

B.S. IN INDUSTRIAL ENGINEERING AND B.S.B.A. IN FINANCE DUAL DEGREE

Overview

The Department of Industrial and Systems Engineering and the Department of Finance offers a dual-degree program that culminates with students receiving both Bachelor of Science in Industrial Engineering (BSIE) and a Bachelor of Science in Business Administration with a Major in Finance (BSBA in Finance) concurrently.

Industrial and Systems Engineering combines science and technical knowledge with human sciences to design, plan, and analyze systems that involve people, materials, money, energy, equipment, and other resources. Industrial engineers work with personnel in research and development, accounting, engineers in other disciplines, maintenance, human resources, and production to increase organizational productivity, improve quality, reduce health care costs, conserve energy, develop public transportation systems, and improve industrial safety conditions. Industrial and Systems engineering distinguishes itself from other engineering professions because it has applications in manufacturing, service, commercial, and governmental activities. It is the major branch of engineering concerned not only with technology, but with people, making industrial engineers a prime source of management talent.

The Finance major of the Bachelor of Science in Business Administration (BSBA) degree prepares students for careers in Finance. The dual degree will prepare students to uniquely pursue careers in Management Consulting, Financial Engineering, Systems Engineering and Financial Systems. The degree uniquely prepares the student to navigate highly technical areas and industries with a solid business core.

Students are required to satisfy all the requirements of the College of Engineering BSIE degree and all of the requirements of the Business School for the BSBA in Finance degree.

Advanced Writing and Communication Skills: The dual degree program will satisfy the University's Advance Writing and Communication Skills within the two degrees. For the Industrial and Systems Engineering degree, the Advanced Writing and Communication Skills requirement is satisfied by completing a set of classroom courses, laboratory courses and design courses where they learn effective oral, graphical and technical writing skills. Industrial Engineering students acquire Advanced Writing and Communication skills in the following core courses:

- ISE 201 (<https://bulletin.miami.edu/search/?P=ISE%20201>) Work Design Systems
- ISE 363 (<https://bulletin.miami.edu/search/?P=ISE%20363>) Project Management for Engineers
- ISE 380 (<https://bulletin.miami.edu/search/?P=ISE%20380>) Engineering Economic Analysis
- ISE 493
- ISE 494 (<https://bulletin.miami.edu/search/?P=ISE%20494>) Senior Design Project
- ISE 512 (<https://bulletin.miami.edu/search/?P=ISE%20512>) Quality Management Systems
- ISE 547 (<https://bulletin.miami.edu/search/?P=ISE%20547>) Simulation Modeling and Systems Analysis
- ISE 557 (<https://bulletin.miami.edu/search/?P=ISE%20557>) Ergonomics and Human Factors Engineering
- ISE 568 (<https://bulletin.miami.edu/search/?P=ISE%20568>) Facilities Planning and Logistics

For the Finance degree, the advanced writing and Communications Skills requirement is satisfied by completing the following core courses:

- BSL 212 (<https://bulletin.miami.edu/search/?P=BSL%20212>)
- BUS 300 (<https://bulletin.miami.edu/search/?P=BUS%20300>)

Admission Requirements

Incoming first year students must meet the requirements of the College of Engineering and the Business School admission requirements. Students will apply either to the College of Engineering or the Business School. Once they have completed their first semester with a GPA of 3.0 and MTH 161 (or equivalent) with a B or more, they will be officially admitted into the Dual Degree Program. Current students wanting to transfer into the program with less than 30 credits need to have a 3.0 GPA and have completed Calculus 1 with an A or B. Students with more than 30 credits need to have a 3.0 GPA and have completed Calculus 1 and 2.

Students need to be aware the program is over 150 credits and entails a rigorous curriculum. Students who come in with credits (either AP or Dual Enrollment) will be able to finish the dual degree in 4-years. Students who do not have credits may need to do the program over 5-years. All students should consult with Financial Aid to understand the financial implications of choosing a 4 or 5-year plan.

