Course Schedule for Fall 2023, Spring 2024, and Summer 2024

Fall 2023

CIS 6735 Cryptocurrencies and Blockchain Technologies (3 credits)
August 19th – September 15th
On-campus lecture days: Saturday August 19th & September 2nd
The course introduces technical aspects of blockchains, public distributed ledgers, and cryptocurrency systems. Students will also learn the concepts and tools for developing distributed and secure applications with public distributed ledgers.

CAP 6635 Artificial Intelligence (3 credits)

September 16th – October 13th
On-campus lecture days: Saturday September 16th & September 30th
This course introduces core concepts, techniques, and applications of artificial intelligence (AI). Course subjects include intelligent agents, problem solving by search, search strategies, game playing, knowledge representation and reasoning, learning from examples, and deep learning. The class also discusses ethical and societal implications of the increasing use of AI.

CAP 6731 Theory and Implementation of Database Systems (3 credits)
October 14th – November 10th
On-campus lecture days: Saturday October 14th & October 28th
This class provides in-depth coverage of data models, query languages, and database management systems. Topics include fundamental concepts of database systems, SQL, relational algebra, database design (e.g., conceptual, logical, and physical data models), query optimization, transaction processing, and new trends (e.g., data warehousing & OLAP, data mining). Oracle database will be used to understand technical components in database systems.

CAP 6619 Deep Learning (3 credits)
November 11th- December 13th
On-campus lecture days: Saturday November 11th, & December 2
This course teaches students basic concepts of deep learning with applications in computer science, engineering, business, and healthcare. The class covers major topics including machine learning basics, deep forward networks, convolutional neural networks (CNN), and recurrent neural networks (RNN). The class will also cover implementations and applications of differentdeep learning models.

Spring 2024

CAP 6629 Reinforcement Learning (3 credits)
January 6th- February 2nd
On-campus lecture days: Saturday, January 6th, & January 20th
This class provides theoretical properties and practical applications of reinforcement learning. Course topics include Markov decision process, dynamic programming, temporal-difference learning, planning, and learning with tabular methods, and deep reinforcement learning.

COT 6405 Analysis of Algorithms (3 credits)
February 3rd- March 2nd
On-campus lecture days: Saturday February 3rd, & February 17th
In this class the students will learn the foundations of algorithm design and analysis. The class will start with a brief overview of theoretical running time analysis using asymptotic notations and strategies for solving recurrences. The class will continue with the study of several algorithmic techniques: divide-and-conquer, network flow, greedy, dynamic programming, linear programming, approximation algorithms, and NP-completeness.

CAP 5768 Introduction to Data Science (3 credits)
March 9th- May 1
On-campus lecture days: Saturday March 9th, Saturday March 23rd, April 6th, April 20th
 This course provides a comprehensive introduction to the tools and analysis workflows employed by data scientists that include data wrangling, visualization, exploration, and modeling. Specific topics include an overview of the field of data science and analytics, data visualization, exploratory data analysis, data transformation, parameter estimation, hypothesis testing, linear regression analysis, logistic regression classification, model selection, feature selection, dimensionality reduction, and clustering. The practical application of these techniques to real data, as well as the interpretation and presentation of analysis results will be emphasized throughout the course.

CAP 6673 Data Mining & Machine Learning (3 credits)
March 9th- May 1
On-campus lecture days: Saturday March 9th, Saturday March 23rd, April 6th, April 20th
Course deals with the principles of data mining and machine learning. Topics to be covered include machine learning methods, knowledge discovery and representation, classification, and prediction models. This course will enable students to understand basic concepts of data mining and machine learning algorithms with an emphasis on real word applications.

Summer 2024
CDA 6316 Embedded System Design (3 credits)
May 11th- June 7th
On-campus lecture days: Saturday May 11th & Saturday May 25th
A software and hardware integration course, from design concepts to practical implementation covering both analog and digital signal conditioning and interface. The course projects include the design and interface of various sensors such as temperature, humidity, pressure, flow, accelerometers, compasses, Gyros, GPS. On the output side, you will explore with LEDs arrays, servos, step motors, solid-state relays, etc. This hands-on course is project-based, and each student builds his own. We will give you a starter kit including an MSP430 Launchpad platform. You are welcome to use your own, such as Raspberry Pie or higher end.