Date Submitted: 02/25/26 1:47 pm

Viewing: BS-EPHY : Bachelor of Science in Engineering Physics

Last approved: 03/12/25 5:30 pm

Last edit: 02/25/26 1:47 pm

Changes proposed by: segre

Catalog Pages
Using this Program

[Bachelor of Science in Engineering Physics](#)

Program Status	Active		
Requestor	Name	Carlo Segre ~~Pavel Snopok~~	E-mail
segre@iit.edu ~~psnopok@iit.edu~~			
Origination Date	2026-2-25 ~~2024-11-7~~		
Is this an interdisciplinary program?	No		
Is this an incubator program?			
Is this stem-eligible?	Yes		
Available for direct application?	Yes		
Academic Unit	Physics		
College	Lewis College of Science and Letters		
Program Title	Bachelor of Science in Engineering Physics		
Effective Academic Year	2026 ~~2025~~ - 2027 ~~2026~~	Effective Term	Fall 2026
Academic Level	Undergraduate		

In Workflow

1. **PHYS Chair**
2. **Academic Affairs**
3. **Undergraduate Academic Affairs**
4. **LS Dean**
5. **Undergraduate Studies Committee Chair**
6. Faculty Council Chair
7. Academic Affairs

Approval Path

1. 03/06/26 1:14 pm Pavel Snopok (psnopok): Approved for PHYS Chair
2. 03/09/26 3:06 pm Ayesha Qamer (aqamer): Approved for Academic Affairs
3. 03/09/26 3:55 pm Joseph Gorzkowski (jgorzkow): Approved for Undergraduate Academic Affairs
4. 03/18/26 1:42 pm Jennifer deWinter (jdewinter): Approved for LS Dean

History

1. Mar 12, 2025 by Carlo Segre (segre)

If all courses in a subject in your department are required, please enter each subject followed by the number ranges in the "Quick Add" field in the pop up box when you click the green plus button below. For example: ARCH 100-499.

What courses will factor the major GPA?	PHYS 100 - Intro to the Profession
	PHYS 123 - General Physics I: Mechanics
	PHYS 221 - General Physics II: Electricity and Magnetism
	PHYS 223 - General Physics III
	PHYS 240 - Computational Science
	PHYS 300 - Instrumentation Laboratory
	PHYS 301 - Mathematical Methods of Physics
	PHYS 304 - Thermodynamics and Statistical Physics
	PHYS 308 - Classical Mechanics I
	PHYS 405 - Fundamentals of Quantum Theory I
	PHYS 413 - Electromagnetism I
	PHYS 427 - Advanced Physics Laboratory I
	PHYS 485 - Physics Colloquium
	MS 201 - Materials Science
	MMAE 202 - Mechanics of Solids
	MMAE 232 - Design for Innovation
	MMAE 313 - Fluid Mechanics
	ECE 308 - Signals and Systems
	ECE 438 - Control Systems

Program Type   Degree

Degree Type   Bachelor of Science (BS)

CIP Code
   14.1201 - Engineering Physics/Applied Physics.

Is there more than one Academic Unit proposer?

   No

Program Code   BS-EPHY

Program Attribute

Total Program   123 ~~125~~
Credit Hours

Rationale for change in program credit hours.
   Removal of CS 105 becaseu requirement for Computing is met by PHYS 240

Please provide a summary and rationale for the

requested program
revision.

02/16/2026 -- Drop the CS 104/105/115 requirement since PHYS 240 satisfies the Computer Science General Education requirement. This reduces the overall credit hours for the program from 125 to 123.

Program Narrative and Justification

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

We propose to take the current Applied Physics B.S. program, reduce the overall credit hours and rename it to Engineering Physics. The principles behind this revised degree program is to provide a fundamental physics education with an applied focus that provides students the background to step into an industrial R&D career where a knowledge of engineering principles is of value. The Physics core consists of 41 credits including one semester each of upper division classical mechanics, electrodynamics, statistical physics, and quantum mechanics along with laboratory courses in electronics and instrumentation, advanced physics, and computational physics. In addition the program requires an engineering core of 15 credits which is designed to provide an engineering base of solid and fluid mechanics, control systems, signal processing, and design.

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

See above.

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

No analysis, this is a replacement of the existing B.S. in Applied Physics program.

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

N/A

Admission Entry Details

What are the enrollment estimates?

Year 1	5	Year 2	7	Year 3	10

Attach Additional
Program
Justification
Document(s)

Academic Information

Advising

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

Advising and mentoring will be carried over from the current B.S. in Applied Physics program.

Program Resources

Which program
resources are
necessary to offer
this program?

