



School of Business
Overview of Curricula
Fall 2019

1. Undergraduate Programs

BACHELOR OF SCIENCE IN BUSINESS

The Bachelor of Science in Business degree is designed to train students in a variety of business disciplines while making sure they are proficient in the use of the latest technologies such as advanced excel, Tableau, as well as computer coding in Python and the “R” language. Students in the undergraduate school of business are required to take coursework in calculus, statistics, analytics and information systems, economics, accounting, marketing, management and finance. This coursework equips them to enter the workforce with the technical and analytical skills necessary to hit the ground running. Our seniors participate in a capstone design course which provides them an opportunity to apply all the concepts, principles, and methods they have learned to tackle real business problems in an application domain of their choice. Located just minutes away from the world’s business capital, 90% of our students also get real-world experience through their internships at the leading investment firms, as well as marketing and media/telecom companies which prepares them for their future careers.

Students pursuing a Bachelor of Science in Business degree can major in:

- Business and Technology
- Accounting and Analytics
- Marketing Innovation and Analytics
- Information Systems
- Management
- Economics
- Finance

Additionally, students may choose to minor in one or more of the 8 following business disciplines:

- Accounting
- Economics
- Entrepreneurship
- Finance
- Information Systems
- International Business
- Marketing
- Quantitative Finance

- *Degree Requirements:* The BSB consists of approximately 45 courses (125 credits). A minimum GPA of 2.00 is required to graduate.
- *Prerequisites:* Four years of English, four years of mathematics (two years of algebra; one year of geometry; and one year of pre-calculus), three years of science (one year of biology, one year of chemistry, one year of physics).
- *Delivery Modes:* On campus

Bachelor of Science in Quantitative Finance

The Stevens QF program has been designed to provide students with a thorough and rigorous foundation for careers in the modern financial industry, which has undergone a transformation in the past two decades to become a hyper-high-tech field. Students will be selected for strong quantitative aptitude, high motivation and work ethic, and a strong interest in the field of business and finance. The curriculum focuses very heavily on quantitative methods (7 required math courses), computer science (6 required CS courses), and a wide range of domain-based courses in finance, accounting, capital markets, and economics. Over the course of eight semester terms, and approximately 140 credit-hours of course work, students may choose to follow one out of four main “threads” in the QF curriculum.

- ◇ Accounting
- ◇ Quantitative Methods
- ◇ Computer Science
- ◇ Finance & Economics

Additionally, students may choose to minor in the following disciplines:

- Computer Science
 - Mathematics
 - Economics
 - Accounting & Analytics
- *Degree Requirements:* The QF Degree consists of approximately 45 courses (140 credits). A minimum GPA of 2.00 is required to graduate.
 - *Prerequisites:* Four years of English, a strong quantitative aptitude, with four years of mathematics (algebra, geometry, pre-calculus, and calculus - preferably AP level), three years of science (e.g., biology, chemistry, physics, computer science).
 - *Delivery Modes:* On campus

2. Graduate Programs

MASTER OF SCIENCE IN BUSINESS INTELLIGENCE AND ANALYTICS (BI&A)

Master of Science in Business Intelligence and Analytics (BI&A)

The MS in Business Intelligence and Analytics (BI&A) is designed for full-time and part-time students who have undergraduate degrees in science, mathematics, computer science or engineering. The program produces analytical thinkers who can pursue careers as data scientists in a variety of industries. The BI&A program includes courses in databases, data warehousing, machine learning and artificial intelligence, social networking and risk modeling. The program is both theoretical and applied in that each course combines relevant theories and techniques with examples and student exercises that illustrate industry applications of data analytics. A capstone course provides opportunity for students to apply the concepts, principles, and methods they have learned to real problems in an application domain of their choice. The BI&A program prepares students for careers as business analysts, data analysts and data scientists in multiple industries including technology, finance, manufacturing, retail and media and communications. Oral and written communications skills, analytical thinking and ethical reasoning are emphasized throughout the curriculum.

