

MSCS DEGREE REQUIREMENTS FORM EFFECTIVE FALL 2009 *last revised (01/26/2015)*

Name: _____ ID #: _____

Requirement A: 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: _____

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: _____

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 B: A student must take the three foundational courses and maintain a rolling GPA of 2.7 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 C: 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
- * Computational Photography
- * Computer Games
- * Computer Graphics
- * Computer Vision
- * Computer Vision and Tracking
- * Experiments in Motion Capture
- * Geometric Modeling
- * Graphics Processing Units (GPUs): Architecture & Programming
- * Interactive Shape Modeling
- * Motion Capture for Gaming & Urban Sensing
- * Multimedia
- * Social Multiplayer Games
- * Special Topics in Computer Animation
- * User Interfaces
- * Visualization

Computation for Science and Society

- * Advanced Cryptography
- * Advanced Topics in Numerical Analysis:
Convex & Nonsmooth Optimization
- * Advanced Topics: Data Science
- * Advanced Cryptography
- * Algorithmic & Economic Aspects of Internet
- * Applied Cryptography & Network Security
- * Bioinformatics
- * Bioinformatics and Genomics
- * Computational Biology
- * Computational Fluids
- * Computational Fluid Dynamics
- * Computational PDEs
- * Computational Systems Biology
- * Financial Computing
- * Financial Computing Projects
- * Financial Software Projects
- * High Performance Scientific Computing
- * Immersed Boundary Method
- * Information & Communication
Technology for Developing Countries

- * Introduction to Cryptography
- * Linear Programming
- * Monte Carlo Methods
- * Music Software Projects
- * Numerical Methods I
- * Numerical Methods II
- * Numerical Methods for Time-Dependant PDEs
- * Numerical Optimization
- * Scientific Computing
- * Speech Recognition
- * Social Networks
- * Topics in Numerical Analysis
- * Values Embodied in Information
& Communications Technology

Intelligent Systems

- * Advanced Computer Vision
- * Advanced Topics in Natural Language Processing
- * Artificial Intelligence
- * Big Data: Large Scale Machine Learning
- * Computer Vision
- * Data Mining
- * Data Warehousing and Mining
- * Deductive Verification of Reactive Systems
- * Deep Learning
- * Formal Methods
- * Foundations of Machine Learning
- * Heuristic Problem Solving
- * Information Science of Marketing
- * Logic in Computer Science

- * Machine Learning
- * Machine Learning & Computational Statistics
- * Mobile Robots
- * Natural Language Processing
- * Optimization in Machine Learning
- * Programming Semantics, Analysis &
Verification by Abstract Interpretation
- * Robot Motion Planning
- * Robotics
- * Social Multiplayer Games
- * Statistical Natural Language Processing
- * Special Topics in Machine Learning:
Probabilistic Graphical Models
- * Topics in Automated Deduction
- * Web Search Engines

Databases

- * Advanced Database Systems
- * Big Data
- * Data Mining
- * Data Warehousing
- * Database System
- * Distributed Storage Systems
- * Realtime & Big Data Analytics

Requirement D: 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 advance lab.

Course _____ Semester _____ Grade _____ Credits: _____

- * Advanced Computer Graphics
- * Advanced Database Systems
- * Cloud Computing
- * Compiler Construction
- * Distributed Systems
- * Graphics Processing Units
(GPUs): Architecture & Programming
- * Info Tech Projects
- * Multicore Processors: Architecture & Programming
- * Networks & Distributed Systems
- * Search Engine Architecture
- * Software Engineering