Policy of Financial Services Analytics (FSAN) Ph.D. and M.S. Programs
October 20, 2023

Part I. Ph.D. Program Policy

FSAN Ph.D. Program Highlights

The Ph.D. in Financial Services Analytics is a university-wide, multi-disciplinary graduate program with scientific curriculum that builds upon the research and educational strengths of departments across the College of Engineering (COE) and the Lerner College of Business and Economics (LCBE). Graduates of the Ph.D. in Financial Services Analytics Program are researchers and professionals, who play key roles in multi- and interdisciplinary teams, bridging the financial services industry and data and operational sciences. This program provides students with the knowledge, skills, tools, and tactics to turn data into value. Students accepted into the program are required to successfully complete both coursework and research requirements. Highlights of these requirements include: the necessary academic coursework, a written summer paper, a qualifying exam, a successful dissertation proposal and a dissertation defense, in accordance with the University of Delaware's guidelines, and at least one published paper. More specific details about each of these requirements and timing is outlined below.

Ph.D. Program Educational Goals

Students who successfully complete the Financial Services Analytics (PhD) program will demonstrate:

- Fundamental knowledge of data science concepts, theories, and major classical/modern data analytics techniques.
- The ability of summarizing, analyzing, visualizing, and processing data via popular computer program tools.
- Good understanding of financial markets, institutions, the mechanisms behind, and related operations.
- The ability to identify and model business problems in financial services and other business environments, and solve the problems via popular data analytics tools.
- The ability to communicate their knowledge and findings in oral and written forms to other professionals and to more general audiences.
- The ability to conduct publishable research in areas related to data science technology and innovative modeling and solution of critical problems in finance services industry.

Requirements For Admission

Applicants to the Ph.D. program in Financial Services Analytics may have undergraduate degrees from business or engineering, computational science, or other disciplines. Candidates for admission need not have majored in any specific field, but well-qualified students will have:

1. Strong written and oral communication skills;

2. Substantial quantitative coursework and/or hands-on experience with software development.

Admission to graduate programs at the University of Delaware is selective and competitive based on the number of well-qualified applicants and the limits of available faculty and facilities. Those who meet stated minimum academic requirements are not guaranteed admission, nor are those who fail to meet those requirements necessarily precluded from admission if they offer other appropriate strengths. Students deficient in any of the admission requirements may be admitted on conditional status and required to complete prerequisite non-degree coursework.

The following should be considered the minimum requirements for consideration for admission:

1. Comply with all of the requirements in the UD's Graduate Admissions;
2. Hold the equivalent of a 4-year U.S. Bachelor's degree from an accredited college or university and a minimum overall GPA of 3.0 (out of 4.0);
3. GRE or GMAT tests are recommended. Students without these test scores should provide additional evidence, such as research projects, papers, certificates, etc., to demonstrate their technical capabilities. Any scores submitted voluntarily by an applicant will be evaluated holistically but will not be used to specifically determine admission.
4. International student applicants must demonstrate a satisfactory level of proficiency in the English language if English is not the first language. International applicants must have an official TOEFL score of 90 on Internet-based tests. TOEFL scores more than two years old cannot be considered official. Alternatively, IELTS can be accepted in place of the TOEFL. The minimum IELTS score is 6.5 overall with no individual sub-score below 6.0;
5. Official transcripts of all previous academic work;
6. Three (3) letters of recommendation. At least one letter must be from a professor, other letters can be from employers or others who have had a supervisory relationship with the applicant and are able to assess the applicant's potential for success in graduate studies;
7. A resume outlining work and academic experience;
8. An application essay consisting of the answers to the following questions:
    1. What educational background and scientific research or employment experience prepare you for this degree program?
    2. What are your long-term professional objectives?
    3. What specific attributes of the program make you feel that this degree is appropriate to help you achieve your professional objectives?

See Graduate Admissions for additional information, particularly for application procedures and deadlines.

Ph.D. Program Timeline and Requirements

Requirements	Completion Time
Coursework	First two years
Summer Paper Proposal Due Completed Summer Paper	May – end of 2nd semester December – end of 3rd semester
Qualifying Exams Make-Up Exams	July – before 3rd semester December – end of 3rd semester
Dissertation Proposal Defense	By the end of the 5th semester
Dissertation Completed	Four years with financial support, no more than 7 years
One published paper in a peer reviewed journal, or a peer-review conference proceeding in computer science or engineering disciplines, or one second-round revision in a top tier academic journal, justified by your supervisor	By the time of graduation

Coursework Requirements

During the first two years of the Ph.D. program, FSAN students are required to complete a minimum of 30 hours of coursework specified in the FSAN program curriculum. This includes 6 cross-curricular, core courses, a required ethics course, 9 credits (3 classes) of electives, 6 credit hours of seminar, and 9 credit hours of doctoral dissertation. Throughout this coursework, students must maintain a 3.0 cumulative GPA.

