ENGINEERING, B.S.

Begin Campus: Abington, Brandywine, DuBois, Hazleton

End Campus: Abington, Brandywine, DuBois, Hazleton

Suggested Academic Plan

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2024-25 academic year. To access previous years' suggested academic plans, please visit the archive (https://bulletins.psu.edu/undergraduate/archive/) to view the appropriate Undergraduate Bulletin edition.

Multi-Disciplinary Engineering Design Option: Engineering, B.S. at Abington Campus

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

If you are starting at a campus other than the one this plan is ending at, please refer to: https://advising.engr.psu.edu/degree-requirements/academic-plans-by-major.aspx

First Year

Fall	Credits	Spring	Credits
CHEM 110 (GN)*#	3	CAS 100A or 100B (GWS)‡†	3
CHEM 111	1	CHEM 112 (or any GN)	3
EDSGN 100*#	3	CHEM 113 (or any GN)	1
ENGL 15, 30H, or ESL 15 (GWS)‡†	3	General Education Course (GHW)	1.5
First Year Seminar	1	MATH 141 (GQ)*#†	4
MATH 140 (GQ)*#†	4	PHYS 211*#	4
	15		**16.5**

Second Year

Fall	Credits	Spring	Credits
CMPEN 271	3	EMCH 212*	3
CMPSC 121, 201, or 200	3	EMCH 213	3
EMCH 211*	3	MATH 251*	4
MATH 231	2	PHYS 214	2
PHYS 212*	4	General Education Course	3
	15		**15**

Third Year

Fall	Credits	Spring	Credits	Summer	Credits
EE 210*	4	EE 316	3	EDSGN 495	1
ECON 102 or 104†	3	EE 310*	4		
EDSGN 401	3	ENGL 202C (GWS)‡	3		
ME 201, 300, or EME 301*	3	EDSGN 402	4		
General Education Course	3	General Education Course	3		
	16		**17**		**1**

Fourth Year

Fall	Credits	Spring	Credits
EDSGN 410*	4	Engr. Tech. Elective (ETE) EDSGN 420 or ME 480	3
ENGR 350*	3	ENGR 407	3
ENGR 490W	1	ENGR 491W	3
EDSGN 403	3	General Education Course	3
General Education Course (GHW)	1.5	General Education Course	3
General Technical Elective(s) (GTE)	4		
	16.5		**15**

Total Credits 127

* Course requires a grade of C or better for the major
‡ Course requires a grade of C or better for General Education
# Course is an Entrance to Major requirement
† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy Cultural Diversity Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

College Notes:

- General Technical Electives (GTE) are four credits of engineering, science or mathematics at a similar or higher level required for the major. Choose at least four credits from the program approved list of courses: BIOL 141 (3), BIOL 142 (1), CHEM 202 (3), CHEM 210 (3), CMPEN 270 (4), CMPEN 275 (1), EDSGN 110 (2), EDSGN 210 (2),

EMCH 315 (2), EMCH 316 (1), MATH 220 GQ (2-3), MATH 232 (2) and PHYS 213 (2). Other GTE credits will be considered through the petition process.
- Upper division engineering courses will be offered in combination at both Penn State Abington and Penn State Great Valley
- EDSGN 495 (1) requires 300 hours of work and may be scheduled during the summer semester after the second or third year

Course Lists:

General Technical Electives (GTE) are 4 credits of engineering, science, or mathematics at a similar or higher level required for the major. Choose from:

- BIOL 141 Introduction to Human Physiology (3 cr.)
- BIOL 142 Physiology Laboratory (1 cr.)
- CHEM 202 Fundamentals of Organic Chemistry I (3 cr.) or CHEM 210 Organic Chemistry I (3 cr.)
- CMPEN 270 Digital Design: Theory and Practice (4 cr.)
- CMPEN 275 Digital Design Laboratory (1 cr.)
- EDSGN 110 Spatial Analysis in Engineering Design (2 cr.)
- EDSGN 210 Tolerancing and Spatial Models (2 cr.)
- EMCH 212 Dynamics (3 cr.) (Alternative Energy and Power Distribution Option only)
- EMCH 315 Mechanical Response of Engineering Materials (2 cr.)
- EMCH 316 Experimental Determination of Mechanical Response of Materials (1 cr.)
- MATH 220 Matrices (2-3 cr.)
- MATH 232 Integral Vector Calculus (2 cr.)
- MATH 310 Elementary Combinatorics (3 cr.)
- PHYS 213 General Physics: Fluids and Thermal Physics (2 cr.)

