MSCS DEGREE REQUIREMENTS FORM last revised (6/19/2018)

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: ___

• 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 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
- Geometric Modeling
- Graphics Processing Units (GPUs): Architecture and Programming
- Integrating Machine Learning to Computer Vision
- Social Multiplayer Games
- Vision Meets Machine Learning

### Computation for Science and Society
- Advanced Topics in Numerical Analysis: Convex and Nonsmooth Optimization
- Applied Cryptography and Network Security
- Bioinformatics and Genomics
- Cryptocurrencies and Decentralized Ledgers
- Data Science for Health
- Financial Software Projects
- Information and Communication Technology for Developing Countries
- Introduction to Agent-Based Modeling
- Introduction to Cryptography
- Linear Programming
- Monte Carlo Methods
- Music Software Projects
- Numerical Methods I
- Numerical Methods II
- Numerical Optimization
- Practical Computer Security
- Scientific Computing
- Security and Privacy
- Speech Recognition
- Social Networks
- Topics in Digital Media
- Topics in Numerical Analysis
- Values Embodied in Information & Communications Technology

### Intelligent Systems
- Advanced Computer Vision
- Advanced Machine Learning
- Advanced Topics in Natural Language Processing
- Artificial Intelligence
- Big Data: Large Scale Machine Learning
- Big Data and ML Systems
- Big Data Science
- Computer Vision
- Data Mining
- Data Mining for Business Analytics – Technical
- Deep Generative Models
- Deep Learning
- Foundations of Machine Learning
- Heuristic Problem Solving
- High Performance Computing for Machine Learning
- Integrating Machine Learning to Computer Vision
- 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
- Robot Motion Planning
- Social Multiplayer Games
- Statistical Natural Language Processing
- Vision Meets Machine Learning
- Web Search Engines

### Databases
- Advanced Database Systems
- Big Data
- Data Mining for Business Analytics - Technical
- Database Systems
- Realtime & Big Data Analytics

### 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.

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester</th>
<th>Grade</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Computer Graphics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Database Systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloud Computing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compiler Construction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distributed Systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graphics Processing Units (GPUs)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Info Tech Projects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multicore Processors: Architecture &amp; Programming</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Networks &amp; Distributed Systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Networks &amp; Mobile Systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Search Engine Architecture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software Engineering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virtual Machines: Concepts and Applications</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>