

M.S. in Bioinformatics

Degree Requirements

A minimum of 30 credits is required for the degree, excluding bridge courses. The graduate curriculum consists of five core courses and additional elective courses, with an optional thesis (six credits) or research project (three credits).

Students with non-computing STEM background may be accepted and required to take the following bridge courses (CS 506 may count toward the credits required for the MS degree):

Code	Title	Credits
Bridge Courses		
CS 280	Programming Language Concepts	3
CS 332	Principles of Operating Systems	3
CS 505	Programming, Data Structures, and Algorithms	3
CS 506	Foundations of Computer Science	3
Total Credits		12

Curriculum

Code	Title	Credits
Core Courses		
CS 636	Data Analytics with R Program	3
MATH 663	Introduction to Biostatistics	3
Select at least three from the following		at least 9 credits

Core Electives

CS 644	Introduction to Big Data
CS 675	Machine Learning
MATH 615	Approaches to Quantitative Analysis in the Life Sciences
MATH 678	Stat Methods in Data Science
MATH 680	Advanced Statistical Learning
BIOL 605	Prin of Bioscience Processing
BIOL 630	Critical Thinking for the Life Sciences
R120 512	Cell Biology: Methods & Appl
R120 515	Molecular Bio Of Eukaryotes
R120 524	Cell Molec Dev

Select remaining courses from the following:

NJIT Electives

BME 661	Neural Engineering
BME 671	Biomechanics of Human Structure and Motion
CHEM 658	Advanced Physical Chemistry
CHEM 673	Biochemistry
CS 631	Data Management System Design
CS 632	Advanced Database System Design
CS 659	Image Processing and Analysis
CS 634	Data Mining
CS 670	Artificial Intelligence
CS 677	Deep Learning
CS 681	Computer Vision
CS 731	Applications of Database Systems
CS 732	Advanced Machine Learning
CS 782	Pattern Recognition and Applications

IS 634	Information Retrieval
ECE 640	Digital Signal and Data Processing
ECE 673	Random Signal Analysis
MATH 635	Analytical Computational Neuroscience
MATH 636	Systems Computational Neuroscience
MATH 637	Foundations of Mathematical Biology
MATH 644	Regression Analysis Methods
MATH 654	Clinical Trials Design and Analysis
MATH 659	Survival Analysis
MATH 662	Probability Distributions
MATH 665	Statistical Inference
YWCC 691	Graduate Capstone Project (Counting towards the elective credits requires the program director's prior approval. In addition, it needs to be completed with an external partner (industry, lab, or government), or with a faculty only if the same faculty is not the student's MS project or MS thesis advisor.)
Rutgers-Newark Electives	
R120 512	Cell Biology: Methods & Appl
R120 515	Molecular Bio Of Eukaryotes
R120 516	Microbial Ecology
R120 526	Topics in Cell Biology
R120 548	Biology Of Cancer
R120 573	Pharmacology
RBHS Electives	
UMD 5002	
UMD 5200	

Total Credits
12