Other GTE credits will be considered through the petition process.

Engineering Technical Electives are 3 credits of engineering courses at the 300 or 400 level. Choose from:

- EDSGN 420 Advanced Robotics Design and Applications (3 cr.)
- ME 380 Machine Dynamics (3 cr.)
- ME 345 Instrumentation, Measurements, and Statistics (4 cr.)
- ME 357 System Dynamics (3 cr.)
- ME 480 Mechanism Design and Analysis (3 cr.)

Students are expected to complete the version of CMPSC that is required for their intended major. The requirement varies across College of Engineering majors. Students should plan the CMPSC course requirement carefully with the assistance of an academic adviser.

These courses offered at Abington in fall semester only:

- CMPEN 271 Introduction to Digital Systems (3 cr.)
- EMCH 211 Statics (3 cr.)

These courses offered at Abington in spring semester only:

- CHEM 112 Chemical Principles II (3 cr.)
- CHEM 113 Experimental Chemistry II (1 cr.)
- EE 210 Circuits and Devices (4 cr.)
- EMCH 212 Dynamics (3 cr.)
- EMCH 213 Strength of Materials (3 cr.)
- MATH 251 Ordinary and Partial Differential Equations (4 cr.)
- PHYS 214 General Physics: Wave Motion and Quantum Physics (2 cr.)

Multi-Disciplinary Engineering Design Option: Engineering, B.S. at Brandywine Campus

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First Year

Fall	Credits	Spring	Credits
CHEM 110 (GN)*#	3	CAS 100A or 100B (GWS)‡	3
CHEM 111	1	CHEM 112 (or any GN)	3
EDSGN 100*#	3	CHEM 113 (or any GN)	1
ENGL 15, 30H, or ESL 15 (GWS)‡†	3	General Education Course (GHW)	1.5
First Year Seminar	1	MATH 141 (GQ)*‡#	4
MATH 140 (GQ)*‡#	4	PHYS 211 (GN)*#	4
	15		**16.5**

Second Year

Fall	Credits	Spring	Credits
CMPEN 271	3	EMCH 212*	3
CMPSC 121, 200, or 201	3	EMCH 213	3
EMCH 211*	3	MATH 251*	4
MATH 231	2	PHYS 214	2
PHYS 212*	4	General Education Course	3
	15		**15**

Third Year

Fall	Credits	Spring	Credits	Summer	Credits
EE 210*	4	EE 316	3	EDSGN 495	1
ECON 102 or 104‡	3	EE 310*	4		
EDSGN 401	3	ENGL 202C‡	3		
ME 201, 300, or EME 301*	3	EDSGN 402	4		
General Education Course	3	General Education Course	3		
	16		**17**		**1**

Fourth Year

Fall	Credits	Spring	Credits
EDSGN 410*	4	Engr. Tech. Elective (ETE) EDSGN 420 or ME 480	3
ENGR 350*	3	ENGR 407	3
ENGR 490W	1	ENGR 491W	3
EDSGN 403	3	General Education Course	3
General Education Course (GHW)	1.5	General Education Course	3
General Technical Elective(s) (GTE)	4		
	16.5		**15**

Total Credits 127

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General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

College Notes:

- General Technical Electives (GTE) are four credits of engineering, science or mathematics at a similar or higher level required for the major. Choose at least four credits from the program approved list of courses: BIOL 141 (3), BIOL 142 (1), CHEM 202 (3), CHEM 210 (3), CMPEN 270 (4), CMPEN 275 (1), EDSGN 110 (2), EDSGN 210 (2), EMCH 315 (2), EMCH 316 (1), MATH 220 GQ (2-3), MATH 232 (2) and PHYS 213 (2). Other GTE credits will be considered through the petition process.
- Upper division engineering courses will be offered at Penn State Great Valley.
- **EDSGN 495 (1) requires 300 hours of work and may be scheduled during the summer semester after the second or third year.**

