C243 Data Structures
Fall 2014 Syllabus

Prerequisite:	C201 Computer Programming II, C151 Multi-user Operating Systems		
Instructor:	Dr. Dana Vrajitoru	Office:	NS 337
email:	dvrajito@iusb.edu	Phone:	520-4525
url:	http://www.cs.iusb.edu/~danav/		
Course web page:	http://www.cs.iusb.edu/~danav/teach/c243/		
Office hours:	MW 11am-5pm, TR 1:30 - 4:30pm, or by appointment.		

Textbook: A set of class notes for this course by Dr. Vrajitoru will be available as a PDF file on Oncourse as the main resource.
Data Structures & Algorithms in C++, by M. Goodrich, R. Tamassia, and D. Mount, used as a reference.

Grading system:

About 12 homework assignments	20 points each
2 midterm exams	50 points each
Final exam	50 points
Class participation	up to 30 points
Achievements	up to 12 points (extra credit)

Guidelines for assignments:

- The assignments will be posted on the course web page.
- The assignments are due at midnight of the due date.
- The programming assignments must be turned in on Canvas (iu.instructure.com).
- No homework accepted after 2 weeks from the due date. A homework turned in 1 week late loses 25% of the points. A homework turned in 2 weeks late loses 50% of the points.
- The programs in this class must follow the rules described in the attached guideline.
- Class participation items are not announced beforehand; there is no make up for them.
- Attendance is expected.
- All of the assignments are individual. Consulting with colleagues is acceptable, but programs that are too similar can be penalized or rejected. No credit will be given for programs obtained from external sources unless explicitly allowed.
- See separate guideline for the achievements.

Programming environment:

OS:	Linux, labs NS#207 and NS#209. Access with student ID card.
Compiler:	g++. Makefiles will be provided.
Editor:	any text editor, emacs (recommended), gedit, pico or vi from telnet.

Grading system:

>= 90% of the points	A
>= 80% of the points	B
>= 70% of the points	C
>= 60% of the points	D
< 60% of the points	F

Learning Disabilities:
If you need adaptations or accommodations because of a disability, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible. My office hours are listed above.

Course Outline

Week	Topic	Exams
1	Review: Pointers, Dynamic Allocation, OOP	
2	Linked Lists, OOP Approach	
3	The Stack and Queue Abstract Data Types (ADT) The C++ Standard Template Library (STL)	
4	Measuring Algorithm Performance	
5	Measuring Algorithm Performance	Midterm 1
6	The Table ADT, Hash Tables	
7	Binary Trees and Recursion, Tail Recursion	
8	Binary Search Trees, AVL Trees	
9	Red-Black Trees, B-Trees, Splay Trees, General Trees	
10	The Priority Queue ADT	
11	Sorting Algorithms	Midterm 2
12	Sorting Algorithms	
13	Finite Graphs Breadth-first search, depth-first search	
14	Dijkstra's Shortest Path Algorithm, The Collection of Disjoint Sets ADT Minimum Spanning Tree, the Union/Find Problem	