Specific degree requirements for the Ph.D. program are as follows:

Degree Requirements (45-54 Credits)	
Core, Required, and Elective Courses (30 Credits)	
Financial Services Analytics Core	18 Credits
Required Class	3 Credits
Electives	9 Credits
Seminar and Research (15-24 Credits)	
Seminar	6 Credits
Research	(0-9) Credits
Doctoral Dissertation	9 Credits

Curriculum
Core (18 Credits)
(3) FSAN815/ELEG815 Analytics I – Foundations of Statistical Learning
(3) FSAN820 Analytics II – Foundations of Optimization
(3) FSAN830 Business Process Management, Innovation, and Analysis

Curriculum
(3) CISC683 Introduction to Data Mining
(3) FINC841/FSAN841 Financial Services Firms and Markets
(3) FINC842/FSAN842 Financial Services Risk Analytics
Required Class (3 Credits)
(3) BUAD640 Ethical Issues in Domestic and Global Business Environments
Electives (9 Credits)
(3) FSAN817/ELEG817 Large Scale Machine Learning
(3) MISY831/FSAN831 Enterprise Information Systems
(3) ELEG636 Statistical Signal Processing
(3) ACCT604 Database Design and Implementation
(3) ACCT806 Systems Analysis, Design and Implementation
(3) ACCT817 Information Technologies Audit
(3) ACCT625 Financial Statement Analysis
(3) CISC686 Introduction to Multi-Agent Systems
(3) CISC684 Introduction to Machine Learning
(3) CISC681 Artificial Intelligence
(3) ELEG630 Information Theory
(3) APEC801 Microeconomic Theory and Behavior
(3) FSAN860 Current Research Topics
(3) FSAN850 Financial Services Analytics Seminar
(3) ECON622 Applied Econometrics I
(3) ECON861 Industrial Organization and Regulation
(3) FSAN964 Pre-Candidacy Study
(3) FINC612 Capital Markets and Financial Institutions
(3) FINC616 Derivative Securities and Risk Management
(3) FINC670 Theory of Financial Decision Making
(3) FINC671 Workshop in Finance: Seminar
(3) MATH612 Computational Methods for Equation Solving and Function Minimization
(3) MATH630 Probability Theory and Applications
(3) MATH631 Introduction to Stochastic Processes
(3) MATH672 Vector Spaces
(3) MATH829 Topics in Mathematics

Curriculum
(3) STAT601 Probability Theory for Operations Research and Statistics
(3) STAT602 Mathematical Statistics
(3) STAT611 Regression Analysis
(3) STAT615 Design and Analysis of Experiments
(3) STAT620 Nonparametric Statistics
(3) STAT674 Applied Data Base Management
(3) STAT675 Logistic Regression
Seminar FSAN850 (6)
Research FSAN860 (0-9)
Doctoral Dissertation FSAN969 (9)

Summer Paper Requirements

as Along with rigorous academic coursework, Ph.D. students in the FSAN Program are required to conduct research, write, and present a summer paper during the second and third semesters. Prior to the end of the first year of study (May), each student must select a topic for the summer research paper. The names of a summer paper advisor, who should be an IFSA affiliated professor, and two additional faculty reviewers, together with a research paper proposal must be submitted at this time. This scholarly paper may be an extension of existing theoretical models, an implementation of existing approaches for new applications, empirical studies with some data collection or an extensive literature review. The final paper, at least 20 pages in length, must be submitted and presented before the end of the third semester (December). A successful summer paper requires a passing grade from at least two professors.

Qualifying Exam Requirements

To demonstrate knowledge and understanding of the material and concepts of the program's core curriculum, FSAN Ph.D. students are required to take a comprehensive, qualifying exam. This exam will be taken at the end of the student's first year of study and consists of subject tests based on the program's 6 core courses.

In order to advance in the program, a student must successfully complete the six core course requirements with a grade of B or higher. Students who receive more than one grade of C or below in the core curriculum will be recommended for dismissal from the program and therefore ineligible to sit for the qualifying examination.

