CIS*3090 Parallel Programming
Fall 2021

School of Computer Science

1 INSTRUCTIONAL SUPPORT

Instructor:	Dr. Denis Nikitenko
Office:	N/A - online instruction only
Office hours:	Online, by appointment only. Details will be posted on the course website.

Pre-requisites: (CIS*2030 or ENGG*3640), CIS*3110
Credit Weight: 0.5

Course format

Lectures ands labs

The course will be offered online, in a synchronous format. The course notes will be delivered online during scheduled times, recorded by the instructor, and posted on the course website.

Unless otherwise noted, the lab times will be used for advising with the instructor. Additional office hours will be scheduled as necessary. Details will be announced on the course website.

Assessment

The course will be evaluated using 4-5 equally-weighted programming assignments.

Topics

- Multi-core and cluster platforms.
- Parallel patterns.
- Software libraries for parallel programming.
- Data and task parallel approaches.

Calendar Description

This course examines the current techniques for design and development of parallel programs targeted for platforms ranging from multicore computers to high-performance clusters, with and with- out shared memory. It includes theoretical models for, and hardware effects on, parallel computation, the definitions of speedup, scalability, and data versus task-parallel approaches. The course will also examine strategies for achieving speedup based on controlling granularity, resource contention, idle time, threading overhead, work allocation, and data localization.