MATHEMATICS, BA

At Roosevelt, the bachelor's degree in Mathematics prepares graduates for a variety of professions (https://mathcareers.maa.org) 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 various areas, including data science, 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/humanities-education-social-sciences/minor/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 grade point average in their major of 2.7 or higher due to state requirements. This standard is set by the Illinois State Board of Education (ISBE), and changes may be decided and implemented by the ISBE.

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.
- 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 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.

Requirements for a major in Mathematics leading to the BA degree consists of the core and elective courses listed below. Students are encouraged to take MATH 390 INDUSTRIAL RESEARCH PROBLEMS, MATH 349 REGRESSION & TIME SERIES, or (for secondary education students) SEED 360 STUDENT TEACHING SEMINAR: SECONDARY EDUCATION as part of their experiential learning coursework. 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.

Code	Title	Credit Hours
Core		
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 a course in probability or statistics		3
MATH 309	DATA MINING	
MATH 339	BASEBALL STATISTICS	
MATH 347	PROBABILITY THEORY	
MATH 348	MATHEMATICAL STATISTICS	
MATH 349	REGRESSION & TIME SERIES	
MATH 390	INDUSTRIAL RESEARCH PROBLEMS (EXL course)	
Select three electives above MATH 233 including at least two at the 300 level [1]		9
Required Programming Course		
CST 150	COMPUTER SCIENCE I	4
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. If a student's probability/statistics course is at the 300 level, then they may choose to take one additional 300 level elective and two others above MATH 233 CALCULUS III.

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/humanities-education-social-sciences/minor/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. All courses presented for the major and the minor(s) must

be completed with an overall GPA of 2.7 in the major for state licensure. 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:

Code	Title	Credit Hours
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 307	DIFFERENTIAL EQUATION/MODELING	
MATH 309	DATA MINING	
MATH 323	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 (Experiential Learning Course)	
Select one of the following Probability and Statistics courses:		3
MATH 217	ELEMENTARY 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:

Code	Title	Credit Hours
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 307	DIFFERENTIAL EQUATION/MODELING	
MATH 309	DATA MINING	
MATH 323	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 (Experiential Learning Course)	
Total Credit Hours		15

In addition, a minor in 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/health-science/minor/biology-minor/)
- Chemistry (http://catalog.roosevelt.edu/undergraduate/health-science/minor/chemistry-minor/)
- Computer Science (http://catalog.roosevelt.edu/undergraduate/health-science/minor/computer-science-minor/)
- Economics (http://catalog.roosevelt.edu/undergraduate/humanities-education-social-sciences/minor/economics-minor/)
- Environmental Sciences (http://catalog.roosevelt.edu/undergraduate/health-science/minor/environmental-science-minor/)
- Psychology (http://catalog.roosevelt.edu/undergraduate/humanities-education-social-sciences/minor/psychology-minor/)
- Sociology (http://catalog.roosevelt.edu/undergraduate/humanities-education-social-sciences/minor/sociology-minor/)
- Others may be allowed upon approval of the department chair.

CORE Requirements (General Education)

Code	Title	Credit Hours
First Year Success Course or Transfer Success Course		
FYS 101	FIRST YEAR SUCCESS COURSE	1
or TRS 101	TRANSFER SUCCESS 101	
Communication Requirement		
ENG 101	COMPOSITION I: CRITICAL READING & WRITING	3
ENG 102	COMPOSITION II: INTRODUCTION TO ACADEMIC RESEARCH	3
COMM 101	PUBLIC SPEAKING (or program specific CORE communications course)	3
Ideas of Social Justice		
3 credits in coursework categorized as Ideas.		3
Humanities and Fine and Performing Arts		
9 credits from the following subject areas: African-American Studies, Art History, English (excluding ENG 101 and ENG 102), History, Languages, Music, Philosophy, Theatre, Communication and Women's and Gender Studies		9
Mathematics		
MATH 110	QUANTITATIVE LITERACY (or above) [1]	3
Science		
One biological science and one physical science required (one must include a one credit lab).		7-8
Social Sciences		
9 credits from the following subject areas: African-American Studies, Criminal Justice, Economics, History, Journalism, Philosophy, Political Science, Psychology, Sociology and Women's and Gender Studies		9
Experiential Learning		

6 credits from coursework categorized as Experiential Learning.	6
Total Credit Hours	47-48

1

Higher level of Math may be required by major

These quantitative requirements also apply to degrees.

