

School	School of Arts & Science
Major	Master of Computer Science

Core Requirements			
Code	Title	Credits	Description
CSCI510	Design and Analysis of Algorithm	3	This course introduces theoretical techniques to support the design and analysis of algorithms. Students learn how to develop efficient algorithms for simple computational tasks and reasoning about the correctness of them. Topics include introduction to algorithm, asymptotic complexity, sorting and searching, divide and conquer, greedy graph algorithms, dynamic programming.
CSCI511	Distributed Operating Systems	3	This course provides an in-depth examination of the principles of distributed systems in general, and distributed operating systems in particular. Covered topics include processes and threads, concurrent programming, distributed inter-process communication, distributed process scheduling, virtualization, distributed file systems, distributed middleware and applications such as the web and peer-to-peer systems. Some coverage of operating system principles for multiprocessors will also be included. A brief overview of advanced topics such as cloud and cluster computing.
CSCI512	Information Retrieval	3	The course introduces students to the concepts of Information Retrieval and Search Engines. It covers indexing and creating an inverted file in Boolean and Vector models. Students will build a pilot search engine and test it on five datasets: Medline, composed of 1033 documents; CRAN, composed of 1400 documents, CISI, composed of 1460 documents, LISA, composed of 5872 documents; and NPL, composed of 11429 documents. Search Engines are evaluated using two well-known measures: Precision and Recall. Additional techniques are introduced to improve the performance of search engines, such as relevance feedback and dimensionality reduction in latent semantic indexing.
CSCI513	Advanced Database Systems	3	This course presents advanced concepts in database systems. We present a quick overview of relational DBMS including the relational model, relational algebra and relational calculus. Then, we will discuss fundamental notions of distributed database design (global directory, query processing) in large scale environment (e.g. Grid and Peer-to-Peer). We will focus on the very hot problem of query optimization by discussing the current approaches in this field. Finally, we will be introducing the strategies of data replication using SQL server.

CSCI514	Advanced Computer Networks	3	<p>This course helps students develop the skills needed for advanced networks career opportunities and an entry-level preparation for relevant research work. It provides theoretically rich, hands-on practices to advanced computer networks, in a logical sequence in presenting the underlying concepts used in nowadays large-scale networks and at the providers' level, altogether with practical skills driven by Cisco technology and basic research skills.</p>
CSCI515	Computer Ethics	3	<p>To teach students about social, legal, philosophical, political, constitutional, and economical issues related to computers and to prepare students for careers in computer science and other fields who are interested in issues that arise from computer technology. The course focuses on ethical issues that student might face directly as a computer professional, in addition to social, political, and legal issues related to computers. Students are required to prepare a term paper as a project, oral presentations and will participate in debates.</p>

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CSCI598	Project	3	<p>The aim of the course is for the student to develop in-depth knowledge and skills regarding development work within the main area of computer science. This course consists of doing an individual investigation into a topic of interest in a basic or applied computer science area with the goal of producing original results.</p> <p>This course requires an independent development, and documentation of substantial software, or computer-based system, employing recent or significant technologies and/or tools.</p>