



**PUSHING BOUNDARIES  
MAKING WAVES**

**MSc Financial Engineering**  
In collaboration with Carnegie Mellon University, USA

## MSc Financial Engineering Programme



"The NTU Financial Engineering program, with its well designed curriculum and partnership with Carnegie Mellon University, has provided me with the finance, computation and quantitative grounding I needed to make a successful transition to the finance industry. My experience at the NTU program continues to play a big role in my career development."

Koo Wai Ming, MFE '00  
Vice President  
Derivatives Analysis

**Goldman Sachs (Japan) Ltd**

### About Nanyang Technological University

Nanyang Technological University (NTU) is a research-intensive university ranked among the world's top 30 technological universities by THES ranking. The university has two campuses in Singapore. The Yunnan Garden campus, NTU's main campus, is located in the southwestern part of Singapore. The NTU@one-north campus, home to educational and alumni clubhouse facilities, is located near Singapore's biomedical research hub, Biopolis; and the new infocomm and media hub, Fusionopolis.

NTU has four colleges. The College of Engineering, one of the largest in the world with six schools focusing on technology and innovation, has a research output that ranks among the top four in the world. The College of Science pushes the boundaries of Singapore's life sciences initiatives. The Nanyang Business School offers one of the world's Top 25 MBA programmes. The College of Humanities, Arts, & Social Sciences boasts Singapore's first professional art school offering degree courses in art, design and interactive digital media, the Humanities and Social Science School, and the Wee Kim Wee School of Communication and Information, a top journalism and media school in Asia.

The S Rajaratnam School of International Studies, an autonomous institute of NTU, is recognized as a world authority on strategic studies and security research. NTU is also

home to the internationally-acclaimed National Institute of Education, Singapore's key teacher education institute. The Earth Observatory of Singapore at NTU, established in 2008 with a S\$150 million government funding, is devoted to studying environmental threats such as earthquakes, tsunamis, volcanic eruptions and climate change.

NTU's collaborations with other institutions are a virtual who's who of the world's most dynamic and innovative scientific institutions. Its partnerships with academic institutions include MIT, Stanford University, Cornell University, Caltech, Georgia Institute of Technology, Carnegie Mellon University in USA, Peking University, Shanghai Jiao Tong University, Waseda University, Indian Institute of Technology in Asia, Cambridge University, Imperial College, Domus Academy (Milan, Italy) and Swiss Federal Institute of Technology in Europe. NTU's collaborations also extend to major technologically-based multi-national companies such as EADS, Infineon, THALES, Rolls-Royce and Robert Bosch.

### Nanyang Business School

One of the top business schools in Asia, the Nanyang Business School (NBS) of the Nanyang Technological University in Singapore is the first and only business school in Singapore to achieve both AACSB (Association to Advance Collegiate Schools of Business) International and EQUIS (European Quality Improvement System) accreditations. Its full-time MBA programme is ranked world's top 25 by the Financial

Times in 2009 and world's top 100 by the Economist Intelligence Unit 2004 - 2008. The Nanyang Business School offers a full range of undergraduate, graduate and executive education programmes and provides a world-class learning environment to support its mission of growing business leaders for Asia and beyond.

Strategic collaborations with premier institutions such as MIT, Cornell and Shanghai Jiao Tong provide students with excellent opportunities for international exposure. The school's 170 full-time faculty have made impact in key areas such as finance, IT, marketing, accountancy and management, in terms of both research and practice. Our alumni are well represented in the top echelons of industry and government, in Singapore and the region.

## Why Financial Engineering?

Updated to reflect new economic realities, The Nanyang Financial Engineering Programme is a vigorous inter-disciplinary field that studies the concepts and techniques found in Finance, Computer Science and Mathematics.

It applies sophisticated engineering tools to financial problems, utilising complex analytical and quantitative methods. To constantly stay ahead of rapid advances in the financial services industry and development of structured finance techniques, our collaborative learning programme aims to create multidisciplinary individuals with strong financial skills.

## The Nanyang MSc FE Experience

A unique graduate programme empowers students to succeed as dynamic professionals. Students will be taught to implement solutions in areas of high technology finance, such as risk management, product structuring, quantitative asset management, quantitative trading, quantitative research and financial information technology.



A rigorous curriculum emphasises teamwork and communication in real life corporate settings, seamlessly integrating current theory and computational methods with practical knowledge. Our multi-disciplinary programmes and research centres unite researchers and students from diverse disciplines to provide exciting cross-disciplinary opportunities for research and training. This encourages close interaction and sharing of experiences, and in the understanding of today's financial world. So at the Nanyang Business School, everyone is a teacher and everyone is a student.

## Carnegie Mellon University, USA

Our commitment to innovation, communication and diversity is long standing and considered essential in our advancement towards excellence.

This includes our collaboration with the prestigious Carnegie Mellon University. A world renowned

**"The opportunity to work with students from different backgrounds as well as the availability and motivation of professors made the learning process more enjoyable. Looking back, I think my choice to come and study in Singapore was the right one."**

Laurent Borredon, MFE '04  
Quantitative Analyst

Citigroup

"I had no doubts about MFE being the programme of my choice because it integrated Quantitative with Qualitative Finance. It's a unique mix and such a skill set is really sought after. In my role as an Associate in IB Technology, I have found it so much easier to talk to the front office people and provide technological solutions to their business needs.

In Feb 2008, MFE also helped me in making a transition to the front office. I am now responsible for selling the Electronic FX solutions of the bank. If not for the rigorous and relevant training I received from the MFE programme, such a transition would not have been possible."

