

MATHEMATICS, BA

At Roosevelt, the bachelor's degree in Mathematics prepare graduates for a variety of professions as well as for continuing study at the graduate level. Students will gain analytical, quantitative, and problem-solving skills. Students will also learn to apply the ideas of mathematics to other fields of knowledge and to communicate mathematics effectively.

Mathematics is a beautiful and interesting subject that involves statistics, numbers, functions, shapes, and structures. These concepts are logically interconnected and develop into a fascinating theory.

They are also used to solve real-world problems from a wide variety of areas, including science, computer science, social science, finance, and business. The study of mathematics provides training in disciplined thought and analysis.

Students who wish to teach mathematics at the high school level should minor in secondary education and as well as take the mathematics courses included in the Concentration in Secondary Education.

The Secondary Education Minor (<http://catalog.roosevelt.edu/undergraduate/education/secondary-teacher-minor>) page provides more detail.

Standards

Courses taken as pass/fail will be given a pass only for work at or above the C- level. The average grade for all courses taken in Mathematics must be C- or higher. All courses presented for the major and the minor(s) must be completed with grades of C- or higher with an overall GPA of 2.0 in the major. A maximum of two grades of C- may be presented for the major. Repeated courses in the major or minor require specific approval.

Note: Students who wish to teach math at the secondary level need a minimum grade of C (2.0) in their Mathematics courses, as well as a grade point average in their major of 2.7 or higher.

Prerequisites

All students who plan to major or minor in Mathematics must see a Math advisor before registering. Some students may need prerequisite courses. Advanced placement in Mathematics is possible for well-prepared students. All prerequisite courses must be completed with grades of C- or higher.

Requirements

All credit must be approved by the Mathematics faculty to be applied toward the major. At least four of the courses beyond MATH 233 CALCULUS III must be completed at Roosevelt University. Once a student begins taking Math classes at Roosevelt, any additional courses taken outside of the university must get pre-approval in writing from the department chair in order to be applied to the Math major.

Requirements for a major in Mathematics leading to the BA degree consists of the core and elective courses listed below. Students who wish to pursue an additional concentration in Secondary Education or in Statistics should follow the requirements in the sections below this one.

This major has 39 credit hours. Note that a student transferring in four-credit hour calculus 1 and 2 courses and a three-credit hour introductory proof course may have only 36 credit hours.

Core		
CST 150	COMPUTER SCIENCE I	4

MATH 231	CALCULUS I	5
MATH 232	CALCULUS II	5
MATH 233	CALCULUS III	3
MATH 245 & MATH 290	DISCRETE STRUCTURES and INTRODUCTION TO PROOF	4
MATH 246	LINEAR ALGEBRA	3
MATH 352	ANALYSIS	3

Math B.A. electives

Select four electives above MATH 233 including at least two at the 300 level ¹	12
---	----

General Education, University Writing Requirement, and Electives

Courses to total 120	81
----------------------	----

Total Credit Hours	120
--------------------	-----

1. Students who wish to teach at the middle school or high school level should choose electives using the concentration in Secondary Education. Students who wish to have a statistics concentration should choose electives from the list in that section.

Concentration in Secondary Education

Students pursuing a concentration in Secondary Education will take courses that prepare them for the Illinois Mathematics Content Test.

They also need to register for the minor in secondary education (<http://catalog.roosevelt.edu/undergraduate/education/secondary-teacher-minor>). Students should speak with both the mathematics and education departments for course advising.

Standards

Courses taken as pass/fail will be given a pass only for work at or above the C- level. The average grade for all courses taken in mathematics must be C- or higher. In order to satisfy state teacher requirements, all courses presented for the major and the minor(s) must be completed with grades of C or higher with an overall GPA of 2.7 in the major. Repeated courses in the major or minor require specific approval.

Requirements for the Concentration

Students choosing this concentration must complete the 27 credit hour core requirements listed above. Five additional courses are required as follows:

Courses required for the SEED Concentration

MATH 316	HISTORY OF MATHEMATICS	3
MATH 317	GEOMETRY	3
Select one of the following Algebraic Structures courses:		3
MATH 318	NUMBER THEORY	
MATH 320	INTRODUCTION TO ABSTRACT ALGEBRA	
Select one of the following Modeling courses:		3
MATH 280	MATHEMATICAL MODELING	
MATH 307	DIFFERENTIAL EQUATION/MODELING	
MATH 309	DATA MINING	
MATH 323	COOPERATION AND COMPETITION – GAME THEORY AND APPLICATIONS	
MATH 328	LINEAR PROGRAMMING & OPTIMIZATION	
MATH 339	BASEBALL STATISTICS	

MATH 389	SPECIAL TOPICS (Requires Chair Approval)	
MATH 390	INDUSTRIAL RESEARCH PROBLEMS	
Select one of the following Probability and Statistics courses:		3
MATH 217	ELEMENTARY STATISTICS	
MATH 238	APPLIED PROBABILITY AND STATISTICS	
MATH 347	PROBABILITY THEORY	
Total Credit Hours		15

Concentration in Statistics

The concentration in statistics prepares graduates for diverse and vital areas that may include medical research, drug testing, environmental risk assessment, quality assurance, economic forecasting, and the exploration of space.

