MSCS DEGREE REQUIREMENTS FORM  last revised (9/18/2020)

First Name:________________ Last Name:________________________ N number:______________________

Required: 36 credits of approved coursework

- **21 credits** - standard graduate CS classroom-based courses.
  
  Course ___________________________ Semester_______ Grade_____ Credits: ___
  
  Course ___________________________ Semester_______ Grade_____ Credits: ___
  
  Course ___________________________ Semester_______ Grade_____ Credits: ___
  
  Course ___________________________ Semester_______ Grade_____ Credits: ___
  
  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.
  
  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: ___
  
  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: ___Placed Out ___
  
  CSCI-GA 2110-001 Programming Languages Semester_______ Grade_____ Credits: ___Placed Out ___
  
  CSCI-GA 2250-001 Operating Systems Semester_______ Grade_____ Credits: ___Placed Out ___

  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: ___
Graphics
❖ Advanced Computer Graphics
❖ Advanced Computer Vision
❖ Computational Geometry
❖ Computer Graphics
❖ Computer Vision

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 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
❖ Data Mining
❖ Data Science for Business Analytics – Technical
❖ Deep Generative Models
❖ Deep Learning
❖ Deep Reinforcement Learning
❖ Foundations of Machine Learning
❖ Heuristic Problem Solving

Databases
❖ Advanced Database Systems
❖ Big Data
❖ Data Science for Business Analytics - Technical

Requirement C: A student must complete a designated capstone course with the grade of B (3.0) or better. 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: ____
❖ Advanced Computer Graphics
❖ Advanced Database Systems
❖ Cloud and Machine Learning
❖ Cloud Computing
❖ Compiler Construction
❖ Distributed Systems
❖ Graphics Processing Units (GPUs): Architecture & Programming
❖ Geometric Modeling
❖ Graphics Processing Units (GPUs): Architecture and Programming
❖ Integrating Machine Learning to Computer Vision
❖ Social Multiplayer Games
❖ Vision Meets Machine Learning
❖ Music Software Projects
❖ Nonlinear Optimization
❖ Numerical Methods I
❖ Numerical Methods II
❖ Numerical Optimization
❖ Practical Computer Security
❖ Responsible Data Science
❖ Scientific Computing
❖ Security and Privacy
❖ Speech Recognition
❖ Social Networks
❖ Stochastic modeling and uncertainty quantification in complex systems
❖ Topics in Digital Media
❖ Topics in Numerical Analysis
❖ Values Embodied in Information & Communications Technology
❖ High Performance Computing for Machine Learning
❖ Integrating Machine Learning to Computer Vision
❖ Introduction to Data Science
❖ Introduction to Deep Learning Systems
❖ Introduction to Machine Learning
❖ 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
❖ Database Systems
❖ Distributed Systems
❖ Realtime & Big Data Analytics
❖ High Performance Machine Learning
❖ Info Tech Projects
❖ Multicore Processors: Architecture & Programming
❖ Networks & Mobile Systems
❖ Search Engine Architecture
❖ Software Engineering
❖ Virtual Machines: Concepts and Applications