Graduate Certificates in Intercollegiate Programs

Certificates in Data Science & Financial Analytics, Quantitative Risk Management or Financial Operations Research are available to Lehigh graduate students, provided prerequisites are met. Students may meet with any Program Director listed below to select their certificate choice upon enrollment in a graduate degree program.

Certificate programs enhance skills and development by allowing additional exploration in three main functional areas.

1. DATA SCIENCE & FINANCIAL ANALYTICS (DSFA) CERTIFICATE

Students develop a unique skill set preparing them for careers in the interdisciplinary field of Data Science and Financial Analytics, with particular application to the financial services industry. Skills developed include working with massive data sets, data-driven analytical methodologies, SAS and R programming, Data Mining, and Machine Learning.

Curriculum: (12 credits)

ISE 465	Applied Data Mining (Required)	3
MATH 312	Statistical Computing and Applications (Required)	3,4
One of the two courses below:		
ISE 467	(OR)	3
ISE 444	Optimization Methods in Machine Learning	3
One of the two data-intensive finance courses below:		
GBUS 422	Derivatives and Risk Management (OR)	3
GBUS 424	Advanced Topics in Financial Management (Risk Management)	3

2. QUANTITATIVE RISK MANAGEMENT (QRM) CERTIFICATE

Students are trained in the quantitative methodologies and regulatory practices that are essential for risk management functions within financial institutions.

Curriculum: 12 credits

GBUS 422	Derivatives and Risk Management (Required)	3
GBUS 424	Advanced Topics in Financial Management (Risk Management-Required)	3
GBUS 426	Financial Markets and Institutions (Required)	3
One of the following courses:		
STAT 434/MATH 334	Mathematical Statistics (OR)	3
STAT 438/MATH 338	Linear Models In Statistics with Applications (OR)	3
STAT/MATH 461	Topics In Mathematical Statistics	3

3. FINANCIAL OPERATIONS RESEARCH

Students gain an understanding of the fundamental techniques underlying Operations Research that are of ubiquitous use in all areas of business today, such as Linear Programming, Game Theory, Dynamic Programming, Integer Programming, Nonlinear Programming, and Machine Learning.

Curriculum: 12 credits

ISE 426	Optimization Models and Applications (Required)	3
ISE 447	Financial Optimization (Required)	3
Select 2 courses from the following:		
ISE 407	Numerical Methods and Scientific Computing	3
ISE 416	Dynamic Programming	3
ISE 444	Optimization Methods in Machine Learning	3
ISE 458	Game Theory	3
ISE 455	Optimization Algorithms and Software	3
ISE 467		3

Contact us:

Dr. Richard Kish, Perella Department of Finance, College of Business

- Lehigh University, 621 Taylor Street, Bethlehem PA 18015
- Phone (610) 758-4205 / Email rjk7@lehigh.edu

Dr. Daniel Conus, Department of Mathematics, College of Arts & Sciences

- Lehigh University, 17 Memorial Drive East, Bethlehem PA 18015
- Phone (610) 758-3749 / Email dac311@lehigh.edu

Dr. Luis Zuluaga, Department of Industrial and Systems Engineering, P.C. Rossin College of Engineering & Applied Science

- Lehigh University, 200 W. Packer Avenue, Bethlehem PA 18015
- Phone (610) 758-5182 / Email luis.zuluaga@lehigh.edu