PROGRAM TRANSFER GUIDE

Industrial Engineering

Associate in Science to Bachelor of Science in Industrial Engineering

This guide between Black Hawk College (BHC) and St. Ambrose University (SAU) in intended to create a smooth and seamless curriculum transition for students who earn the Associate in Science (AS) degree at BHC to transfer and complete the Bachelor of Science (BS) degree in Industrial Engineering at SAU. This guide incorporates the Articulation Agreement between BHC and SAU dated December 13, 2013, the 2022-2023 BHC catalog and the 2021-2023 SAU catalog.

This guide may also be used as a foundation for a dual major in Industrial and Mechanical Engineering at St. Ambrose. The five-year program will result in Bachelor of Science degrees in Industrial and Mechanical Engineering. Both SAU programs are accredited by the Engineering Accreditation Commission of ABET.

Degree Availability	AS general education courses and most science and MATH courses offered on campus or online (science labs primarily on campus). ENGR courses and advanced science and MATH courses may only be offered at the QC campus only. BS in Industrial Engineering offer on campus. General education requirements may be offered on campus or online.
GPA and Grade Requirements	Graduation from BHC **2.00 GPA** Admission to SAU **2.00 GPA.** Admission to SAU Industrial Engineering major **2.00 GPA**. Graduation from SAU to earn the Industrial Engineering degree **2.50 GPA**. Additionally, a min. 2.00 GPA is required from the IE and ENGR prefixed courses. Calculus I and II must be completed with a grade of 'C' or better. SAU will grant transfer credit for college-level work in all areas that correspond to courses offered at SAU if a grade of 'C' or better is earned.
General Education	The AS degree includes the IAI General Education Core Curriculum minus one Humanities/Fine Arts course and one Social Behavioral Science course. Contact an advisor or refer to the BHC catalog for a list of IAI general education courses. **This plan includes two general education courses (6 credits total) taken at SAU for reverse transfer to BHC to complete the AS degree.** The AS degree satisfies SAU's lower division general education requirements except for the Health and Fitness, and Second Language categories.
Credit Hours	BHC credits on this guide: 63. SAU credits on this guide: 64. ✓ A minimum of 60 credits is required to complete the AS degree. ✓ A minimum of 120 combined credits from BHC and SAU are required to complete the BS in Industrial Engineering degree. ✓ A maximum of 64 community college credits may be applied toward the minimum 120 credits required for a bachelor degree at SAU.

Other Requirements and Recommendations

- ✓ BHC requires **one Non-Western Studies course** for graduation and it may simultaneously fulfill an IAI category in Humanities, Fine Arts, or Social and Behavioral Sciences, or be taken as an elective in the AS degree. Social and Behavioral Science courses must be from different disciplines.

- ✓ SAU requires **a second language** to graduate. Fulfill by completing either three years of the same second language in high school, or the same second language in college (or demonstrated proficiency) through the 102-level.

- ✓ Students are encouraged to view the St. Ambrose Transfer Facts for additional transfer information

The following BHC course order may be modified to accommodate part-time students; however, the ENG, GE, MATH and PHYS courses are sequenced and must be taken in order due to pre-requisites. It's strongly recommended that sequences in PHYS and Calculus are completed at the same institution. Selected BHC courses may also be offered in the summer or during the minimester. This plan assumes that students are academically eligible for all Semester 1 courses.

BHC Courses & Credit Hours			Transfers to SAU as
Semester 1			
ENG 101	Composition I. *A grade of 'C' or better is required*	3	English Elective
MATH 124	Calculus I with Analytic Geo	4	MATH 191 Calculus & Analytic Geo. I
PHYS 201	Mechanics and Thermal Physics	5	PHYS 251 General Physics I: Mechanics
GE 101	Engineering Graphics Geometry	3	ENGR 106 Introduction to Engineering Design and Analysis
	IAI Humanities. *PHIL 103 or HIST 222 recommended to serve as the pre-req. for SAU upper division PHIL or THEO course*	3	PHIL 207 Ethics or THEO 250 Introduction to Comparative Religions
	Semester total	**18**	

Semester 2			
ENG 102	Composition II. *A grade of 'C' or better is required*	3	ENGL 101 English Composition
MATH 225	Calculus II with Analytic Geo	4	MATH 192 Calculus & Analytic Geo. II
MATH 228	Probability and Statistics	3	STAT 213 Applied Statistical Reasoning for the Sciences
PHYS 202	Electricity and Magnetism	5	PHYS 253 General Physics II: Thermodynamics, Electricity & Magnetism
	Semester total	**15**	

Semester 3			
SPEC 101	Principles of Speech	3	COMM 129 Principles of Public Speaking
CHEM 101	General Chemistry I	4	CHEM 105 General Chemistry I
GE 201	Analytical Mechanics Statics	3	ENGR 220 Engineering Statics
	IAI Life Science	3 min.	General Education
	IAI Fine Arts	3	General Education
	Semester total	**16**	

Semester 4			
MATH 226	Calculus III with Analytic Geo	5	MATH 291 Calculus & Analytic Geo. III
MATH 230	Linear Algebra	3	MATH 290 Elementary Linear Algebra
GE 202	Analytical Mechanics Dynamics	3	ENGR 302 Engineering Dynamics
GE 205	Strength of Materials	3	ENGR 303 Strength of Materials
	Semester total	**14**	

After transfer to SAU complete the following courses (credit hours)

Semester 5	Semester 6	Semester 7	Semester 8
IE 305 Work System Design & Analysis (3)	ENGR 265 Engineering Economy (3)	ENGR 201 Engineering Service (0)	ENGR 301 Engineering Participation (0)
IE 335 Quality Control & Reliability (3)	ENGR 270 Materials Science (3)	ENGR 251 Engineering Design Laboratory (3)	ENGR 401 Engineering Exit Survey (0)
IE 419 Operations Research Probability Models (3)	ENGR 296 Manufacturing Processes: Fundamental & Computer-Aided (3)	IE 350 Operations Planning, Scheduling & Control (3)	IE 319 Operations Research Mathematical Programming (3)
General education courses for reverse transfer to complete AS degree (6). *must meet BHC's Social & Behavioral Science category**	IE 340 Ergonomics & Occupational Safety (3)	IE 403 Design Fundamentals for Industrial Engineers (3)	IE 490 Industrial Engineering Senior Design Seminar (3)
Second Language 101 Level (3) *unless satisfied in high school*	IE 360 Introduction to Simulation (3)	IE 415 System Integration & Design (3)	ME Elective (3)
	Second Language 102 Level (3) *unless satisfied in high school*	Philosophy general education (3)** *select an Ethics topic if not taken previously*	Theology general education (3)** KIN 149 Wellness Concepts (1)
Semester total (18)	**Semester total (18)**	**Semester total (15)**	**Semester total (13)**

* select from different disciplines; courses in **bold** meet BHC's Non-Western Studies; choose ECON 201, 202; HIST 201, 202, **211**; PSCI 101, **130**; PSYC 105; or SOC 101, 120, **210**. **one course must be upper division.

For questions about this guide and to apply, please contact:

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Phone 309-796-5100
ADVQC@bhc.edu

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Visit the Natural Sciences & Engineering Department

St. Ambrose University
Admissions Office
Phone 563-333-6300
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This guide is intended as a projected plan coordinated by both institutions and is not presented as a contract. While effort is made to present current information, both institutions reserve the right to make changes to admission, graduation, degree, course and supplementary information without notice. Students are responsible for confirming all guide contents.