Among students who take the qualifying exam, students who fail 4 or more subjects will be recommended for dismissal from the program. Otherwise, students are given the option to retake the failed subjects.

If a student receives a grade of a C or lower in any one of the six core curriculum courses, the student must pass all 6 subjects, either in the initial exam or through the retake option. Otherwise, the student will be recommended for dismissal from the program.

If a student receives no grade of a C or lower in any one of the six core curriculum courses, the student must pass 5 out of 6 subjects, either in the initial exam or through the retake option. Otherwise, the student will be recommended for dismissal from the program.

Qualifying examinations will be offered in the summer of Year 1 (July), with the retake exams to be scheduled in December.

Dissertation Proposal Requirements

Each Ph.D. student in the FSAN program must establish a Dissertation Committee as soon as the student passes the qualifying exam but no later than the end of the second year of study. The Committee should consist of at least four faculty members, including a primary faculty advisor chosen from the IFSA affiliated faculty members, and at least one additional faculty member from the COE and one additional faculty member from the LCBE, and an external member outside of LCBE and COE. Additionally, by the end of their 5th semester, students are expected to complete and present the dissertation proposal to their committee members.

A successful dissertation proposal should meet the following criteria:

1. The proposal's **content** should be logically organized, clearly presented, and carefully written.
2. The proposal should be sufficiently **comprehensive**. It should have at the minimum following sections: introduction, literature review, proposed research questions, models, preliminary results, and future research plan.
3. Potential **research questions and models should be clearly stated and defined**.
4. Research **methodologies should be clearly described**.
5. The proposal should include **preliminary research results** such as model formulation, initial analysis, data collection, numerical experiments, or similar proof that the proposal has potential for interesting results.
6. The proposed **research plan should be likely to be successful** as judged by committee members.

There are four possible grades for a dissertation proposal defense: Pass, Conditional Pass, Revision and Redefend (R&R), and Fail. A student receiving a Pass grade will become a PhD candidate of FSAN program.

The pass applies to a proposal defense that meets the following conditions:

a. Committee members are happy with the research directions and topics and believe they will lead to a successful dissertation.

b. The student has done sufficient preliminary research work along the proposed research directions.
c. The student's proposal presentation is well organized and well received by committee members.

Thus, a pass grade will be given to only the situation where all committee members are in agreement and are satisfied with the proposal defense.

If a student receives a conditional pass, the student will need to revise the written proposal according to the committee suggestions (e.g., improved writing, more literature review, better specified future research problems and potential contributions) and turn in the revised proposal to the committee and the FSAN program office before the last day of classes for the Fall semester. The dissertation chair will then collect the feedback from committee members on this revised proposal. If committee members are happy with the proposal revision, the proposal is passed and no re-defense is necessary. If any committee member is not satisfied with the revision, a re-defense will be scheduled during the first week of the spring semester and the student will have one more chance to pass the proposal defense. Committee chairs will notify the FSAN program office that (1) a student has successful met the conditions and therefore passed or (2) that the student must re-defend the proposal once the decision has been made by the committee or no later than the end of the calendar year.
A student receiving an R&R or a Fail grade will be given an opportunity to redefend the proposal before the end of the 5th semester. Redefending proposals will take place during the first week of the spring semester. A student who fails the dissertation proposal defense will be placed under academic program review until the proposal is passed. A student who fails the proposal defense twice will be recommended for dismissal from the program.

Recommendation for Dismissal and Appeal Process

At the close of each semester, winter session, or summer session, in those circumstances deemed appropriate by the department or program faculty exercising its professional judgment, the faculty of each department or program may evaluate the progress of a graduate student toward meeting the academic standards of the program in which the student is enrolled. In addition to graded course work, academic standards include, but are not limited to, professional, ethical, clinical, and other standards required of graduate students.

Students are entitled to know the procedures and standards by which their academic performance is assessed. Each program has a statement of policies and procedures by which student academic progress is monitored and by which comprehensive, qualifying, and final examinations/ defenses are conducted and graded. If, in the professional judgment of a department or program faculty, a student has failed to make satisfactory progress toward

meeting the academic standards of the program in which that student is enrolled, the faculty may vote to dismiss that student from the program.

In the case of dismissal, the program director is required to send a report to the Associate Dean of the Graduate College that states the faculty vote on the decision causing dismissal and the justification for this action. The Associate Dean of the Graduate College will notify a student in writing when the student is being dismissed for failure to make satisfactory progress in the program.