- *Degree Requirements:* The MS in Business Intelligence and Analytics consists of 12 courses (36 credits). A minimum GPA of 3.0 is required to graduate.
- *Admission Requirements:* The BI&A program is designed for students with a strong technical background in mathematics, economics, engineering, or computer science.
- All applicants to the BI&A program must submit a GMAT or GRE score.
- *Prerequisites:* 4-year undergraduate degree; calculus (1 year); at least one course in programming or programming experience and one course covering basic probability, hypothesis testing and estimation.
- *Delivery Modes:* On-campus, online, selected corporate locations.

MASTER OF SCIENCE IN INFORMATION SYSTEMS (MSIS)

Rapid advancements in technology, dynamic markets, and the changing global business environment have led to intense global competition in which shorter product life cycles and efficient and effective computing services are a competitive necessity. Information systems professionals are required to identify innovative opportunities for leveraging IT for competitive advantage. Close alignment of IT and business is essential. Organizations need IT professionals who are effective at working closely with their business partners, and business people need to better understand how to work closely with their IT partners. In addition to strong practical, real-world IT and management skills, graduates of the program leave with improved communication, interpersonal, and team skills. The MSIS program prepares students for careers such as: Business Analyst, Internal IT Consultant, IT Manager, Management Consultant, Data Analyst, Knowledge Manager, Social Media Expert and Technology Specialist. In addition to off-campus (corporate-

sponsored) programs, the MSIS program is offered on campus on weekdays via Stevens WebCampus platform. Courses are offered year-round, in fall, spring and summer semesters.

- *Degree Requirements:* The MS in Information Systems consists of 12 courses (36 credits). A minimum GPA of 3.0 is required to graduate.
- *Admission Requirements:* The MSIS program is designed for students with a technical background in engineering, science, information systems, computer engineering computer science. Applicants to the program must submit a GMAT or GRE score.
- *Prerequisites:* 4-year undergraduate degree; calculus (1 year); at least one course in programming or programming experience.
- *Delivery Modes:* On-campus, online, selected corporate locations

MASTER OF SCIENCE IN MANAGEMENT (MSM)

The Master of Science in Management (MSM) program is a generalist graduate business program designed specifically for individuals with non-business academic backgrounds/degrees. Students do not need any professional work experience to be admitted to this 30-credit program. Grounded in the fields of management, economics, applied psychology, and quantitative methods, the unique 10-course curriculum encompasses the primary business disciplines to help you round out your undergraduate training and experience. Students will learn how economics, technology, social science and quantitative methods can be used to solve today's complex and managerial challenges. In today's competitive global workplace, having the right technical skills is extremely important, but it is often not enough. Businesses need people who can enter the workplace with the ability to transform technical expertise into business solutions. Through the MSM coursework and other learning experiences, students are guided in developing a core set of critical thinking, collaboration, communication and innovation skills that are keys to success at the intersection business and technology. The MSM courses help students master business fundamentals and enrich their capacity to communicate effectively across business and technical domains. Stevens is renowned for excellence in project management, leadership and innovation management. Not only are these skills important to technical professionals, they also impart a competitive edge regardless of previous field of study or current type of work. Our faculty includes thought leaders who are experienced professionals, many of whom were managers at Fortune 500 organizations. Be a part of a major technical university that on the one hand has a rich tradition of excellence in applied science and engineering, and on the other is also home to original thought leaders in management science.

- *Degree Requirements:* The MS in Management consists of 10 courses (30 credits). A minimum of 3.0 is required to graduate.
- *Admission Requirements:* The Master of Science in Management program is designed for students having less than two years work experience. Admission to the program requires a bachelor's degree with at least a "B" average, and two letters of recommendation. Meeting

minimum admissions standards does not guarantee admission; minimum requirements serve as a guide to the minimum expected qualifications necessary to be considered for admission.

- *Prerequisites:* a four-year bachelor's degree or equivalent
- *Delivery modes:* On-campus, online, selected corporate locations

MASTER OF SCIENCE IN FINANCE (MFIN)

The Master of Science in Finance (MFin) is a 36-credit degree program that addresses the needs of students looking to advance their management careers in the financial sector. It consists of core courses covering fundamental topics in finance and economics, the management of financial technologies, and allows students to specialize in topics such as regulatory and market environments, the management of risks, or financial project management.

