MATHEMATICS (B.A.)

The courses offered by the Department of Mathematics serve several purposes; they supply the mathematical preparation necessary for students specializing in the physical, life or social sciences, in business administration, in engineering, and in education; they provide a route by which students may achieve a level of competence to do research in any of several special mathematical areas; they allow students to prepare themselves for work as mathematicians and statisticians in industry and government; and they give an opportunity to all inquisitive students to learn something about modern mathematical ideas.

Admission Requirements

Admission requirements for this program are satisfied by the general requirements for undergraduate admission (http://bulletins.wayne.edu/undergraduate/general-information/admission/) to the University. Undergraduates declaring a mathematics major are strongly encouraged to meet with a departmental advisor before doing so. After a student's acceptance as a major, a student should consult a Departmental advisor at least once a semester to verify progress.

Program Requirements

Candidates must complete 120 credits in coursework including satisfaction of the University General Education Requirements (http://bulletins.wayne.edu/undergraduate/general-information/general-education/) and the College of Liberal Arts and Sciences Group Requirements (http://bulletins.wayne.edu/undergraduate/college-liberal-arts-sciences/bachelors-degree-requirements/), as well as the departmental major requirements cited below. All coursework must be completed in accordance with the regulations of the University (http://bulletins.wayne.edu/undergraduate/general-information/academic-regulations/) and the College (http://bulletins.wayne.edu/undergraduate/college-liberal-arts-sciences/academic-regulations/) governing undergraduate scholarship and degrees.

It is each student's responsibility to learn the requirements, policies, and procedures governing the program the student is following and to act accordingly. Students should consult the Department of Mathematics' undergraduate academic advisor on a regular basis. Although the advisor will provide assistance, the responsibility for fulfilling degree requirements remains with the student.

Major Requirements

Residency: A minimum of 15 credits of major requirements at or above MAT or STA 5030 must be taken at Wayne State University. This includes courses that are considered equivalent to the Mathematics Department's MAT or STA courses and that are approved by the Mathematics Department to meet a major requirement.

Minimum Grade Requirements: The following grade requirements must be satisfied in the major.

- C- or better in all required coursework.
- C or better average for all coursework.

Notes:

1. STA courses previously designated by MAT (for example STA 2210 was previously labelled MAT 2210) are the same courses and meet the same requirements.
2. Although this policy is found in the College of Liberal Arts and Sciences (CLAS) requirements, it is worth noting that if a student is majoring in a CLAS major, they must obtain at least one minor that has 3 unique courses from the major. This means that at least 3 courses used to complete requirements in the minor must not be used to complete requirements in the major.
3. The required courses listed are the minimum that students should complete. Students are encouraged to take more courses in order to strengthen their background and enhance their prospects for employment and/or graduate school.

Course Requirements and Concentrations

In addition to the general bachelor's degree requirements, the candidate must complete one of the following concentrations: Prospective Graduate Study, General Topics or Computer Science, as described below.

Prospective Graduate Study Concentration

This concentration is for students interested in advanced mathematics, including those who intend to pursue graduate study in mathematics or statistics and those who want to be exceptionally well qualified for high-level employment in government or industry.

Code	Title	Credits
MAT 2010	Calculus I	4
MAT 2020	Calculus II	4
MAT 2030	Calculus III	4
Select one of the following two options (MAT 2350 is preferred, if available, and it is 3 credits rather than 4):		3-4
MAT 2350	Elementary Differential Equations	
MAT 2150	Differential Equations and Matrix Algebra	
MAT 2250	Elementary Linear Algebra	3
MAT 5070	Elementary Analysis	4
MAT 5420 & MAT 5993	Algebra I and Writing Intensive Course in Mathematics	4
MAT 5600	Introduction to Analysis I	4
MAT 5700	Introduction to Probability Theory	4
Select one of the following two options:		3-4
MAT 5430	Algebra II	
MAT 5610	Introduction to Analysis II	
Select one of the following six options:		3-4
MAT 5230	Complex Variables and Applications	
MAT 5430	Algebra II	
MAT 5520	Introduction to Topology	
MAT 5530	Elementary Differential Geometry and its Applications	
MAT 5610	Introduction to Analysis II	
STA 5800	Introduction to Mathematical Statistics	
Select one of the following four options:		3-4
An MAT or STA course numbered 5030 or above. [1]		
CSC 6500	Theory of Languages and Automata	
CSC 6620	Matrix Computation I	
CSC 6991	Topics in Computer Science (The topic must be approved by the Math Department Undergraduate Committee.)	
ECO 5270	Games of Strategy	
Total Credits		**43-47**

[1] Excluding MAT 5120, MAT 5180, MAT 5190, MAT 5992, MAT 6130, MAT 6150, MAT 6200, and MAT 6210. Only one (at most) of the courses may be selected from MAT 5890 or MAT 5990. These electives are subject to advisor approval on the Student's Plan of Work.