In the case of academic dismissal, the student may appeal the termination by writing to the Dean of the Graduate College. This appeal must be made within ten class days from the date on which the student had been notified of academic dismissal. The Dean will review the appeal and may either uphold the dismissal, grant reinstatement or refer the case to the Graduate Hearing Board for resolution. If the Dean grants reinstatement, the student must meet the conditions of the reinstatement. Failure to meet these conditions will result in dismissal from the program. A graduate student may be reinstated only once to a given major. The student's academic transcript will reflect the reinstatement with the appropriate academic probation status.

Dissertation Requirements

Once a student becomes a Ph.D. candidate in the FSAN program, it is essential that they work with their supervisor and dissertation committee to complete their dissertation in accordance with all of the University of Delaware's requirements outlined in this link below. https://grad.udel.edu/policies/step-by-step-guide-to-graduation/. The final version of the dissertation must be submitted to the committee members at least one month in advance.

Research Publication Requirements

In order to graduate from the FSAN program, each student is required to have a least one paper either accepted by a peer-review journal, or accepted by a peer-review conference proceeding in computer science or engineering disciplines, or have one paper in the second round revision of a top tier journal as determined by his/her dissertation supervisor.

Funding Policy

Students entering the FSAN Ph.D. Program are provided with appropriate tuition waiver and/or stipend. Funding will be renewed annually based on availability and student performance. Student funding stops after a maximum of 4 years or when a student leaves or is dismissed from the program. Funding may be reduced if a student is placed on academic review or academic probation due to unsatisfactory progress in the FSAN Ph.D. program. In addition, a student will not receive a stipend from the FSAN program if he or she receives funding from other sources, unless otherwise approved by the director. Additionally, a student will lose all FSAN financial support (tuition and stipend) if he or she chooses to work before graduation.

In addition to tuition and stipend funding, other funding opportunities available to students in the FSAN Ph.D. program include summer research funding and conference travel funding. In order to be considered for summer research funding, interested students must apply by March 1st. This funding is open to all FSAN Ph.D. students. A student's application for this funding must include the research topic and description, research plan, estimated time commitment and an endorsement from your faculty advisor. Misuse of these funds may led lead to reduced or eliminated summer funding for the following year.

Additionally, in an effort to involve students in the financial services industry and provide valuable opportunities for education and networking, all FSAN Ph.D. students, who have passed their qualifying exam, are also eligible for conference travel funding up to one conference per year. The conference chosen should be relevant to the FSAN program and the student's research and prior approval from the program director is needed before the travel can be taken. Approval and amount of the funding is dependent upon the student's role in the conference, the student's academic progress, the student's past participation in IFSA/FSAN events, budget availability, number of previous conferences attended, and how efficiently travel funds will be used.

Performance Evaluation Policy

Students are expected to adhere to the UD graduate program academic policy outlined in the link here: http://grad.udel.edu/policies/graduate-academicpolicies/#gpa and the specific FSAN Ph.D. program requirements detailed in this document. In order to maintain a high quality, academically rigorous program, performance reviews for all students will be conducted annually in April. Students who fail to meet the UD graduate program policy or fail to make satisfactory progress in the FSAN program may be placed on academic review or academic probation, receive reduced financial support, no renewal of financial support, or they may be dismissed from the FSAN program.

Each FSAN student will be evaluated in the following areas: academic performance which includes grades, summer paper, qualifying exam and dissertation progress, participation in IFSA/FSAN activities such as seminars, conferences, and workshops, and personal evaluations (every semester) from a student's faculty advisor, professors they are assigned to work for, and any internship supervisors they may work with. Additionally, feedback or comments from other IFSA faculty members and the Program director will also be used to evaluate student performance.

Part II. M.S. Program Policy

FSAN M.S. Program Highlights

The FSAN M.S. program is designed in response to the increasing popularity of the financial services analytics area and the need to train students to understand both finance and analytics to solve real-world, practical problems in the financial services industry. Offering the M.S. enables the program to serve students with more diverse backgrounds, needs, and career goals. Since the FSAN area is relatively new and is constantly involving, the flexibility of the MS alternative is important to meet student and employer demands. Admission and curriculum requirements for the M.S. program are discussed below.

M.S. Program Educational Goals

Students who successfully complete the Financial Services Analytics M.S. program will demonstrate:

- Fundamental knowledge of data science concepts, theories, and major classical/modern data analytics techniques.
- The ability of summarizing, analyzing, visualizing, and processing data via popular computer program tools.
- Good understanding of financial markets, institutions, the mechanisms behind, and related operations.
- The ability to identify and model business problems in financial services and other business environments, and solve the problems via popular data analytics tools.
- The ability to communicate their knowledge and findings in oral and written forms to other professionals and to more general audiences.