Requirements for the concentration

Students choosing this concentration must complete the 27 credit hour core requirements listed above. Five additional courses are required as follows:

Courses required for the Statistics Concentration

MATH 347	PROBABILITY THEORY	3
MATH 348	MATHEMATICAL STATISTICS	3
MATH 349	REGRESSION & TIME SERIES	3

Electives

Select two of the following:		6
MATH 280	MATHEMATICAL MODELING	
MATH 307	DIFFERENTIAL EQUATION/MODELING	
MATH 309	DATA MINING	
MATH 323	COOPERATION AND COMPETITION – GAME THEORY AND APPLICATIONS	
MATH 328	LINEAR PROGRAMMING & OPTIMIZATION	
MATH 339	BASEBALL STATISTICS	
MATH 369	MODELS FOR LIFE CONTINGENCIES	
MATH 389	SPECIAL TOPICS	
MATH 390	INDUSTRIAL RESEARCH PROBLEMS	
Total Credit Hours		15

In addition, a minor in a science that uses statistics is required. Approved minor areas for the BA degree with a concentration in statistics are:

- Biology (<http://catalog.roosevelt.edu/undergraduate/arts-sciences/biology-minor>)
- Chemistry (<http://catalog.roosevelt.edu/undergraduate/arts-sciences/chemistry-minor>)
- Computer Science (<http://catalog.roosevelt.edu/undergraduate/arts-sciences/computer-science-minor>)
- Economics (<http://catalog.roosevelt.edu/undergraduate/arts-sciences/economics-minor>)
- Environmental Sciences (<http://catalog.roosevelt.edu/undergraduate/arts-sciences/environmental-science-minor>)
- Psychology (<http://catalog.roosevelt.edu/undergraduate/arts-sciences/psychology-minor>)

- Sociology (<http://catalog.roosevelt.edu/undergraduate/arts-sciences/sociology-minor>)

General Education Requirements

Code	Title	Credit Hours
Academic Communities of Practice		
ACP 101	FIRST YEAR SEMINAR ¹	3
ACP 110	PRIMARY TEXTS	3
ACP 250	FOUNDATIONS FOR CHANGE	3
English Composition ²		
ENG 101	COMPOSITION I: CRITICAL READING & WRITING	3
ENG 102	COMPOSITION II: INTRODUCTION TO ACADEMIC RESEARCH	3
Humanities		
Select 9 credits from the following subject areas: African-American Studies, Art History, English (excluding ENG 101 and ENG 102), History, Languages, Music, Philosophy, Theatre, Speech and Women's and Gender Studies		9
Mathematics		
MATH 110	QUANTITATIVE LITERACY (or above) ³	3
Non-Western requirement		
Non-Western course (can be used for Humanities or Social Sciences general education requirements)		3
RU mission-related course ²		
LIBS 201	WRITING SOCIAL JUSTICE	3
Science		
One biological science and one physical science required (at least one must be a four-hour lab (not applicable for science majors))		7-8
Social Sciences		
Select 9 credits from the following subject areas: African-American Studies, Anthropology, Economics, History, Journalism, Philosophy, Political Science, Psychology, Sociology and Women's and Gender Studies		9
Total Credit Hours		49-50

¹ Required for students who enter RU with fewer than 12 credit hours

² Minimum grade of C- required

³ Math, Computer Science & Technology, and Science majors have different requirements—see advisor

These quantitative requirements also apply to degrees in the College of Arts and Sciences:

- Students may apply no more than 60 credit hours of 100-level courses toward the degree.
- Students must apply no fewer than 60 credit hours of 200- and 300-level courses toward the degree.
- Students must have at least 18 credit hours (of the 60 credit hours above) at the 300 level.
- Students may transfer in no more than 66 credit hours from community colleges.
- Students must take their final 30 hours at Roosevelt University. Note that some majors have additional requirements for RU hours.

- Students must have a grade point average of 2.0 or higher to graduate. Note that some majors have additional GPA requirements.
- Students must have a minimum of 90 hours in Arts and Sciences.
- Students may apply no more than 51 hours in the major (BA) or 57 hours in the major (BS)

- ¹ Or course towards an optional Minor.
- ² Any course at the 200 level within the discipline.
- ³ Any course at the 300 level within the discipline.
- ⁴ This requirement can be fulfilled by other requirements.
- ⁵ One Natural Science course must have a lab

Your degree map is a general guide suggesting courses to complete each term on the academic pathway to your degree. It is based on the most current scheduling information from your academic program. Your program's degree map is reviewed annually and updated as schedules change (although you retain the same course requirements as long as you are continuously enrolled in your degree program).

Always work closely with your academic advisor to understand curriculum requirements and scheduling, as each student's academic plan can look slightly different.

Year 1

Fall	Credit Hours Spring	Credit Hours
ACP 101	3 ENG 102	3
ENG 101	3 ACP 110	3
MATH 121	3 CST 150	4
BIOL 111 or 112 ⁵	4 MATH 122	3
Humanities #1	3 Physical Science ⁵	3
	16	16

Year 2

Fall	Credit Hours Spring	Credit Hours
LIBS 201 or ACP 250	3 ACP 250 or LIBS 201	3
MATH 231	5 MATH 232	5
Humanities #2	3 MATH 246	3
Social Science #1	3 Social Science #2	3
	14	14

Year 3

Fall	Credit Hours Spring	Credit Hours
MATH 233	3 MATH 352	3
MATH 245	3 MATH 2XX or MATH 3XX ^{2,3}	3
MATH 290	1 Humanities #3	3
Social Science #3	3 Non-Western Studies Course ⁴	3
General Elective ¹	3 General Elective ¹	3
General Elective ¹	3	3
	16	15

Year 4

Fall	Credit Hours Spring	Credit Hours
MATH 2XX or MATH 3XX ^{2,3}	3 MATH 3XX ³	3
MATH 3XX ³	3 General Elective ¹	3
General Elective ¹	3 General Elective ¹	3
General Elective ¹	3 General Elective ¹	3
General Elective ¹	3 General Elective ¹	3
	15	15

Total Credit Hours 121