

B.S. in Mathematics with a Concentration in Financial Mathematics

This program is designed to prepare mathematics majors for a quantitative career in Asset Management, which requires intellectual ability and analytical skills in applied mathematics, portfolio management, statistical/econometric modeling, machine learning techniques, and computer science. Quantitative analysts, who build models to find patterns and extract signals in financial markets, are called “QUANTS.” Students may ultimately seek employment with asset management firms such as mutual funds, hedge funds, and ETF providers. In addition, there will be opportunities in quantitative research departments at major financial institutions. Moreover, given the depth and breadth of subject areas covered in the concentration and the capstone course during the senior year, students will learn how to engineer a fund and ultimately, set up their own funds, if they choose to do so.

The concentration in Financial Mathematics is rigorous but rewarding in the long run. It provides a transdisciplinary approach to master problem solving by combining knowledge from mathematics, statistics, finance, economics and data science. Interested students can choose Applied Statistics, Physics and/or Computer Science as a minor. After you graduate from this prestigious program, you will for sure be an attractive job candidate in the field of quantitative asset management.

Following this concentration, you will be advised in both Mathematics and Finance. The Director of Undergraduate Studies & Research in the Department of Finance is the advisor to students with a concentration in Financial Mathematics. His contact information is:

Kurtay Ogunc, PhD, MBA, MApStat

kurtay@lsu.edu

<https://www.linkedin.com/in/kurtay/>

<https://www.lsu.edu/business/directory/employee-profiles/ogunc-kurtay-finance.php>



CURRICULUM

Semester 1

MATH 1550 (5)

EXST 2201 (4)

General Education Course - Humanities (3)

ENGL 1001 English Composition (3)

Approved elective (1)

Total Semester Hours: 16

Semester 2

MATH 1552 (4)

ECON 2030 (3)¹

EXST 3201 (4)

General Education Course - Natural Sciences (3)²

Natural Sciences Lab (0-1)²

Total Semester Hours: 14-15

Semester 3

MATH 2057 (3)

MATH 2020, MATH 2025, MATH 2030, or MATH 2035 (3)

MATH 3050 (5)

General Education Course - Natural Sciences (3)²

Natural Sciences Lab (1-2)²

Total Semester Hours: 15-16

¹ Satisfies the General Education Course - Social Sciences (2000-level).

² The courses selected to meet this Natural Science requirement must be chosen from courses offered by departments in the College of Science and come from the approved list. The semester 3 and 4 natural science courses should be a sequence.



Department of Finance



**Department of
Mathematics**

Semester 4

MATH 2090 (4)

MATH 3355 (3)

ENGL 2000 (3) or HNRS courses from the General Education “English Composition” list

FIN 3826 (3)

Total Semester Hours: 13

Semester 5

ECON 4630 (3)

MATH 4325 (3), MATH 4024 (3), or MATH 4056(4)

MATH 2105 (3)³

General Education Course - Social Sciences (3)

Approved electives (3)

Total Semester Hours: 15-16

Semester 6

FIN 4850 (3)

EXST 4012 (3)

ECON 4633 (3)

MATH 4058 (3)

General Education Course - Arts (3)

Total Semester Hours: 15

³ Satisfies the mathematics department second “Bridge courses” requirement of “a 3-hour-or-more math course at the 2000-level or higher.”



Department of Finance



**Department of
Mathematics**

Semester 7

FIN 4828 (3)

FIN 3900 (3) - first semester capstone

Upper division MATH course (3)⁴

EXST 4151 (3)

Foreign Language (4)

Total Semester Hours: 16

Semester 8

FIN 3900 (3) - second semester capstone

General Education Course - Natural Sciences (3)

General Education Course - Humanities (3)

Approved electives (5-6)

Total Semester Hours: 14-15

120 Total Semester Hours

⁴ Select course from: MATH 4023, MATH 4024, MATH 4025, MATH 4027, MATH 4031, MATH 4036, MATH 4039, MATH 4040, MATH 4045, MATH 4056, MATH 4064, MATH 4065, MATH 4066, MATH 4153, MATH 4158, MATH 4171, MATH 4172, MATH 4181, MATH 4200, MATH 4325, MATH 4340, MATH 4345, MATH 4997, MATH 4999.

LIST OF COURSES

MATHEMATICS

MATH 1550 (5) - Differential and Integral Calculus
MATH 1552 (4) - Analytic Geometry and Calculus II
MATH 2057 (3) - Multidimensional Calculus
MATH 2090 (4) - Elementary Differential Equations and Linear Algebra

One of the following four:

MATH 2020 (3) - Solving Discrete Problems
MATH 2025 (3) - Linear Algebra and Wavelets
MATH 2030 (3) - Discrete Dynamical Systems
MATH 2035 (3) - Mathematical Foundations of Data Science

MATH 3050 (5) - Interest Theory
MATH 3355 (3) - Probability

One of the following three:

MATH 4325 (3) - Fourier Transforms
MATH 4024 (3) - Mathematical Models
MATH 4056 (4) - Mathematical Statistics

MATH 2105 (3) - Data Science
MATH 4058 (3) - Elementary Stochastic Processes
Additional Upper division MATH course

FINANCE

FIN 3826 (3) - Fundamentals of Asset Management
FIN 4850 (3) - Financial Derivatives
FIN 4828 (3) - Security Analysis and Portfolio Management
FIN 3900 (6) - Directed Study and Research

EXPERIMENTAL STATISTICS

EXST 2201 (4) - Introduction to Statistical Analysis
 EXST 3201 (4) - Statistical Analysis II
 EXST 4012 (3) - Introduction to Sampling Techniques
 EXST 4151 (3) - Bayesian Data Analysis

ECONOMICS

ECON 2030 (3) - Economic Principles
 ECON 4630 (3) - Introduction to Econometrics
 ECON 4633 (3) - Time Series Data Analysis

POSSIBLE MINORS

1. **Minor in Applied Statistics (18 hours):** To graduate with a minor in applied statistics, students must complete a minimum of 18 hours of coursework consisting of:
 - EXST 2201, EXST 3201, EXST 4050 or both MATH 3355 and MATH 4056; and
 - Six hours from EXST 3999, EXST 4012, EXST 4025, EXST 4087, EXST 4142, and EXST 4151.
2. **Minor in Computer Science (21 hours):** Required courses are a two-course 6 credit hour introductory programming sequence, [CSC 1253](#) and [CSC 1254](#) or [CSC 1350](#) and [CSC 1351](#), [CSC 2259](#), [CSC 3102](#), [CSC 3501](#) or [EE 3755](#), and three hours of computer science electives at the 3000 level and above; and [CSC 4101](#) or [CSC 4103](#).
3. **Minor in Physics (22-23 hours):** To complete a minor in physics, you first need to complete the introductory physics sequence with the labs. That would be either PHYS 1201 General Physics for Physics Majors (4), 1202, 1208 and 1209, or PHYS 2110, 2112, 2113, 2108 and 2109. In addition, you must complete PHYS 2221 and three additional lecture courses. At least one of the courses should be at the 4000 level. The lecture courses can be chosen from PHYS 2203, 2231, 2411, 3098 or any three credit hour PHYS or ASTR courses numbered from 4100 to 4299.