

COMPUTER SCIENCE, DOCTORAL (CS)

CS 801 Advanced Algorithms (4 credits)

Advanced topics in data structures and computational complexity, including randomized algorithms, dynamic programming, recurrence relations, amortized analysis, network flow algorithms, and approximation algorithms and NP-completeness will be discussed. This course covers both fundamental techniques and applications. Instructor approval required to register.

Course Rotation: Spring

Prerequisites: CS 608 with minimum grade of A.

CS 802 Research Seminar (2 credits)

Research seminar by domain experts, and student presentations on research papers. Restrictions/Requirements: Computer Science PhD candidacy.

Course Rotation: Fall.

Prerequisites: This course does not have a prerequisite.

CS 804 Independent Research (1-4 credits)

The student will work closely with the advisor to conduct literature survey, identify a research problem with solution methodologies, and create a clear research plan for the dissertation.

Course Rotation: Fall and Spring.

Prerequisites: This course does not have a prerequisite.

CS 806 Dissertation Preparation (4 credits)

The student will work closely with the advisor to develop the dissertation research proposal for defense.

Course Rotation: Fall and Spring

Prerequisites: This course does not have a prerequisite.

CS 816 Introduction to Big Data Analytics (4 credits)

Overview of Big Data technologies, applications, and market trend. Fundamental Big Data storage and processing platforms, such as Hadoop, and IBM System G for Linked Big Data. Big Data upload, storage, distribution, and process with HDFS, HBase, KV stores, document database, and graph database. Important analytics and visualization algorithms on different platforms. Large-scale machine learning methods that are foundations for artificial intelligence and cognitive networks. Instructor approval required to register.

Course Rotation: : PLV; Fall

Prerequisites: This course does not have a prerequisite.

CS 823 Advanced Database Management Systems (4 credits)

Advanced theory and applications of databases, including the relational calculus, functional dependence, query optimization, schema normalization and concurrent databases. Instructor approval required to register.

Course Rotation: Fall; NY and PLV

Prerequisites: CS 623 with minimum grade of A.

CS 827 Advanced Artificial Intelligence (4 credits)

Prerequisites: CS 627 with minimum grade of A.

CS 837 Quantum Computing (4 credits)

This will be a Pace University leading edge computing course for Computer Science PhD advance masters students. This quantum computing course will demonstrate that Seidenberg School is providing a leading-edge computing technology education to its students, thus making Pace University competitive with major universities in the greater NYC area. Instructor approval required to register.

Course Rotation: NYC & PLV: Spring [2018].

Prerequisites: This course does not have a prerequisite.

CS 840 Advanced Computer Vision (4 credits)

This course covers advanced research topics in computer vision. Building on the introductory materials covered in the Computer Vision prereq class, this class will prepare graduate students in both the theoretical foundations of computer vision as well as the practical approaches to building real Computer Vision systems. This course investigates current research topics in computer vision with an emphasis on recognition tasks and deep learning. Topics include optical flow, object tracking, object recognition, bag-of-features representation, deep neural networks, etc. We will examine data sources, features, and learning algorithms useful for understanding and manipulating visual data. Instructor approval required to register.

Course Rotation: Fall; NY and PLV

Prerequisites: CS 671 with minimum grade of A.

CS 855 Pattern Recognition and Machine Learning (4 credits)

This course focuses on the fundamental concepts, theories, and algorithms for pattern recognition and machine learning. Diverse application areas such as optical character recognition, speech recognition, and biometrics are discussed. Topics covered include supervised and unsupervised (clustering) pattern classification algorithms, parametric and non-parametric supervised learning techniques, including Bayesian decision theory, neural networks, support vector machines, nearest neighbor, and genetic algorithms. Instructor approval required to register.

Course Rotation: Fall

Prerequisites: CS 655 or CS 677 with minimum grade of A.