- Students must earn a minimum of 120 semester hours.
- 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 70 credit hours from community colleges.
- Students earning less than 60 total hours in residence 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 may apply no more than 51 hours in the major (BA) or 57 hours in the major (BS)

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
ENG 101	3	ENG 102	3
MATH 121[7]	3	CST 150	4
FYS 101	1	Ideas of Social Justice	3
BIOL 111 or 112[5]	4	MATH 122[7]	3
Humanities #1	3	Physical Science[5]	3
	14		16

Year 2

Fall	Credit Hours	Spring	Credit Hours
MATH 231[7]	5	MATH 232[7]	5
Humanities #2	3	MATH 246	3
COMM 101	3	General Elective[1]	4
Social Science 1[6]	3	Social Science 2[6]	3
	14		15

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	Experiential Learning #1[4]	3
General Elective [1]	3	General Elective[1]	3
General Elective[1]	3	Humanities #3	3
Social Science #3[6]	3		
	16		15

Year 4

Fall	Credit Hours	Spring	Credit Hours
Probability or Statistics Course	3	MATH 3XX[3]	3
MATH 3XX[3]	3	Experiential Learning #2[4]	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 120

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

Two Experiential Learning Courses are required. Students are encouraged to take MATH 390 INDUSTRIAL RESEARCH PROBLEMS, MATH 349 REGRESSION & TIME SERIES, or SEED 360 STUDENT TEACHING SEMINAR: SECONDARY EDUCATION to satisfy this requirement.

5

One Natural Science course must have a lab

6

Or other social science course. ECON 234 ELEMENTARY STATISTICS is recommended as it can act as a prerequisite for many of the courses in the major.

Math BA with SEED Minor

Year 1

Fall	Credit Hours	Spring	Credit Hours
ENG 101	3	ENG 102	3
MATH 121[7]	3	Ideas of Social Justice	3
FYS 101	1	MATH 122[7]	3
BIOL 111 or 112[5]	4	Physical Science[5]	3
Humanities #1	3	EDUC 201	3
EDUC 101	3	MATH 217	3
	17		18

Year 2

Fall	Credit Hours	Spring	Credit Hours
MATH 231[7]	5	MATH 232[7]	5
Humanities #2	3	MATH 246	3
COMM 101	3	Social Science 2[6]	3
Social Science 1[6]	3	SPED 219	3
EDUC 202	3	CST 150	4
	17		18

Year 3

Fall	Credit Hours	Spring	Credit Hours
MATH 233	3	MATH 352	3
MATH 245	3	MATH 390 (or other EXL mathematical modeling course)	3
MATH 290	1	MATH 318 or 320	3
Social Science #3[6]	3	Humanities #3	3
MATH 316 or 317	3	SEED 301	3
READ 363	3	SEED 303	3
	16		18

Year 4

Fall	Credit Hours	Spring	Credit Hours
SEED 350	3-4	SEED 360 (EXL course)	12
MATH 317 or 316	3		
SEED 353	3		
SEED 323	3		
	12-13		12

Total Credit Hours 128-129

5

One Natural Science course must have a lab

6

ECON 234 is recommended as it can act as a prerequisite for many of the courses in the major.

7

Where a student begins their math sequence depends on their placement, and so some students will start in MATH 231 CALCULUS I. Students should take this sequence of courses each semester until they complete MATH 232 CALCULUS II; they should take MATH 233 CALCULUS III in the next possible fall term.

Three year plan for a student beginning in Calculus I

A three-year degree plan is shown below for the well-prepared student who has the time available to take 18-credits in the fall and spring terms as well as the ability to take summer courses.

Year 1

Fall	Credit Hours	Spring	Credit Hours	Summer	Credit Hours
ENG 101	3	ENG 102	3	General Elective	3
FYS 101	1	CST 150	4	Social Science #1	3
MATH 231	5	Ideas of Social Justice	3		
Humanities #1	3	Physical Science [5]	3		
General Elective	3	MATH 232	5		
	15		18		6

Year 2

Fall	Credit Hours	Spring	Credit Hours	Summer	Credit Hours
ECON 234[6]	3	MATH 246	3	Experiential Learning	3
COMM 101	3	Math 3XX	3	General Elective	3
MATH 233	3	Experiential Learning Course #1[4]	3		
MATH 245	3	Math 3XX	3		
MATH 290	1	Humanities #2	3		
BIOL 111 (with lab)	4	General Elective	3		
	17		18		6

Year 3

Fall	Credit Hours	Spring	Credit Hours	Summer	Credit Hours
Social Science #2	3	MATH 352	3	General Elective[1]	4
MATH 3XX	3	Social Science #3	3		
General Elective[1]	3	General Elective[1]	3		
General Elective[1]	3	Experiential Learning Course #2[4]	3		
Humanities#3	3	MATH 3XX	3		
General Elective[1]	3	MATH 2XX or 3XX[2,3]	3		
	18		18		4

Total Credit Hours 120

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

Two Experiential Learning Courses are required. Students are encouraged to take MATH 390 INDUSTRIAL RESEARCH PROBLEMS, MATH 349 REGRESSION & TIME SERIES, or SEED 360 STUDENT TEACHING SEMINAR: SECONDARY EDUCATION to satisfy this requirement.

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One Natural Science course must have a lab

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