The Finance curriculum is structured in such a way as to provide students with a rigorous education that will familiarize them with the terminology, methods and application areas of economics, finance and financial technology, while providing an understanding of the financing needs of companies and the market mechanisms available to meet these needs. Graduates will be able to apply financial technologies for analysis, forecasting and management; assess the financial health of an organization; develop comprehensive plans that address financial management needs of an organization; and lead business and technology teams.

Graduates of the Master of Finance program will:

- be familiar with terminology, methods, and application areas of economics, finance, and financial technology
- understand the financing needs of organizations and the market mechanisms available to meet these needs
- be able to apply common financial technologies for analysis, forecasting, and management of financial enterprises
- be able to assess the financial health of an organization
- be able to develop comprehensive plans that address the financial management needs of an organization
- lead combined business and technology teams in the delivery of change projects.
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- *Degree Requirements:* The MS in Finance consists of 30 credits. Of these 30 credits, 21 credits are considered core. The remaining 9 credits are electives. A minimum GPA of 3.0 is required to graduate.
- *Admission Requirements:* The MFIN program is designed for professionals in the industry, or aspiring to enter the profession, who understand just how intensely the data revolution has disrupted the industry. The program will prepare you to apply technology for financial analysis, forecasting and management; assess the financial health of an organization; develop

plans that address financial management needs of an organization; and lead business and technology teams. All applicants must submit a GRE score or GMAT equivalent.

- *Prerequisites:* 4-year undergraduate degree with one standard finance course (Financial Management); a standard undergraduate accounting course (like Finance and Managerial Accounting) and a standard undergraduate statistics course (like Statistical Models).
- *Delivery Modes:* On-campus, online.

MASTER OF SCIENCE IN FINANCIAL ANALYTICS (MFA)

Financial analytics combines data science and financial modeling for broad financial services and financial technology industry. Since the emerging of quantitative finance, the financial industry has been showing increasing demand for advanced machine learning, data visualization, and cloud-based data-driven solutions. Financial data, such as multi-dimensional time series or multi-representative structured tables have unique data characteristics when compared to data from other areas. A data analytics graduate of our program needs to understand and help analyze data varying from high-frequency nanosecond tick data to long-term asset allocation correlations. The novel data-driven transformation in the financial industry requires new data focus decision makers with a deep understanding of financial markets. The MSFA program is designed to foster the core skills in building solutions for handling real-world events and large data sets and thus essential to provide candidates with these enterprise-level skills.

- *Degree Requirements:* The MS in Financial Analytics consists of 30 credits. A minimum GPA of 3.0 is required to graduate.
- *Admission Requirements:* The MSFA program is designed for students with a strong technical background in mathematics, statistics, physics, engineering, computer science or finance. All applicants must submit a GRE score or GMAT equivalent.
- *Prerequisites:* 4-year undergraduate degree; calculus (up to and including multivariate calculus); a standard undergraduate probability course and a standard undergraduate statistics course.
- *Delivery Modes:* On-campus, online, selected corporate locations

MASTER OF SCIENCE IN FINANCIAL ENGINEERING (MFE)

The vast complexity of financial markets compels industry to look for experts who not only understand how they work, but also possess the mathematical knowledge to uncover their patterns and the computer skills to exploit them. To achieve success, banking and securities industries must come to grips with securities valuation, risk management, portfolio structuring, and regulation-knowledge embracing applied mathematics, computational techniques, statistical analysis, and economic theory. The goal of the degree is to produce graduate who can make pricing, hedging, trading, and portfolio-management decisions in the financial services enterprise. With sharply honed practical skills complimented by strong technical elements, graduates are in demand in the industries-investment banking, risk management, securities trading and portfolio management. Students wishing to enroll in any of the FE programs must

have an undergraduate degree in an engineering or science discipline and strong quantitative background.

- *Degree Requirements:* The MS in Financial Engineering consists of 10 courses (30 credits). A minimum GPA of 3.0 is required to graduate.
- *Admission Requirements:* The Financial Engineering program is designed for students with a strong STEM background.
- All applicants to the Financial Engineering program must submit a GRE score.
- *Prerequisites:* 4-year undergraduate degree, including coursework in calculus and differential equations, probability and statistics, linear algebra and programming.
- *Delivery Modes:* On-campus, and online.