Applied Materials Option: Engineering, B.S. at DuBois Campus

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

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First Year

Fall	Credits	Spring	Credits
CHEM 110 (GN)*#	3	CAS 100 (GWS)‡†	3
CHEM 111	1	CHEM 112 (GN)	3
EDSGN 100*#	3	CHEM 202	3
ENGL 15, 30H, or ESL 15 (GWS)‡†	3	MATH 141 (GQ)*#†	4
First Year Seminar	1	PHYS 211 (GN)*#	4
MATH 140 (GQ)*‡#	4		
	15		**17**

Second Year

Fall	Credits	Spring	Credits
ECON 102 or 104†	3	CMPSC 121, 200, or 201	3
EMCH 211*	3	EMCH 213	3
General Education Course	3	MATH 251*‡	4
General Education Course (GHW)	1.5	ME 300 or EME 301*	3
MATH 231	2	PHYS 214*	2
PHYS 212*	4	General Education Course (GHW)	1.5
	16.5		**16.5**

Third Year

Fall	Credits	Spring	Credits
General Education Course	3	ENGR 320	3
General Technical Elective	4	ENGR 350*	3
MATH 220	2	MATSE 400	3
MATSE 201*	3	MATSE 413	3
MATSE 202	3	ENGL 202C‡†	3
	15		**15**

Fourth Year

Fall	Credits	Spring	Credits
ENGR 421*	4	ENGR 450	3
ENGR 490W	1	ENGR 491W	3
General Education Course	3	General Education Course	3
General Education Course	3	MATSE 411	3
MATSE 402	3	MATSE 417 or ESC 417	3
MATSE 430	3		
	17		**15**

Total Credits 127

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General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

College Notes:

- General Technical Electives are 4 credits of engineering, science or mathematics at a similar or higher level required for the major.
- **Choose from:** BIOL 141 GN (3), BIOL 142 (1), CHEM 113 (1), CMPEN 270 (4), CMPEN 271 (3), CMPEN 275 (1), EDSGN 110 (2), EDSGN 210 (2), EMCH 212 (3) (Applied Materials and Alternative Energy & Power Generation Options only), EMCH 315 (2), EMCH 316 (1), MATH 232 (2), MATH 310 (3), and PHYS 213 GN (2).
- Other GTE credits will be considered through the petition process.

Alternative Energy and Power Generation Option: Engineering, B.S. at Hazleton Campus

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First Year

Fall	Credits	Spring	Credits
MATH 140*‡#†	4	MATH 141*‡#†	4
CHEM 110*#†	3	PHYS 211*#†	4
CHEM 111†	1	CHEM 112†	3
ENGL 15 or 30H‡†	3	CHEM 113†	1
EDSGN 100*#	3	ECON 102 or 104†	3
PSU 8	1	CAS 100A or 100B‡†	3
	15		**18**

Second Year

Fall	Credits	Spring	Credits
MATH 251*	4	MATH 231	2
PHYS 212*†	4	EE 210*	4
EMCH 211*	3	EMCH 213	3
CMPSC 200[2]	3	ME 300*	3
GTE - General Tech Elective[1]	3	General Education Course	3
	17		**15**

Third Year

Fall	Credits	Spring	Credits
EE 314	3	ENGR 350*	3
EME 303	3	PHYS 214†	2
ME 345	4	ENGL 202C or 202D‡†	3
General Education Course	3	General Education Course (GHW)	1.5
GTE - General Tech Elective[1]	1	EGEE 302	3
General Education Course (GHW)	1.5	NUCE 401 (Engrg. Tech. Elective)[3]	3
	15.5		**15.5**

Fourth Year

Fall	Credits	Spring	Credits
EE 485	3	EE 488 (Engrg. Tech. Elective)[3]	3
EGEE 437 (Engrg. Tech. Elective)[3]	3	EGEE 420	3
EGEE 438 (Engrg. Tech. Elective)[3]	3	ENGR 491W	3
EGEE 441 (Engrg. Tech. Elective)[3]	3	General Education Course	3
ENGR 490W	1	General Education Course	3
General Education Course	3		
	16		**15**

Total Credits 127

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1 General Technical Electives (GTE) are 4 credits of engineering, science, or mathematics at a similar or higher level required for the major. Consultation with adviser is recommended to select the proper course.
2 Students can take CMPSC 200, CMPSC 201 or CMPSC 121. Consultation with adviser is recommended to select the proper course.
3 Select 9 credits from NUCE 401, EE 488, EGEE 437, EGEE 438, EGEE 441 and 6 Engineering Technical Elective credits from any 400 level Engineering or EMS course. See adviser for details.

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