Curriculum Requirements

Code	Title	Credit Hours
BSIE/ BSBA in Finance REQUIREMENTS (164 CREDIT HOURS)		
BSIE Core Courses		

EGN 114	Global Challenges Addressed by Engineering and Technology (NEW COURSE: Global Challenges in Engineering)	3
EGN 123	Computing and Digital Solutions for the future (NEW COURSE: Digital Solutions for the Future)	3
or BUS 150	Business Analytics	
ISE 224	Python for Engineers	3
ISE 201	Work Design Systems	3
ISE 312	Foundations of Data Analysis	3
or MAS 312	Statistical Methods and Quality Control	
ISE 363	Project Management for Engineers	3
ISE 380	Engineering Economic Analysis ⁴	3
ISE 406	Computer-Aided Manufacturing	3
ISE 441	Operations Research and Optimization Methods	3
ISE 442	Stochastic Modeling and Decision Making	3
ISE 465	Inventory and Supply Chain Management	3
ISE 494	Senior Design Project	3
ISE 493	Industrial and Systems Engineering Capstone Planning	1
ISE 512	Quality Management Systems	3
ISE 516	Introduction to Applied Data Analytics	3
ISE 524	Systems Intelligence with Software Applications	3
ISE 547	Simulation Modeling and Systems Analysis	3
ISE 557	Ergonomics and Human Factors Engineering	3
ISE 568	Facilities Planning and Logistics	3
ISE Undergraduate Electives (9 credits)		
Satisfied by Finance Major Courses - FIN 303, FIN 320, FIN elective		
Choose one of the following:		3
CAE 210	Mechanics of Solids I	
ECE 205	Principles of Electrical Engineering--I	
MAE 303	Thermodynamics	
Technical Elective - Satisfied by Finance Major Requirements (3 credits)		
BSBA Business Core Requirements		
ACC 223	Principles of Financial and Managerial Accounting ⁹	4
BSL 212	Introduction to Business Law and Ethics	3
BTE 210	Fundamentals of Business Technology and Innovation	3
BTE 320 Python Programming: Fundamentals and Algorithms (Satisfied by Engineering Core Course ISE 224)		
BUS 150 Business Analytics or EGN 123		
BUS 211	Professional Development for Finance and Accounting	1
BUS 300	Critical Thinking and Persuasion for Business ³	3
ECO 211	Principles of Microeconomics	3
ECO 212	Principles of Macroeconomics	3
FIN 302 Fundamentals of Finance (Satisfied by Engineering Core Course ISE 380)		
MKT 301	Marketing Foundations	3
or MKT 201	Foundations of Marketing	
MAS 311 - Applied Probability and Statistics (Satisfied by ISE 310)		
MAS 312 - Statistical Methods and Quality Control or ISE 312		
MGT 100 - Managing for Success in the Global Environment (Satisfied by Engineering Core Course EGN 114)		
MGT 303 - Operations Management 3 credits (Satisfied by Engineering Core ISE 201)		
MGT 304	Organizational Behavior	3
MGT 401	Strategic Management (Taken in Final Semester)	3
Quantitative Course - 3 credits (Satisfied by Engineering Core Course ISE 442)		
Major Area of Specialization in Finance ^{4, 5}		
FIN 302 Fundamentals of Finance 3 credits (replace with Engineering Core Course ISE 380)		

FIN 303	Intermediate Financial Management ⁶	3
FIN 320	Investment and Security Markets ⁶	3
FIN 422	Speculative Markets and Derivatives	3
FIN 427	Fixed Income Markets and Analysis	3
Major Choice Courses		9
Select one course (3 credit hours) at the 300 - 500 level from the Finance departmental offerings ⁷		
Select two courses (6 credit hours) at the 400 - 500 level from the Finance Departmental Offerings ⁸		
Other Courses		
Math & Basic Sciences Credit Hours		
ISE 310	Introduction to Engineering Probability (minimum grade of C-required)	3
MTH 151	Calculus I for Engineers (Minimum grade of B required; fulfills quantitative skills requirement)	5
MTH 162	Calculus II	4
EGN 318	Engineering Mathematics I	3
or MTH 210	Introduction to Linear Algebra	
EGN 319	Engineering Mathematics II	3
or MTH 311	Introduction to Ordinary Differential Equations	
PHY 221	University Physics I	3
PHY 222	University Physics II	3
PHY 106	Physics Laboratory 1	1
EGN 233	Electromagnetics and Its Engineering Applications	3
Basic Science Elective		3
Basic Science Lab Elective		1
General Education Requirements		
Written Communication Skills:		
WRS 105	First-Year Writing I	3
WRS 107	First-Year Writing II: STEM ³	3
Quantitative Skills:		
MTH 151	Calculus I for Engineers (fulfilled through the major)	
Areas of Knowledge:		
Arts and Humanities Cognate ²		9
People and Society Cognate ¹		9
Other Credit Hours - ECO 211 or ECO 212 (Satisfied by Business Core)		
Total Credit Hours		164

