

**CMPS 191 – 001: Programming Techniques and Algorithm Development II**  
**(3 credit hours)**

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**Note:** Please e-mail me using both e-mail accounts. This insures that I receive your message. Thanks for your cooperation and understanding.

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## **Course Objectives**

This course, as specified in Southern University Undergraduate Catalog, the Course Description section of the Department of Computer Science, is the second course in two courses sequence for computer science majors. It is designed to Object Oriented Programming (OOP) concepts and techniques that will help the student to develop high quality software.

The C++ programming language is used in this course. Topics include: functions and functions overloading, arrays, pointers and strings, recursion, objects and classes, Constructors and destructors, inheritance and polymorphism, exception handling, and file I/O.

## **Prerequisite**

**Student MUST have completed CMPS 190 with a grade of C or better.**

## **Required Textbook**

**Title:** Y. Daniel Liang, “Introduction to Programming with C++, Comprehensive Version,”  
*Prentice-Hall, Inc. 2007. ISBN: 0-13-225445-X*

## **References**

- 1) William H. Ford and William R. Topp, “Introduction to Computing Using C++ and Object Technology”, *Prentice-Hall, Inc. 2006. ISBN: 0-13-268152-8*
- 2) H. M Deitel and P. J. Deitel, “C++ How to Program,” 4<sup>th</sup> Edition,  
*Prentice Hall, 2003. ISBN: 0-13-117334-0.*

# Projected Course Schedule

<b>Topic Covered</b>
<b>Review of CMPS 190</b> <ul style="list-style-type: none"><li>- Introduction to computer, programs, and C++ Environment</li><li>- Syntax and semantics</li><li>- Data types, variable, and assignment</li><li>- Expressions and Boolean expressions</li><li>- Applied programming example</li><li>- Concepts of algorithms design and implementation</li><li>- Tutorial on Visual C++ and Bloodshed Dev-C++</li></ul>
<b>Review of CMPS 190 - Continue</b> <ul style="list-style-type: none"><li>- Control structures: Selections (if, if-else, and switch) and Loops (for, while, and do-while)</li><li>- Arrays</li></ul>
<b>Chapter 5 Functions</b> <ul style="list-style-type: none"><li>- Concepts of functions</li><li>- Creating and calling or invoking functions</li><li>- Functions prototypes</li><li>- Parameters passing: by values and by references</li><li>- Functions overloading</li><li>- Scope of variables</li><li>- Math functions</li><li>- Function abstraction and stepwise refinement</li><li>- Inline functions</li><li>- Concepts of recursion</li><li>- Example of recursive functions</li></ul>
<b>Chapter 7 Pointers and Strings</b> <ul style="list-style-type: none"><li>- Concepts of pointers</li><li>- Declaring and initializing a pointer variable</li><li>- Passing parameter by reference using pointers</li><li>- Arrays and pointers</li><li>- Constant pointers</li><li>- Returning pointers from functions</li><li>- Dynamic memory allocation</li><li>- Characters and strings</li><li>- ...</li></ul>
<b>Chapter 9 Objects and Classes</b> <ul style="list-style-type: none"><li>- Introduction</li><li>- Defining classes for objects</li><li>- Constructors</li><li>- Object Names</li><li>- Arrays of Objects</li><li>- ...</li></ul>

<b>Chapter 11</b> <b>Inheritance and Polymorphism</b> - Introduction - Base classes and derived classes - Generic programming - ...
<b>Chapter 12</b> <b>File Input and Output and Exception Handling</b> - Introduction - Text I/O - Formatting output - ...
<b>Chapter 13</b> <b>Operator Overloading</b> - Introduction - The Rational Class - Operator Functions - ...

*Note: As this course schedule is a projection, in the event that it is not exactly followed, we (students and the instructor) will discuss in class the possibilities of adjustment of the overall schedule.*

## Evaluation Method

Attendance and Quizzes	5%
Assignments and Programming Projects	35%
Test 1	15%
Test 2	15%
Final Exam	30%

## Grading Policy

### Grading Scale

90 – 100	→ A
80 – 89	→ B
70 – 79	→ C
60 – 69	→ D
<= 59	→ F

### How do you calculate your final grade in this course?

Let: D = Attendance, A = Average of all the assignments, T1 = Test #1,  
T2 = Test #2, F = Final Exam, and R = Class average

$$R = D*5\% + A*35\% + T1*15\% + T2*15\% + F*30\%$$

Example: D = 100, A = 90, T1 = 85, T2 = 70, and F = 90.

$$R = 100*0.05 + 90*0.35 + 85*0.15 + 70*0.15 + 90*0.30$$

$$= 5 + 31.5 + 12.75 + 10.5 + 27 = 86.75.$$

*Your final grade will be B. Note that it is totally the instructor's decision whether to round of the final grade. For example, 86.75 could be round of to 87. Those students who rely on the so called "curving", well I have bad news for you: DO NOT count on it in this course.*