Anand Goyal, MFE '07

Associate, Asia FX E-Commerce Sales

JP Morgan

pioneer in the teaching and research of Financial Engineering, Carnegie Mellon University's Tepper School of Business, is one of the first business schools to emphasise interdisciplinary thinking. In recognition of consistent groundbreaking contributions, the U.S. News & World Report 2010 and the Financial Times - 2009 rankings have placed Tepper School of Business among top business schools.

## Resources

The Financial Trading Rooms on campus are fully equipped with 50 computers and state-of-the-art hardware, software, video-conferencing facility, coupled with the Reuters 3000 Xtra and Bloomberg software. We aim to support all teaching and research activities in financial engineering and other areas of high technology finance. You will be exposed to and trained in a "live" financial market environment, as Reuters 3000 Xtra is a high-speed, high performance information service for financial professionals. Designed for the most demanding users in business, it delivers a potent combination of real-time information and powerful analysis tools.

## Speaker Series

You will benefit from the knowledge, wisdom and collective experience of our guest speakers. Industry professionals are invited throughout the academic year to participate in the delivery of the courses, as well as to conduct seminars.

## Engineering Financial Freedom

The best measure of our success is through the achievements of our graduates. Many alumni members have gone on to carve a niche in the financial industries, both locally and internationally.

Yearly, the school's brightest graduating students are individually recognised and awarded for outstanding scholastic performance. The Monetary Authority of Singapore Gold Medal is presented to the best overall student for the Master of Science (Financial Engineering) programme, while the Reuters Gold Medal honours the student with the highest aggregate score in the four courses taken at Carnegie Mellon University, USA.

Career development services such as workshops & seminars are offered to our graduates to facilitate job opportunities and prepare students for employment.



The courses in the MFE programme are divided into three groups: Financial Mathematics & Statistics, Finance and Computing.

Participants are required to complete nineteen core courses and four elective courses:

### Financial Mathematics & Statistics

- Calculus & Linear Algebra
- Stochastic Modeling in Asset Pricing
- Stochastic Calculus for Finance
- Probability & Statistics
- Linear Financial Models
- Financial Time Series Analysis
- Numerical Methods for Financial Instrument Pricing (E)
- Simulation Methods for Option Pricing (CMU)
- Advanced Statistical Modeling (E)
- Optimization in Finance (E)

### Finance

- Corporate Finance
- Asset Pricing Theory
- Bond Portfolio Management
- Equity Portfolio Management
- Derivative Securities
- Interest Rate Derivatives
- Financial Risk Management
- Studies in Financial Engineering (CMU)
- Term Structure: Theory & Practice (CMU)
- Monetary Economics (E)
- Financial Accounting (E)
- Exotic Options & Structured Products (E)
- Credit Risk - Measurement & Management (E)
- Advanced Risk Management (CMU)

### Computing

- Object Oriented Programming I
- Object Oriented Programming II
- Financial Engineering Project (CMU)
- Web Computing (E)
- Artificial Intelligence Techniques in Finance (E)
- Financial Computing (CMU)

Note:

1. (E) denotes elective courses. All others are core courses.
2. Electives and courses at CMU are subjected to changes.
3. All MFE courses are half courses which carry 1.5AUs with the exception of Stochastic Calculus for Finance which is a full course carrying 3AUs.



## PROGRAMME STRUCTURE

Our extensive curriculum will be taught over 3 trimesters in the full-time programme. Each trimester is divided into 2 mini terms consisting of 7 weeks each. Students will spend the first five mini terms in Nanyang Technological University, Singapore, followed by a final term in Carnegie Mellon University, USA. (Subject to approval of US visa, where applicable)

Part-time students may opt not to go to CMU subject to University's approval. If approved, they will take the courses in NTU. Fees will remain unchanged.

## TRIMESTER

<b>ONE</b> (JUL - NOV)	1 (JUL - SEP) 2 (SEP - NOV)
<b>TWO</b> (NOV - MAR)	3 (NOV - DEC) 4 (JAN - MAR)
<b>THREE</b> (MAR - JUN)	5 (MAR - APR) 6 (MAY - JUN)

\* Recess: DEC - JAN & APR - MAY.

The official schedule for 2010/2011 is not finalised. Please visit our website for up-to-date information.

## PERIOD OF CANDIDATURE

Full-time 1 Year (3 Trimesters)  
Part-time 2 Years (6 Trimesters)

## ADMISSION REQUIREMENTS

- A good undergraduate degree in applied mathematics, applied science, statistics, computer science, engineering or economics. Applicants from other fields will be considered on a case by case basis
- Good GMAT or GRE score (compulsory)
- Good TOEFL score, if the medium of instruction during undergraduate studies was not in English
- Minimum 2 years of relevant work experience is preferred but not required

## FEES

Application fees: S\$50

Tuition Fees (AY 2009/2010):

- Singapore Citizen S\$26,000
- Singapore Permanent Resident S\$27,000
- Foreigners with 3 year Service Obligation S\$30,000
- Foreigners without 3 year Service Obligation S\$39,000

Fees for AY 2010/2011 are currently under review and will be announced in due course. Tuition Fees do not include travel and living expenses for the final term in Carnegie Mellon University, USA. Estimated cost between S\$6,500 - S\$8,000 is to be fully borne by participants.

## APPLICATION DETAILS

Admission for the programme takes place in July, every year. All applications are to be submitted electronically or in hardcopy with all the necessary educational and other supporting documents, examination results transcripts and an application fee of S\$50 (inclusive of GST).

Application closes in end February for July admission.

For more information or to apply, please visit our website at:

<http://www.mfe.ntu.edu.sg/admission.asp>

For more information, contact us at:

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