

THE UNIVERSITY OF CHICAGO

Master of Science in Financial Mathematics

The Financial Mathematics program is a one year graduate degree program leading to a Master of Science degree.

The program is designed to produce graduates with a good understanding of the theoretical background of pricing models, but more importantly with a real understanding of the underlying assumptions and an ability to critically ascertain the limitations and applicability of the various models. A significant part of the program is taught by professionals in the financial industry and is devoted to examining how the models behave in practice under a variety of market conditions, to examine how realistic the underlying assumptions are and to understand what happens when these assumptions are not satisfied.

Students will learn to use the models to set up hedges and evaluate the effectiveness of hedges by simulating various market conditions.

The Department of Mathematics at The University of Chicago is consistently ranked as one of the top five Mathematics departments in the country and is ranked as number two in effectiveness of graduate education. The Master of Science in Financial Mathematics Program draws on the strength of the department in areas such as Numerical Analysis and Differential Equations combined with the expertise of faculty from the Departments of Statistics and Economics and the practical experience of a group of outstanding professionals from the financial industry.

The University of Chicago

The University of Chicago is one of the world's leading universities. From its inception in 1892 it has been at the forefront of the graduate education in the United States. Always strong in individual areas: sociology, economics, anthropology, chemistry, physics, English, and linguistics, among others - it has also encouraged research and teaching across traditional academic boundaries. The professional schools enjoy unusually close relationships with the rest of the university.

William Rainey Harper, Chicago's first president, and John D. Rockefeller, its founder, envisaged a university that would defy tradition, set new standards in teaching and research, and revolutionize university study in the United States. In many fields and intellectual discussions, such as economics, law, business, literary criticism, sociology

and religious studies, "Chicago" designates not a city, nor even a university, but a "school," with characteristic approaches and emphases. The teaching and research achievements of Chicago's scholars have had a profound effect on our understanding of the world. Seventy-five Nobel laureates have been students, researchers or faculty members at the university, including Enrico Fermi, Milton Friedman and Saul Bellow. In the first half of the century, names popularly associated with the university were John Dewey, the innovative philosopher of education, Amos Alonzo Stagg, football coach of Chicago's original "Monsters of the Midway," and Robert Hutchins, president of the university and forceful advocate of a general educational curriculum.

Today Paul Samuelson, David Broder, Katherine Graham, John Paul Stevens, Susan Sontag, Kurt Vonnegut, Ed Asner, Philip Glass and Mike Nichols are but a few of Chicago alumni who are currently making their mark as leaders in their fields. Over 90 alumni serve as presidents, chancellors, or chief executives of other colleges and universities.

Total degree candidate enrollment is divided almost equally among: one of the most respected undergraduate colleges in the country; four graduate arts and sciences divisions; six professional schools - the Graduate School of Business, the Divinity School, the Law School, the Irving B. Harris Graduate School of Public Policy Studies, the School of Social Service Administration, and the Pritzker School of Medicine. In addition, through the Graham School of General Studies, the university also extends its teaching and research to 8,000 adult learners and professional and institutional leaders in this country and abroad each year. The University of Chicago Press, the largest academic press in the country, is an integral part of the university. It may be best known for its *Manual of Style*, a standard for editorial procedure first published in 1906.

Program Description

The Masters Program consists of the following sequences: Mathematics, Probability Theory, Economics and Financial Applications and Simulations.

The Mathematics sequence runs over three quarters, Probability Theory over two quarters and Economics over one quarter. The Financial Applications sequence is a three quarter sequence. Courses in each sequence meet for three hours per week for a total of nine hours of instruction per week. The Mathematics and Probability Theory sequences are taught by faculty members of the Mathematics and Statistics departments respectively. The Economics course is taught by a faculty member from the Department of Economics. The Financial Applications sequence is taught by professionals from the financial industry and includes a computer lab.

Content and curriculum for the program have been worked out jointly by faculty members at the University of Chicago and by practitioners in the field to insure the relevance of the material. Teaching of the program relies heavily on the use of computer simulations to illustrate the material. This is not only to make it possible to cover more

material but also to teach students to implement the theory in practice at every stage of the program.

The Program maintains a computer laboratory on the Hyde Park campus, where workstations and necessary software packages are available to students around the clock. This laboratory also permits access to the program's data server, which makes available a large amount of financial tick data. The program has its own server, reserved for students and faculty in the program. Course material and assignments will be available and submitted on-line.

The program is structured to allow part-time enrollment for two or three years.

Additional Program Features

REVIEW PERIOD

We recommend that entering students attend our review classes that are held throughout September, before the start of the actual program. Topics covered include measure theory, linear algebra, matlab programming and options pricing. The review classes are held in the evenings and meet for three hours, three or four times a week.

CLASSROOM LOCATION

The program is taught in the evenings to make it possible for students who are currently working in the field to attend. All courses are now taught at the main campus of the University in Hyde Park.

DEGREE REQUIREMENTS

To obtain the Master of Science degree, one must complete nine quarter courses.

ADMISSION REQUIREMENTS

The program is very intensive and requires substantial background. The program has a limited number of students. The requirements for acceptance to the program include a solid undergraduate background in Mathematics, ideally a major in Mathematics or Science/Engineering, with some background also in probability theory. Some experience in programming, especially Matlab or C/C++ will also be useful. Persons with practical experience in the financial industry but with less of a mathematical background will be considered but will be required to acquire additional skills in Mathematics. A list of recommended readings will be provided. The Math Department particularly welcomes applications from women and minorities.

TUITION

The tuition for the 2002-2003 academic year is \$32,832 for the full time program. A part-time program can consist of the Mathematics sequence alone or Mathematics, Probability Theory and Economics in the first year. The Financial Applications sequence can only be taken in connection with the other courses or after they have been completed.

STUDENTS WITH DISABILITIES

The University is committed to accommodating individuals with disabilities so that they may participate in the programs and life of the University. It is important that the University be made aware as soon as possible of any special needs or problems. For further information call (773) 702-7949.