Quantitative Finance Certificate

Orientation 2014

The Quantitative Finance track is one of two curricular options of the Actuarial Studies and Quantitative Finance Certificate Program. Successful completion results in the award of the Quantitative Finance Certificate by the Leeds School of Business and the College of Arts & Sciences. The certificate is independent of any major course of study and is open to all students. However, the curriculum fits best with the curricula for majors in Applied Mathematics, Business and Economics due to the requirements in those areas.

Purpose

The Quantitative Finance Track is designed to provide candidates with a very strong analytical grounding for application in the business environment, particularly in the finance function. Recruiters have consistently listed strong analytical skills highly among desired characteristics in job candidates, even more so when recruiting to fill highly competitive complex financial analysis positions.

Interdisciplinary Curriculum

Quantitative Finance is jointly sponsored by the Leeds School of Business and the College of Arts & Sciences and requires coursework from the Finance and Accounting Divisions in the Leeds School of Business and from the Mathematics, Economics and Applied Mathematics Departments in the College of Arts & Sciences.

Potential Career Impact

Quantitative Finance is designed to provide a competitive preparatory advantage for students interested in successful careers in a variety of fields. Examples of the career areas for which the preparation provided by Quantitative Finance is particularly well suited include:

- Financial consulting
- Pension consulting
- Investment management research
- Portfolio management
- Corporate treasury functions
- Institutional securities sales & trading
- Institutional financial marketing
- Investment banking

Due to the scarcity of competitive programs nationally which combine rigorous training in quantitative methods and extensive finance training, it is expected that successful candidates will encounter strong job demand in areas of direct interest. In addition, the Quantitative Finance curriculum provides a very strong foundation for students interested in additional academic training in the future.

Rigorous Requirements

Quantitative Finance requirements constitute a very high level of academic rigor. Both initial and on-going academic performance requirements are greater than for any major area of study.

At a minimum, successful candidates are required to complete:
22 credit hours of mathematical/statistical coursework
14 credit hours of economics coursework
25 hours of finance/accounting coursework
3 credit hours of computer programming coursework

Most successful candidates will complete mathematics/statistics and accounting coursework in excess of the minimum required. The program is designed for students with strong academic credentials and a genuine interest in analytical work.

Candidates must achieve grade point minimums for all courses applied to the certificate (3.0) and specifically in mathematics and statistics courses. The mathematics/statistics requirement can be met either by achieving a GPA of 2.70 in the three calculus courses or by achieving a GPA of 3.0 in the five mathematics/statistics courses. Candidates may apply for provisional admission after receiving a grade of "B" in Calculus 1 or advanced placement credit for Calculus 1. On an on-going basis, candidates must maintain a 3.0 grade point average in all coursework used to satisfy program requirements.

Faculty Mentoring

Candidates in good standing the Quantitative Finance program are advised by a faculty member in their major area of study in addition to any advising services provided by the school. The advising faculty members communicate regularly with faculty in other involved departments to coordinate optimal schedules for students of any major. The following faculty members are members of the Certificate Committee and are available to advise students.

Dr. Daniel Brown (Business)	daniel.brown@colorado.edu
Dr. Anne Dougherty (Applied Mathematics)	anne.dougherty@colorado.edu
Dr. David Grant (Mathematics)	david.grant@Colorado.EDU
Dr. Nick Flores (Economics)	floresn@stripe.colorado.edu

Specific Curricular Requirements

Listed below is the minimum coursework required to obtain the Quantitative Finance Certificate. Most students go beyond the minimum requirements. Students can apply to the program after completing Calculus 1. Students may withdraw at any time without impacting their major field of study.

Math

Calculus 1	APPM 1350*/MATH 1300*	4/5 credits
Calculus 2	APPM 1360/ MATH 2300	5/5 credits
Calculus 3	APPM 2350/ MATH 2400	4 credits
Linear Algebra	APPM 3310*/MATH 3130*	3 credits
Probability	APPM 3570*/MATH 4510*	3 credits
Statistics	APPM 4520/MATH 4520	3 credits

Economics

Intro. to Microeconomics	ECON 2010	4 credits
Intro to Macroeconomics	ECON 2020	4 credits
Intermed. Microeconomics	ECON 3070	3 credits
Intro. to Econometrics	ECON 4818	3 credits

Business

Accounting and Financial Analysis	BCOR 2000*	4 credits
Introductory Finance	BCOR 2200*	3 credits
Corporate Finance	FNCE 3010*	3 credits
Mathematical Finance or Financial Markets and Institutions	FNCE 4820* or APPM 4720 or FNCE 4070*	3 credits
Investments and Portfolio Theory	FNCE 4030*	3 credits
Derivative Securities	FNCE 4040*	3 credits
Corporate Financial Reporting I	ACCT 3220	3 credits
One Finance Elective	*	3 credits

Computer Programing

One computer programming course	MGMT 3210 recommended but course must be approved	3 credits

Note that the above requirements are the bare minimums to earn the Certificate. Ideally, students will study several other recommended courses which will be discussed at the information session.

* indicates courses that fulfill specific or area of emphasis requirements for the Business major with an emphasis in Finance. Only one statistics course is required for the Business major.

Critical Course Sequences

Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6
Calculus 1* MATH 1300 APPM 1350	Calculus 2 MATH 2300 APPM 1360	Calculus 3 MATH 2400 APPM 2350	Probability** MATH 4510 APPM 3570	Statistics MATH 4520 APPM 4520	Lin. Alg*** MATH 3130 APPM 3310
		Accounting & Finance# BCOR 2000	Intro. Finance BCOR 2200	Corporate Finance FNCE 3010	Finance Electives FNCE 4XXX

* Replaces MATH 1081
** Replaces BCOR 1020
*** Replaces MATH 1071
# Requires sophomore registration priority (26 credit hours)

Revision of Your First Semester Schedule

Freshmen planning to pursue the Quantitative Finance Certificate should revise their fall semester schedule as follows:

- Keep BCOR 1010 and your WRTG course
- Drop MATH 1071 or 1081 and add APPM 1350 or MATH 1300
- Consider adding MGMT 3210 Business Applications Programming (VBA). This is one of the few Business courses that you can take as a freshman. It fulfills the programming course requirement for the certificate and serves as a Business Elective for your degree. It is only offered in the fall semester.
- Consider adding an Arts & Sciences course that fulfills one of the Content Area requirements. Your Contemporary Societies requirement will be fulfilled by your basic economics courses. Also, many students who pursue the Certificate also pursue a minor in economics. Certain upper-level economics courses that can be applied to the minor can also fulfill a Content Area requirement. Specifically, you may find courses in the Historical Context, Cultural and Gender Diversity or US Context areas. It would be safest at this time to choose a course in the following:
    - Literature and the Arts
    - Natural Science
    - Ideals and Values

When changing courses, **ADD THE NEW COURSE FIRST AND THEN DROP THE OLD COURSE**. You may not get your original course back if you drop first.

Contact

Business students interested in the program should contact Daniel Brown as soon as possible. *daniel.brown@colorado.edu*