

INTERDISCIPLINARY BUSINESS WITH ENGINEERING STUDIES, B.S.

Begin Campus: Any Penn State Campus

End Campus: Erie

Program Description

The Interdisciplinary Business with Engineering Studies major provides students with an interdisciplinary program containing both business and engineering course content. The major includes a set of core courses in both business and engineering/engineering technology that should enable a graduate to function effectively in a technical business environment. In addition, a student will be able to choose, from a selection of modules, a set of courses or electives designed to enable a student to function in a specific business or technical area. The modules provide an entry-level set of skills that will help graduates provide immediate value as an employee. The modules includes Accounting/ Finance, Supply Chain Management, Technical Sales, Product Design & Manufacture or a school approved selection of coursework.

In addition to completing the broad-based core in business, science, and engineering, students acquire the ability to work as members of a team toward successful attainment of a common goal, preparing them to work in businesses or to further their study in graduate school. The program develops written and oral communication skills from an early stage and culminates in a capstone course sequence consisting of a project that stresses communication, strategic product development, and product realization.

What is Interdisciplinary Business with Engineering Studies?

Do you have an aptitude for business, yet are fascinated by engineering? Sometimes choices have to be made—but this is not one of those times. Penn State Behrend's unique B.S. in Interdisciplinary Business with Engineering Studies degree program allows you to combine your interest in both business and engineering in a way that creates multiple career pathways within technology and technical organizations. The breadth of experiences offered by Interdisciplinary Business with Engineering Studies is reflected in the diverse career paths possible in the industrial, service, and academic sectors. Graduates typically enter the business side of technical companies in positions such as technical/industrial sales, technical business/product development, technical support, junior-level product or brand management, production planning, operations analysis, operations/production management, and project management.

You Might Like This Program If...

- You're interested in both business and engineering and don't want to limit your education to one or the other.
- You're looking for a versatile degree program.
- You envision working on the business side of a technical organization or in a tech-rich environment.

Entrance to Major

Entry to the Interdisciplinary Business with Engineering Studies (IBE) major requires successful completion of 5 entry-to-major courses:

ACCTG 211, ECON 102, ENGL 15 or ENGL 30H, MATH 110 or MATH 140, STAT 200 or SCM 200. Each course requires a C or better grade for successful completion.

Degree Requirements

For the Bachelor of Science degree in Interdisciplinary Business with Engineering Studies, a minimum of 127 credits are required:

Requirement	Credits
General Education	45
Requirements for the Major	112-114

30 of the 45 credits for General Education are included in the Requirements for the Major. This includes: 9 credits of GN courses; 6 credits of GQ courses, 6 credits of GS courses, 9 credits of GWS courses.

Per Senate Policy 83.80.5, the college dean or campus chancellor and program faculty may require up to 24 credits of coursework in the major to be taken at the location or in the college or program where the degree is earned.

Requirements for the Major

Each student must earn at least a grade of C in each 300- and 400-level course in the major field.

To graduate, a student enrolled in the major must earn a grade of C or better in each course designated by the major as a C-required course, as specified by Senate Policy 82-44 (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#82-44>).

Code	Title	Credits
Prescribed Courses		
BA 241	Legal Environment of Business	2
BA 242	Social and Ethical Environment of Business	2
CHEM 110	Chemical Principles I	3
EDSGN 100S	Introduction to Engineering Design	3
PHYS 211	General Physics: Mechanics	4
PHYS 212	General Physics: Electricity and Magnetism	4
<i>Prescribed Courses: Require a grade of C or better</i>		
ACCTG 211	Financial and Managerial Accounting for Decision Making	4
CAS 100	Effective Speech	3
CMPSC 201	Programming for Engineers with C++	3
ECON 102	Introductory Microeconomic Analysis and Policy	3
ECON 104	Introductory Macroeconomic Analysis and Policy	3
EGT 120	Introduction to Graphics and Solid Modeling	3
ENGL 202C	Effective Writing: Technical Writing	3
FIN 301	Corporation Finance	3
MATH 140	Calculus With Analytic Geometry I	4
MATH 141	Calculus with Analytic Geometry II	4
MGMT 301	Basic Management Concepts	3
MGMT 410	Project Management	3
MGMT 475W	Strategic Product Development	3
MGMT 476	Product Realization Capstone	3
MIS 204	Introduction to Management Information Systems	3
MKTG 301	Principles of Marketing	3

