M.S. in Computer Science (30 credits)
Training Computer Science Professionals

Everything runs on software – from smart phones to autonomous cars to the refrigerator in your kitchen. Today's software-driven society depends on **computing professionals** to both build and maintain that software, developing new features and keeping our data and livelihoods secure. As recent global events have shown, our world can only move as quickly and efficiently as the computer systems that power it.

The M.S. in Computer Science prepares its graduates for all areas of this critical field, whether it's maintaining legacy systems or designing the newest smartphone apps and virtual reality applications. Students develop an understanding of the theories underpinning effective software design, as well as the algorithms that allow our computers to solve some of the most difficult problems in human history. To be admitted to the program, we require a basic background in Mathematics (calculus, linear algebra), Statistics (probability and basic stats) and Software Development (programming, data structures and algorithms). A GRE score is not required. This part-time degree program involves 10 courses of 3 credits each, taught over 5 semesters of 15 weeks each (including summer). Courses consist of formal lectures as well as hands-on programming projects.

The program curriculum uses various programming languages to put key concepts into practice while building *reliable* and *scalable* software systems – participants will be responsible for both making the software work and understanding **how** and **why** it works. Students work on hands-on homework assignments and projects covering both theory and applications on real data with guidance from the professor and teaching assistants.

Recommended part-time credit schedule: Two courses (6 credits) per semester over five consecutive semesters, including Summer. Start is possible in Fall, Spring or Summer semesters.

Core (required) courses:

CS 610	Data Structures and Algorithms
CS 630	Operating System Design
CS 631	Data Management System Design
CS 656	Internet and Higher Layer Protocols

Sample electives:

CS 602	Java Programming
CS 632	Advanced Database System Design
CS 634	Data Mining
CS 636	Data Analytics with R Programming
CS 643	Cloud Computing
CS 644	Introduction to Big Data
CS 670	Artificial Intelligence
CS 673	Software Design and Production Methodology
CS 675	Machine Learning
CS 677	Deep Learning
CS 684	Software Testing and Quality Assurance
CS 696	Network Management and Security

Prerequisites and Admissions:
To be eligible for admission, a student must have a B.S. degree with a minimum GPA of 2.8 on a 4.0 scale and have the following background (typically obtained through a BS in a STEM field):

- Calculus: Derivatives, integrals, applications
- Linear Algebra: Vector spaces, dot products, matrices, linear systems

- Probability and Statistics: Random variables, probability distributions, basic statistics
- Programming: Basic object-oriented programming constructs, writing and debugging programs, iteration, recursion, structures and arrays
- Data Structures and Algorithms: Basic data structures, search and sort, algorithm analysis

Applicants lacking this background may enroll in the Certificate in Computer Science to acquire it and then continue to the MS program while transferring all credits.

A GRE score is not required.

Program Outcomes:
- Comfortably assess the run-time efficiency of a given computer algorithm and identify common logic errors in software design, while designing new data structures and algorithms for new use cases.
- Acquire full-stack software development skills to build reliable and scalable software systems for real-world applications in a variety of environments on a variety of devices.
- Build a robust and secure database system – from design to implementation – for a wide range of purposes.
- Construct networked applications that can quickly and safely transmit and process data, taking advantage of parallel and cloud computing.
- Develop a specialized skillset in one of several high-demand areas of computing, including data science, cyber security, and software engineering.

Tuition + fees for ALL non-F1 students (independent of residency and visa status) at 2020-21 rates, assuming two courses per consecutive semester:

Fall semester: $6,522. Spring semester: $6,522. Summer semester: $5,577.

Total tuition + fees for degree: Fall start: $31,665. Spring start: $30,720. Summer start: $30,720.

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