Requirements For Admission

Students interested in FSAN M.S. degree may either apply to the M.S. program directly or apply to the FSAN Ph.D. program and choose the M.S. option before starting the second year of the Ph.D. program.

Students who apply for the M.S. program directly are admitted according to the same admission process and the same minimum requirements for the Ph.D program, as specified in FSAN Ph.D. admission requirement. The requirements are as follows:

Applicants to the M.S. program in Financial Services Analytics may have undergraduate degrees from business or engineering, computational science, or other disciplines. Candidates for admission need not have majored in any specific field, but well-qualified students will have:

1. Strong written and oral communication skills;
2. Substantial quantitative coursework and/or hands-on experience with software development.

Admission to graduate programs at the University of Delaware is selective and competitive based on the number of well-qualified applicants and the limits of available faculty and

facilities. Those who meet stated minimum academic requirements are not guaranteed admission, nor are those who fail to meet those requirements necessarily precluded from admission if they offer other appropriate strengths. Students deficient in any of the admission requirements may be admitted on conditional status and required to complete prerequisite non-degree coursework.

The following should be considered the minimum requirements for consideration for admission:

9. Comply with all of the requirements in the UD's Graduate Admissions;
10. Hold the equivalent of a 4-year U.S. Bachelor's degree from an accredited college or university and a minimum overall GPA of 3.0 (out of 4.0);
11. GRE or GMAT tests are recommended. Students without these test scores should provide additional evidence, such as research projects, papers, certificates, etc., to demonstrate their technical capabilities. Any scores submitted voluntarily by an applicant will be evaluated holistically but will not be used to specifically determine admission.
12. International student applicants must demonstrate a satisfactory level of proficiency in the English language if English is not the first language. International applicants must have an official TOEFL score of 90 on Internet-based tests. TOEFL scores more than two years old cannot be considered official. Alternatively, IELTS can be accepted in place of the TOEFL. The minimum IELTS score is 6.5 overall with no individual sub-score below 6.0;
13. Official transcripts of all previous academic work;
14. Three (3) letters of recommendation. At least one letter must be from a professor, other letters can be from employers or others who have had a supervisory relationship with the applicant and are able to assess the applicant's potential for success in graduate studies;
15. A resume outlining work and academic experience;
16. An application essay consisting of the answers to the following questions:
    4. What educational background and scientific research or employment experience prepare you for this degree program?
    5. What are your long-term professional objectives?
    6. What specific attributes of the program make you feel that this degree is appropriate to help you achieve your professional objectives?

See Graduate Admissions for additional information, particularly for application procedures and deadlines.

Directly admitted M.S. students who want to pursue the Ph.D. program must complete the Ph.D. qualifying exam, and, if receiving "pass" scores for all 6 subjects, using the same criteria as for the Ph.D. students, may switch to the FSAN Ph.D. program. For students admitted directly into the MS and who do not qualify to switch into the PhD, the MS in the Financial Analytics

Program is a terminal degree for the program and the student would not be eligible to enter the PhD at a later time.

FSAN Ph.D. students who choose the M.S. option will lose the funding from the FSAN Ph.D. program. Students who switch from FSAN M.S. program to Ph.D. program may receive stipend and/or tuition waivers depending on the program funding availability.

M.S. Degree Requirements (30 credits)

1. To receive the FSAN M.S. degree, a student must: Successfully complete the 6 core courses of the FSAN Ph.D. program (18 credits), the required ethics class BUAD 840 (3 credits), and 3 additional elective classes (9 credits) from the list of elective classes specified in the FSAN Ph.D. program. Up to three elective classes can be replaced by independent studies if a student choose to do a practical project.
2. Maintain a cumulative GPA of at least 3.0.

Coursework Requirements

To earn the M.S. degree, students are required to complete a minimum of 30 credits of coursework specified in the FSAN program curriculum. Throughout this coursework, students must maintain a 3.0 cumulative GPA.

