Analytical Finance

ANALYTICAL FINANCE
This program provides students with a strong education in advanced finance and quantitative financial analysis tools to develop graduates who can create innovative solutions for real financial problems, using state of the art analytical techniques and computing technology. Students with undergraduate degrees in computer science, economics, engineering, finance, mathematics and the hard sciences should have the quantitative background needed for success in this field.

This program equips students with the necessary skill set to prepare for the Financial Risk Manager® examination offered by The Global Association of Risk Professionals (GARP). (http://www.garp.org)

PREREQUISITES
Applicants must show basic competency in the following areas: finance, corporate finance, investments, financial accounting, economics, money and banking, statistics, linear algebra, and calculus. These courses will not count toward the master degree.

Entrance Prerequisites
(Examples given from Lehigh courses)
Must show basic competency in the following areas: (Does not count towards the 30 credit minimum degree requirement)

Corporate Finance
FIN 328 Corporate Financial Policy (OR) 3
GBUS 419 Financial Management 3
Equivalent course

Investments
FIN 323 Investments (OR) 3
GBUS 420 Investments 3
Equivalent course

Financial Accounting
ACCT 151 Introduction to Financial Accounting (OR) 3
ACCT 108 Fundamentals of Accounting (OR) 3
GBUS 401 Financial Reporting for Managers and Investors 3
Equivalent accounting course

Statistics and Probability
MATH 231 Probability and Statistics (OR) 3
ISE 328 Engineering Statistics 3
Equivalent introductory calculus based statistics and probability course

Calculus Series
MATH 021 Calculus I (AND) 4
MATH 022 Calculus II (AND) 4
MATH 023 Calculus III 4
Equivalent calculus series

Linear Algebra
MATH 205 Linear Methods (OR) 3
MATH 242 Linear Algebra 3-4
Equivalent course

Note: Entrance prerequisites at Lehigh typically have several prerequisites that must be fulfilled.

Note: Prerequisites do not have to be taken at Lehigh University.

Note: ECO 045 or an equivalent introductory course including regression analysis is not rigorous enough preparation for MATH 467 and therefore is not adequate for the Statistics and Probability prerequisite.

Required Courses
The 30 credit hour program is a joint venture of the College of Business and Economics, the P.C. Rossin College of Engineering and Applied Science and the College of Arts & Sciences. Required courses are as follows:

Analytical Core
MATH 467 Financial Calculus I (fall) 3
MATH 468 Financial Calculus II (spring) 3
Select one of the following Statistics courses: 3
STAT 410 Random Processes and Applications (fall)
STAT 412 Statistical Computing and Applications
Select one of the following computation modeling courses: 3
ECO 415 Econometrics I (fall)
STAT 438 Linear Models In Statistics with Applications (spring)
Select one of the following Industrial Engineering courses: 3
ISE 426 Optimization Models and Applications
ISE 429 Stochastic Models and Applications

Finance Core
GBUS 421 Advanced Investments (Fixed Income - spring) 3
GBUS 422 Derivatives and Risk Management (fall) 3
GBUS 424 Advanced Topics in Financial Management (Risk Management - spring) 3

Computing Core
ISE 447 Financial Optimization 3

Capstone Practicum
ISE 441 Financial Engineering Projects 3

Total Credits
30

Note: Students with equivalent courses from an undergraduate degree program will be given credit for fulfilling the field requirement and will be permitted to replace the credits from the list of approved electives. The program director(s) must approve courses for each student’s choice of electives. Typically, a finance elective will be used to substitute for a finance course waiver; a computational elective to substitute for a statistics/econometric course, and programming elective for a computing course.

ADMISSIONS
Students may apply through the Graduate Programs Office in the College of Business & Economics or through the Graduate Office of the P. C. Rossin College of Engineering and Applied Science in the Department of Industrial and Systems Engineering. Students must take either the GRE or GMAT. International students must have 16 years of schooling with four years at the University level to be considered for admission. Applicants whose native language is not English are required to take the Test of English as a Foreign Language (TOEFL). Deadline for international students to apply is February 1. U.S. Citizens may apply until July 15.

Further information about the M.S. in Analytical Finance Program may be obtained by visiting http://cbe.lehigh.edu/msaf, contacting the Graduate Programs Office of the College of Business and Economics or one of the following Co-Directors:
Dr. Richard Kish, Perella Department of Finance, College of Business and Economics, Lehigh University, 621 Taylor Street, Bethlehem, PA 18015, phone (610) 758-4205, email: rjk7@lehigh.edu

Department of Mathematics, Lehigh University, 14 E. Packer Avenue, Bethlehem, PA 18015, phone (610) 758-3732

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