

# BACHELOR OF SCIENCE IN ECONOMICS AND DATA SCIENCE\*

The Bachelor of Science in Economics and Data Science degree is a cross-disciplinary program that provides a data analysis and data visualization focus with a strong grounding in economics. The curriculum combines core economics knowledge with an understanding of the conceptual and practical data science skills that will enable graduates to contribute to organizational decision making and efficiency. Graduates will be prepared to become economics and data science practitioners and leaders in one of the fastest growing job sectors.

Stuart School of Business is a global leader in bridging business and technology, offering distinctive education that provides students with the knowledge and skillsets to become outstanding professionals.

Economics at Illinois Tech has a prestigious history that dates back to the 1880s, with the establishment of the Armour Institute of Technology in 1890 and the Lewis Institute in 1895. Economics at Illinois Tech began at the Lewis Institute, Stuart's original home, with some of the nation's first courses in "Family and Consumer Science" (including "Home Economics" and "Household Management"), and the Institute's subsequent formation of the university's Department of Business and Economics in 1926. The merger of the Lewis Institute with the Armour Institute of Technology in 1940 brought business and technology under one entity. The Armour Institute of Technology itself was founded through the pioneering works of Philip D. Armour, a merchant financier, Julia A. Beveridge, a librarian turned public administrator, and Frank W. Gunsaulus, an entrepreneurial preacher. The Department Business and Economics ultimately grew into a separate school at Illinois Institute of Technology – the Stuart School of Business, in 1969, with a gift from Lewis Institute alum and renowned financier Harold Leonard Stuart. Harold L. Stuart himself was a national leader in the field of investment banking in the first half of the 20th century, and his Chicago investment bank played a pivotal role in establishing the city as a global financial hub, as well as financing some incredible engineering feats, including Chicago's elevated train lines.

Over a period of more than 125 years, harnessing curricular innovations by Julia A. Beveridge and George N. Carman, and incredible scholarly works by trailblazing Illinois Tech scholars Herb A. Simon (author of Administrative Behavior, later awarded the Nobel Prize in Economics), Karl Menger (developer of the St. Petersburg paradox in economics) and Abe Sklar (developer of the Copula in financial and statistical modeling), the Stuart School of Business has refined business education. A long-standing leader in curricular innovation, in 1990, building on the foundational works of numerous Illinois Tech scholars, and Harold L. Stuart's own contributions to finance and the broader business community, the Stuart School of Business established quantitative finance as an academic discipline, with a world's first postgraduate Master's program in Financial Markets and Trading – a program that highlighted a new model for embedding into a postgraduate academic program the emphases on career readiness and connectedness with the business community, and transformed business school education.

The Bachelor of Science in Economics and Data Science brings together world-class faculty from the College of Computing and the Stuart School of Business, offering students an incredible opportunity to complete a core set of courses in both disciplines, with expanded access to subject matter experts from both colleges. The program builds on Stuart's and Computing's prestige and tradition of undergraduate education that prepares students to add value to any organization they may join on day 1 of their roles. This innovative cross-disciplinary program can be completed in the standard 4 years timeframe.

\* indicates that this program is an Incubator Program. Please visit Incubator Programs for more information.

## Required Courses

Code	Title	Credit Hours
<b>Economics Required Courses</b>		<b>(36)</b>
BUS 100	Introduction to Business and Economics	3
BUS 102	Introduction to Business Analytics	3
BUS 221 Business Statistics or MATH 225 Introductory Statistics		3
BUS 321	Analytics for Optimization	3
BUS 480	Strategic Management and Design Thinking	3
ECON 151	Microeconomics	3
ECON 152	Macroeconomics	3
ECON 311	Intermediate Microeconomics	3
ECON 312	Intermediate Macroeconomics	3
ECON 382	Business Economics	3
ECON 423	Economics of Capital Investments	3
Economics Elective - Choose one course		3
BUS 210	Introduction to Accounting	3
BUS 211	Financial Accounting	3
BUS 212	Managerial Accounting	3
BUS 301	Organizational Behavior	3
BUS 305	Operation and Supply Chain Analytics	3
BUS 311	Strategic Cost Management	3
BUS 341	Business Law	3
BUS 361	Topics in Entrepreneurship	3
BUS 371	Marketing Fundamentals	3
BUS 452	International Finance	3
BUS 454	Investments	3
BUS 455	Corporate Finance	3
BUS 457	Financial Modeling	3
BUS 458	Financial Derivatives	3
BUS 472	New Product Development	3
BUS 473	Marketing Analytics	3
BUS 475	Sales Management and Analytics	3

