

# MSCS DEGREE REQUIREMENTS FORM (before Fall 2024) *last revised (12/20/2024)*

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

Required: 36 credits of approved coursework

- **21** credits - standard graduate CS classroom-based courses.

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

- **6** credits - standard graduate CS, Math and Data Science classroom-based courses; independent study; MS thesis (no external internships) Independent study and master's thesis require DGS approval (MS Thesis fulfills the Capstone requirement, see page 2 under Requirement C).

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

- Remaining **9** credits in any of above or: credits transferred from graduate study in CS; external internship; and relevant graduate courses. At most 6 credits of external internship. Relevant graduate courses and external internships require DGS approval.

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 better 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** course in **TWO** of the following four designated application areas

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

**Requirement C:** A student must complete a designated capstone course with the grade of B (3.0) or better (see page 2 for the list). Alternatively, subject to requirements and prior approval of the DGS, a student may complete a master's thesis or a capstone advanced lab.

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
- ❖ High Performance Computing
- ❖ Immersed Boundary Method
- ❖ Information and Communication Technology for Developing Countries
- ❖ Introduction to Agent-Based Modeling
- ❖ Introduction to Cryptography
- ❖ Linear Programming
- ❖ Machine Learning for Healthcare
- ❖ Monte Carlo Methods

## Intelligent Systems

- ❖ Advanced Computer Vision
- ❖ Advanced Machine Learning
- ❖ Advanced Topics in Natural Language Processing
- ❖ Artificial Intelligence
- ❖ Bayesian Machine Learning
- ❖ Big Data: Large Scale Machine Learning
- ❖ Big Data and ML Systems
- ❖ Big Data Science
- ❖ 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
- ❖ Deep Generative Models
- ❖ Deep Decision Making & Reinforcement Learning
- ❖ Deep Learning
- ❖ Efficient AI and Hardware Accelerator Design
- ❖ Embodied Learning and Vision
- ❖ Emerging Topics in Natural Language Processing
- ❖ Foundations of Deep Learning Theory
- ❖ Foundations of 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
- ❖ Cryptography of Blockchains
- ❖ Deep Decision Making & Reinforcement Learning
- ❖ Deep Learning
- ❖ Distributed Systems
- ❖ Embodied Learning and Vision

- ❖ 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
- ❖ Public Interest Technology
- ❖ Randomized Numerical Linear Algebra
- ❖ Responsible Data Science
- ❖ Scientific Computing
- ❖ Security and Privacy
- ❖ Speech Recognition
- ❖ Social Networks
- ❖ 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

- ❖ Heuristic Problem Solving

- ❖ 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

- ❖ Distributed Systems

- ❖ Realtime & Big Data Analytics
- ❖ Big Data Application Development
- ❖ Programming Parallel Algorithms

- ❖ Geometric Modeling

- ❖ Graphics Processing Units (GPUs): Architecture & Programming
- ❖ High Performance Computing
- ❖ High Performance Machine Learning
- ❖ Info Tech Projects
- ❖ Monte Carlo Methods
- ❖ Multicore Processors: Architecture & Programming
- ❖ Networks & Mobile Systems
- ❖ Software Engineering
- ❖ Technologies for Finance
- ❖ Virtual Reality