Specific degree requirements for the M.S. program are as follows:

Course Curriculum
Core (18)
(3) FSAN815/ELEG815 Analytics I – Foundations of Statistical Learning
(3) FSAN820 Analytics II – Foundations of Optimization
(3) FSAN830 Business Process Management, Innovation, and Analysis
(3) CISC683 Introduction to Data Mining
(3) FINC841/FSAN841 Financial Services Firms and Markets
(3) FINC842/FSAN842 Financial Services Risk Analytics
Required Class (3)
(3) BUAD640 Ethical Issues in Domestic and Global Business Environments
Electives (9)
(3) FSAN817/ELEG817 Large Scale Machine Learning
(3) MISY831/FSAN831 Enterprise Information Systems
(3) ELEG636 Statistical Signal Processing
(3) ACCT604 Database Design and Implementation

Course Curriculum
(3) ACCT806 Systems Analysis, Design and Implementation
(3) ACCT817 Information Technologies Audit
(3) ACCT625 Financial Statement Analysis
(3) CISC686 Introduction to Multi-Agent Systems
(3) CISC684 Introduction to Machine Learning
(3) CISC681 Artificial Intelligence
(3) ELEG630 Information Theory
(3) APEC801 Microeconomic Theory and Behavior
(3) FSAN860 Current Research Topics
(3) FSAN850 Financial Services Analytics Seminar
(3) ECON622 Applied Econometrics I
(3) ECON861 Industrial Organization and Regulation
(3) FSAN964 Pre-Candidacy Study
(3) FINC612 Capital Markets and Financial Institutions
(3) FINC616 Derivative Securities and Risk Management
(3) FINC670 Theory of Financial Decision Making
(3) FINC671 Workshop in Finance: Seminar
(3) MATH612 Computational Methods for Equation Solving and Function Minimization
(3) MATH630 Probability Theory and Applications
(3) MATH631 Introduction to Stochastic Processes
(3) MATH672 Vector Spaces
(3) MATH829 Topics in Mathematics
(3) STAT601 Probability Theory for Operations Research and Statistics
(3) STAT602 Mathematical Statistics
(3) STAT611 Regression Analysis
(3) STAT615 Design and Analysis of Experiments
(3) STAT620 Nonparametric Statistics
(3) STAT674 Applied Data Base Management
(3) STAT675 Logistic Regression
(3) FSAN817/ELEG817 Large Scale Machine Learning

Program Options and Timelines

Students who enter the M.S. program can complete the M.S. program (with 30 required credits) as intended. Students who enter the M.S. program may find the FSAN area more intriguing and technically interesting than they imagined and, by completing and passing the

qualifying exam, have the opportunity to switch to the Ph.D. program to pursue a deeper dive in research area, earning a Ph.D. in Financial Services Analytics. Given that students have exposure to the domain in the M.S. program through the coursework, the students shifting from the M.S. to the Ph.D. program also enhances the quality of the PhD program. Students may underestimate the challenge of academic research when they initially apply for the FSAN Ph.D. program and prefer the M.S. degree and an applied career. As a result, the FSAN M.S. degree option also allows students to switch from the FSAN Ph.D. program to the M.S. program after the first year of study.

Options for students to earn the M.S. in Financial Services Analytics are noted below:

(a) For students admitted to and remaining in M.S. program

Requirements	Completion Time
FSAN Core Courses (18 credits), BUAD 840 (3 credits), FSAN electives, and (or) FSAN project independent study (12 credits)	Within 4 years

(b) For students switching from Ph.D. program to M.S. program

Requirements	Completion Time
FSAN Core Courses (18 credits)	First year
Summer Paper Proposal Due (optional)	May – end of 2nd semester
Qualifying Exams (optional)	July – before 3rd semester
Choose FSAN M.S. option	August – before 3rd semester
BUAD 840 (3 credits), FSAN electives, and (or) FSAN project independent study (12 credits)	Within 3 years

(c) For students switching from M.S. program to Ph.D. program

Requirements	Completion Time
FSAN Core Courses	Within 3 years
Summer Paper Proposal Due and apply to switch to Ph.D. program	May – same schedule as a Ph.D. cohort to join
Qualifying Exams	July – same schedule as the Ph.D. cohort
Pass all 6 subjects of the qualifying exams and at least one IFSA affiliated faculty member is willing to supervise the student.	August – switch to FSAN Ph.D. program
Completed Summer Paper	December – same schedule as the Ph.D. cohort
BUAD 840 (3 credits) and FSAN electives (12 credits)	Within 2 years after switching to Ph.D. Program
Dissertation Proposal Defense	Same schedule as the Ph.D. cohort

Dissertation Completed	Four years with financial support based on funding availability, no more than 7 years
One published paper in a peer reviewed journal, or a peer-review conference proceeding in computer science or engineering disciplines, or one second-round revision in a top tier academic journal, justified by supervisor	By the time of graduation