Prerequisite  CS201

Description and objectives
This course aims to provide programming experience and to give advanced programming techniques. In this way, students would be more prepared to data structures and several other junior and senior level CS courses. CS204 is a prerequisite course for several CS courses including data structures. Thus, it is a must course for CS students and students who will take advanced CS courses.

The programming language that will be used in this course is C++; we will use Visual C++ 2012 as the development environment. CS204 heavily depends on CS201. Thus a good CS201 background is needed. We will NOT make a review of CS201 topics.

Topics planned to be covered
- Introduction (overview of basic concepts, Visual C++ environment, preprocessor directives, compiler, compiler options, linker, libraries, debugging)
- Pointers and dynamic memory allocation
- Linked lists
- Stacks and queues
- Templates, templated classes and functions
- Advanced issues on classes and object oriented programming
- Data representation, bitwise operations
- Inheritance, polymorphism and advanced object oriented design
- Exception handling
- Programming with threads
- Visual programming and graphical user interfaces
- Move constructors and smart pointers (if time permits)

Instructor
Prof. Albert Levi, FENS 1091, ext. 9563, levi@sabanciuniv.edu
Office Hours: whenever I am in my office (generally I am in my office :) )
Assistants: Detailed assistant information (offices, office hours, etc.) will be available on the course website.

Textbook(s)
Main texts are
"A Computer Science Tapestry" (CS201 book)

Reference books are
"Starting out with C++ Early Objects", 7th edition, by T. Gaddis, J. Walters and G. Muganda
"Objects, Abstraction, Data Structures and Design using C++" by Koffman and Wolfgang.

We may not stick to the textbooks; you are responsible material covered in class too. Thus it is very important to attend to classes.

Schedule
Lectures: Monday 11:40-13:30 (FMAN 1099), Tuesday 13:40-14:30 (FMAN 1099)
 Labs: Sections A1, A2, A3: Thursday 10:40 – 12:30, B1, B2, B3: Thursday 15:40 – 17:30, see schedule for the places
 Sections C1, C2, C3: Friday 10:40 – 12:30, D1, D2, D3: Friday 12:40 – 14:30, see schedule for the places

Homework
There will be 8 (plus/minus 1) programming homework assignments. Late penalty is 10% of full grade (only one late day is allowed). You must submit your own work! No group works! Collaboration will not be considered as an excuse for plagiarism!

Tentative Grading (subject to change)
Midterm 1 (23%) – around week 7. Exact date has been set to March 28, 2020, Saturday, 12:40 – 14:30.
Midterm 2 (23 %) – around week 11-12. Exact date has been set to April 27, 2020, Monday, 11:40 – 13:30 (class time).
Final (34%) – will be scheduled by student resources
Homework assignments (20%) – The homework assignments are not of equal weight. Homework grading will mostly be based on correctness of the execution; not based on how big is the mistake or how hard you work for it. Thus please test your code very carefully. No debugging will be done during grading. No code/file changes are allowed after the submission. If you submit wrong file, we cannot grade your work. See website for detailed homework grading criteria.

Other Rules and Remarks
- We are not planning to give any quizzes, but depending on your attendance, we may start quizzes with prior notice.
- Weighted average is not the only criterion in letter grading; exam average may also be taken into consideration.
- We have a strict make-up policy. If you plan to take a makeup exam, please first read the makeup policy at the website in order to understand the rules and to see whether you are eligible or not.

See Class Website at http://people.sabanciuniv.edu/levi/cs204 for other, but important, details

Plagiarism, Homework Trading, Illegal Local and Remote Help and Cheating will not be tolerated. See the related policy on the web site.
### Homework Submission and Grading Policy of CS 204

- All homework submissions must be done until the specified deadline. If you submit on the exact deadline time, then you are late. That means if the deadline is 21:00, then the latest second that you can submit is 20:59:59.
- Late homework submission is allowed, but only for one day (24 hours). Late submission penalty is 10 points.
- Homework submission must be done only to SUCourse. Email or other type of submissions are not allowed.
- You will be able to resubmit your homework until the deadline.
- If you resubmit your homework after the deadline, but during the late submission period, your homework will be treated as late.
- No modification is allowed after SUCourse closes. Thus, please make sure that you’ve submitted the correct homework. If you submit wrong file or if a crucial file is missing, we cannot grade your homework and you get zero (0). Sometimes, the students argue the local computer's system time as a proof of timely completion of a wrongly submitted homework; we cannot accept such local proofs and we cannot accept any file other the ones submitted to SUCourse. No exceptions to this rule.
- Homework grading may be done via a demo and you may be questioned about your homework during the demo.
- **Homework grading is mostly based on correct execution.** We generally generate some test data for grading and this test data is never given out before the deadline. If your homework executes wrongfully against this test data, your grade will be lowered accordingly no matter how big is your programming bug and no matter how hard you work for it. Sometimes the bug is too simple, but it may cause your program to work totally wrong and you may get very low grades. This is too unfortunate but we have nothing to do. In order to avoid such cases, please test your program thoroughly before the submission.
- **We do not debug your code during grading to understand where the problem is.** As mentioned in the previous bullet, we just test your code and grading is not based on how big your bug is.
- **Testing is your responsibility.** We do not use grade checker or any other online tool in order to give you a feedback about the correctness of your program before the deadline. However, depending on the suitability of homework, we will provide some sample runs together with the project specification. Nevertheless, it is your responsibility to test your program against all possibilities in order not to lose points due to some bugs.
- Other grading criteria include modularity of the code, coding style, commenting, efficiency, etc.

### Rules to submit a medical report to take a make-up exam in CS 204

- All medical reports must be submitted BEFORE the exam. If this is not possible due to last minute problems, the instructor must be called before the exam. Any excuses that will be taken into instructor's account after the exam will not be considered.
- Please keep in mind that it is totally up to the instructor to accept a medical report according to the by-laws. That means, a medical report does not guarantee taking a make-up exam. The instructor must make sure about the necessity of taking the make-up exam depending on your illness.

Moreover, please keep in mind that for fairness reasons, the advantage of having a late exam will be compensated by having relatively more difficult questions in the makeup exam.

### Summary Policy on Plagiarism and Homework Trading (see the full version on the web site)

A plagiarized homework may or may not be a verbatim copy of another homework. Verbatim copies are of course plagiarized ones. However, if a homework is derived from another one by partially changing some parts, this action is also plagiarism. Cooperation and working together is not an excuse. A common fallacy is that the graders cannot catch a program that is developed by partially changing another program. Believe it or not, such programs are caught very easily. There are software products available to catch such cases, and we use them. When a plagiarism case is detected, sanctions are applied to all parties regardless of the actual source of the homework. These sanctions are as follows.

- For the first time, all plagiarized homework owners receive –100 (minus hundred).
- Second time, the student fails the course automatically.