CRS - COMPUTER SCIENCE

CRS 230 Technology, Society and Ethics (3 Credit Hours)
This course examines the intersection of modern technology and its impacts on the world and humanity. Topics include: cyber ethics, privacy, security, intellectual property, sustainability, cyber crime, cyber terrorism, and civil liberties in cyberspace.
Academic Level: Undergraduate

CRS 280 Computer Networks (3 Credit Hours)
This course will provide students with a comprehensive understanding of the fundamental concepts, organization and structure of modern computer networks. This course will examine their architecture and design, and explore local and wide area networks, as well as the internet. Security, performance, and network management will also be explored.
Academic Level: Undergraduate

CRS 290 Operating Systems (3 Credit Hours)
This course will provide a study of the fundamental concepts, design principles, and implementations of modern operating systems. This course explores the core functions of operating systems, including process management, memory management, concurrency, resource allocation and scheduling, file systems, input/output systems, protection and security. Throughout the course, students will explore various operating systems, including Linux/Unix and Windows.
Academic Level: Undergraduate

CRS 320 Computer Architecture (3 Credit Hours)
An introduction to the fundamental components of computer organization and architecture, this course explores how computer systems execute programs and manipulate data. Students in this course will explore a variety of topics including processor organization, Assembly and C programming languages, machine-level code, computer arithmetic, code compilation, memory systems, parallelism, and performance evaluation and optimization.
Academic Level: Undergraduate

CRS 340 Cybersecurity Fundamentals (3 Credit Hours)
This course explores the fundamentals of cybersecurity. This course will introduce the concepts and techniques used to secure computer networks, systems and data from threats. Students will learn about malware, phishing, and other attack vectors. They will also explore network defenses and vulnerabilities, as well as the legal and ethical issues in cybersecurity.
Academic Level: Undergraduate

CRS 370 Cyber Forensics (3 Credit Hours)
This course explores the technical and legal aspects of cyber forensics. Students will become familiar with general forensic procedures, the tools and techniques used for digital evidence, and different types of cyber crime. Students will perform detailed cyber forensic analyses on compromised system images using both open-source and court-approved digital forensic software tools, write analytical reports, and practice mock courtroom presentations.
Academic Level: Undergraduate

CRS 390 Computational Theory (3 Credit Hours)
This advanced course explores the fundamental concepts and theoretical underpinnings of computation. Theoretical foundations of computer science and formal models of computation are covered. Students study several models of computation and the complexity of computational problems. Topics include Turing machines, decidability, the halting problem, complexity, numerical optimization, and the P versus NP problem.
Academic Level: Undergraduate

CRS 410 Software Engineering (3 Credit Hours)
This course explores the concepts and principles of software engineering. Students will study the software development lifecycle, from requirements gathering and analysis, to design, testing, deployment, and maintenance. Students will also be introduced to project management concepts and techniques.
Academic Level: Undergraduate

CRS 420 Analysis of Algorithms (3 Credit Hours)
This course investigates methods for the design and benchmarking of algorithms, emphasizing methods useful in practice. Topic coverage includes induction, numerical optimization, divide-and-conquer, dynamic programming, network flow, randomization, complexity theory, greedy algorithms, searching and sorting algorithms, cryptographic algorithms, graph theory, hashing, and advanced data structures.
Academic Level: Undergraduate

CRS 430 Parallel and Cloud Computing (3 Credit Hours)
This course examines the principles and implementations of parallel computing and distributed systems. The demand for big data and cloud resources continues to grow, and large scale computing systems have become critical for analyzing complex computational problems. This course will study processor- and data-intensive applications of distributed computing, with a focus on the technologies and factors that impact the performance, power, resilience, and scalability of modern parallel and distributed systems.
Academic Level: Undergraduate

CRS 450 Concepts in Artificial Intelligence (3 Credit Hours)
This course explores the foundational concepts, techniques, and theories in artificial intelligence. Techniques such as machine learning, natural language processing, and computer vision will be studied, with real-world applications from other fields and industries being used as examples. Students will also study the ethical and societal impacts of AI on modern society.
Academic Level: Undergraduate

CRS 480 Computer Science Internship (3 Credit Hours)
A supervised applied experience in an approved organization where qualified students gain real-world knowledge and utilize their academic training in a professional environment. Available for juniors and seniors.
Academic Level: Undergraduate

CRS 490 Computer Science Capstone Seminar (3 Credit Hours)
This course, for senior Computer Science majors, is a hands-on, research-based seminar. Students will conduct semester-long group projects, including regular meetings and updates, followed by a presentation at the end of the semester.
Academic Level: Undergraduate
Enrollment is limited to students with a program in Computer Science.