

# BACHELOR OF SCIENCE: MATHEMATICS AND STATISTICS / MASTER OF SCIENCE: MATHEMATICS - DUAL DEGREE

## Student Learning Outcomes

Students graduating from this program will:

- read, write, understand mathematical proofs, and construct mathematical proofs as appropriate.
- reason with and apply mathematical concepts, principles and methods; analyze and evaluate problems (both theoretical and practical) and plan strategies for their solution.
- work collaboratively with others on projects requiring mathematical knowledge and input, to function effectively in a professional workplace related to mathematics, or in a graduate program.
- Use theoretical knowledge in core areas to construct rigorous proofs of mathematical statements.
- Develop solutions for advanced problems, employing appropriate analytical and/or numerical techniques.
- Effectively present and explain mathematical arguments, in writing or orally.

This program offers students an opportunity to meet the full requirements of the BS and MS in a shorter time period than the separate degree programs. The students may complete a Bachelor of Science degree in Mathematics and Statistics in four years and the Master's degree in Statistics the fifth year.

## Admission Requirements

1. The applicant must be a UMKC undergraduate student who has completed a minimum of 60 cumulative credit hours.
2. The applicant should complete the BS/MS application form and submit it to both the undergraduate ([baniyaghoubm@umkc.edu](mailto:baniyaghoubm@umkc.edu) (%28baniyaghoubm@umkc.edu)) and graduate advisors ([segal@umkc.edu](mailto:segal@umkc.edu) (%28segal@umkc.edu)).
3. The applicant must satisfactorily complete the following courses:
  - a. MATH 300 Linear Algebra I
  - b. MATH 301 On Solid Ground: Sets and Proof, or any 400-level class that has MATH 301 as a prerequisite. For instance, MATH 410, MATH 420, or MATH 402
  - c. MATH 345 Ordinary Differential Equations
4. A minimum overall GPA of 3.0 is required.
5. A minimum GPA of 3.0 in Math/Stat courses is required

## B.S. Degree Requirements (total of 33 credit hours)

As listed below, there are 24 credit hours required undergraduate courses.

Code	Title	Credits
MATH 210	Calculus I	4
MATH 220	Calculus II	4
MATH 250	Calculus III	4
MATH 300	Linear Algebra I	3
MATH 345 & 345L	Ordinary Differential Equations and Ordinary Differential Equations Lab	4
or select one of the following:		
MATH 406	Partial Differential Equations	
STAT 436	Introduction To Mathematical Statistics I	
MATH 402	Advanced Analysis I	3
MATH 410	Abstract Algebra	3

The student should also take at least 9 credit hours of Math or Stat elective courses at the 400 level or above.

## M.S. Degree Requirements (total of 30 credit hours)

The following core courses are required for the completion of the M.S. degree:

Code	Title	Credits
MATH 5509	Algebra I	3
MATH 5513	Real Variables I	3

MATH 5521	Differential Equations	3
MATH 5542	Advanced Numerical Analysis	3
Choose one of the following, to create an emphasis area		3
MATH 5519	Algebra II	
MATH 5523	Real Variables II	
MATH 5555	Optimization	
MATH 5517	Matrix Theory I	

Also a total of 15 credit hours of MATH or STAT (or other approved designations) elective courses at the 400 level or above must completed satisfactorily. At most 12 credit hours can be at 400 level.

## B.S./M.S. Degree Overlap (up to 9 credit hours)

Up to 9 credit hours of 400-level Math or Stat courses in the graduate degree can overlap with the courses taken towards satisfying the requirements for the undergraduate degree.