

Careers with a Mathematical Economics Major



<http://math.richmond.edu/major-minor/mathecon.html>

Graduates with strong analytical skills are highly valued in today's increasingly data-driven and interconnected business world. The Mathematical Economics major provides a course of study that allows students to not only acquire some of these highly valued analytical skills, but also integrates that knowledge with a deeper understanding of the business world and the social sciences. This combination of mathematics, statistics/data, and economics knowledge makes Mathematical Economics majors highly competitive in the job market and excellent candidates for graduate school.

The Mathematical Economics major provides students with a structured study towards several post-graduate paths. These focal areas include Actuarial Sciences, Data Science, Economic Consulting, Economics Graduate School, Finance, and Statistics Graduate School. Students interested in other post-graduate paths such as engineering, medical school, entrepreneurship, etc. should discuss these plans with their academic advisor and/or the program coordinators towards choosing electives and non-major courses that complement their plans.

Actuarial Sciences

Actuaries are experts in calculating and managing risk. Actuaries work in a variety of industries, including insurance, consulting, and government. They apply mathematical and statistical methods to calculate and assess risk in these industries. For example, in the insurance industry actuaries calculate risks and determine the premiums for policy holders, while as consultants they help firms evaluate risk with respect to strategic management decisions. The Mathematical Economics major provides a pathway into this career by both providing courses that fulfil the VEE requirements and also courses that help students prepare for the Actuarial Science Probability and Financial Mathematics exams.

Students considering an actuarial career should visit <http://www.beanactuary.org/> to get more information about the process towards becoming an actuary, including information about the P & FM exams and how to fulfil VEE requirements.

Suggested coursework for Mathematical Economics majors focusing in Actuarial Sciences:

- Elective Courses: ECON 370, MATH 309, MATH 330
- Non-Major Courses/Exams: ACCT 201, FIN 360, FIN 361/366, P Actuarial Exam, FM Actuarial Exam
- Other considerations: Take MATH 329 early. Talk to a Math-Econ coordinator about fulfilling the VEE requirements.

Data Science/Analytics

Data Scientists are expert at solving complex problems in business and economics by collecting, managing and analyzing large data bases. This is an interdisciplinary field of study that is rooted in statistics and computer coding, and data science is acknowledged to one of the most important new careers for the 21st century. Mathematical Economics majors are well suited for data science/analytics jobs as the major requires students to take statistics and econometrics courses, which can then be supplemented with electives in the areas of statistics, econometrics, and data science. Additionally, many electives in the Economics department require students to work with and analyze data.

Suggested coursework for Mathematical Economics majors focusing in Data Science:

- Elective Courses: ECON 370, ECON 373, MATH 330, DSST 389
- Non-Major Courses: CMSC 221, ECON 242, DSST 289
- Other considerations: Take CMSC 150 & ECON 270 early and look out for special topics offerings in data-related topics. Consider taking the Data Science & Statistics Minor. Also consider further learning opportunities to improve your skills in languages such as R, Python, and SQL (e.g. ECON 249 workshops). Finally, students considering a data science career will benefit from adding more computer science courses such as CMSC 315, CMSC 325, CMSC 326, CMSC 327, and CMSC 328 to their academic plans.

Economic Consulting

Consultants are generally hired to study a project/company and give advice on how to help improve performance and succeed strategically. Consultants are problem solvers. They can be found in nearly every industry in the economy, providing advice on management, finance, accounting, marketing, data, education, health, government, environment, politics, etc. Mathematical economics students with their strong data, analytical, and problem solving skills are highly valued in this industry.

For more information about the resources available to them, students should consider visiting the career service's consulting page at: <http://careerservices.richmond.edu/students/explore/industries/consulting.html>.

Suggested coursework for Mathematical Economics majors focusing in Economic Consulting:

- Elective Courses: ECON 300, ECON 370, ECON 373, MATH 336, DSST 389
- Non-Major Courses: CMSC 221, ECON 242, DSST 289, MGMT 450
- Other considerations: Consider ECON 249 workshops. Talk to a Math-Econ coordinator about the possibility of attempting the consulting-sequence in the Business School.

Economics Graduate School

Graduate study in economics prepares students to be experts in economic research and data analysis. Post graduate school economists pursue a variety of careers that include working as professors or researchers, working in government/ nonprofit work, or working in the private sector as a consultant or professional economist. Academic research in economics covers a broad spectrum of topics that includes public finance, economic growth, business cycles, health, education, demographics, labor markets, inequality, trade, individual human behavior and industrial organization.

Students considering economics graduate school should weigh the option of whether to pursue an application for a Masters vs. Ph.D. degree program. Many academic and research-oriented positions require a Ph.D. in economics.

Suggested coursework for Mathematical Economics majors focusing in an Economics Graduate School path:

- Elective Courses: ECON 300, ECON 370, MATH 300, MATH 312, MATH 320
- Non-Major Courses/Tracks/Exams: Departmental Honors Track, GRE
- Other considerations: Take ECON 270 early. Discuss graduate school application plans with a Math-Econ coordinator. Do note that Real Analysis (MATH 320) is very important for a Ph.D. program in Economics

Finance

Many jobs in the financial sector require individuals to study companies and macroeconomic conditions with an aim of making economic, industry, or firm-level recommendations. For example, many financial analysts study companies and make recommendations with regards to investment strategies. Other jobs in the financial sector specialize in the buying and selling of assets, identifying areas where a firm could improve efficiency, preparing financial reports, and generally look after the financial health of a firm or industry. Mathematical Economics majors have the option of complementing their studies with courses in the Finance department. This combination of mathematics, statistics, economics, and finance courses provides strong applied quantitative skills that are highly valued in this sector making such majors very attractive candidates for finance sector jobs.

For more information about the resources available to them students should consider visiting the career service's finance page at: <http://careerservices.richmond.edu/students/explore/industries/finance.html>

Suggested coursework for Mathematical Economics majors focusing in Finance:

- Elective Courses: ECON 370, ECON 373, MATH 309, MATH 312
- Non-Major Courses/Exams: ACCT 201, ACCT 301, ECON 200, FIN 360, 3-5 300/400-level Finance Courses (For tracks offered by the Finance department visit <https://robins.richmond.edu/undergraduate/finance/concentration.html>)
- Other considerations: Consider applying for the Student Managed ETF Fund.

Statistics Graduate School

Graduate study in statistics or data science prepares students to develop techniques to effectively collect, model and analyze data. Post graduate school statisticians apply their knowledge of statistical methods to a variety of problems across fields as diverse as economics, medicine, sports, engineering, marketing, finance, etc. Given their versatility, the career path for a statistician or data scientist is highly varied, including being a professor, software engineer, business or risk analyst. Academic research is similarly varied from building theoretical statistical techniques and models, to applying them to a variety of real-world problems across many fields.

Students considering statistics graduate school should weigh the option of whether to pursue an application for a Masters vs. Ph.D. degree. Many academic and research-oriented positions require a Ph.D. in statistics.

Suggested coursework for Mathematical Economics majors focusing in a Statistics Graduate School path:

- Elective Courses: ECON 370, ECON 373, MATH 300, MATH 312, MATH 330, DSST 389
- Non-Major Courses/Tracks/Exams: CMSC 221, Departmental Honors Track, GRE
- Other considerations: Take MATH 329 early. Discuss graduate school application plans with a Math-Econ coordinator.

For general questions feel free to contact the Mathematical Economics Program Coordinators, Paul Kvam (pkvam@richmond.edu) or Saif Mehkari (smehkari@richmond.edu). For questions about the possibility of taking Business School courses email Saif Mehkari (smehkari@richmond.edu)