

CMPS 191
Programming Techniques and Algorithm Development II
SPRING 2018

2017 - 2020 Catalog Data: CMPS 191 **PROGRAMMING TECHNIQUES AND ALGORITHM DEVELOPMENT II** (Credit, 3 hour) (Lecture, 3 hour). The second course in the two-course sequence for Computer Science majors and minors improving the analysis and design skills is the primary intent of this course. Emphasis is placed on problem analysis and design of systems, algorithm design and efficient coding techniques to optimize overall programming execution. Advanced techniques utilizing the language introduced in CMPS 190. Prerequisite(s): CMPS 190

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

Lectures: 9:00 AM – 9:50 AM, MWF
205 Thurman Hall

Instructor: Assistant Professor: Dr. Lynette Jackson
Office Location: E104 Thurman Hall
Office Hours: 9:00 a.m. – 10:50 a.m. Tuesdays and Thursdays
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Course Coordinator: Dr. Oleg Starovoytov

Program Education Objectives:

The Educational Objectives of the Computer Science Program are to produce graduates who:

PEO1: Are thoroughly trained in methods of analysis, including the mathematical and computational skills appropriate for problem solving.

PEO2: 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.

Program ABET Outcomes:

Each graduate by the time of graduation will demonstrate:

Outcome a: an ability to apply knowledge of computing and mathematics appropriate to the discipline,

Outcome b: an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution,

Outcome c: an ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs,

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:

Upon successful completion of CMPS 191, students will be able to:

1. demonstrate the ability to use foundational skills for future computer science courses
2. demonstrate the ability to use problem-solving skills and software design tools
3. demonstrate the ability to use the syntax and semantics of the C++ programming language
4. demonstrate the ability to design and implement small scale programming projects

Course Educational Strategies:

1. Provide clear lectures and discussions of appropriate programming concepts.
2. Provide students with the opportunity to learn course material through reading and program assignments.
3. Allow students to demonstrate mastery of the course concepts through submitted exercises such as exams, quizzes, and other assignments.
4. Provide students with the opportunity to learn more about various branches of computer science through the application of object-oriented programming to real world problems.

Course Weekly Content: (subject to change)

Week	Topic
1	Orientation and Introductions
2	Review of Programming Concepts from CMPS 190
3	Arrays
4	Pointers
5	String Class
6	Structured Data
7	Advanced File Operations
8	Introduction to Classes
9	Inheritance, Polymorphism, and Virtual Functions
10	Exceptions, Templates, and the Standard Template Library
11	Linked Lists
12	Stacks and Queues
13	Recursion
14	Binary Trees
15	FINAL

Administrative Information and Requirements*Course Requirements:*

The student is expected to:

1. purchase the course textbook and My Programming Lab code by the second week of classes
2. read assignments to prepare for scheduled discussions of the material
3. access online course materials to obtain assignments and related materials
4. attend all classes to ensure that expectations are understood, and give feedback to monitor and assess progress
5. complete each graded activity at the scheduled time (Should one of these activities be missed, the grade for the next activity of the same type will be used for both.)
6. place cell phone either in the off position or kept on vibrate during lecture
7. demonstrate knowledge of the subject through 2 exams (midterm and final), 7 quizzes, 14 reading assignments, and 14 programming assignments

Exam Information:

1. Exams will emphasize concepts developed in the course.
2. Exams will be closed book and notes unless stated.
3. Students will not be able to leave the classroom while they are taking an exam.
4. There will be no sharing of any materials (including calculators) during exams.
5. 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.
6. A student who misses an exam will receive a zero unless the absence is legitimate and documented properly (e.g., a letter from a court clerk stating that he/she must appear in court, a letter from physician that he/she was sick). If a student has foreknowledge of an absence, he/she should clear this with the instructor before missing class. There will be no make-up exams for unexcused absences or improperly documented absences.

Grading Distribution

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

Quizzes/Assignments	60%
Exams	40%

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

Course Communication

When sending any electronic correspondence (via your SUBR email address) to the instructor, please include the following:

- Subject: First and Last Name, CRN
- Greeting: Dear Dr. Jackson,
- Body of message: clearly state your concerns and/or problems, do not use text message lingo
- Signature: First and Last Name, Course Information

Note: If you have followed the above format, then you can expect that the professor or teaching assistant will respond to your e-mail message within 48 hours during the week. **Visit during office hours if an urgent issue surfaces.**

LIVETEXT SUBSCRIPTION – 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.

LiveText is a dynamic tool that will enable you to:

- Create electronic portfolios for storing and displaying coursework for use anytime and anyplace.
- Share your resumés, professional portfolios and virtually any projects that can be photographed, video recorded, and uploaded to prospective employers and others who need or want to know about your accomplishments.
- Engage in discussion boards with other students, exchange feedback, and create study groups and other types of social networks.
- Complete assignments in key/required courses where LiveText has been embedded (without LiveText, you will not be able to complete these assignments).
- Create a complete record of your academic career that is malleable and easily accessible.
- Engage in developing a results-driven culture of assessment at Southern University.
- Participate in a process that will allow for data-driven curricular improvements that foster improved student learning and performance.

MOODLE ACCESS – Southern University and A&M College at Baton Rouge will use 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. 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, 225-7713950 (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.

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 a, b and c	70% will perform at the level of performance 2 or 3 in achieving Outcomes a, b and c	a, b and c
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 a, b and c	70% will perform at the level of performance 2 or 3 in achieving Outcomes a, b and c	a, b and c
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 a, b and c	70% will perform at the level of performance 2 or 3 in achieving Outcomes a, b and c	a, b and c
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 a, b and c	70% will perform at the level of performance 2 or 3 in achieving Outcomes a, b and c	a, b and c