

MAJOR IN COMPUTER SCIENCE, COMPUTING SYSTEMS CONCENTRATION

Computing systems are integrated devices that input, output, process, and store data and information. Computing systems encompass a wide range, from simple sensors and hardware components to phones, laptops, desktops, and entire data centers. Computing systems specialists are challenged to provide ever increasing levels of performance from these systems.

The Computing Systems concentration provides students the necessary tools to solve important and demanding systems problems at scale. Students will learn how to design and assess computer systems from a holistic perspective that encompasses distributed and parallel algorithms, big data, systems software, networking, compiler design, and artificial intelligence/machine learning.

Data is our most valuable resource. Large scale data are being generated by programs, sensors, and simulations. Drawing timely and effective insights from these data are at the heart of modern problems in computer science and society in general. The Computing Systems concentration includes courses that teach you how to accomplish this goal, from storing, transporting, organizing, and extracting insights from data to expressing programs that execute in parallel and distributed environments encompassing hundreds of thousands of cores.

Learning Objectives

Upon successfully completing this program, students will be able to:

1. Design scalable systems for computational and data intensive problems.
2. Design distributed and parallel algorithms to analyze large data sets.
3. Leverage diverse computing architectures in support of problem solutions.
4. Program accelerators/coprocessors (e.g., for deep learning).
5. Confidently pursue graduate studies or professional employment in computer systems and computer science.

Potential Occupations

In addition to the career opportunities open to all computer science graduates, the Computing Systems concentration opens career paths that include:

Cloud applications designer, systems designer, data scientist, big data analyst, compiler designer, database specialist, and supercomputing applications specialist.