Mathematics for Nuclear, Plasma, and Radiological Engineering	2
NPRE 247	Modeling Nuclear Energy System	3
NPRE 321	Intro to Plasmas & Application	3
NPRE 330	Materials in Nuclear Engrg	3
NPRE 349	Intro to NPRE Heat Transfer	2
NPRE 441	Radiation Protection	4
NPRE 445	Radiation Interact w/Matter I	4
NPRE 449	Nuclear Syst Engrg & Design	3
NPRE 451	NPRE Laboratory	3
NPRE 455	Neutron Diffusion & Transport	4
NPRE 458	Design in NPRE	4
TAM 210	Introduction to Statics (TAM 211 may be taken instead of TAM 210. The extra hour may be applied towards the Professional Concentration Area electives.)	2
TAM 212	Introductory Dynamics (PHYS 325 may be taken instead of TAM 212 for s	3
Total Hours		53

Professional Concentration Area		
Total		17

Free Electives		
Free electives. Additional course work, subject to the Grainger College of Engineering restrictions to Free Electives, so that there are at least 128 credit hours earned toward the degree.		11

ILLINOIS

COLLEGE OF AGRICULTURAL, CONSUMER
& ENVIRONMENTAL SCIENCES

Office of the Dean
227 Mumford Hall, MC-710
1301 W. Gregory Drive
Urbana, IL 61801

January 13, 2022

Dear Dean Bashir,

Thank you for informing us of the proposed removal of the Liberal Education requirements in all undergraduate programs in The Grainger College of Engineering. I understand that this requirement included an extensive list of courses Grainger Engineering students could choose from, including some from our college. Grainger Engineering students will continue to be welcome to enroll in the courses formerly on your Liberal Education list as Free Electives after the removal of this requirement.

Sincerely,

Germán Bollero, Interim Dean

ILLINOIS

COLLEGE OF APPLIED HEALTH SCIENCES

Office of the Dean
110 Huff Hall, MC-586
1206 S. Fourth St.
Champaign, IL 61820

January 25, 2022

Dear Dean Bashir,

Thank you for informing us of the proposed removal of the Liberal Education requirements in all undergraduate programs in The Grainger College of Engineering. I understand that this requirement included an extensive list of courses Grainger Engineering students could choose from, including some from our college. Grainger Engineering students will continue to be welcome to enroll in the courses formerly on your Liberal Education list as Free Electives after the removal of this requirement.

While I support the move the give your students more freedom in course selection, it is important to express my concern that discontinuing your Liberal Education requirement may negatively impact my college's finances by reducing the IUs generated from lower enrollments in AHS courses. As you know, the current budget model rewards colleges financially based on the number of registrants in courses. I am hopeful that your students and advisors will continue to view AHS courses as relevant and valuable when they are selecting electives.

Sincerely,

Cheryl Hanley-Maxwell

Dean

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

College of Education
Undergraduate Student Academic Affairs Office
110 Education Building, MC-708
1310 S. Sixth St.
Champaign, IL 61820

Dear Dean Bashir,

Thank you for informing us of the proposed removal of the Liberal Education requirements in all undergraduate programs in The Grainger College of Engineering. I understand that this requirement included an extensive list of courses Grainger Engineering students could choose from, including some from our college. Grainger Engineering students will continue to be welcome to enroll in the courses formerly on your Liberal Education list as Free Electives after the removal of this requirement.

Sincerely,

Assistant Dean for Academic Affairs
College of Education | University of Illinois at Urbana-Champaign

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

College of Fine & Applied Arts

Office of the Dean
100 Architecture Building, MC-622
608 E. Lorado Taft Dr.
Champaign, IL 61820

21 December 2021

Rashid Bashir, Dean
306 Engineering Hall
1308 W. Green St.
M/C 266
Urbana, IL 61801

Dear Dean Bashir,

Thank you for informing us of the proposed removal of the Liberal Education requirements in all undergraduate programs in The Grainger College of Engineering. I understand that this requirement included an extensive list of courses Grainger Engineering students could choose from, including some from the College of Fine & Applied Arts. Grainger Engineering students will continue to be welcome to enroll in the courses formerly on your Liberal Education list as Free Electives after the removal of this requirement.

Sincerely,

Kevin Hamilton
Dean and Professor

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

College of Liberal Arts & Sciences
2090 Lincoln Hall, MC-448
702 S. Wright St.
Urbana, IL 61801

December 20, 2021

Dear Dean Bashir,

Thank you for informing the College of LAS of the proposed removal of the Liberal Education requirement in all undergraduate programs in the Grainger College of Engineering. I understand that this requirement includes an extensive list of courses from which your students could choose some, many of which are from our college. Grainger Engineering students will continue to be welcome to take our courses formerly on your Liberal Education list as free electives after the removal of this requirement from their programs of study.

