CSI3131: Operating Systems (Winter 2018)

- **Professor**

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Office Hours: Tuesday & Thursday (10:00 – 11:30)

- **Lectures**

Tuesday: 16:00-17:30 STE G0103
Thursday: 14:30-16:00 STE G0103

All course materials will be available in Brightspace.

- **Tutorials & Labs**

Lab 1 – Tuesday: 17:30 – 19:00 STE 0130

Lab 2 – Tuesday: 17:30 – 19:00 STE 2060

Lab 3 – Tuesday: 17:30 – 19:00 STE 0131

Tutorial – Thursday: 16:00 – 17:30 CBY C03

- **Course Objectives**
  - learn the fundamental principles of operating systems,
  - get exposed to the problems operating systems designers face, explore the tradeoffs and solutions to these problems,
  - see how these issues are solved in practice in real operating systems (Unix, Windows, etc.)
  - get a hands-on programming experience (some C, mostly Java) dealing with issues which operating systems must address

- **Textbook**

Silberschatz, Galvin, Gagne, "Operating System Concepts", 10th Edition
John Wiley & Sons, Inc., 2018

- **Marking Scheme**

3-4 Assignments	20%
Midterm (**February 15, 2018**)	30%
Final Exam	50%

Note: You must have passing mark on the exam portions to pass the course.

- **Course Topics**

  - **Background**: Computer systems overview, operating systems overview: interface, system calls, design and implementation issues, OS structure

  - **Process Management**: processes and threads, interprocess communication, CPU scheduling – algorithms and criteria, process/thread synchronization – problems and solutions, deadlocks – prevention, avoidance, detection, recovery

  - **Memory Management**: Basic main memory management: swapping, contiguous memory allocation, paging, segmentation; Virtual Memory: demand paging, copyon-write, page replacement, allocating kernel memory

  - **Storage Management**: File-System Interface (files, directories, mounting file system, file sharing), File-System Implementation, Mass-Storage Structure (disk structure, scheduling, management), swap-space management, I/O Systems (hardware, application I/O interface, kernel I/O subsystem)