MASTER OF SCIENCE IN ENTERPRISE PROJECT MANAGEMENT (EPM)

The 30-credit Stevens master's degree in Enterprise Project Management emphasizes a strategic perspective that's crucial to modern project management. The program prepares forward-thinking leaders through courses in strategic perspectives, project planning, project portfolio management and cross-project leadership, ensuring graduates can direct complex, enterprise-level initiatives on time and on budget. The curriculum is unique for its concentration on business, analytical and leadership skills, and is designed to both prepare technical professionals to become skilled managers while offering the opportunity to pursue a concentration in a field where industry desperately needs leadership, such as software engineering and construction management. This curriculum encompasses a strategic approach to project management that goes beyond the traditional tools, tactics, and PMI Certification preparation taught in most PM programs. The Stevens EPM program prepares students to:

- ◇ Lead transformational, large-scale projects and project teams across units, enterprises and multiple organizations;
- ◇ Gain insight and skills pertaining to leadership, cultural and behavioral project environment
- ◇ Lead change and span boundaries across complex enterprise systems
- ◇ Bridge cultural and organizational gaps

The program offers a unique blend of small class sizes, intense collaboration, and global professional networking opportunities.

Graduates will leave Stevens with better communications, interpersonal and team skills enabling them to plan, implement and manage complex enterprise level projects.

- *Degree Requirements:* The MS in Enterprise Project Management comprises 10 courses (30 credits). A minimum GPA of 3.0 is required to graduate.
- *Admission Requirements:* The Master of Science in Enterprise Project Management is designed for working professionals who want to excel in managing enterprise-level projects, programs, portfolios, and project management offices. Applicants should have a minimum of one-year work experience. Applicants who do not meet the work experience requirement, but

have outstanding academic records, may be considered for admission. Admission to the program requires a bachelor's degree with at least a "B" average, and two letters of recommendation. Meeting minimum admissions standards does not guarantee admission; minimum requirements serve as a guide to the minimum expected qualifications necessary to be considered for admission.

- *Prerequisites:* A four-year bachelor's degree or equivalent
- *Delivery modes:* On-campus, online, selected corporate locations

MASTER OF SCIENCE IN NETWORK & COMMUNICATION MANAGEMENT & SERVICES (MS-NCMS)

The Network & Communication Management & Services graduate program is an interdisciplinary program between the School of Business and the Electrical and Computer Engineering Department of the School of Engineering and Science. The School of Business administers the program. This program is STEM (Science, Technology, Engineering and Mathematics)- designated by the Department of Homeland Security. A CoOP is an available option for students seeking work experience. The Network & Communication Management & Services curriculum addresses the demanding requirements of the global communications industry, businesses, and government for technical expertise combined with business skills. The program provides students with advanced technical knowledge of applied communications integrated with business management. This program prepares students to plan, implement and manage leading edge communications capabilities. The goal of this student is to become a technical business and management professional responsible for planning communications products and services; for leading the resources required to implement the plan, including people, product, networks, and systems, and for the decisions and budgeting for development, acquisition, installation, and maintenance of products and services. Each sector of industry (government, regulatory, service providers, financial, equipment vendor, consultant, and R&D) will have corresponding profiles of professionals who need such technical expertise and management skills. This degree program builds an advanced foundation for more specialized study while enabling professionals from all industry sectors to understand and interact with customers and communications professionals who make the decisions on how businesses will exploit communications capabilities. Program courses prepare students to plan, implement and manage leading-edge networks and services and think critically about new technologies and their role in developing new service offerings that take advantage of evolving networks. Specialized courses are available in the areas of management of wireless networks (including 5G mobile wireless), broadband communications, communications security, Software Defined Networks (SDN), Network Function Virtualization (NFV), and project management. Elective courses in this program can be selected from multiple disciplines, and include topics such as 5G mobile wireless, SDN, NFV, the Internet of Things, cybersecurity, computer science, data analytics, electrical engineering, management, and more. Graduate certificates are offered in the Management of Wireless Networks and Management of Broadband Communications and Converged Networks.

