

## MS Financial Engineering @ NYU-Polytechnic Institute Capstone Experience Procedures and Requirements

This document details the procedures that must be followed and the requirements that must be met in order to gain credit for this capstone experience.

### Types of Capstone Experiences

There are four types of capstone experiences available to MS FE students: theses, projects, special topics, and internships.

### Theses

A Master's Thesis is a work of original research into the theory or practice of Financial Engineering. This work must be guided by a faculty mentor from the start. Approval to begin a Master's Thesis is granted after the student and the faculty mentor submit an acceptable thesis proposal to the director of capstone experiences. Such a proposal lays out the questions to be addressed, the work to be done, the timeframe for completion of the work, and a literature review sufficiently extensive to convince the director that the work is new and interesting and that the student has the background knowledge to begin the effort. The written thesis must follow the prescribed style and organization of master's theses at NYU - Polytechnic Institute. A copy of the guidelines for the style and organization for the master's these can be found on My Poly under Community for FE Students. The written paper must be submitted to the Department of Finance and Risk Engineering electronically so that it can be checked for plagiarism. The signatures of both the faculty mentor and the capstone director are required for the thesis to be considered complete. The thesis must be successfully defended in a public oral presentation to obtain the capstone director's signature, unless the director waives this requirement.

### Projects

A Capstone Project is the creation of an analysis, tool, product, or other object of potential value to the financial community. Such a project must be guided by a mentor from the start; this person can come from either NYU – Polytechnic Institute's faculty or from industry. The student and the mentor must jointly submit an acceptable project proposal to the capstone director to gain permission to begin a project. Such a proposal outlines the work to be done, the resources required, the potential value of the finished product, the project's milestones, a demonstration that the student is intellectually prepared to begin the project, and a statement that the mentor will allocate the time necessary to guide the student to completion. The project must be rigorous enough to warrant the granting of three academic credits.<sup>1</sup> During the creation of the project, the student will file brief reports with the director at each milestone; a final report detailing the outcome of the project must be filed before the work can be considered to be complete. The student should write his or her report conforming to the University's Guidelines for Masters Projects. The guidelines for project documentation can be downloaded from the web site <http://poly.edu/graduate-school>. On the web page there is a link called Current Students. After clicking on this link, click on the link Academic forms to download. On the next page, you will see the entry for the guidelines. The director reserves the right to require any student to orally defend their project in a public forum.

### Special Topics

Students may satisfy the capstone requirement by completing with passing grades 3 credits (2 courses of 1.5 credits each) of courses marked in the FRE section of the NYU-Polytechnic Institute catalog as "special topics" or "topics" and by writing a summary paper that outlines potential advances in these areas and areas of opportunity for practitioners of financial engineering. Please note that the course numbers attached to

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<sup>1</sup> A credit is defined by the State of New York as having 15 weeks of classroom experience (or the equivalent) of one academic hour each (50 minutes). Each classroom hour must be supplemented by two to three hours of work outside the classroom; this includes reading, homework, studying, and writing papers. Therefore, the following formula outlines the minimum amount of time required to be spent on a 3-credit capstone experience:  $150 \text{ minutes/credit/week} * 15 \text{ weeks} * 3 \text{ credits} = 6750 \text{ minutes} = 112.5 \text{ hours}$ . We strongly desire that this minimum be exceeded by a comfortable margin.

these courses does not matter; they must be titled as “topics”. The summary paper must correctly and fully attribute all source material and must provide a thorough analysis of the issues presented. The faculty believes that a successful summary paper will be at least 10 pages in length, single-spaced.

#### Internships

An internship in financial engineering is the employment of an MS FE student in a meaningful position in the financial industry in which the student is provided the opportunity for intellectual growth and career-building experience. Internships are managed by industrial employers, and must be approved in advance by the capstone director. The student must provide a letter from the employer that documents the work to be performed and the number of hours. Currently, a minimum of 200 hours is required. The work must be relevant in some way to Financial Engineering. Once the capstone director receives the letter and the description of the internship, a letter will be prepared for the International Students Office requesting approval of the capstone internship. Once approved, a permission number is obtained for the capstone course FRE 7023 and the student can register for the course. (see footnote 1). A full report must be presented to the director at the completion of the internship, outlining the tasks that were required of the student and the topics learned during the internship, both theoretical and practical.<sup>2</sup> The capstone director reserves the right to require any student to make an oral presentation of their internship experience in a public forum.

#### Registration and Grading

Each of the capstone experiences requires that the student register for three credits. Master’s thesis students must register for FRE 7003, internship students for FRE 7023, and project students for FRE 7043. No student shall be registered for any of these courses without the signature of the director or the director’s designee. For thesis students and project students mentored by faculty members the final grade for the experience will be assigned by the faculty mentor. For project students mentored by industry leaders and students completing internships, the final grade may be suggested by the industry mentor or employer but will be decided upon by the capstone director. In all cases, the capstone experience is not complete and no grade is to be entered until the capstone director certifies that all requirements have been met and all procedures followed. Grading for the capstone internship is either S (satisfactory) or U (unsatisfactory).

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<sup>2</sup> It is possible that some of the things learned by a student in an internship will be company confidential; indeed, in a well-designed internship this is more likely. Reports to the director must be made in full, but accommodations will be made for confidential material. There are many ways to manage this issue, including but not limited to: non-disclosure agreements, careful editing of written work and oral presentations made privately that supplement the written report.