

COMPUTATIONAL FINANCE MINOR (CMSC)

Program Directors: Albert S. Kyle, Ph.D. and Louiqa Raschid, Ph.D.

The Minor in Computational Finance will provide students with proficiency in applying analytical models and machine learning methods to solve challenging financial tasks. The Minor will introduce students to (pseudo) realistic tasks faced by financial analysts and researchers, as well as the real world datasets that are widely used across the financial industry and by financial regulators (e.g., SEC, FINRA, etc.). The Minor, which is only open to Computer Science majors, will equip students with the domain specific skills needed for positions in the financial industry (banking and investment) or with financial regulators (SEC, FINRA, Fannie Mae, etc.) or to explore innovative opportunities in the Financial Technology (FinTech) industry.

For more information about this minor visit <http://rhsmith.umd.edu/programs/undergraduate/academics/academic-minors/>.

Program Learning Outcomes

1. Develop proficiency in manipulating financial datasets.
2. Apply analytical models to solve challenging financial tasks.
3. Apply machine learning methods to analyze financial datasets.
4. Engage with academic and industry mentors in a capstone project.
5. Engage in experiential learning projects that are designed to solve real world problems with real datasets.
6. Demonstrate analytical thinking skills through the use and application of analytical and machine learning methods.

REQUIREMENTS

Admitted Computer Science majors will begin the minor in their junior year and MATH240, MATH241, and STAT400 (or equivalent courses) should be completed prior to entering the program. CMSC320 (or an equivalent course) should be completed either prior to beginning the minor or during a student's first semester in the minor.

Course	Title	Credits
BUFN400	Introduction to Financial Markets and Financial Datasets	3
CMSC320	Introduction to Data Science	3
BUFN403	Capstone Computational Finance Projects	3
One course from the following:		3
BUFN401	Option Theory and Derivatives	
BUFN402	Portfolio Management	
One course from the following:		3
CMSC421	Introduction to Artificial Intelligence	
CMSC422	Introduction to Machine Learning	
CMSC470	Introduction to Natural Language Processing	
CMSC471	Introduction to Data Visualization	
CMSC472	Introduction to Deep Learning	
CMSC474	Introduction to Computational Game Theory	
Total Credits		15