SCM 301	Supply Chain Management	3
Additional Courses		
<i>Additional Courses: Require a grade of C or better</i>		
CMPEN 270	Digital Design: Theory and Practice	3-4
or CMPET 117	Digital Electronics	
EE 211	Electrical Circuits and Power Distribution	3
or EET 101	Electrical Circuits I	
EMCH 211	Statics	3
or MET 111	Mechanics for Technology: Statics	
EMCH 213	Strength of Materials	3
or MET 213	Strength and Properties of Materials	
ENGL 15	Rhetoric and Composition	3
or ENGL 30H	Honors Rhetoric and Composition	
ME 300	Engineering Thermodynamics I	3
or MET 330	Thermodynamics	
SCM 200	Introduction to Statistics for Business	4
or STAT 200	Elementary Statistics	
Select 3 credits from the following list:		3
ECON 470	International Trade and Finance	
FIN 471	International Finance	
IB 303	International Business Operations	
MGMT 461	International Management	
MKTG 445	Global Marketing	
Other 300-400-level international business course		

Supporting Courses and Related Areas

Select one module from School Approved List of Modules 1-5. 15-16
 Except where noted, courses taken to satisfy General Education requirements may not be used to satisfy module requirements.

General Education

Connecting career and curiosity, the General Education curriculum provides the opportunity for students to acquire transferable skills necessary to be successful in the future and to thrive while living in interconnected contexts. General Education aids students in developing intellectual curiosity, a strengthened ability to think, and a deeper sense of aesthetic appreciation. These are requirements for all baccalaureate students and are often partially incorporated into the requirements of a program. For additional information, see the General Education Requirements (<https://bulletins.psu.edu/undergraduate/general-education/baccalaureate-degree-general-education-program/>) section of the Bulletin and consult your academic adviser.

The keystone symbol appears next to the title of any course that is designated as a General Education course. Program requirements may also satisfy General Education requirements and vary for each program.

Foundations (grade of C or better is required and Inter-Domain courses do not meet this requirement.)

- **Quantification (GQ):** 6 credits
- **Writing and Speaking (GWS):** 9 credits

Breadth in the Knowledge Domains (Inter-Domain courses do not meet this requirement.)

- **Arts (GA):** 3 credits
- **Health and Wellness (GHW):** 3 credits
- **Humanities (GH):** 3 credits

- **Social and Behavioral Sciences (GS):** 3 credits
- **Natural Sciences (GN):** 3 credits

Integrative Studies

- **Inter-Domain Courses (Inter-Domain):** 6 credits

Exploration

- **GN**, may be completed with Inter-Domain courses: 3 credits
- **GA, GH, GN, GS, Inter-Domain courses.** This may include 3 credits of World Language course work beyond the 12th credit level or the requirements for the student's degree program, whichever is higher: 6 credits

University Degree Requirements

First Year Engagement

All students enrolled in a college or the Division of Undergraduate Studies at University Park, and the World Campus are required to take 1 to 3 credits of the First-Year Seminar, as specified by their college First-Year Engagement Plan.

Other Penn State colleges and campuses may require the First-Year Seminar; colleges and campuses that do not require a First-Year Seminar provide students with a first-year engagement experience.

First-year baccalaureate students entering Penn State should consult their academic adviser for these requirements.

Cultures Requirement

6 credits are required and may satisfy other requirements

- United States Cultures: 3 credits
- International Cultures: 3 credits

Writing Across the Curriculum

3 credits required from the college of graduation and likely prescribed as part of major requirements.

Total Minimum Credits

A minimum of 120 degree credits must be earned for a baccalaureate degree. The requirements for some programs may exceed 120 credits. Students should consult with their college or department adviser for information on specific credit requirements.

Quality of Work

Candidates must complete the degree requirements for their major and earn at least a 2.00 grade-point average for all courses completed within their degree program.

Limitations on Source and Time for Credit Acquisition

The college dean or campus chancellor and program faculty may require up to 24 credits of course work in the major to be taken at the location or in the college or program where the degree is earned. Credit used toward degree programs may need to be earned from a particular source or within time constraints (see Senate Policy 83-80 (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#83-80>)). For more information, check the Suggested Academic Plan for your intended program.

