

CSC Special Topics Courses for Spring 2020

1. **CSC 9010-001 TOP: Seminar in Deep Learning CRN: 32486**
W 6:15-9:00pm, Instructor: Benjamin R Mitchell

Deep Learning is the study of computational learning systems that utilize repeated composition of simple functional elements to produce complex behavior. These methods are currently state-of-the-art on a wide range of problems, and are deployed in areas like computer vision, natural language processing, audio analysis, and game AI. As a result, they have received a great deal of attention in recent years, both in academia and in industry, with companies like Google and Facebook investing heavily in this area.

This class will be a seminar style exploration of the field of deep learning, including both its historical roots and the current state of the art. Weekly assignments will consist primarily of reading selected papers from the literature and writing short responses on them, as well as participating in in-class discussions. Students will also help lead these discussions. The culmination of the semester will be writing a scientific paper (either a review paper giving a survey of the field, or a conference style paper on a student project).

2. **CSC 9010-002 TOP: TOP:Parallel Programming:The Road to HPC CRN: 32487**
R 3:00-5:45pm, Instructor: Michael P. Robson

Theoretical and practical models of parallel computing and their appropriate application; Flynn's taxonomy, including shared memory (e.g. OpenMP), distributed (e.g. MPI), and GPU (e.g. CUDA) programming. Design of various parallel machines and architectures. Measures of parallel performance including speedup and scalability.

Class will assume undergraduate level background in computer systems or a related course.

3. **CSC 9010-003 TOP: Cloud Native App Design & Development CRN: 32488**
M 6:15-9:00pm, Instructor: Juan Carlos Vega

Cloud computing is a shared platform where users can consume storage, processing power, and other services on demand, without having to physically add more system resources to their environments. This course focuses on exploring and using such technologies to create innovative and complex business solutions that can drastically reduce the cost of creating such solutions, while offering new career opportunities for software and solution engineers looking to stay on the leading edge of the technology industry.

The course will explore the three companies that are often associated with Cloud Computing – Microsoft, Amazon, and Google. Each company has significantly contributed to growing the cloud platform and so, we will take an in-depth look at

what each has to offer.

The learning objectives are to gain a thorough understanding of how to create real world applications using current cloud technologies; deep understanding of the cloud computing solution offerings from Amazon, Microsoft, and Google; a basic understanding of emerging technologies, such as OpenShift, Kubernetes, Heroku, Netflix OSS, and others; and, high level understanding of key concepts such as Cloud Provisioning and Orchestration.

Students should have a basic understanding of Cloud Computing Technologies, Development Environments and IDEs, and Programming Concepts & Languages.