- ¹ People and Society (PS) cognate - To be selected from the Cognate Search Engine. Minimum of 3 courses (9 Credit hours)
- ² To be selected from the Cognate Search Engine, Arts and Humanities (AH) (or applicable cognates). Students take a minimum of 3 courses (9 credit hours)
- ³ Students who do not earn at least a C- in WRS 107 must either repeat WRS 107 and earn at least a C- or complete WRS 230 with at least a C- before enrolling in BUS 300.
- ⁴ In order to pursue a Finance area of specialization, a student must earn a grade of "B" (grade point of 3.0) or higher in FIN 302 (note that a grade of "B-" does not qualify), and must have a minimum cumulative University of Miami GPA of 2.5 before enrolling in FIN 303 or FIN 320.
- ⁵ All specific coursework for the major area of specialization in Finance must be completed with a grade of "C-" or higher (except for the minimum "B" grade required for FIN 302, as noted). A minimum cumulative GPA of 2.5 is required for all specific coursework taken in the major area of specialization.
- ⁶ Students are strongly encouraged to take FIN 303 and FIN 320 during the same semester
- ⁷ Select one courses (3 credit hours) at the 300-500 level from the Finance departmental offerings. Excluding FIN 300, FIN 308, and FIN 236
- ⁸ Select two courses (6 credit hours) at the 400 or 500 level from the Finance departmental offerings.
- ⁹ If a student leaves the dual degree program and has taken ACC 223, the ACC 223 will only satisfy the requirement for ACC 211.

Plan of Study: 4 Years

Freshman Year			
Fall			Credit Hours
EGN 114	Global Challenges Addressed by Engineering and Technology		3
WRS 105	First-Year Writing I		3
MTH 151	Calculus I for Engineers		5
PHY 221	University Physics I		3
EGN 123 or BUS 150	Computing and Digital Solutions for the future or Business Analytics		3
ECO 211	Principles of Microeconomics		3
		Credit Hours	20
Spring			
BTE 210	Fundamentals of Business Technology and Innovation		3
WRS 107	First-Year Writing II: STEM		3
MTH 162	Calculus II		4
BSL 212	Introduction to Business Law and Ethics		3
PHY 222	University Physics II		3
PHY 106	Physics Laboratory 1		1
P/S Cognate (PS Cognate) ¹			3
		Credit Hours	20
Summer			
A/H Cognate (AH Elective) ²			3
A/H Cognate (AH Elective) ²			3
P/S Cognate (PS Cognate) ¹			3
P/S Cognate (PS Cognate) ¹			3
		Credit Hours	12
Sophomore Year			
Fall			
ISE 201	Work Design Systems		3
EGN 318 or MTH 210	Engineering Mathematics I or Introduction to Linear Algebra		3
ISE 380	Engineering Economic Analysis ⁴		3
ECO 212	Principles of Macroeconomics		3
MKT 201 or 301	Foundations of Marketing or Marketing Foundations		3
Basic Science Elective			3
BUS 211	Professional Development for Finance and Accounting		1
		Credit Hours	19
Spring			
ISE 224	Python for Engineers		3
BUS 300	Critical Thinking and Persuasion for Business ³		3
EGN 319 or MTH 311	Engineering Mathematics II or Introduction to Ordinary Differential Equations		3
A/H Cognate (AH Elective) ²			3
ACC 223	Principles of Financial and Managerial Accounting ⁹		4
CAE 210, ECE 205, or MAE 303	Mechanics of Solids I or Principles of Electrical Engineering–I or Thermodynamics		3
Basic Science Elective Lab			1
		Credit Hours	20

