

Syllabus - CSCE 210 Data Structures

Term:	Spring 2020
Class times:	Mon, Wed, Fri @ 1:20 - 2:25 pm at Wentz Science Center, Room 154
First class:	Mon Jan 6, 2020 @ 1:20 pm

Noctrl Description

Here's the official Noctrl description of our class:

Elementary data structures and algorithms. Topics include the design, implementation, application, and variations of the following: linked lists, stacks and queues; different types of trees; searching and sorting algorithms; graphs; and introduction to analysis of algorithms. Extensive programming required. Integrated laboratory.

Source: merlin.noctrl.edu

Instructor

My name is Bill Krieger. I'm a part-time professor in the Computer Science department at North Central College. Class information can be found at my website: wtkrieger.faculty.noctrl.edu.

To contact me, email is best: wtkrieger@noctrl.edu.

Textbook

Our primary textbook is online and free.

Open Data Structures by Pat Morin

This is an open content textbook: opendatastructures.org

Grading

Your final grade will be comprised of:

- Homework/class participation, 10%
- Programming assignments, 30%
- Exam1, 15%
- Exam2, 20%
- Final exam, 25%

The standard North Central College grading scale will be used. It's spelled out here:
www.northcentralcollege.edu/academics/registrar-and-support-services/registrar/plusminus-grading

The college rules on academic integrity will be strictly enforced. Plagiarism is a severe offense and will not be tolerated. Here's the official Noctrl link:

www.northcentralcollege.edu/computer-science/departement-plagiarism-policy

Late work will not be accepted without prior approval. Please see me if you have an issue meeting any course deadline.

The Plan

We'll focus on the following topics:

- ❑ **Programming:** Learn/use Java, Netbeans or Eclipse IDE, abstract data types (ADT's), generics/templates, efficient memory representation
- ❑ **Data structures:** stacks, queues, priority queues, doubly-linked lists, circular queues, binary search trees, 2-4 trees, B-trees, heaps, tree representation of arithmetic expressions, red-black trees, AVL trees, scapegoat trees, various kinds of balanced trees, graph representations
- ❑ **Algorithms:** bubble sort, selection sort, insertion sort, quicksort, mergesort, heapsort, hashing & searching algorithms
- ❑ **Recursion:** definition (base case, recursive case), direct and indirect recursion, binary search, insertion sort, quicksort, Towers of Hanoi
- ❑ **Analysis:** growth functions for algorithms, Big-O notation

To quote the course description: Extensive programming required.