

Quantitative Finance at the University of Colorado at Boulder

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. The requirements are extensive, however the curriculum fits best with the curricula for majors in Applied Mathematics, Business, Economics.

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
- 13 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.

Gerald J. Madigan (Business) madigan@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.

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

ECON 2010 Introduction to Microeconomics
ECON 2020 Introduction to Macroeconomics
ECON 3070 Intermediate Micro 3 credits
ECON 4818 Intro to Econometrics 3 credits

BCOR 2000* Accounting/Financial Analysis 4 credits
BCOR 2200* Introductory Finance 3 credits
FNCE 3010* Corporate Finance 3 credits
FNCE 4820* Mathematical Finance 3 credits (also listed as APPM 4720)
FNCE 4030* Investments & Portfolio Theory 3 credits
FNCE 4040* Derivative Securities 3 credits
ACCT 3020 Corporate Reporting 1
One Finance elective*

One Programming Course 3 credits (course must be approved)

The * 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.

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.

Revision of Your First Semester Schedule

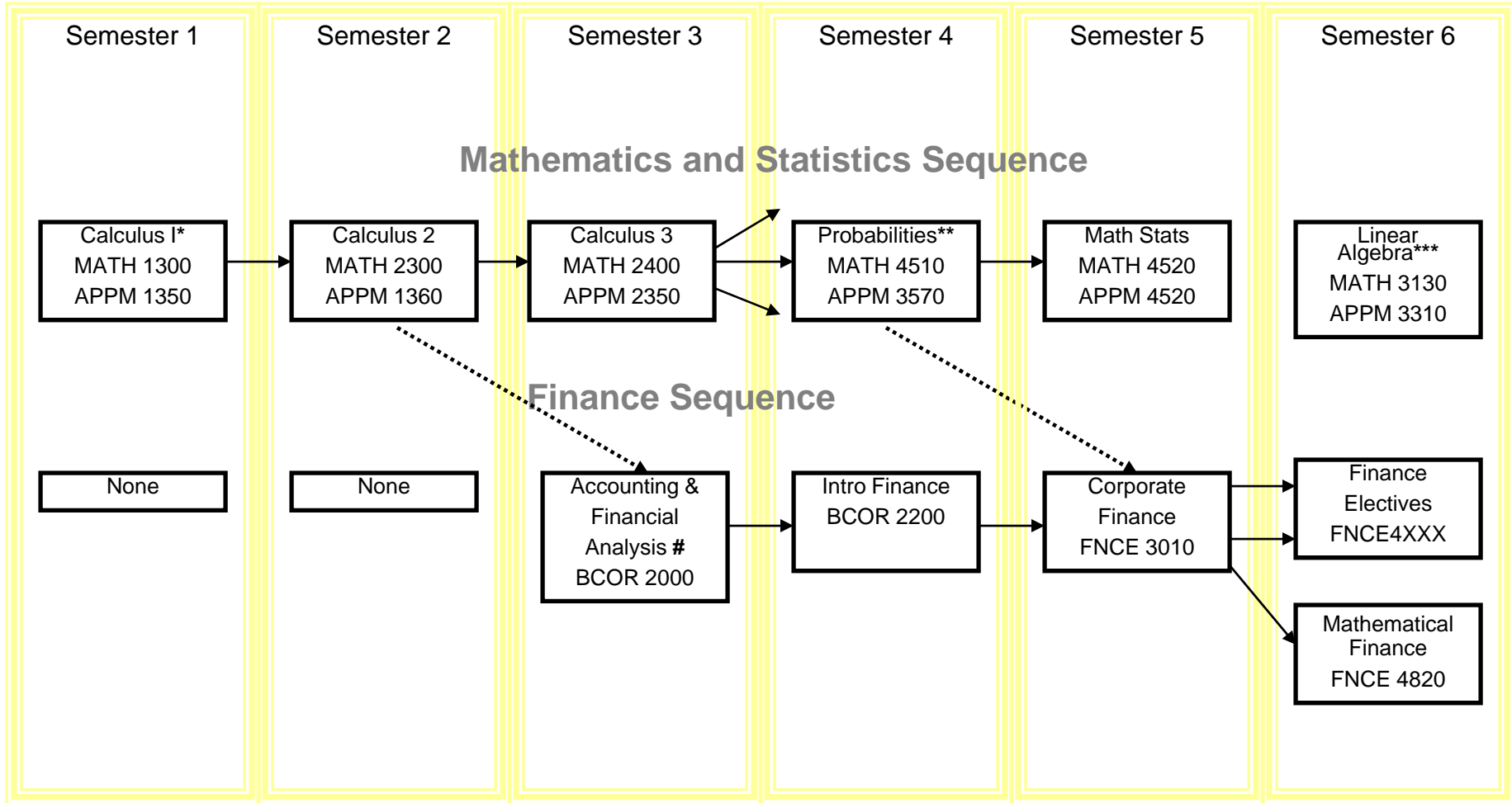
Freshmen planning to pursue the Quantitative Finance Certificate should revise their fall semester schedule as follows:

- Keep BCOR 1010 and your WRTG course
- Drop MATH 1071 or 1081 and add APPM 1350 or MATH 1300
- Consider adding OPIM 2010 Visual Basic Programming. 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, in the Historical Context, Cultural and Gender Diversity or US Context areas. Therefore, it would be safest at this time to choose a course in these areas:
 - 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.

Business students interested in the program should contact Gerald Madigan as soon as possible. There is no other way for us to know. Madigan@colorado.edu

Critical Course Sequences



* Replaces Business Calculus MATH 1081

** Replaces Business Statistics BCOR 1020

*** Replaces Finite Math MATH 1071

Requires sophomore registration priority (26 credit hours)

**Minimum For Certificate
Sample Schedule**
Class of 2014

	Total	A&S	Area Of	Business	Grad	Track
	Business	Content	Emphasis	Electives	Courses	Items
Required	61	24	18	15	0	
Actual	61	24	21	15	0	24

Fall Frosh		Spring Junior						
BCOR 1010	3	APPM 4520	3	3				3
OPIM 2010	3	FNCE 4030	3	6		3	3	
Econ 2010	4	FNCE Elective	3	3		3		
APPM 1350	4	FNCE 4040	3	3		3		
A&S Content	3	BCOR 2500	3	3	3			
Total	17	Total	15					
Spring Frosh		Fall Senior						
APPM 1360	5	A&S Content	3		3			5
Econ 2020	4	Bus Elect	3	3			3	
WTRG 1150	3	FNCE Elective	3	3		3		
A&S Content	3	BCOR 3000	3	3	3			
A&S Science	3	A&S Content	3		6			3
Total	18	Total	15					
Fall Soph		Spring Senior						
BCOR 2000	4	BCOR 3010	3	7				
BCOR 2300	3	FNCE 4820	3	6		3		
APPM 2350	4	Econ 4818	3					7
Econ 3070	3	Bus Elect	3	3			3	
A&S Content	3	BCOR 4000	3	3	3	3		
Total	17	Total	15					
Spring Soph		Fall 5th						
BCOR 2200	3			3				
APPM 3570	4							3
A&S Content	3				3			
A&S Content	3				3			
BCOR 2400	3			3				
Total	16	Total	0					
Fall Junior		Spring 5th						
FNCE 3010	3			3		3		
Bus Elect	3			3			3	
APPM 3310	3							3
Acctg 3220	3			3			3	
WRTG 3040	3							
Total	15	Total	0					

Total Hours Above: **128**

**Note that this schedule is an example only!
See your academic and certificate advisors to develop your schedule**