Sincerely,

Venetria K. Patton
Harry E. Preble Dean

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

College of Media
Office of the Dean
119 Gregory Hall, MC-462
810 S. Wright St.
Urbana, IL 61801

January 13, 2022

Rashid Bashir, Dean
The Grainger College of Engineering
306 Engineering Hall
1308 W. Green Street
Urbana, IL 61801

Dear Dean Bashir,

Thank you for informing us of the proposed removal of the Liberal Education requirements in all undergraduate programs in The Grainger College of Engineering. I understand that this requirement included an extensive list of courses Grainger Engineering students could choose from, including some from our college. Grainger Engineering students will continue to be welcome to enroll in the courses formerly on your Liberal Education list as Free Electives after the removal of this requirement.

Sincerely,

Tracy Sulkin
Dean, College of Media

Gies College of Business
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Office of the Dean
260 Wohlers Hall, 1206 S. 6th Street
Champaign, IL 61820
217.333.2747

December 13th, 2021

Dean Bashir,

Thank you for informing us of the proposed removal of the Liberal Education requirements in all undergraduate programs in The Grainger College of Engineering. I understand that this requirement included an extensive list of courses Grainger Engineering students could choose from, including some from Gies College of Business. Students from Grainger will continue to be welcome to enroll in the courses formerly on your Liberal Education list as Free Electives after the removal of this requirement.

Sincerely,

Jeffrey R. Brown
Dean, Gies College of Business

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

School of Information Sciences

501 E. Daniel St., MC-493
Champaign, IL 61820-6211

February 3, 2022

Dean Rashid Bashir
306 Engineering Hall
1308 West Green Street
Urbana, IL 61801

Dear Rashid,

Thank you for informing us of the proposed removal of the Liberal Education requirements in all undergraduate programs in the Grainger College of Engineering. I understand that this requirement included an extensive list of courses that Grainger Engineering students could choose from, including some from the iSchool. This letter acknowledges that Grainger Engineering students will continue to be able to enroll in courses as articulated and constrained in Course Explorer and formerly on your Liberal Education list as Free Electives, after the removal of this requirement.

Sincerely,

Eunice Santos

Eunice Santos
Professor and Dean

From: Hanley-Maxwell, Cheryl D <cherylhm@illinois.edu>
Sent: Monday, February 14, 2022 3:57 PM
To: Miller, Nolan H <nmiller@illinois.edu>
Subject: RE: Senate Ed Pol - Re: change to Grainger Liberal Education requirement

That's fine. Thanks for asking

CHERYL D HANLEY-MAXWELL
Dean

University of Illinois at Urbana-Champaign
College of Applied Health Sciences
108 Huff Hall
1206 S Fourth | M/C 586
Champaign, IL 61820
217.333.2131 | cherylhm@illinois.edu
www.ahs.illinois.edu
(217) 333-0404 (FAX)

Human kindness has never weakened the stamina or softened the fiber of a free people. A nation does not have to be cruel to be tough. -- President Franklin D. Roosevelt

From: Miller, Nolan H <nmiller@illinois.edu>
Sent: Monday, February 14, 2022 1:49 PM
To: Hanley-Maxwell, Cheryl D <cherylhm@illinois.edu>
Subject: RE: Senate Ed Pol - Re: change to Grainger Liberal Education requirement

Dear Cheryl,

Thanks again for talking with me about the changes to the Grainger BS programs. I read the statement you sent to the committee today. The Chair would like to include it in the record that is forwarded to the Senate. Is it ok to include the email you sent below?

Thanks,

Nolan

_____

NOLAN H MILLER
Daniel and Cynthia Mah Helle Professor in Finance | Department of Finance
Director, Center for Business and Public Policy
Gies College of Business | University of Illinois at Urbana-Champaign
217.244.2847 | nmiller@illinois.edu | http://www.business.illinois.edu/nmiller

From: Hanley-Maxwell, Cheryl D <cherylhm@illinois.edu>
Sent: Thursday, February 10, 2022 1:49 PM
To: Miller, Nolan H <nmiller@illinois.edu>
Subject: RE: Senate Ed Pol - Re: change to Grainger Liberal Education requirement

Hi Nolan –

I appreciate what Ed Pol does in juggling the interests and concerns of the various programs across the campus, while keeping the students in mind. I served on a committee like this at my previous institution and know that it all boils down to what is best for the students' learning. Thanks for reminding me of that.

Here is a statement: While the Grainger proposal has the potential to financially affect AHS, we want to affirm another college's right to control their program requirements and student experiences, ensuring the best possible outcomes for their students. As a result, AHS supports this proposal and hopes that Grainger advisors will recognize the valuable contribution AHS classes make to the education of their students and continue to encourage them to consider relevant and/or high interest classes in AHS.

Hope this works!

Cheryl

CHERYL D HANLEY-MAXWELL, PHD
Dean

University of Illinois at Urbana-Champaign
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108 Huff Hall
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Human kindness has never weakened the stamina or softened the fiber of a free people. A nation does not have to be cruel to be tough. -- President Franklin D. Roosevelt