Junior Year		
Fall		
ISE 310	Introduction to Engineering Probability	3
ISE 441	Operations Research and Optimization Methods	3
MGT 304	Organizational Behavior	3
FIN 303	Intermediate Financial Management ^{5, 6}	3
FIN 320	Investment and Security Markets ^{5, 6}	3
EGN 233	Electromagnetics and Its Engineering Applications	3
Credit Hours		18
Spring		
ISE 312 or MAS 312	Foundations of Data Analysis or Statistical Methods and Quality Control	3
ISE 363	Project Management for Engineers	3
ISE 406	Computer-Aided Manufacturing	3
ISE 442	Stochastic Modeling and Decision Making	3
ISE 524	Systems Intelligence with Software Applications	3
FIN 422	Speculative Markets and Derivatives ⁵	3
Credit Hours		18
Senior Year		
Fall		
ISE 465	Inventory and Supply Chain Management	3
ISE 493	Industrial and Systems Engineering Capstone Planning	1
ISE 512	Quality Management Systems	3
ISE 547	Simulation Modeling and Systems Analysis	3
ISE 557	Ergonomics and Human Factors Engineering	3
FIN 427	Fixed Income Markets and Analysis	3
Finance Elective ^{5, 7}		3
Credit Hours		19
Spring		
ISE 494	Senior Design Project	3
ISE 516	Introduction to Applied Data Analytics	3
ISE 568	Facilities Planning and Logistics	3
MGT 401	Strategic Management	3
Finance Elective ^{5, 8}		3
Finance Elective ^{5, 8}		3
Credit Hours		18
Total Credit Hours		164

- ¹ People and Society (PS) cognate - To be selected from the Cognate Search Engine. Minimum of 3 courses (9 Credit hours).
- ² To be selected from the Cognate Search Engine, Arts & Humanities (AH) (or applicable cognates). Students take a minimum of 3 courses (9 credit hours)
- ³ Students who do not earn at least a C- in WRS 107 must either repeat WRS 107 and earn at least a C- or complete WRS 230 with at least a C- before enrolling in BUS 300.
- ⁴ In order to pursue a Finance area of specialization, a student must earn a grade of "B" (grade point of 3.0) or higher in FIN 302 (note that a grade of "B-" does not qualify), and must have a minimum cumulative University of Miami GPA of 2.5 before enrolling in FIN 303 or FIN 320.
- ⁵ All specific coursework for the major area of specialization in Finance must be completed with a grade of "C-" or higher (except for the minimum "B" grade required for FIN 302, as noted). A minimum cumulative GPA of 2.5 is required for all specific coursework taken in the major area of specialization.
- ⁶ Students are strongly encouraged to take FIN 303 and FIN 320 during the same semester
- ⁷ Select one courses (3 credit hours) at the 300-500 level from the Finance departmental offerings. Excluding FIN 300, FIN 308, and FIN 236
- ⁸ Select two courses (6 credit hours) at the 400 or 500 level from the Finance departmental offerings.
- ⁹ If a student leaves the dual degree program and has taken ACC 223, the ACC 223 will only satisfy the requirement for ACC 211.

