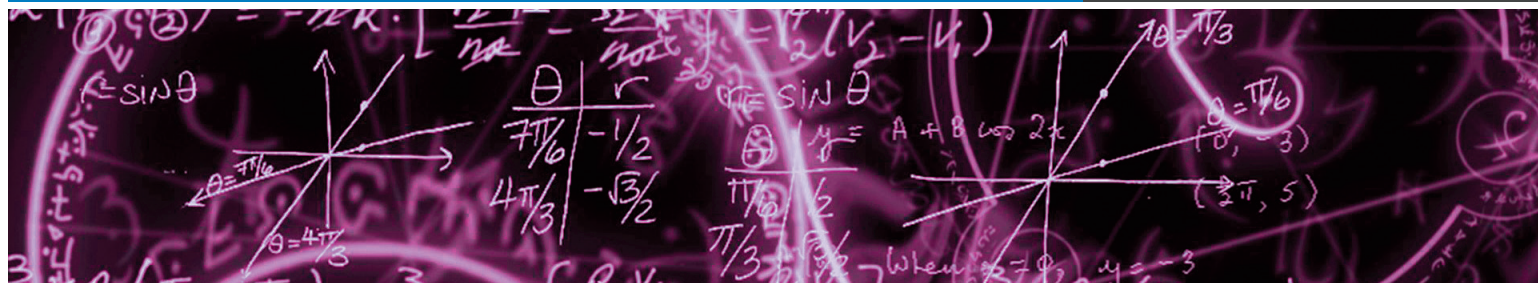# Mathematics

MANCHESTER
Community College



## Why Mathematics?

Labor market trends indicate a growing need for professionals in the STEM disciplines in New Hampshire, as well as across the country. The Mathematics degree at MCC is designed for students planning to transfer to four-year degree concentrations leading to STEM careers in mathematics, physics, engineering, chemistry, astronomy and data analysis. In addition, the Mathematics degree supports pathways for other career paths such as business, finance, strategic planning, insurance analyst and the Department of Defense.

*U.S. News* reports the "10 College Majors with the Best Starting Salaries" lists mathematics and computer science as number five with the other nine all various types of engineering *(Sept. 25, 2017)*. The Mathematics degree program at MCC will help prepare students to enter any of these fields.

## Program Goal

The Mathematics degree at MCC is designed for students who are planning to pursue a four-year degree in Mathematics, engineering or the sciences. The curriculum includes both the general education and mathematics courses typically required in the first two years of a bachelor's concentration in Mathematics, engineering or science.

## Program Outcomes

Students who graduate from this program will be able to:

- Demonstrate applicable problem-solving ability in completing mathematical practices
- Apply mathematical principles to other disciplines including physical and life sciences, technologies, social sciences and business
- Communicate in the language of mathematics effectively using appropriate mathematical terminology, both verbally and written
- Use logical reasoning in understanding mathematical proofs
- 

## Potential Jobs

- Mathematician
- Mathematics Educator
- Data Analyst
- Physicist
- Statistician
- Engineer
- Survey Technician
- Business/Finance Analyst

## Potential Salary*

There is a wide range of jobs in the mathematics industry. See below for the average annual salary range in NH for a *Statistician.*

| ENTRY LEVEL | MID-RANGE | EXPERIENCED |
|:---:|:---:|:---:|
| $60,466 | $79,810 | $95,181 |

*\*New Hampshire Occupational Employment & Wages 2021, published by the NH Economic + Labor Market Information Bureau — Salaries are based on 40 hours of work, not including overtime.*

## Transfer Opportunities

Students in the Mathematics Program can successfully transfer to colleges and universities around the country, including:

- Boston University
- Emerson College
- Granite State College
- Keene State College
- Plymouth State University
- Rivier University
- Southern NH University
- University of New Hampshire
- University of Massachusetts

...and many more!

