

**MSCS DEGREE REQUIREMENTS FORM (30 CREDITS)** *last revised (06/12/2024)*

First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_ N number: \_\_\_\_\_ NYU Email: \_\_\_\_\_

Required: 30 credits with Capstone course (effective Fall 2024)

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

Course \_\_\_\_\_ Semester \_\_\_\_\_ Grade \_\_\_\_\_ Credits: \_\_\_\_\_

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- **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 **3 credits** - credits transferred from graduate study in CS; external internship; and relevant graduate courses. At most 3 credits of external internship. Relevant graduate courses and external internships require DGS approval.

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:** A student must pass **ONE** of the following four designated application areas (see page 2 for the list of application areas)

Course \_\_\_\_\_ Semester \_\_\_\_\_ Grade \_\_\_\_\_ Credits: \_\_\_\_\_

**Requirement C:** A student must complete a Capstone project course (see page 2 for the list of Capstone courses)

Course \_\_\_\_\_ Semester \_\_\_\_\_ Grade \_\_\_\_\_ Credits: \_\_\_\_\_

## Graphics

- ❖ Advanced Computer Graphics
- ❖ Advanced Computer Vision
- ❖ Computational Geometry
- ❖ Computer Graphics
- ❖ Computer Vision
- ❖ Computer Vision for Science and Engineering
- ❖ Geometric Modeling

## Computation for Science and Society

- ❖ Applied Cryptography and Network Security
- ❖ Bioinformatics and Genomics
- ❖ Blockchain and Its Applications
- ❖ Convex and Nonsmooth Optimization
- ❖ Cryptocurrencies and Decentralized Ledgers
- ❖ Data Analytics and Visualization in Healthcare
- ❖ Data Science for Health
- ❖ Financial Software Projects for Developing Countries
- ❖ High Performance Computing
- ❖ Immersed Boundary Method
- ❖ Information and Communication Technology
- ❖ Introduction to Agent-Based Modeling
- ❖ Introduction to Cryptography
- ❖ Linear Programming
- ❖ Machine Learning for Healthcare
- ❖ Monte Carlo Methods

## 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
- ❖ Conceptual Gaps in Modern Machine Learning
- ❖ Data Analytics and Visualization in Healthcare
- ❖ Data Mining
- ❖ Data Science for Health
- ❖ Deep Generative Models
- ❖ Deep Learning
- ❖ Deep Reinforcement Learning
- ❖ Foundations of Deep Learning Theory
- ❖ Foundations of Machine Learning
- ❖ Heuristic Problem Solving
- ❖ High Performance Computing for Machine Learning

## Databases

- ❖ Advanced Database Systems
- ❖ Big Data
- ❖ Database Systems

## Capstone

- ❖ Advanced Computer Graphics
- ❖ Advanced Database Systems
- ❖ Big Data and ML Systems
- ❖ Cloud and Machine Learning
- ❖ Cloud Computing
- ❖ Compiler Construction
- ❖ Deep Reinforcement Learning
- ❖ Distributed Systems

- ❖ Graphics Processing Units (GPUs): Architecture and Programming
- ❖ Integrating Machine Learning to Computer Vision
- ❖ Introduction to Computer Vision
- ❖ Learning with Large Language and Vision Models
- ❖ Social Multiplayer Games
- ❖ Virtual Reality
- ❖ Vision Meets Machine Learning

- ❖ Music Software Projects
- ❖ Nonlinear Optimization
- ❖ Numerical Methods I
- ❖ Numerical Methods II
- ❖ Numerical Optimization
- ❖ Practical Computer Security
- ❖ Randomized Numerical Linear Algebra
- ❖ Responsible Data Science
- ❖ Scientific Computing
- ❖ Security and Privacy
- ❖ Social Networks
- ❖ Speech Recognition
- ❖ Stochastic modeling and uncertainty quantification in complex systems
- ❖ Technologies for Finance
- ❖ Topics in Digital Media
- ❖ Topics in Numerical Analysis
- ❖ Values Embodied in Information & Communications Technology

- ❖ 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
- ❖ Responsible Data Science
- ❖ Robot Motion Planning
- ❖ Social Multiplayer Games
- ❖ Statistical Natural Language Processing
- ❖ Vision Meets Machine Learning
- ❖ Web Search Engines

- ❖ Distributed Systems
- ❖ Realtime & Big Data Analytics
- ❖ Big Data Application Development

- ❖ Geometric Modeling
- ❖ Graphics Processing Units (GPUs): Architecture & Programming
- ❖ High Performance Computing
- ❖ High Performance Machine Learning
- ❖ Info Tech Projects
- ❖ Multicore Processors: Architecture & Programming
- ❖ Virtual Reality