Plan of Study: 5 Years

Freshman Year		
Fall		Credit Hours
EGN 114	Global Challenges Addressed by Engineering and Technology	3
WRS 105	First-Year Writing I	3
MTH 151	Calculus I for Engineers	5
PHY 221	University Physics I	3
EGN 123 or BUS 150	Computing and Digital Solutions for the future or Business Analytics	3
	Credit Hours	17
Spring		
WRS 107	First-Year Writing II: STEM ³	3
MTH 162	Calculus II	4
PHY 222	University Physics II	3
PHY 106	Physics Laboratory 1	1
BTE 210	Fundamentals of Business Technology and Innovation	3
P/S Cognate (PS Cognate) ¹		3
	Credit Hours	17
Sophomore Year		
Fall		
ISE 201	Work Design Systems	3
EGN 318	Engineering Mathematics I	3
ECO 211	Principles of Microeconomics	3
BSL 212	Introduction to Business Law and Ethics ¹	3
BUS 211	Professional Development for Finance and Accounting	1
Basic Science Elective		3
Basic Science Elective Lab		1
	Credit Hours	17
Spring		
ISE 224	Python for Engineers	3
BUS 300	Critical Thinking and Persuasion for Business ³	3
EGN 319 or MTH 311	Engineering Mathematics II or Introduction to Ordinary Differential Equations	3
ACC 223	Principles of Financial and Managerial Accounting ⁹	4
ECO 212	Principles of Macroeconomics	3
	Credit Hours	16
Junior Year		
Fall		
ISE 310	Introduction to Engineering Probability	3
ISE 441	Operations Research and Optimization Methods	3
ISE 380	Engineering Economic Analysis ⁴	3
EGN 233	Electromagnetics and Its Engineering Applications	3
MKT 301	Marketing Foundations	3
AH Cognate (AH Elective) ²		3
	Credit Hours	18
Spring		
ISE 312 or MAS 312	Foundations of Data Analysis or Statistical Methods and Quality Control	3
ISE 363	Project Management for Engineers	3
ISE 442	Stochastic Modeling and Decision Making	3
CAE 210 or MAE 303	Mechanics of Solids I or Thermodynamics	3

FIN 320	Investment and Security Markets ^{5, 6}	3
PS Cognate (PS Elective) ¹		3
Credit Hours		18
Senior Year		
Fall		
ISE 465	Inventory and Supply Chain Management	3
ISE 557	Ergonomics and Human Factors Engineering	3
MGT 304	Organizational Behavior	3
FIN 303	Intermediate Financial Management ^{5, 6}	3
FIN 427	Fixed Income Markets and Analysis	3
Credit Hours		15
Spring		
ISE 406	Computer-Aided Manufacturing	3
ISE 524	Systems Intelligence with Software Applications	3
FIN 422	Speculative Markets and Derivatives ⁵	3
Finance Elective ^{5, 8}		3
AH Cognate (AH Elective) ²		3
Credit Hours		15
Fifth Year		
Fall		
ISE 493	Industrial and Systems Engineering Capstone Planning	1
ISE 512	Quality Management Systems	3
ISE 547	Simulation Modeling and Systems Analysis	3
Finance Elective ^{5, 8}		3
PS Cognate (PS Elective) ¹		3
AH Cognate (AH Elective) ²		3
Credit Hours		16
Spring		
ISE 494	Senior Design Project	3
ISE 516	Introduction to Applied Data Analytics	3
ISE 568	Facilities Planning and Logistics	3
MGT 401	Strategic Management	3
Finance Elective ^{5, 8}		3
Credit Hours		15
Total Credit Hours		164

¹ People and Society (PS) cognate to be selected from the Cognate Search Engine - (9 credit hours)

² To be selected from the Cognate Search Engine, Arts & Humanities (AH) (or applicable cognates). Students take a minimum of 3 courses (9 credit hours) in AH cognate.

³ Students who do not earn at least a C- in WRS 107 must either repeat WRS 107 and earn at least a C- or complete WRS 230 with at least a C- before enrolling in BUS 300

⁴ In order to pursue a Finance area of specialization, a student must earn a grade of "B" (grade point of 3.0) or higher in FIN 302 (note that a grade of "B-" does not qualify), and must have a minimum cumulative University of Miami GPA of 2.5 before enrolling in FIN 303 or FIN 320.

⁵ All specific coursework for the major area of specialization in Finance must be completed with a grade of "C-" or higher (except for the minimum "B" grade required for FIN 302, as noted). A minimum cumulative GPA of 2.5 is required for all specific coursework taken in the major area of specialization.

⁶ Students are strongly encouraged to take FIN 303 and FIN 320 during the same semester.

⁷ Select one courses (3 credit hours) at the 300-500 level from the Finance departmental offerings. Excluding FIN 300, FIN 308, and FIN 236.

⁸ Select two courses (6 credit hours) at the 400 or 500 level from the Finance departmental offerings.

⁹ If a student leaves the dual degree program and has taken ACC 223, the ACC 223 will only satisfy the requirement for ACC 211.