BUS 476	Consumer Behavior	3
ECON 383	Sports Economics	3
<b>Data Science Required Courses</b>		<b>(21)</b>
DS 151	Introduction to Data Science	3
DS 261	Ethics and Privacy in Data Science	3
DS 451	Data Science Life Cycle	3
ECON 251	Introduction to Econometrics	3
MATH 474	Probability and Statistics or MATH 476 Statistics	3
Data Science Electives - Choose one course from CS and one course from AMAT, DS or STAT		6
CS 422	Data Mining	3
CS 430	Introduction to Algorithms	3
CS 484	Introduction to Machine Learning	3
CS 584	Machine Learning	3
DS 251	Mathematical Foundations for Data Science I	3
DS 351	Mathematical Foundations for Data Science II	3
MATH 350	Introduction to Computational Mathematics	3
MATH 380	Introduction to Mathematical Modeling	3
MATH 435	Linear Optimization	3
MATH 446	Introduction to Time Series	3
MATH 475	Probability	3
MATH 484	Regression	3
MATH 497	Special Problems	3
MATH 569	Statistical Learning	3
MATH 574	Bayesian Computational Statistics	3
STAT 514	Applied Computational Statistics for Analytics	3
<b>Mathematics Requirements</b>		<b>(17)</b>
MATH 151	Calculus I	5
MATH 152	Calculus II	5
MATH 251	Multivariate and Vector Calculus	4
MATH 332	Elementary Linear Algebra	3
<b>Computer Science Requirements</b>		<b>(4)</b>
CS 115	Object-Oriented Programming I	2
CS 116	Object-Oriented Programming II	2
Students may substitute CS 115 and CS 116 for CS 201 Accelerated Intro to Computer Science (4 credits)		
<b>Natural Science and Engineering Requirements</b>		<b>(10)</b>
See Illinois Tech Core Curriculum, section D		10
<b>Interprofessional Projects (IPRO)</b>		<b>(6)</b>
See Illinois Tech Core Curriculum, section E		6
<b>Humanities and Social Science Requirements</b>		<b>(21)</b>
See Illinois Tech Core Curriculum, section B and C		21
<b>Free Electives</b>		<b>(5)</b>
Select 5 credit hours.		5
<b>Total Credit Hours</b>		<b>120</b>

## Bachelor of Science in Economics and Data Science\* Curriculum

		Year 1	
Semester 1	Credit Hours	Semester 2	Credit Hours
BUS 100	3	BUS 102	3
ECON 151	3	ECON 152	3
CS 115	2	CS 116	2
Humanities Elective (200 Level)	3	MATH 152	5
MATH 151	5	Science Elective	4
		<b>16</b>	<b>17</b>
		Year 2	
Semester 1	Credit Hours	Semester 2	Credit Hours
BUS 321	3	BUS 221 or MATH 225	3
ECON 311	3	ECON 312	3
DS 151	3	DS 261	3
MATH 251	4	MATH 332	3
Science Elective	3	Science Elective	3
		<b>16</b>	<b>15</b>
		Year 3	
Semester 1	Credit Hours	Semester 2	Credit Hours
ECON 251	3	ECON 382	3
MATH 474 or 476	3	Economics Elective	3
DS 451	3	Data Science Elective	3
Humanities Elective (300+)	3	IPRO Elective I	3
Social Science Elective	3	Humanities Elective (300+)	3
		<b>15</b>	<b>15</b>
		Year 4	
Semester 1	Credit Hours	Semester 2	Credit Hours
ECON 423	3	BUS 480	3
Data Science Elective	3	Free Elective	3
IPRO Elective II	3	Humanities or Social Science Elective	3
Social Science Elective (300+)	3	Social Science Elective (300+)	3
Free Elective	2		
		<b>14</b>	<b>12</b>
<b>Total Credit Hours: 120</b>			

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