Program Learning Objectives

- **CRITICAL AND INTEGRATIVE THINKING:** Students will be able to think critically across business disciplines by considering different perspectives and using an integrated, holistic approach to perform

relevant analyses, construct valid arguments, and make appropriate conclusions.

- **ORAL COMMUNICATION:** Students will be able to execute the oral communication skills that they have learned in the interactive business courses to business situations where effective explanation, persuasion, exchanging information and ideas are essential.
- **WRITING COMPETENCE:** Students will be able to demonstrate effective business writing skills.
- **TEAMWORK:** Students will be positive contributors to an effective team functioning via application of their functional skills in addition to strong interpersonal skills.
- **ETHICS AND SOCIAL RESPONSIBILITY:** Students will be able to recognize ethical issues and apply ethical theories in business situations at individual and/or organizational levels.
- **FUNCTIONAL AREA KNOWLEDGE (ETS):** Students will be able to apply foundational knowledge to analyze and solve problems and interpret written and visual material across various business domains.
- **FUNCTIONAL AREA KNOWLEDGE (ACCOUNTING):** Students will be able to demonstrate a broad general knowledge of the principles of accounting, both managerial and financial.
- **FUNCTIONAL AREA KNOWLEDGE (ECONOMICS):** Students will be able to demonstrate a broad general knowledge of the principles of economics, both microeconomics and macroeconomics
- **FUNCTIONAL AREA KNOWLEDGE (FINANCE):** Students will be able to demonstrate a broad general knowledge of the principles of finance.
- **FUNCTIONAL AREA KNOWLEDGE (MIS):** Students will be able to describe the benefits and challenges of applying information technology in various organizations and functional areas.
- **FUNCTIONAL AREA KNOWLEDGE (INTERNATIONAL BUSINESS):** Students will be able to apply basic multidisciplinary knowledge needed to conduct international business and analyze the impact of globalization.
- **FUNCTIONAL AREA KNOWLEDGE (LEGAL ENVIRONMENT):** Students will be able to identify key terms, concepts, and theories of the law, evaluate how law affects business, analyze legal issues, and apply the law to business situations.
- **FUNCTIONAL AREA KNOWLEDGE (MANAGEMENT):** Students will be able to demonstrate a broad knowledge of the business discipline of management.
- **FUNCTIONAL AREA KNOWLEDGE (MARKETING):** Students will be able to demonstrate comprehensive knowledge in the field of marketing.
- **FUNCTIONAL AREA KNOWLEDGE (QUANTATIVE BUSINESS ANALYSIS):** Students will be able to demonstrate a broad knowledge of quantitative business analysis.
- **FUNCTIONAL AREA KNOWLEDGE (SUPPLY CHAIN MANAGEMENT):** Students will be able to demonstrate a broad knowledge of supply chain management.

Academic Advising

The objectives of the university's academic advising program are to help advisees identify and achieve their academic goals, to promote their intellectual discovery, and to encourage students to take advantage of both in-and out-of class educational opportunities in order that they become self-directed learners and decision makers.

Both advisers and advisees share responsibility for making the advising relationship succeed. By encouraging their advisees to become engaged

in their education, to meet their educational goals, and to develop the habit of learning, advisers assume a significant educational role. The advisee's unit of enrollment will provide each advisee with a primary academic adviser, the information needed to plan the chosen program of study, and referrals to other specialized resources.

READ SENATE POLICY 32-00: ADVISING POLICY (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/32-00-advising-policy/>)

Erie

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Suggested Academic Plan

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2023-24 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 (*Note: the archive only contains suggested academic plans beginning with the 2018-19 edition of the Undergraduate Bulletin*).

Interdisciplinary Business with Engineering Studies, B.S. at Erie 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.