Proposed Catalog Entry

Admission
Requirements

Course Requirements

Required Courses

Physics Requirements		(41)
PHYS 100	Intro to the Profession	2
PHYS 123	General Physics I: Mechanics	4
PHYS 221	General Physics II: Electricity and Magnetism	4
PHYS 223	General Physics III	4
PHYS 240	Computational Science	3
PHYS 300	Instrumentation Laboratory	4
PHYS 301	Mathematical Methods of Physics	3
PHYS 304	Thermodynamics and Statistical Physics	3
PHYS 308	Classical Mechanics I	3
PHYS 405	Fundamentals of Quantum Theory I	3
PHYS 413	Electromagnetism I	3
PHYS 427	Advanced Physics Laboratory I	3
PHYS 485	Physics Colloquium	1
PHYS 485	Physics Colloquium	1
Engineering Core Requirements		**(18)**
MS 201	Materials Science	3
MMAE 202	Mechanics of Solids	3
MMAE 232	Design for Innovation	3
MMAE 313	Fluid Mechanics	3
ECE 308	Signals and Systems	3
ECE 438	Control Systems	3
Mathematics Requirements		**(18)**
MATH 151	Calculus I	5
MATH 152	Calculus II	5
MATH 251	Multivariate and Vector Calculus	4
MATH 252	Introduction to Differential Equations	4
Engineering Electives		**(9)**
Select 9 credit hours from the approved list of Engineering electives [1]		9

Technical Electives	(6)
Select 6 credit hours, approved by the advisor, from Engineering or 400-level Physics courses	6
Chemistry Requirement	(4)
CHEM 124	Principles of Chemistry I with Laboratory	4
~~Computer Science Requirement~~	
~~Select one of the following:~~	~~2~~
~~CS 104~~	~~Introduction to Computer Programming for Engineers~~	~~2~~
~~CS 105~~	~~Introduction to Computer Programming~~	~~2~~
~~CS 115~~	~~Object-Oriented Programming I~~	~~2~~
Interprofessional Projects (IPRO)	(6)
See Illinois Tech Core Curriculum, section E	6
Humanities and Social Science Requirements	(21)
See Illinois Tech Core Curriculum, sections B and C	21
Total Credit Hours	123

1

BME 309, BME 422, BME 433, BME 438, CAE 286, CAE 287, CAE 312, CAE 419, CAE 470, ECE 403, ECE 408, ECE 437, ECE 447, MMAE 302, MMAE 320, MMAE 323, MMAE 485

Sample Curriculum/Program Requirements

Bachelor of Science in Engineering Physics Curriculum

			Year 1
Semester 1	Credit Hours	Semester 2	Credit Hours
PHYS 100	2	PHYS 221	4
PHYS 123	4	MS 201	3
CHEM 124	4	MATH 152	5
MATH 151	5	Humanities 200-level Course	3
	15		15
			Year 2
Semester 1	Credit Hours	Semester 2	Credit Hours
PHYS 223	4	PHYS 304	3
~~CS 105~~	~~2~~	MATH 252	4
MATH 251	4	MMAE 232	3
MMAE 202	3	Social Sciences Elective	3

Humanities or Social Sciences Elective	3	Humanities Elective (300+)	3
	14		16

Year 3

Semester 1	Credit Hours	Semester 2	Credit Hours
PHYS 300	4	PHYS 240	3
PHYS 301	3	ECE 308	3
PHYS 308	3	Engineering Elective[1]	3
MMAE 313	3	IPRO 497 or 397	3
Engineering Elective[1]	3	Social Sciences Elective (300+)	3
	16		15

Year 4

Semester 1	Credit Hours	Semester 2	Credit Hours
PHYS 405	3	PHYS 485	1
PHYS 413	3	Engineering Elective[1]	3
PHYS 427	3	Technical Elective[2]	3
PHYS 485	1	IPRO 497	3
ECE 438	3	Social Sciences Elective (300+)	3
Technical Elective[2]	3	Humanities Elective (300+)	3
	16		16

Total Credit Hours: 123

[1] Select from BME 309, BME 422, BME 433, BME 438, CAE 286, CAE 287, CAE 312, CAE 419, CAE 470, ECE 403, ECE 437, ECE 447, MMAE 302, MMAE 320, MMAE 323, MMAE 485.

[2] Select from any PHYS 400+ course or approved Engineering Electives.

Specialization Requirements

Program Outcomes and Assessment Process

What are your learning objectives in this program? Please list each learning objective in the boxes below:

Note: These should be the same as described in your assessment plan at the bottom of this form.

Demonstrate understanding of classical physics by being able to solve problems at an advanced undergraduate level.

Demonstrate understanding of electricity and magnetism by being able to solve problems at an advanced undergraduate level.

Demonstrate understanding of quantum mechanics by being able to solve problems at an advanced undergraduate level.

Demonstrate understanding of thermal and statistical physics by being able to solve problems at an advanced undergraduate level.

Model physical systems using advanced mathematics and apply mathematical techniques correctly.

Design, write, execute, and troubleshoot computational code which models physical phenomena.

Demonstrate the ability to design and instantiate mechanical systems and scientific experiments.