## STUDENT ASSESSMENT METHODOLOGY

Students learning and performance in this course are evaluated based on the results obtained from:

- Attendance and Quizzes. A student whose absences record is at most four will receive hundred points. A total absence of at least five results to a grade of "F" for the student (a straight "F" regardless of the student's grade). Each quiz is worth 10 point but scaled to 100 for averaging. The average of all the quizzes is averaged with the attendance's points and the result is multiplied by 0.05 (5%)
- Assignments and Programming Projects worth 35% of the overall course work
- Test 1 and Test 2 worth each 15% of the course work
- Final Exam which is worth 30% of the overall course work

## STUDENT LEARNING OUTCOMES

Upon completion of this course, students should be able to:

- Computers basic concepts, computer programs, history of the C++ programming language
- Understand C++ syntax and semantics
- Write C++ programs, compiling, executing, and debugging programs
- Demonstrate knowledge of programming style and documentation
- Demonstrate knowledge of algorithms Design and Implementation
- Use control structure constructs (selection and loops) and functions to dictate program flow
- Use arrays data structures and pointers
- Demonstrate knowledge recursive function implementation and applications
- Implement intermediate C++ technology programming and object-oriented concepts
- Demonstrate knowledge of two Integrated Development Environment tools: **Microsoft Visual C++ and Dev-C++**
- Read and understand fundamentals C++ textbooks

In addition, students should be:

- Prepared for the next C++ programming course, CMPS 201: Data Structures
- Capable of learning other programming languages, such as **Java, C#, Java Script**, etc
- Capable of using other Integrated Development Environment tools, such **Netbeans, Eclipse, Borland C++, Microsoft Visual Studio 2005**, etc.
- Able to build teamwork and self-directed skills

## RULES AND POLICY IN THIS CLASS

Although the rules and policy defined here may seem a little bit rush, they are not meant to cause any harm to you instead to protect you and to prepare you for better life and to become professionals.

- Students are not allowed to bring their family members for day care or baby sitting. The classroom is not a place for children.

- Student behavior/classroom decorum: “Free discussion, inquiry, and expression are encouraged this class.” However, classroom behavior that interferes with either the instructor’s ability to conduct the classroom or the ability of students to benefit from the instruction is not acceptable.
- Please turn off (or place on silence) your beepers and cellular phones before the lecture starts
- In the event of a situation where student legitimately needs to carry a beeper/cellular telephone to class, prior notice and approval of the instructor is required
- No use of electronic devices while in class unless required or approved by the instructor.
- Classroom behavior which is deemed inappropriate and cannot be resolved by the student and the faculty member may be referred to the Office of Student Life, 2<sup>nd</sup> Floor J. S. Clark Hall Annex; telephone (225) 771-5280, for administrative or disciplinary review as per the code of Students Conduct.
- As part of the academic integrity outlined in the current General Catalogue: “Students are expected to maintain the highest standards of academic integrity. Behavior that violates these standards is not acceptable. Please see the Academic Dishonesty at <http://www.cmps.subr.edu/academicdishonesty.htm>.
- Students are NOT allowed to share their assignments and to communicate during the tests or exam
- No student is allowed in the class if not officially registered in this class.
- ***Late assignment will be penalized as follow after the assignment due date and time: 10% off the first day, 25% off the second day, 50% off the third day, and “Zero” after that. All the assignments will be due in class by to 9:35 AM on the specified due date.***
- No makeup test or exam will be given except in the case of emergency such as the student being sick and he/she is unable to come to class in which case an official Doctor’s excuse MUST be presented to the instructor. The student concerned is required to take the make up test/exam no later than two lectures or class periods after he/she returns to class. Failure to comply will result in the grade of zero (0) for the test/exam.
- ***All students are encouraged to attend class and on time. I will be taking rolls randomly. A total of five (5) absences will result in the grade of “F” in this class for the student(s) concerned. It is the student responsibility to make sure that he/she signs the roll I will be passing around in the classroom when one is provided.***
- ***It is totally forbidden to voice or/and video record this course lecture presentations without a written agreement signed and dated between the student and the instructor. Any violation to this rule will result to the invasion of the instructor privacy.***

Finally, I am totally open to any critics or/and suggestions.

## EMERGENCY EVACUATION

In the case of fire or emergency, please do not panic and simply follow your instructor’s emergency procedure evacuations.

## BLACKBOARD USAGE

All assignments, notes, and class news will be posted on the Blackboard. In order to be able to use the Blackboard system, you will need to use your SUBR user ID and password.

## STUDENTS WITH DISABILITY

“If you are a qualified student with a disability seeking accommodations under the Americans with Disabilities Act, you are required to self-identify with the Office of Disability Services (ODS), 125 Blanks Hall, telephone: (225)771-3546 for further information/assistance. No accommodation will be granted without an official documentation from the ODS.

I truly appreciate your time, understanding, and cooperation during the course of the semester.  
I am looking forward to working with you individually and in group.  
Feel free to ask me any questions you may have anywhere and at any time. God Bless.