First Year		
Fall	Credits Spring	Credits
CHEM 110 [†]	3 CMPSC 201 ^{*†}	3
EDSGN 100	3 ECON 102 ^{*#††}	3
ENGL 15 or 30H ^{*†#††}	3 EGT 120 [*]	3
MATH 140 ^{*†#††}	4 MATH 141 ^{*†}	4
GENERAL EDUCATION COURSE ³	3 GENERAL EDUCATION COURSE ³	3
	16	16
Second Year		
Fall	Credits Spring	Credits
BA 241 & BA 242	4 ACCTG 211 ^{*#}	4
CAS 100 ^{††}	3 ENGL 202C [†]	3
ECON 104 ^{†*}	3 MET 111 or EMCH 211 [*]	3

MIS 204*	3 PHYS 212 [†]	4
PHYS 211 [†]	4 SCM 200 or STAT 200 ^{*†#}	4
GENERAL EDUCATION COURSE (GHW)	1.5	
	18.5	18

Third Year

Fall	Credits Spring	Credits
EET 101*	3 FIN 301*	3
MET 213*	3 CMPET 117 or CMPEN 271*	3
MGMT 301*	3 ME 300 or MET 330*	3
MKTG 301*	3 INTERNATIONAL BUSINESS COURSE (IL)*	3
SCM 301*	3 MODULE ELECTIVE	3
	15	15

Fourth Year

Fall	Credits Spring	Credits
MGMT 410*	3 MGMT 476*	3
MGMT 475W*	3 GENERAL EDUCATION COURSE ³	3
GENERAL EDUCATION COURSE (GHW) ³	1.5 GENERAL EDUCATION COURSE ³	3
MODULE ELECTIVE	3 MODULE ELECTIVE	3
MODULE ELECTIVE	3 MODULE ELECTIVE	3
	13.5	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.

¹ Please see your academic adviser for approval before scheduling your course.

² In order for a course to be eligible for an Approved Elective, the course can not be a lower level ENGL (1-6) or MATH (2-41) OR a GHW designated course. Please see your academic adviser if you have a question on a specific course.

³ All students are required to fulfill 45 credits of General Education courses. They include 9 credits of Natural Science (GN), 6 credits of Arts (GA), 6 credits of Humanities (GH), 6 credits of Social Science (GS) and 3 credits of Health and Wellness (GHW). Two (2) classes must

be Inter-domain (N) or Linked (Z) courses. One (1) course must be designated an United States culture (US) and one (1) course must be designated an International culture (IL).

Any 3 credits may be substituted for a different designation (GN,GA,GH,GS, or GHW) once 3 credits in each designation area have been successfully completed

Career Paths

Interdisciplinary Business with Engineering Studies graduates have found early-career success in technical sales, new business development, technical support, brand management, production planning, purchasing, operations analysis and management, plant accounting, and project management. Penn State Behrend has a comprehensive support system to help you identify and achieve your goals for college and beyond. Meet with your academic adviser often and take advantage of the services offered by the Academic and Career Planning Center beginning in your first semester.

Careers

Employers of recent Behrend B.S. in Interdisciplinary Business with Engineering Studies graduates include Volvo Groups, Donnelly Mechanical, FMC Technologies, Harris Corp., Exxon Mobil, Barrington Research, Logistics Plus, General Electric, Tenneco, and Covestro.

MORE INFORMATION ABOUT POTENTIAL CAREER OPTIONS FOR GRADUATES OF THE INTERDISCIPLINARY BUSINESS WITH ENGINEERING STUDIES PROGRAM (<https://behrend.psu.edu/school-of-business/academic-programs/interdisciplinary-business-engineering-studies/>)

Opportunities for Graduate Studies

Students who have both business and engineering education are well-prepared to continue their education in a master's- or doctoral-level degree program, including Penn State Behrend's master's degree programs in Business Administration (M.B.A.), Manufacturing Management (M.M.M.), or Project Management (M.P.M.).

MORE INFORMATION ABOUT OPPORTUNITIES FOR GRADUATE STUDIES (<https://behrend.psu.edu/admissions-financial-aid/graduate-admissions/>)

Professional Resources

- AACSB International (<https://www.aacsb.edu/>)
- National Organization of Business and Engineering (<https://www.nobenational.org/>)

Accreditation

The Black School of Business is accredited by AACSB International—The Association to Advance Collegiate Schools of Business. As the world's largest business education alliance, AACSB connects educators, students, and business to achieve a common goal: to create the next generation of great leaders. Synonymous with the highest standards of excellence since 1916, AACSB provides quality assurance, business education intelligence, and professional development services to over 1,500 member organizations and more than 785 accredited business schools worldwide. AACSB's mission is to foster engagement, accelerate innovation, and amplify impact in business education.

MORE INFORMATION ABOUT THE ASSOCIATION TO ADVANCE COLLEGIATE SCHOOLS OF BUSINESS (<https://www.aacsb.edu/>)

Contact

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