NYU | COURANT

B.S. Mathematics Major Curriculum
(Starting with the Fall 2019 Cohort), 126 Credits
http://engineering.nyu.edu/academics/programs/mathematics-bs/curriculum

Name:

Core Mathematics Requirements: 48 Credits	Credits	Grade	Notes/Substitute
MA-UY 1024 Calculus I for Engineers **or** MA-UY 1324 Integrated Calculus I for Engineers	4		
MA-UY 1124 Calculus II for Engineers **or** MA-UY 1424 Integrated Calculus II for Engineers	4		
MA-UY 2114 Calculus III: Multi-Dimensional Calculus	4		
MA-UY 3034 Applied Linear Algebra **or** MA-UY 3044 Linear Algebra **or** MA-UY 3054 Honors Linear Algebra	4		
MA-UY 3014 Probability	4		
MA-UY 4114 Applied Statistics	4		
MA-UY 4204 Ordinary Differential Equations **or** MA-UY 4214 Applied Ordinary Differential Equations	4		
MA-UY 4414 Applied Partial Differential Equations	4		
MA-UY 4424 Numerical Analysis	4		
MA-UY 4434 Applied Complex Variables	4		
MA-UY 4444 Mathematical Modeling	4		
MA-UY 4614 Applied Analysis	4		
Other Required Courses: 27 Credits			
CM-UY 1004 General Chemistry for Engineers	4		
CS-UY 1114 Introduction to Programming & Problem Solving	4		
EXPOS-UA 1 Writing the Essay **or** EXPOS-UA 4	4		
EXPOS-UA 2 The Advanced College Essay **or** EXPOS-UA 9	4		
PH-UY 1013 Mechanics	3		
PH-UY 2023 Electricity, Magnetism and Fluids	3		
PH-UY 2121 General Physics Laboratory I	1		
PH-UY 2033 Waves, Optics and Thermodynamics	3		
PH-UY 2131 General Physics Laboratory II	1		
Math Electives: 8 Credits *(Students should select two math elective courses with advisor approval)*			
MA-UY			
MA-UY			
Required Engineering Components: 15 credits *(Students should select five engineering courses totaling at least 15 credits in Engineering Components.)*			
Humanities/Social Science Electives: 16 Credits *			
Free Electives: 12 credits *(with advisor's approval)*			

**** Humanities and Social Sciences Elective Requirement (4 courses, 16 credits)**

Students may choose 4 courses from any humanities and social sciences cluster. These 4 electives can be within a single cluster or across multiple clusters. The department encourages students to take humanities and social sciences electives across clusters and/or across disciplines within a cluster. These 4 humanities and social sciences electives must satisfy the following constraints:

a. **At least one course must be a 3xxx/4xxx level humanities and social science elective.**

b. **At least one course must be a writing-intensive humanities and social science elective, labeled by "W."**

Humanities and Social Sciences Electives List: http://bulletin.engineering.nyu.edu/preview_program.php?catoid=11&poid=3480

*Required Engineering Components: 15 credits

Students should select five engineering courses totaling at least 15 credits in Engineering Components. The Engineering Component of the B.S. in Mathematics Program must be in at least one of the following disciplines:

  - Chemical and Biomolecular Engineering
  - Civil Engineering
  - Computer Engineering
  - Computer Science
  - Electrical Engineering
  - Mechanical Engineering
  - Robotics

Interdisciplinary components involving two or more of the fields above will be considered. The courses comprising a math major's engineering component must be approved in advance by an official Mathematics Department advisor.

Sample Engineering Components:

Chemical & Biomolecular Engineering	Credits
CBE-UY 1002 Introduction to Chemical and Biomolecular Engineering	2
CBE-UY 2124 Analysis of Chemical and Biomolecular Processes	4
CBE-UY 3153 Chemical and Biomolecular Engineering Thermodynamics	3
CBE-UY 3313 Transport I	3
CBE-UY 3323 Transport II	3

Civil Engineering	
CE-UY 2133 Engineering Mechanics	3
CE-UY 2123 Mechanics of Materials	3
CE-UY 2213 Fluid Mechanics and Hydraulics	3
CE-UY 3122 Structural Dynamics	2
CE-UY 3133 Structural Analysis	3
CE-UY 2343 Transportation Engineering	3

Computer Engineering	
ECE-UY 2013 Fundamentals of Electric Circuits I	3
ECE-UY 2024 Fundamentals of Electric Circuits II	4
CS-UY 2204 Digital Logic and State Machine Design	4
ECE-UY 4144 Introduction to Embedded Systems Design	4

Computer Science	
CS-UY 1134 Data Structures and Algorithms	4
CS-UY 2124 Object Oriented Programming	4
CS-UY 2413 Design and Analysis of Algorithms	3
CS-UY 2xxx or Upper Level Elective	4

Electrical Engineering	
ECE-UY 2013 Fundamentals of Electric Circuits I	3
ECE-UY 2024 Fundamentals of Electric Circuits II	4
ECE-UY 3054 Signals and Systems	4
ECE-UY 3114 Fundamentals of Electronics I	4
ECE-UY 3124 Fundamentals of Electronics II	4

Mechanical Engineering	
ME-UY 2813 Introduction to Materials Science	3
ME-UY 2811 Materials Science Laboratory	1
ME-UY 2213 Statics	3
ME-UY 2211 Statics Laboratory	1
ME-UY 3333 Thermodynamics	3
ME-UY 3213 Mechanics of Materials	3
ME-UY 3313 Fluid Mechanics	3

Robotics	
ROB-UY 2004 Robotic Manipulation and Locomotion	4
ROB-UY 3203 Robot Vision	3
ROB-UY 3303 Robot Motion and Planning	3
ROB-UY 3404 Haptics and Telerobotics in Medicine	4
Engineering elective (with advisor approval)	1-4