General Topics Concentration

This concentration is for students interested in a broad range of topics.

Code	Title	Credits
MAT 2010	Calculus I	4
MAT 2020	Calculus II	4
MAT 2030	Calculus III	4
Select one of the following two options (MAT 2350 is preferred if available, and it is 3 credits rather than 4):		3-4
MAT 2350	Elementary Differential Equations	
MAT 2150	Differential Equations and Matrix Algebra	
MAT 2250	Elementary Linear Algebra	3
MAT 5070	Elementary Analysis	4
MAT 5700	Introduction to Probability Theory	4
MAT 5420 & MAT 5993	Algebra I and Writing Intensive Course in Mathematics	4
Two MAT or STA courses numbered 5030 or above. [1]		6-8
One additional MAT or STA course numbered 5030 or above, or one of the CSC courses listed below: [1]		3-4
CSC 6500	Theory of Languages and Automata	
CSC 6580	Design and Analysis of Algorithms	
CSC 6620	Matrix Computation I	
CSC 6991	Topics in Computer Science (The topic must be approved by the Math Department Undergraduate Committee.)	
ECO 5270	Games of Strategy	
Total Credits		**39-43**

[1] Excluding MAT 5120, MAT 5180, MAT 5190, MAT 5992, MAT 6130, MAT 6150, MAT 6200, and MAT 6210. Only one MAT 5890 and only one MAT 5990 may be selected.

Computer Science Concentration

Mathematics and computer science are so closely related that a great many students who major in mathematics pursue careers or graduate study in computer science. A mathematics degree, being more than just welcome in the field, is highly regarded. For students who would like to complete a double degree in mathematics and computer science or a major in mathematics with a minor in computer science, the Department offers a specially designed program. ***This concentration is available only to students who complete a second degree or a minor in computer science prior to graduation.*** Within this concentration, students can take certain courses that satisfy both mathematics and computer science major requirements simultaneously. See the Mathematics Department undergraduate advisor for additional information on how this course can fit into this major/minor or double degree combination. Students should also consult the Computer Science Department concerning the requirements for the second degree or minor.

Code	Title	Credits
MAT 2010	Calculus I	4
MAT 2020	Calculus II	4
MAT 2030	Calculus III	4
MAT 2250	Elementary Linear Algebra	3
Select one of the following (If pursuing a second degree in Computer Science, choose only from MAT 5700 or BE 2100):		3-4
MAT 5700	Introduction to Probability Theory	
STA 2210	Probability and Statistics	
BE 2100	Basic Engineering III: Probability and Statistics in Engineering	
ECO 5100	Introductory Statistics and Econometrics	
PH 3200	Introduction to Biostatistics	
TIS 3400	Quantitative Methods II: Statistical Methods	
MAT 2860	Discrete Mathematics	3
MAT 5070	Elementary Analysis	4
MAT 5100	Numerical Methods I [2]	3
MAT 5420 & MAT 5993	Algebra I and Writing Intensive Course in Mathematics	4
One MAT or STA course numbered 5030 or above. [1]		3-4
One additional MAT or STA course numbered 5030, or above one of the following five options: [1]		3-4
CSC 5870	Computer Graphics I	
CSC 6500	Theory of Languages and Automata	
CSC 6620	Matrix Computation I	
CSC 6991	Topics in Computer Science (Topic must be approved by the Math Department Undergraduate Committee.)	
ECO 5270	Games of Strategy	
Total Credits		**38-41**

[1] Excluding MAT 5120, MAT 5180, MAT 5190, MAT 5992, MAT 6130, MAT 6150, MAT 6200, and MAT 6210. Only one (at most) of the courses may be selected from MAT 5890 or MAT 5990. These electives are subject to advisor approval on the Student's Plan of Work.

[2] This course can also count as an elective for the minor or major in computer science.