

# Program Change Request

Date Submitted: 03/22/24 2:50 pm

Viewing: **MATH-GEM1 : Mathematics MA, Data Science Emphasis**

Last approved: 01/26/22 4:16 pm

Last edit: 03/22/24 2:50 pm

Changes proposed by: Adrian Clingher (clinghera)

Catalog Pages Using  
this Program

[Mathematics MA, Data Science Emphasis](#)

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Program Code

MATH-GEM1

## In Workflow

1. S006000 Chair
2. Curricular  
Alignment Check
3. Academic Affairs  
Program  
Preapproval
4. SA\_S Assoc Dean
5. SA\_S Dean
6. Graduate C&I  
Committee
7. Senate C&I
8. Senate C&I Editing
9. FacultySenate
10. Academic Affairs
11. Registrar Programs

## Approval Path

1. 03/25/24 2:13 pm  
Erika Gibb (gibbe):  
Approved for  
S006000 Chair
2. 04/01/24 1:45 pm  
Keeta Holmes  
(holmeskm):  
Approved for  
Curricular  
Alignment Check
3. 04/01/24 4:38 pm  
Betsy Sampson  
(sampsone):  
Approved for  
Academic Affairs  
Program  
Preapproval

4. 04/19/24 12:00 pm  
Matthew Taylor  
(taylormatt):  
Approved for SA\_S  
Assoc Dean
5. 04/30/24 7:45 am  
Matthew Taylor  
(taylormatt):  
Approved for SA\_S  
Dean
6. 09/12/24 11:09 am  
Teresa Thiel (thiel):  
Approved for  
Graduate C&I  
Committee
7. 09/16/24 12:37 pm  
Allison Belew  
(apbt27): Approved  
for Senate C&I
8. 09/17/24 2:49 pm  
Betsy Sampson  
(sampsone):  
Rollback to Senate  
C&I for Senate C&I  
Editing
9. 10/10/24 3:53 pm  
Deborah Cohen  
(Deborah.Cohen):  
Approved for  
Senate C&I
10. 10/10/24 4:14 pm  
Betsy Sampson  
(sampsone):  
Approved for  
Senate C&I Editing

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## History

1. Aug 11, 2018 by  
Qingtang Jiang  
(jiangq)

2. Oct 10, 2018 by  
Betsy Sampson  
(sampsone)
3. May 28, 2019 by  
Betsy Sampson  
(sampsone)
4. Jan 26, 2022 by  
Qingtang Jiang  
(jiangq)

*To be completed by Academic Affairs*

Title	Mathematics MA, Data Science Emphasis
Program Type	Degree Program
College/School	College of Arts & Sciences
Department	Mathematics
Academic Level	Graduate
CIP Code	27.0101 - 27.0101
Effective CAT	2023-24

Program Requirements and Description as it will appear in the bulletin.

## Admission Requirements

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Applicants must have at least a bachelor's degree in mathematics or in a field with significant mathematical content. Examples of such fields include computer science, data science, economics, engineering and physics. An applicant's record should demonstrate superior achievement in undergraduate mathematics.

Individuals may apply for direct admission to either the M.A. or Ph.D. program. Candidates for the M.A. degree may choose an emphasis in mathematics or data science. Students in the M.A. program who want to transfer to the Ph.D. program upon successful completion of 15 credit hours must fill out a new application through Graduate Admissions.

## Degree Requirements

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Candidates for the M.A. degree must complete 30 hours of course work with at least 15 hours of courses numbered 5000 or above. Up to 6 credit hours can be completed outside the Department of Mathematics and Statistics in a related field, with graduate program director's prior approval. Up to 9 graduate credit hours could be transferred into the the program, pending the approval of the Graduate School. All courses numbered below 5000 must be completed with grades of at least B. The selections of the courses numbered 5000 or above need the prior approval of the graduate advisor.

For the M.A. degree with data science emphasis, the courses taken must include the data-science core courses and five elective courses chosen from the data-science electives listed below. Up to 2 courses in the data-science electives can be substituted with other courses upon student's request and graduate program director's approval. Students who have already completed courses equivalent to those in the core may substitute other courses numbered above 4000. All substitutions of courses for those listed in the core require the prior approval of the graduate director.

### Thesis Option

The non-core course work may consist of an M.A. thesis written under the direction of a faculty member in the Department of Mathematics and Statistics. A thesis is not, however, required for this degree. A student who wishes to write a thesis should enroll in 6 hours of [MATH 6900](#), M.A. Thesis. Students writing an M.A. thesis must defend their thesis in an oral exam administered by a committee of three department members which includes the thesis director.

Core Courses		
<a href="#">MATH 4005</a>	Exploratory Data Analysis with R	3
<a href="#">MATH 4200</a>	Mathematical Statistics I	3
<a href="#">MATH 4210</a>	Mathematical Statistics II	3
<a href="#">MATH 5250</a>	Statistical Methods in Learning and Modeling	3
<b>Elective Courses</b>		<b>18</b>
Choose six of the following courses:		
<a href="#">MATH 4220</a>	Bayesian Statistical Methods	
<a href="#">MATH 4260</a>	Introduction to Stochastic Processes	
<a href="#">MATH 5070</a>	Nonlinear Optimization	
<a href="#">MATH 5080</a>	Scientific Computation	
<a href="#">MATH 5090</a>	High-dimensional Data Analysis	
<a href="#">MATH 5225</a>	Statistical Computing	
<a href="#">MATH 5320</a>	Topics in Statistics and its Applications	
<a href="#">MATH 5470</a>	Statistical Data Analysis for GIS	
<a href="#">MATH 5480</a>	Remote Sensing Digital Image Analysis	
<a href="#">MATH 5600</a>	Topics in Computation	
<a href="#">MATH 5750</a>	Mathematics of Artificial Neural Networks	
<a href="#">MATH 5770</a>	Advanced Topics in Nonlinear Optimization	
<a href="#">CMP SCI 4200</a>	Python for Scientific Computing and Data Science	