- *Degree Requirements:* The M.S. in Network and Communication Management and Services consists of 12 courses (36 credits). A minimum GPA of 3.0 is required to graduate.
- *Admission Requirements:* Admission to the M.S. in Network and Communication Management and Services program requires all applicants to submit transcripts showing academic achievement in prior studies (bachelor's degree with at least a "B" average), two letters of recommendation, a "statement of purpose", and a resume. A semester of calculus is also required. For students who lack this prerequisite, Stevens offers a non-credit course (e.g., TM500). International students must also submit a GMAT/GRE score.
- *Prerequisites:* A four-year bachelor's degree.
- *Delivery modes:* On-campus, online, "hybrid" mode (on-campus lectures are simultaneously broadcast online), selected corporate locations.

MASTER OF BUSINESS ADMINISTRATION (MBA)

To stand out in today's business world, you need three essential competencies. First, you need to be proficient in the basic business disciplines, such as finance, accounting, and marketing. These three courses are prerequisites to the program (if you have not taken them previously you must take them as part of the program). Second, you must possess the key skills that enable you to collaborate and lead, communicate, be creative and think strategically. Third, with technology being essential to running nearly every facet of business, you need to understand how to nurture and leverage technology for business success. The Stevens MBA is uniquely designed to equip you with these three essential elements. It will position you to operate effectively at the intersection of business and technology, which is where 21st century businesses need you to be. You will learn from faculty members who remain connected with high-tech organizations around the globe and engage in cutting edge research in such areas as entrepreneurship, innovation and project management. You will draw upon Stevens' rich heritage in the management sciences, and its 140+ years as an applied technological university, which puts technology at the core of your learning experience. There are three MBA program options - the Stevens MBA for full-time and part-time students having a minimum of two years work experience, the Analytics MBA for full time students who want to accelerate their studies and complete the program in one year, and the Experienced Professional MBA that is a weekend, cohort-based program that is offered on the Stevens campus on alternate Saturdays. Applicants to the EMBA must have 5+ years of work experience. The following sections pertain to the Stevens MBA program. The Analytics MBA and the Experience Professional MBA program is discussed later in the catalog. Incorporating a technology-centric approach with skills development the Stevens MBA program is designed to help students succeed in today's fast-paced technology-driven environment. Graduates from the program will be able to apply their skills to contribute to excellence at the intersection of business and technology and lead their organizations in an increasingly complex and competitive world.

- *Degree Requirements:* The Stevens MBA degree comprises 13 courses (39 credits) plus the three prerequisite courses. A minimum GPA of 3.0 is required to graduate.

- *Admission Requirements:* Applicants to the Stevens MBA program are preferred that they have at least two years of work experience. All applicants must submit transcripts showing academic achievement in prior studies (bachelor's degree with at least a "B" average), two letters of recommendation, and a resume. All applicants (domestic and international) to the MBA program must submit a GMAT score (or GRE score if taken previously). Note: The GMAT requirement is waived for domestic candidates possessing an MS degree and 5 years of work experience. Meeting minimum admissions standards does not guarantee admission; minimum requirements serve as a guide to the minimum expected qualifications necessary to be considered for admission.
- *Prerequisites:* A four-year bachelor's degree or equivalent.
- *Delivery modes:* On-campus, online, selected corporate locations.

ANALYTICS MASTER OF BUSINESS ADMINISTRATION (AMBA)

The Analytics MBA at Stevens is a STEM program for recent college graduates who have studied a technical discipline, have no professional experience and want to quickly earn an advanced degree to compete for exciting jobs at the world's most prestigious companies — where, increasingly, even entry-level work requires a master's.

Here, faculty present traditional themes like strategy, marketing, finance and accounting through an analytical, problem-solving lens, with an emphasis on applying data-intensive methods to industry challenges. And the program's structure encourages your personal and professional development through career support, mentorship and business immersion.

