

CAP: Computer Applications (For Computer Scientists) Courses

Courses

CAP 4053 AI Programming for Intelligent Environments

3 sh (may not be repeated for credit)

Prerequisite: COP 3530

Introduction to the use of AI methods and programming for the development of intelligent systems, including game AI systems, robotic applications, and educational environments. Students will identify an appropriate AI project topic of interest to them, and work individually or as teams to design, develop, and evaluate an AI system for that topic.

CAP 4136 Malware Analysis

3 sh (may not be repeated for credit)

Prerequisite: CDA 3101C

This course covers software reverse engineering of executable code (or malware) to determine its function and affects or to recover the source code implementation.

CAP 4138 Reverse Software Engineering - Malware Analysis

3 sh (may not be repeated for credit)

Prerequisite: CDA 3101C

This course covers software reverse engineering of executable code (or malware) to determine its function and affects or to recover the source code implementation.

CAP 4601 Artificial Intelligence

3 sh (may not be repeated for credit)

Prerequisite: COP 3411 OR COP 3530

Introduction to Artificial Intelligence principles and techniques. Students will learn about core AI techniques for solving complex problems, including search strategies, knowledge-based techniques, and agent-based systems. Overview of AI topics such as intelligent agents, machine learning, as well as AI applications.

CAP 4710 Computer Graphics and Simulation

3 sh (may not be repeated for credit)

Prerequisite: MAC 2312 AND MAS 3105

This course provides foundational concepts in computer graphics and simulations that enable students to develop new interactive 2D and 3D computer visualizations. Students will be able to develop and evaluate their programs in state of the art computing and virtual reality labs at the School of Science & Engineering.

CAP 4770 Data Mining

3 sh (may not be repeated for credit)

Prerequisite: COP 4710

Exposes students to data mining concepts and techniques and different data mining software. Covers data pre-processing and cleaning, concept hierarchy generation, attribute relevance analysis, association rule mining, classification algorithms, and cluster analysis. Offered concurrently with CAP 5771; graduate students will be assigned additional work.

CAP 4786 Big Data Analytics

3 sh (may not be repeated for credit)

Prerequisite: ((CAP 4710 AND STA 4321)) AND (COP 3530 OR COP 3022)

This course introduces students to the handling of Big Data on Hadoop's MapReduce environment. Advanced Data Mining/Machine learning applications created using Spark.

CAP 4905 Directed Study

1-12 sh (may be repeated indefinitely for credit)

CAP 5600 Introduction to Artificial Intelligence

3 sh (may not be repeated for credit)

Introduction to basic Artificial Intelligence theories and methods for solving complex and difficult problems using computers; goal-oriented procedures, search problems, knowledge representation and machine learning. Topics will include intelligent systems such as expert systems, intelligent agents and robots. Will be conducted within a cognitive science framework.

CAP 5701 Computer Graphics and Simulation

3 sh (may not be repeated for credit)

Prerequisite: COP 3530 AND MAC 2312 AND MAS 3105

This course provides foundational concepts in computer graphics and simulations that enable students to develop new interactive 2D and 3D computer visualizations. Students will be able to develop and evaluate their programs in state of the art computing and virtual reality labs at the School of Science & Engineering.

CAP 5771 Data Mining

3 sh (may not be repeated for credit)

Prerequisite: COP 5725

Exposes students to data mining concepts and techniques and different data mining software. Covers data pre-processing and cleaning, concept hierarchy generation, attribute relevance analysis, association rule mining, classification algorithms, and cluster analysis. Offered concurrently with CAP4770.

CAP 5905 Directed Study

1-12 sh (may be repeated indefinitely for credit)

CAP 6772 Data Warehousing

3 sh (may not be repeated for credit)

Prerequisite: COP 5725

The primary focus of this course is on Data Warehousing and its applications to business intelligence. Some areas of concentration are: requirements gathering for data warehousing; data warehouse architecture; dimensional model design for data warehousing; physical database design for data warehousing; extracting, transforming, and loading strategies; introduction to business intelligence; design and development of business intelligence applications; expansion and support of a data warehouse. Prerequisites: COP5725, minimum grade of C.

CAP 6777 Web Data Mining

3 sh (may not be repeated for credit)

Prerequisite: CAP 5771 AND COP 5725

The primary focus of this course is on Web usage mining and its applications to e-commerce and business intelligence. We will consider techniques from machine learning, data mining, text mining, and databases to extract useful knowledge from Web data which could be used for site management, automatic personalization, recommendation, and user profiling. The first half of the course will focus on a detailed overview of the data mining process and techniques, specifically those that are most relevant to Web data mining. The second half will concentrate on the applications of these techniques to Web and e-commerce data, and their use in Web analytics, user profiling and personalization.

CAP 6782C Big Data Analytics in the Cloud

3 sh (may not be repeated for credit)

Prerequisite: COP 5007 AND COP 5725

This course examines how to perform big data analytics in a cloud environment using currently accepted practices. The course will also examine how to load, query and visualize data in the cloud, along with topics on the architecture, security concerns and cost management in a cloud environment.

CAP 6905 Directed Study

1-12 sh (may be repeated indefinitely for credit)