THE OHIO STATE UNIVERSITY

COLLEGE OF ENGINEERING

Computational Thinking in Context

CSE 6011

Credit Hours:
3.00

Course Levels:
Graduate (5000-8000 level)

Course Components:
Lecture
Lab

Course Description:
Introduction to computational thinking, focusing on problem solving and programming concepts such as abstraction; Use of computing to discover new insights from data; How computers and the internet work; Societal impacts of computing innovations

Prerequisites and Co-requisites:
Prereq: Permission of instructor.

Course Goals / Objectives:
- Be competent with using basic constructs provided by high-level imperative programming languages: sequencing, selection, and iteration
- Be familiar with algorithmic thinking
- Be familiar with using basic data structure interfaces such as arrays or lists in simple programs
- Be familiar with procedural composition and abstraction
- Be familiar with using a modern interactive program development environment
- Be exposed to the virtual machine model of modern computer systems
- Be exposed to networking protocols and how the Internet works
- Be exposed to ways in which computing affects society, human communication, and the workplace

Course Topics:
- Software installation, and basic concepts
- Introduction to programming with media, images, colors, encodings
- Loops, new definitions, simple image manipulations
- Nested loops, conditionals, Boolean expressions, advanced image manipulations
- Sequencing, iteration, and drawing
- The Internet and security
- Impact of computing innovations on society
- Presentation and evaluation of final projects

Designation:
Elective