Demonstrate understanding of control systems and signals by being able to solve problems at an advanced undergraduate level

Upload your assessment plan here:
2024_Assessment_Plan_BS_EngineeringPhysics.xlsx

Undergraduate Program Requirements

What courses will factor the major GPA?	PHYS 100 - Intro to the Profession
	PHYS 123 - General Physics I: Mechanics
	PHYS 221 - General Physics II: Electricity and Magnetism
	PHYS 223 - General Physics III
	PHYS 240 - Computational Science
	PHYS 300 - Instrumentation Laboratory
	PHYS 301 - Mathematical Methods of Physics
	PHYS 304 - Thermodynamics and Statistical Physics
	PHYS 308 - Classical Mechanics I
	PHYS 405 - Fundamentals of Quantum Theory I
	PHYS 413 - Electromagnetism I
	PHYS 427 - Advanced Physics Laboratory I
	PHYS 485 - Physics Colloquium
	PHYS 485 - Physics Colloquium
	ECE 308 - Signals and Systems
	ECE 438 - Control Systems
	MS 201 - Materials Science
	MMAE 202 - Mechanics of Solids
	MMAE 232 - Design for Innovation
	MMAE 313 - Fluid Mechanics

Engineering Electives - Course Engineering Electives not Found

Technical Electives - Course Technical Electives not Found

Undergraduate Degree Requirements

Minimum credit hours	<u>123</u> ~~125~~

Specialization required?

   No

Minor required?

   No

Proposed General Curriculum

List Major Course Requirements

PHYS 100	Intro to the Profession	2
PHYS 123	General Physics I: Mechanics	4
PHYS 221	General Physics II: Electricity and Magnetism	4
PHYS 223	General Physics III	4
PHYS 240	Computational Science	3
PHYS 300	Instrumentation Laboratory	4
PHYS 301	Mathematical Methods of Physics	3
PHYS 304	Thermodynamics and Statistical Physics	3
PHYS 308	Classical Mechanics I	3
PHYS 405	Fundamentals of Quantum Theory I	3
PHYS 413	Electromagnetism I	3
PHYS 427	Advanced Physics Laboratory I	3
PHYS 485	Physics Colloquium	1
PHYS 485	Physics Colloquium	1
MS 201	Materials Science	3
MMAE 202	Mechanics of Solids	3
MMAE 232	Design for Innovation	3
MMAE 313	Fluid Mechanics	3
ECE 308	Signals and Systems	3

ECE 438	Control Systems	3

List Mathematics Requirements

MATH 151	Calculus I	5
MATH 152	Calculus II	5
MATH 251	Multivariate and Vector Calculus	4
MATH 252	Introduction to Differential Equations	4

List Science Requirements

CHEM 124	Principles of Chemistry I with Laboratory	4

List Computer Science Requirements

CS 105	Introduction to Computer Programming	2
or CS 104	Introduction to Computer Programming for Engineers	
or CS 115	Object-Oriented Programming I	

List Humanities and Social Sciences Requirements

See Illinois Tech Core Curriculum, sections B and C		21

List Interprofessional Project (IPRO) Requirements

See Illinois Tech Core Curriculum, section E		6

List Technical Elective Course Options

Technical electives: select six credit hours, approved by the advisor, from Engineering or 400-level Physics courses	6
Engineering electives: select 9 credits from the approved list of Engineering electives [1]	9

[1] BME 309, BME 422, BME 433, BME 438, CAE 286, CAE 287, CAE 312, CAE 419, CAE 470, ECE 403, ECE 408, ECE 437, ECE 447, MMAE 302, MMAE 320, MMAE 323, MMAE 485

List Free Elective Credit Hours (if applicable)

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

			Year 1
Semester 1	**Credit Hours**	**Semester 2**	**Credit Hours**
PHYS 100	2	PHYS 221	4
PHYS 123	4	MS 201	3
CHEM 124	4	MATH 152	5
MATH 151	5	Humanities 200-level course	3
	15		15
			Year 2
Semester 1	**Credit Hours**	**Semester 2**	**Credit Hours**
PHYS 223	4	PHYS 304	3
CS 105	2	MATH 252	4
MATH 251	4	MMAE 232	3
MMAE 202	3	Social Sciences elective	3
Humanities or Social Sciences elective	3	Humanities elective (300+)	3
	16		16
			Year 3
Semester 1	**Credit Hours**	**Semester 2**	**Credit Hours**
PHYS 300	4	PHYS 240	3
PHYS 301	3	ECE 308	3
PHYS 308	3	Engineering elective	3
MMAE 313	3	IPRO 497 or 397	3
Engineering elective	3	Social Sciences elective (300+)	3
	16		15
			Year 4
Semester 1	**Credit Hours**	**Semester 2**	**Credit Hours**
PHYS 405	3	PHYS 485	1
PHYS 413	3	Engineering elective	3
PHYS 427	3	Technical elective	3
PHYS 485	1	IPRO 497	3
ECE 438	3	Social Sciences elective (300+)	3
Technical elective	3	Humanities elective (300+)	3
	16		16

Total Credit Hours: 125

Report to Faculty Council

Reviewer
Comments

Key: 652