# MASTER OF COMPUTATIONAL AND APPLIED MATHEMATICS (MCAAM) DEGREE

## Program Learning Outcomes for the MCAAM Degree

Upon completing the MCAAM degree, students will be able to:

1. Acquire broad, advanced knowledge in Computational and Applied Mathematics that is also deep within a major sub-discipline.
2. Demonstrate an ability to gain employment or advancement in a technical field related to Computational and Applied Mathematics.

## Requirements for the MCAAM Degree

The MCAAM degree is a non-thesis master's degree. For general university requirements, please see Non-Thesis Master's Degrees (https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-non-thesis-masters-degrees/). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/). Students pursuing the MCAAM degree must complete:

- A minimum of 10 courses (30 credit hours) to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (graduate semester credit hours, coursework at the 500-level or above).
- A minimum of 24 graduate semester credit hours must be taken at Rice University.
- A minimum of 24 graduate semester credit hours must be taken in standard or traditional courses (with a course type of lecture, seminar, laboratory, lecture/laboratory).
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A maximum of 2 courses (6 graduate semester credit hours) from transfer credit. For additional departmental guidelines regarding transfer credit, see the Policies (p. 1) tab.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum program GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree.

This professional degree program emphasizes the applied aspects of mathematics, and requires satisfactory completion of at least 30 credit hours of graduate-level coursework approved by the department.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program's academic advisor or, where applicable, the department or program's Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program's Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/). Additionally, these course substitutions must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

| Code | Title | Credit Hours |
|---|---|---|
| Total Credit Hours Required for the MCAAM Degree | | 30 |

### Degree Requirements

| Code | Title | Credit Hours |
|---|---|---|
| **Core Requirements** | | |
| *Select 2 courses from the following:* | | *6* |
| CMOR 520 | COMPUTATIONAL SCIENCE | |
| CMOR 522 | NUMERICAL ANALYSIS | |
| CMOR 530 | ITERATIVE METHODS FOR SYSTEMS OF EQUATIONS AND UNCONSTRAINED OPTIMIZATION | |
| CMOR 541 | LINEAR AND INTEGER PROGRAMMING | |
| **Elective Requirements** | | |
| *Select at least 8 courses (24 credit hours) of departmental (CMOR) course offerings at the 500-level or above* [1, 2] | | *24* |
| **Total Credit Hours** | | **30** |

#### Footnotes and Additional Information

1. A number of CMOR courses, including CMOR 600 (formerly CAAM 600), CMOR 696 (formerly CAAM 699), and CMOR 800 (formerly CAAM 800) may not be applied toward the Elective Requirements. Thesis, seminar, or independent study courses cannot be applied towards the Elective Requirements.
2. Students may take up to 3 courses (9 credit hours) at the 500-level or above from course offerings outside of CMOR, with the approval of the student's mentor.

## Policies for the MCAAM Degree

### Department of Computational Applied Mathematics and Operations Research Graduate Program Handbook

The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the department of Computational Applied Mathematics and Operations Research publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2024_25/Computational_Applied_Mathematics_Operations_Research_Graduate_Handbook.pd

### Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (https://ga.rice.edu/undergraduate-students/academic-policies-procedures/transfer-credit/). Some departments and programs have additional restrictions on transfer credit. Requests for transfer credit must be approved for Rice equivalency by the designated transfer credit advisor for the appropriate academic department offering the Rice equivalent course (corresponding to the subject code of the course content). The Office of Academic Advising maintains the university's official list of transfer credit advisors (https://oaa.rice.edu/advising-network/transfer-credit-advisors/) on their website: https://oaa.rice.edu. Students are encouraged to meet with the applicable transfer credit advisor as well as their academic program director when considering transfer credit possibilities.

## Departmental Transfer Credit Guidelines

Students pursuing the MCAAM degree should be aware of the following departmental transfer credit guideline:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the degree.

## Additional Information

For additional information, please see the Computational Applied Mathematics and Operations Research website: https://cmor.rice.edu/.

# Opportunities for the MCAAM Degree

## Fifth-Year Master's Degree Option for Rice Undergraduate Students

In certain situations and with some terminal master's degree programs, Rice students have an option to pursue a master's degree by adding an additional fifth year to their four years of undergraduate studies.

Advanced Rice undergraduate students in good academic standing typically apply to the master's degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master's degree program. A plan of study will need to be approved by the student's undergraduate major advisor and the master's degree program director.

As part of this option and opportunity, Rice undergraduate students:

- must complete the requirements for a bachelor's degree and the master's degree independently of each other (i.e. no course may be counted toward the fulfillment of both degrees).
- should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).
- more information on this *Undergraduate - Graduate Concurrent Enrollment* opportunity, including specific information on the registration process can be found here (https://ga.rice.edu/undergraduate-students/academic-opportunities/undergraduate-graduate-concurrent-enrollment/).

Rice undergraduate students completing studies in science and engineering may have the option to pursue the Master of Computational and Applied Mathematics (MCAAM) or the Master of Industrial Engineering (MIE) degree. For additional information, students should contact their undergraduate major advisor and the MCAAM/MIE program director.

## Additional Information

For additional information, please see the Computational Applied Mathematics and Operations Research website: https://cmor.rice.edu/.