- *Degree Requirements:* The Stevens AMBA degree comprises 13 courses (39 credits) plus the three prerequisite courses. A minimum GPA of 3.0 is required to graduate.
- *Admission Requirements:* Applicants to the Stevens MBA program are preferred that they have at least two years of work experience. All applicants must submit transcripts showing academic achievement in prior studies (bachelor's degree with at least a "B" average), two letters of recommendation, and a resume. All applicants (domestic and international) to the MBA program must submit a GMAT score (or GRE score if taken previously). Note: The GMAT requirement is waived for domestic candidates possessing an MS degree and 5 years of work experience. Meeting minimum admissions standards does not guarantee admission; minimum requirements serve as a guide to the minimum expected qualifications necessary to be considered for admission.
- *Prerequisites:* a four-year bachelor's degree or equivalent.
- *Delivery modes:* On-campus.

EXECUTIVE MASTER OF BUSINESS ADMINISTRATION (EMBA)

Like most EMBA programs, Stevens offers a careful work-life balance for aspiring leaders, with courses meeting on alternating Saturdays. And you move through the program with the same group of professionals, giving you an incredibly powerful network and enriching classroom discussions with perspectives from a variety of industries.

The Stevens EMBA, though, recognizes that executive-level courses must offer a strong technology perspective to be relevant in a fast-changing world. Here, courses in marketing, finance, strategy and operations emphasize the use of analytical tools that are changing how decisions are made in these disciplines. Faculty teach you to approach problems like a nimble entrepreneur and use emerging technologies to become an innovator who brings greater sophistication and efficiency to the enterprise.

- *Degree Requirements:* The Stevens EMBA degree comprises 16 courses (48 credits). A minimum GPA of 3.0 is required to graduate.
- *Admission Requirements:* Applicants to the Stevens MBA program are required that they have at least five years of professional work experience. All applicants must submit transcripts showing academic achievement in prior studies (bachelor's degree with at least a "B" average), two letters of recommendation, and a resume. All applicants (domestic and international) to the MBA program must submit a GMAT score (or GRE score if taken previously). Note: The GMAT requirement is waived for domestic candidates possessing an MS degree and 5 years of work experience. Meeting minimum admissions standards does not guarantee admission; minimum requirements serve as a guide to the minimum expected qualifications necessary to be considered for admission.
- *Prerequisites:* a four-year bachelor's degree or equivalent and five years of professional work experience.
- *Delivery modes:* On-campus.

MASTER OF SCIENCE-MASTER OF BUSINESS ADMINISTRATION

The MS-MBA is a coordinated dual degree program enabling students who graduate with a Business School MS to apply relevant courses from their MS to their MBA degree. In most cases, the MBA degree can be obtained with 24-36 credits (8-12 courses) of additional course work depending on the chosen MBA concentration. MS graduates must submit an application for admission to the MBA program. The combination of courses comprising the MS and MBA degrees provides in-depth preparation for graduates wishing to assume either general management or technology-related managerial positions. The program is designed to allow students to specialize in areas that are relevant to their careers.

- *Degree Requirements:* The dual degree is comprised of 20 courses (60 credits). A minimum of 3.0 is required to graduate.
- *Admission requirements:* Master of Science degree holders from the SSB will qualify for the dual degree.
- *Prerequisites:* A MS degree from Stevens.
- *Delivery modes:* On-campus, online.

MASTER OF SCIENCE IN TECHNOLOGY MANAGEMENT (MSTM)

The Master of Science in Technology Management (MSTM) is a part-time program specifically designed for experienced professionals wishing to move to a broader role in technology and business management. The MSTM program focuses on the effective management and use of technology in technology-intensive businesses. It integrates business and technology topics aimed at educating students to manage technology creatively in order to enhance business

competitiveness in a global business environment. Students learn general business skills, such as accounting, finance and marketing, along with emphasis on development of technology management skills encompassing technology strategy, emerging technology and corporate entrepreneurship to assure alignment of technology strategy with business strategy.

- *Degree Requirements:* The MSTM program is comprised of 10 courses (30 credits).
- *Admission Requirements:* Applicants to the MSTM degree must have a minimum of five years of professional work experience. All applicants must submit transcripts showing academic achievement in prior studies (bachelor's degree with at least a "B" average), two letters of recommendation, and a resume (proving work experience).
- *Prerequisites:* five years of professional experience.
- *Deliver mode:* On-campus, Corporate locations.