# Degree & Certificate Requirements

## Mathematics Degree

**Degree Program - First Year**

| First Year | Fall Semester | TH | LAB | CR |
|---|---|---|---|---|
| MATH204M | Calculus I | 4 | 0 | 4 |
| PHYS210M | University Physics I | 3 | 3 | 4 |
| ENGL110XM or ENGL110M | College Composition I with Corequisite or College Composition I | 4 | 0 | 4 |
|  | Open Elective | 3 | 0 | 3 |
| FYE100M | MCC Essentials | 1 | 0 | 1 |
|  | **Total** | **15** | **3** | **16** |

| First Year | Spring Semester | TH | LAB | CR |
|---|---|---|---|---|
| MATH214M | Calculus II | 4 | 0 | 4 |
| PHYS220M | University Physics II | 3 | 3 | 4 |
| Pathway Option | **Physics Pathway**: CHEM115M General Chemistry I | 3 | 3 | 3 |
|  | **Mathematics and Engineering Pathway** - *choose one: CIS122M, MATH210M, ROBO211M, DATA215M* | 3 | 0 | 3 |
|  | Foreign Language/Humanities/Fine Arts Elective | 3 | 0 | 3 |
|  | **Total** | **13** | **3/6** | **14** |

**Degree Program - Second Year**

| Second Year | Fall Semester | TH | LAB | CR |
|---|---|---|---|---|
| MATH218M | Linear Algebra | 4 | 0 | 4 |
| MATH222M | Multidimensional Calculus | 3 | 2 | 4 |
|  | Social Science Elective | 3 | 0 | 3 |
| Pathway Option | **Mathematics Pathway:** Open Elective | 3 | 3 | 3 |
|  | **Engineering Pathway:** ADMT225M Statics | 3 | 0 | 3 |
|  | **Physics Pathway:** PHYS230M Modern Physics | 3 | 3 | 4 |
|  | **Total** | **13** | **2/5** | **14/15** |

| Second Year | Spring Semester | TH | LAB | CR |
|---|---|---|---|---|
| MATH220M | Differential Equations | 4 | 0 | 4 |
| Pathway Option | **Mathematics and Engineering Pathway:** Lab Science Elective | 3 | 3 | 4 |
|  | **Mathematics and Physics Pathway:** MATH299M Mathematics Capstone | 4 | 0 | 4 |
|  | **Mathematics Pathway:** MATH215M Mathematical Proofs | 4 | 0 | 4 |
|  | **Engineering Pathway:** ADMT112M Introduction to Engineering Design and Solid Modeling | 3 | 4 | 4 |
|  | **Engineering Pathway:** Mathematics Elective | 4 | 0 | 4 |
|  | **Physics Pathway:** PHYS225M thermodynamics and Statistical mechanics | 4 | 0 | 4 |
|  | **Physics Pathway:** MATH210M Mathematics and Applications in MATLAB | 3 | 2 | 4 |
|  | **Total** | **15** | **3** | **16** |
|  | **Total Credits - 60/61** | | | |

## Applied Data Analytics Certificate

Data is an increasingly important part of our lives; from business operations and processes to environmental systems, social sciences, genetics and health care, data allows us to gain important insights and make useful predictions. Data Analytics comprises all the academic disciplines related to managing data as a resource; such as visualization, machine learning, statistical applications, data mining, predictive analytics and database management. Upon completion, the student will have foundational understanding of and competency with many facets of effective communication with data.

|  |  | TH | LAB | CR |
|---|---|---|---|---|
| MATH202M | Probability and Statistics I | 4 | 0 | 4 |
| MATH212M | Probability and Statistics II | 4 | 0 | 4 |
| DATA210M | Introduction to Data Mining | 3 | 2 | 4 |
| DATA215M | Applied Data Analytics | 3 | 2 | 4 |
|  | Elective - *choose one: CIS113M, CIS220M, CIS233M, MATH218M* | 2/3 | 2/3 | 3/4 |
|  | **Total Credits - 19/20** | | | |

All courses and degree requirements are subject to change. For the most current information on MCC programs, **visit mccnh.edu**.

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