CMPS 191 Programming Techniques and Algorithm Development II
Spring 2020

I. COURSE INFORMATION

Course Information:

CRN	24035
Rubric No	CMPS 191
Section	1
Title	Programming Techniques and Algorithm Development II
Credit Hours	3

Lectures: Day and Time: 9:00 AM – 9:50 AM, MWF
Class Location: 205 Thurman Hall

II. TEXTBOOK AND MATERIALS

Textbook: Tony Gaddis, *Starting Out with C++: Early Objects*, 9th edition, Pearson, 2016.
ISBN: 9780134400242

Reference   Engineering Problem Solving with C++", Delores M. Etter and Jeanine A. Ingber, 4th Edition, Prentice Hall, ISBN 10: 0134444299

Other Reference   Peter Gacs and Laszlo Lovasz, Complexity of Algorithms, Spring 1999.
Online: http://web.cs.elte.hu/~lovasz/complexity.pdf

III. INSTRUCTOR INFORMATION

Instructor(s):
Name:	Yaser Banadaki, Ph.D.
Office Location:	114E Henry Thurman Jr. Hall, Southern University Baton Rouge
Office Phone:	225-771-3941
Office Hours:	MWF 10:00 AM - 11:00 AM or by appointment and contact
E-mail:	yaser_banadaki@subr.edu

IV. COURSE LEARNING OUTCOMES

Course Objectives:

The objectives of this course are to cover:
1. foundational skills for future computer science courses
2. problem-solving skills and software design tools
3. syntax and semantics of the C++ programming language
4. design and implementation of small scale programming projects

Course Learning Outcomes:

Each graduate by the time of graduation will demonstrate:
1. An ability to analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solution (ABET Outcome-1),
2. An ability to design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline (ABET Outcome-2),
3. An ability to apply computer science theory and software development fundamentals to produce computing-based solution (ABET Outcome-6).

Program Education Objectives:

The Educational Objectives of the Computer Science Program are to produce graduates who:
1. Are thoroughly trained in methods of analysis, including the mathematical and computational skills appropriate for problem solving (PEO1).
2. Have developed the skills pertinent to the design of computing systems, including the ability to formulate problems, to think creatively, to synthesize information, to work collaboratively, and to communicate effectively (PEO2).

Course Educational Strategies:
1. Provide clear lectures and discussions of programming concepts to learn problem-solving skills and software design tools.
2. Provide students with the opportunity to learn course material through reading and homework assignments to be ready for future computer science courses.
3. Allow students to demonstrate mastery of the course concepts, e.g. syntax and semantics of the C++ programming language, through submitted exercises such as exams, quizzes, and homework problems.
4. Provide students with the opportunity to learn more about C++ programming languages through the design and implementation of small scale programming projects for real world problems.

V. COURSE OUTLINE

Course Weekly Content: (subject to change)

Week	Topic
1	Orientation and Introductions, [Quiz 1]
2	Review of Programming Concepts from CMPS 190, [Quiz 2]
3	Arrays [Quiz 3]
4	Searching, Sorting, and Algorithm Analysis, [Quiz 4]
5	Pointers, [Quiz 5]
6	More About Classes and Object-Oriented Programming, [Quiz 6]
7	More on C-Strings and the string Class, [Quiz 7]
8	Advanced File and I/O Operations, [Quiz 8]
9	Advanced File and I/O Operations, [Midterm Exam]
10	Recursion, [Quiz 9]
11	Polymorphism and Virtual Functions, [Quiz 10]
12	Exceptions, Templates, and the Standard Template Library, [Quiz 11]
13	Linked Lists, [Quiz 12]
14	Stacks and Queues, and Binary Trees, [Quiz 13]
15	Big-O Analysis of Algorithms Complexity in C++, [Quiz 14]
16	[FINAL]

VI. EVALUATION AND GRADING

Grading Distribution

A student's grade at the end of the semester will be determined by following percentages:

Class Participation	10%
Assignments/Tests/Quiz	30%
Midterm Exam	30%
Final Exam	30%

Students will demonstrate knowledge of the subject through 14 quizzes, 2 programming assignments, the midterm and final exams.

Grading Scale

Course grades at the end of the semester will be given based upon performance using the standard grading scale:

90– 100%	A
80 – 89%	B
70 – 79%	C
60 – 69%	D
Below 60%	F

Grades may be curved at the end of session at the instructor's discretion.

VII. COURSE RULES AND PROCEDURES

Exam policy: Exams will emphasize concepts developed in the course. Exams will be closed book and notes unless stated otherwise (if formulas, tables, etc. are needed, the instructor will supply them). Students will not be able to leave the classroom while they are taking an exam. There will be no sharing of any materials (including calculators) during exams. Communicating to one another is not permitted while taking an exam. If there are questions, they should be directed to the instructor. Students who communicate to one another will receive a zero for that exam.