Master of Philosophy

The Master of Philosophy (M.Phil.) is a postgraduate research degree. It is offered to enrolled Ph.D. students who achieve a record of distinction during the pre-dissertation phase. Because the Master of Philosophy is not designed as a terminal degree, its requirements are integrated with the requirements for the Doctor of Philosophy degree: potential candidates for the Master of Philosophy degree must be qualified to pursue the doctorate and have been advised to apply for admission to a doctoral program.

Doctoral Programs

PH.D. IN BUSINESS ADMINISTRATION

The School of Business Ph.D. in Business Administration (BA) program defines itself at the intersection of three research domains: Information Systems & Analytics, Entrepreneurship & Innovation Management and Finance. These three research domains are strongly represented by the faculty of the Business School and provide different perspectives on business administration.

The design of the Ph.D. program is based on the assumption that novel research ideas often occur at the intersection of different knowledge domains. The unique combination of these three research domains and their integrated discussion will lead to creative and innovative research questions within and across these domains. The combination will also encourage the development of the interdisciplinary skill sets necessary to conduct innovative research. The majority of Ph.D. programs focus on theory and analytical skills. The integration of three research domains complements this fundamental skill set with the skills necessary for creating and applying this knowledge. Our students are challenged to create new technologies for analyzing relevant research questions related to important problems we face today.

Students of the program will choose one of the three research domains as their research focus and they can study aspects of the other two domains as part of the program. Because of the specific integration of the knowledge domains the program offers a truly interdisciplinary experience. This is achieved by a common set of required courses and by the selection of individual courses.

- *Degree Requirements:* The BA PhD degree requires 84 credits beyond the Bachelor's degree. For students who already possess a Master's degree in a management discipline, the requirement is 54 graduate credit hours of coursework and research beyond the Master's degree. Up to one-third of additional graduate course credits may be transferred with the approval of the university's Graduate Curriculum Committee (GCC) and the Dean of Graduate Academics. For the latter, the grade of "B" (3.0 GPA) or better is required and such courses may not have been already used to obtain an academic degree. The BA PhD degree also requires the satisfactory completion of a required preliminary exam after the end of year 1, and qualifying examination after the end of year 2, a dissertation proposal defense and a dissertation defense including an oral component. For the Stevens credit hours, a minimum of 15 research credits are required. The proportion of classroom course versus research credit hours will vary by student and is decided as part of the advising process. The Ph.D. Students in the BA Program must complete *PRV 961 Ph.D. Signature Course* and the following five courses: *Statistical Inferences (MA 701)*, *Microeconomic Theory (FIN 703)*, *Econometrics (FIN 704)*, *Research Design (MGT 719)*, *Multivariate Data Analytics (BIA 652)* as the Ph.D. core courses. In addition, the Ph.D. students need to take *Corporate Finance Theory and Applications (FIN 708)*, and *Asset Pricing Theory and Application (FIN 705)* for completing the Finance concentration requirements; *Entrepreneurship Theory and Innovation Management Research (MGT 711)*, and *Theory in Management Research (MGT 753)* for completing the Innovation and Entrepreneur concentration; and the *Design Science Research Seminar (MGT 734)* and *Business Process Management & Innovation (MIS 722)* for completing the Information System & Analytics concentration. For fulltime PhD students, the expected completion date is within four (4) years. The maximum number of years for all Ph.D. students to complete all requirements is six (6) years. Support beyond four years is unusual and outside the current university guidelines. Students should plan to finish within a four-year time frame if they desire financial support.
- *Admission Requirements:* The BA PhD program is designed for students with a Master's degree in mathematics, operations research, computer science, economics or other business-related disciplines. All applicants must submit a GMAT or GRE score.
- *Delivery Modes:* On-campus.

PH.D. IN FINANCIAL ENGINEERING

As the first Financial Engineering doctoral program to be developed in the nation, the Doctor of Philosophy (Ph.D.) degree is designed to prepare students to perform research or high-level

design in financial engineering. With an emphasis on an interdisciplinary approach requiring knowledge in finance, economics, mathematics, probability/ statistics, operations research, engineering, computer science and systems thinking, the program gives graduates substantial expertise in key disciplines such as financial mathematics, risk management, financial statistics, portfolio optimization, financial standards, systemic risk, behavioral finance, microstructure finance, investment banking, data analytics, securities trading to name a few examples. Students work alongside with faculty and perform transformative research in four crucial areas: Quantitative Finance, Financial Services Analytics, Financial Risk & Regulation, and Financial Systems. Graduates of the program are typically employed in world-class financial investment firms and academic research institutions.

