

MSCS DEGREE REQUIREMENTS (36 credits with concentration) *last revised (12/20/2024)*

First Name: _____ Last Name: _____ N number: _____ NYU Email: _____

Required: 36 credits with concentration in Artificial Intelligence OR Systems/Security (**effective Fall 2024**)

- **21** credits – Standard graduate CS classroom-based courses

Course _____ Semester _____ Grade _____ Credits: _____
Course _____ Semester _____ Grade _____ Credits: _____

- **6** credits – related electives from CS, Math and Data Science classroom-based courses (3 or 6 credits)

Course _____ Semester _____ Grade _____ Credits: _____
Course _____ Semester _____ Grade _____ Credits: _____

- Remaining **9** credits in any of above or outside electives (9 credits); two maximum internships (6 credits max); transfer credits (9 credits max) - see page 2 for the course list; MS Thesis does not fulfill the Capstone requirement

Course _____ Semester _____ Grade _____ Credits: _____
Course _____ Semester _____ Grade _____ Credits: _____
Course _____ Semester _____ Grade _____ Credits: _____

Requirement A: A student must take the three foundational courses and maintain a GPA of 2.667 or higher in the courses:

CSCI-GA 1170-001 Fundamental Algorithms Semester _____ Grade _____ Credits: _____ Notes _____
CSCI-GA 2110-001 Programming Languages Semester _____ Grade _____ Credits: _____ Notes _____
CSCI-GA 2250-001 Operating Systems Semester _____ Grade _____ Credits: _____ Notes _____

Requirement B: 9 credits are for concentration of study with Capstone either in Artificial Intelligence OR Systems and Security (see page 2 for the course list). A student must complete ONE concentration study (Artificial Intelligence OR Systems/Security). For AI concentration, students are required to take either CSCI-GA 2560 Artificial Intelligence OR CSCI-GA 2565 Machine Learning.

Course _____ Semester _____ Grade _____ Credits: _____
Course _____ Semester _____ Grade _____ Credits: _____
Course _____ Semester _____ Grade _____ Credits: _____

Requirement C: 3 credits A student must complete a concentration Capstone course with the grade of B (3.0) or better (see page 2 for the course list)

Course _____ Semester _____ Grade _____ Credits: _____

Artificial Intelligence

- ❖ Advanced Computer Vision
- ❖ Advanced Machine Learning
- ❖ Advanced Topics in Natural Language Processing
- ❖ Artificial Intelligence
- ❖ Bayesian Machine Learning
- ❖ Big Data and ML Systems
- ❖ Big Data Science
- ❖ Big Data: Large Scale Machine Learning
- ❖ Cloud and Machine Learning
- ❖ Computer Vision
- ❖ Computer Vision for Science and Engineering
- ❖ Conceptual Gaps in Modern Machine Learning
- ❖ Data Analytics and Visualization in Healthcare
- ❖ Data Mining
- ❖ Data Science for Health
- ❖ Deep Generative Models
- ❖ Deep Learning
- ❖ Deep Decision Making & Reinforcement Learning
- ❖ Efficient AI and Hardware Accelerator Design
- ❖ Embodied Learning and Vision
- ❖ Emerging Topics in Natural Language Processing
- ❖ Fair and Ethical Machine Learning for Social Good
- ❖ Foundations of Deep Learning Theory

- ❖ Foundations of Machine Learning
- ❖ Heuristic Problem Solving
- ❖ High Performance Computing for Machine Learning
- ❖ High Performance Machine Learning
- ❖ Integrating Machine Learning to Computer Vision
- ❖ Introduction to Data Science
- ❖ Introduction to Deep Learning Systems
- ❖ Introduction to Machine Learning
- ❖ Learning with Large Language and Vision Models
- ❖ Logic in Computer Science
- ❖ Machine Learning
- ❖ Machine Learning for Healthcare
- ❖ Mathematics of Deep Learning
- ❖ Natural Language Processing
- ❖ Predictive Analytics
- ❖ Probabilistic Graphical Models
- ❖ Protein Design
- ❖ Responsible Data Science
- ❖ Robot Motion Planning
- ❖ Social Multiplayer Games
- ❖ Statistical Natural Language Processing
- ❖ Vision Meets Machine Learning
- ❖ Web Search Engines

Artificial Intelligence (Capstone)

- ❖ Big Data and ML Systems
- ❖ Cloud and Machine Learning
- ❖ Deep Decision Making & Reinforcement Learning
- ❖ Deep Learning
- ❖ Embodied Learning and Vision

- ❖ Graphics Processing Units (GPUs): Architecture and Programming
- ❖ High Performance Machine Learning
- ❖ Multicore Processors: Architecture & Programming
- ❖ Info Tech Projects (approved on a case-by-case basis; requires DGS approval)

Systems and Security

- ❖ Advanced Database Systems
- ❖ Applied Cryptography and Network Security
- ❖ Big Data Application Development
- ❖ Big Data Realtime & Big Data Analytics
- ❖ Blockchain and Its Applications
- ❖ Cryptocurrencies and Decentralized Ledgers
- ❖ Database Systems
- ❖ Distributed Systems
- ❖ Efficient AI and Hardware Accelerator Design

- ❖ Graphics Processing Units (GPUs): Architecture and Programming
- ❖ High Performance Computing
- ❖ Information and Communication Technology for Developing Countries
- ❖ Interactive Proofs
- ❖ Introduction to Agent-Based Modeling
- ❖ Introduction to Cryptography
- ❖ Programming Parallel Algorithms
- ❖ Recent Developments in Algorithm Design

Systems and Security (Capstone)

- ❖ Advanced Database Systems
- ❖ Big Data and ML Systems
- ❖ Cloud and Machine Learning
- ❖ Cloud Computing
- ❖ Compiler Construction
- ❖ Cryptography of Blockchains
- ❖ Distributed Systems
- ❖ Graphics Processing Units (GPUs): Architecture & Programming

- ❖ High Performance Computing
- ❖ Multicore Processors: Architecture & Programming
- ❖ Networks & Mobile Systems
- ❖ Software Engineering
- ❖ Networks & Mobile Systems
- ❖ Software Engineering
- ❖ Technologies of Finance
- ❖ Virtual Reality