Attendance policy and class participation: Students are expected to be present and on time and participate in class from the beginning throughout the end of the class period. Though attendance is strongly encouraged, merely attending classes does not guarantee a passing grade. It is every student responsibility to make sure that he/she signs the roll in class when one is provided, or he/she pays attention during the roll call.

Makeup test or exam: No makeup test or exam will be given except in the case of emergency such as the student being sick, or he/she is unable to come to class due to some unforeseen event. An official proof MUST be presented to the instructor and student is required to take the makeup test/exam as soon he/she returns to class in the following class session. Failure to comply will result in the grade of zero (0) for the test/exam.

Use of electronic devices while in class: Students are not allowed to use the classroom computers or laptop during the lectures unless authorized by the instructor of this course for the purpose of the course. Please turn off (or place on silence) your cellular phones before the lecture starts.

Missing or late assignments/quizzes/exams: At the instructor's discretion, students may be given opportunity for late submission of an assignment or retake of a quiz or exam upon presentation of a valid excuse.

Academic honesty and plagiarism: Please review the Southern University – Baton Rouge Student Handbook for information regarding the university's academic conduct policy and what constitutes plagiarism. Academic dishonesty and plagiarism will NOT be tolerated.

Assignment policy: Students are NOT allowed to share their assignments or to communicate during the tests or exam. No late assignment will be accepted and no make up for assignments and quizzes.

Change to syllabus: Any aspects of this syllabus may be subject to change. However, any substantive changes affecting distribution of grades for various components of the course will be accompanied with prior notice given to students via class announcement and Blackboard announcement or email.

Livetext Access: Each student is required to have access to LiveText. Southern University and A&M College-Baton Rouge has entered into partnership with LiveText, Inc. to provide online academic resources for student collaboration and learning outcomes assessment. Therefore, all students enrolled in this course are required to purchase a subscription from LiveText, Inc. through the Southern University Bookstore. LiveText, Inc. provides students with the electronic tools and services needed to serve them in their courses and in their career or academic pursuits beyond graduation.

Moodle Access: Southern University and A&M College at Baton Rouge will used Moodle extensively in this course. Moodle is a learning management system designed to help teachers and students communicate effectively online. The course syllabus, class materials (e.g., handouts, PowerPoint slides, journal articles, assignments, readings, etc.) will be placed on Moodle. The student should check Moodle DAILY for all assignments submitted via Moodle. All course communications will be primarily via SUBR email or Moodle. Students are responsible for regularly checking their emails and Moodle. If the student has problems with his Moodle account, he/she should contact Ms. Chrisena Williams-Brown in the Division of Information Technology via email at chrisena_williams@subr.edu or via phone at (225) 771-5017.

Academic Dishonesty: The University defines academic dishonesty as premeditated and un-premeditated fraudulent behavior. Premeditated fraud is defined as conscious, pre-planned, deliberate cheating with materials prepared in advance. Unpremeditated fraud is defined as cheating without the benefit of materials prepared in advance. See the Southern University and A & M College Catalog for a more detailed definition of academic dishonesty. In addition, administrative regulations governing the conduct of students enrolled at the University are contained in the Code of Student Conduct. A copy of the Code of Student Conduct may be obtained from the Office for Student Affairs.

ADA Compliance: Students with documented disabilities who believe that they may need accommodations in this class are encouraged to contact the Disability Services Coordinator in the Office of Disability services, 234 A.C. Blanks Hall, 225-771-3950 (Voice/TTD), 225-771-5652 (Fax), as soon as possible to ensure that such accommodations are implemented in a timely fashion. Students who need accommodations must be registered with the Office of Disability Services. Students are responsible for informing the instructor of any instructional accommodations and/or special learning needs at the beginning of the semester. All discussions will remain confidential.

VIII. COURSE ASSESSMENT

Course Objectives	Course Learning Outcomes	Methods of Assessment	Target	Relationship to Program Learning Outcomes
Objective 1: Students will be able to use foundational skills for future computer science courses	Students will demonstrate the ability to use foundational skills for future computer science courses	Outcome Rubrics 1, 2 and 6	70% will perform at the level of performance 2 or 3 in achieving Outcomes 1, 2, and 6	1, 2, and 6
Objective 2: Students will be able to problem-solving skills and software design tools	Students will demonstrate the ability to use problem-solving skills and software design tools	Outcome Rubrics 1, 2 and 6	70% will perform at the level of performance 2 or 3 in achieving Outcomes 1, 2, and 6	1, 2, and 6
Objective 3: Students will be able to use syntax and semantics of the C++ programming language	Students will demonstrate the ability to use the syntax and semantics of the C++ programming language	Outcome Rubrics 1, 2 and 6	70% will perform at the level of performance 2 or 3 in achieving Outcomes 1, 2, and 6	1, 2, and 6
Objective 4: Students will be able to design and implement small scale programming projects	Students will demonstrate the ability to design and implement small scale programming projects	Outcome Rubrics 1, 2 and 6	70% will perform at the level of performance 2 or 3 in achieving Outcomes 1, 2, and 6	1, 2, and 6