- *Degree Requirements:* The FE PhD degree requires 84 credits beyond the Bachelor's degree. For students who already possess a Master's degree in a management discipline, the requirement is 54 graduate credit hours of coursework and research beyond the Master's degree. Up to one-third of additional graduate course credits may be transferred with the approval of the university's Graduate Curriculum Committee (GCC) and the Dean of Graduate Academics. For the latter, the grade of "B" (3.0 GPA) or better is required and such courses may not have been already used to obtain an academic degree. The FE PhD degree also requires the satisfactory completion of a required comprehensive examination, qualifying examination, a dissertation proposal defense and an oral defense of a dissertation. For the Stevens credit hours, a minimum of 15 research credits are required. The proportion of classroom course versus research credit hours will vary by student and is decided as part of the advising process. In addition, the PhD. Students in the FE PhD Program must complete PRV 961 Ph.D. Signature Course and MGT 719 Research Methods before their graduation. For fulltime PhD students, the expected completion date is within - 4 years. The maximum number of years for all Ph.D. students to complete all requirements is six years. Support beyond four years is unusual and outside the current university guidelines. Students should plan to finish within a four-year time frame if they desire financial support.
- *Admission Requirements:* The FE PhD program is designed for students with a Master's degree in mathematics, operations research, computer science, economics or other engineering disciplines. All applicants must submit a GMAT or GRE score.
- *Delivery Modes:* On-campus, online, selected corporate locations.

INTERDISCIPLINARY PH.D. IN DATA SCIENCE

The Interdisciplinary PhD in Data Science is managed jointly by the School of Engineering and Sciences and the School of Business. The program prepares students for research careers in academia or industry that involve the use of methods and systems for extracting insights from rich data sets, especially as applied to the fields of finances and the life sciences. The program responds to the demand by industry for data scientists with a deep knowledge of the theories, techniques and applications associated with “Big Data” and artificial intelligence. The program also

recognizes the broad range of skills needed to successfully apply the tools of the digital revolution in industry. This is reflected in the four core areas of (1) mathematical and statistical modeling, (2) machine learning and artificial intelligence, (3) computational systems, and (4) data management at scale, all of which provide a strong foundation for a thorough strong understanding of (5) a field of application. Programs of study are available in two application areas, Financial Services and Life Sciences. Students may design a program of study in another field of application with support of their advisor and approval of the department chair/program director. To make progress on leading-edge subjects in a fast-moving field like data science requires full-time study. Accordingly, students will be admitted only for full-time on-campus study in partnership with a full-time faculty advisor.

- *Degree Requirements:* The PhD in DS degree requires 84 credits beyond the Bachelor's degree. For students who already possess a Master's degree in a management discipline, the requirement is 54 graduate credit hours of coursework and research beyond the Master's degree. Up to one-third of additional graduate course credits may be transferred with the approval of the university's Graduate Curriculum Committee (GCC) and the Dean of Graduate Academics. For the latter, the grade of "B" (3.0 GPA) or better is required and such courses may not have been already used to obtain an academic degree. The PhD in DS degree also requires the satisfactory completion of a required comprehensive examination, qualifying examination, a dissertation proposal defense and an oral defense of a dissertation. A minimum of 15 research credits are required. The proportion of classroom course versus research credit hours will vary by student and is decided as part of the advising process. In addition, the PhD. Students in the PhD in DS Program must complete PRV 961 Ph.D. Signature Course and MGT 719 Research Methods before their graduation. For fulltime PhD students, the expected completion date is within 4 years. The maximum number of years to complete all requirements is six years. Support beyond four years is unusual and outside the current university guidelines. Students should plan to finish within a four-year time frame if they desire financial support.
- *Admission Requirements:* The PhD in DS program is designed for students with a Master's degree in mathematics, operations research, computer science, economics or other engineering disciplines. All applicants must submit a GMAT or GRE score.
- *Delivery Modes:* On-campus.