

**Morehouse College
Computer Science**

CSC110 – Programming I

Course Title: Programming I – Section 03 (CRN#45632)

Credits/Hours: 3.00

Instructor: Dr. Alfred R. Watkins || alfred.watkins@morehouse.edu
Office: Tech Tower 223
Office Phone: 470.639.0326
Office Hours: MWF 1:00--2:50 PM or by appointment

Course Locations: Lecture – MWF 1:00 – 1:50PM in Tech Tower 233
Lab – W 4:00 – 5:00PM Tech Tower 233 (CRN#45633)

Rationale:

Programming I is an introductory course to algorithmic problem solving techniques that can be used for solving problems with computers. The course presents the fundamentals for C++ program design, analysis, implementation, testing and debugging. In addition, the course explores how algorithms solve problems in the various domains of computer science.

Course Description:

Goals:

1. Introduce problem solving methods and algorithm development.
2. Develop solid analytical skills and good programming practices.
3. Develop computing techniques for effectively using the computer as a problem-solving tool.
4. Introduce concepts of structured and object oriented programming.
5. Provide a foundation on which to build modern software engineering principles in later courses.
6. Introduce the C++ programming language.
7. Develop an appreciation for computing literature.
8. Introduce issues in the computing field such as ethics and social implications.
9. Provide experience with Internet tools and resources.

Objectives:

Upon completion of this course, the student should be able to:

- Develop algorithms for computer-solutions to problems.
- Express algorithms using natural language, pseudocode, flowcharts, and a high-level programming language (C++)
- Convert numeric values from decimal to binary and from binary to decimal.
- Illustrate techniques of object oriented programming practices.
- Analyze, design, code, test, debug, and document C++ programs.
- Exhibit an interest in staying abreast of technology and the computing field by reading computing literature.
- Display an awareness of the ethical and social implications posed by the increasing use of computers.

- Use the Internet to communicate and obtain information.

Textbooks and Resources:

The student must read each chapter of the book prior to its discussion. During lectures, the student must listen well, take copious notes, and engage the professor with relevant questions. Following the class, the student should reread the material and work with the Checkpoint Exercises, Video Notes, and Review Questions and Exercises at the end of assigned chapters in the text to achieve mastery of the subject matter.

- ❑ Required Texts: Tony Gaddis. **Starting Out with C++: From Control Structures through Objects**, 9th Ed.
ISBN-10: 0134498372 • ISBN-13: 9780134498379
- ❑ Supplemental Texts: Schneider and Gersting. *Invitation to Computer Science (C++ Version)*, 3rd Ed.
ISBN-10: 0133769399 • ISBN-13: 9780133769395
- ❑ Course Management: <http://blackboard.morehouse.edu>
- ❑ Textbook Website: <http://www.pearsonhighered.com/gaddis> (Video Notes)
- ❑ USB Flash Drive or cloud storage: Highly Recommended for back-ups

Method of Instruction:

Instruction will consist of classroom lectures, discussions, exercises, laboratories, and programming assignments.

- **Assigned Readings:** The schedule at the end of this syllabus indicates assigned readings. These should be completed prior to class time to aid understanding of the material.
- **Homework Problems:** You are expected to complete problem sets as given and submit them by their due dates. The problem sets are related to the material of the chapter being covered at the time. These problems may or may not be found within the textbook.
- **Lab Assignments:** You are expected to complete most lab assignments during the allotted laboratory time. Some assignments may be allotted additional time as determined and communicated by the instructor. Generally, you will need to answer the questions during the lab, and submit the answers at the end of the lab period.
- **Programming Assignments:** It is virtually impossible for you to learn the material in this course without some type of directed hands-on experience. There will be a number of programming assignments for you to complete independently to reinforce the material covered in class. Much of our classroom discussion will be devoted to the concepts, which these programs will utilize. You will be held responsible on tests for the concepts illustrated. Written descriptions of all programming assignments will be provided as the semester progresses. The due date for each assignment will be announced in class, and the assignments must be submitted by 11:59 p.m. on the announced due date in order for the assignment to be considered on time.
- **Programming assignments must be submitted via Blackboard with the following:**
 1. Each program must be formatted properly as instructed.
 2. Each programming assignment must be submitted with: requirements specification, program listing, sample of input data when appropriate, and listing of results (output of compilation or execution phase).

Topical Outline:

This is meant to serve as an approximate schedule. There are some topics that may take less time, and other topics that may take more time depending on the class itself. Significant modifications to the schedule will be made as early as possible.

| Week | | Reading | Lecture Topics |
|-------------|----------------------------|---|---|
| 1: | 8/21-8/23 | Schneider Slides – Ch-1 | Definitions and Intro to Algorithms |
| 2: | 8/26-8/30 | Schneider Slides – Ch-2 Gaddis – Ch-1 Appendix D (on Website) | Expressing Algorithms using Pseudocode & Flowcharts |
| 3: | 9/2 9/4-9/6 | Labor Day Gaddis – Ch-2 Appendix I (on Website) | Introduction to C++ & The Binary Number System |
| 4: | 9/9-9/13 | Gaddis – Ch-3 Appendix C | Expressions and Interactivity |
| 5: | 9/16-9/20 9/20 | Gaddis – Ch-4 | Making Decisions Exam 1 |
| 6: | 9/23-9/27 | Gaddis – Ch-5 Appendix F (on Website) | Looping |
| 7: | 9/30-10/4 | Gaddis – Ch-6 Appendix I (on Website) | Functions |
| 8: | 10/7-10/11 10/11 | Gaddis – Ch-6 | More Functions Exam 2 |
| 9: | 10/14-10/15 10/16-10/18 | Fall Break Gaddis – Ch-7 | Arrays |
| 10: | 10/21-10/25 | Gaddis – Ch-7 | More Arrays |
| 11: | 10/28-11/1 11/1 | Gaddis – Ch-8 | Searching and Sorting Algorithms Exam 3 |
| 12: | 11/4-11/8 | Gaddis – Ch-8 | Searching and Sorting Algorithms |
| 13: | 11/11-11/15 | Gaddis – Ch-9 | Pointers |

| Week | | Reading | Lecture Topics |
|------|----------------------------|--------------------------------------|--|
| 14: | 11/18-11/22 | Gaddis – Ch-10 | Characters, Strings, Vectors, and the string Class |
| 15: | 11/25-11/26 11/27-11/29 | Gaddis – Ch-10 Thanksgiving Break | Characters, Strings, Vectors, and the string Class |
| 16: | 12/2-12/4 12/5-12/6 | Reading Period | Final Project Demonstrations |
| 17: | 12/13 | | Final Exam – 10:30am-12:30pm |

COURSE POLICIES

Student Conduct in Class Policy

Any acts of classroom disruption that go beyond the normal rights of students to question and discuss with the instructors the educational process relative to subject content will not be tolerated. This is in accordance with the Academic Code of Conduct described in the Student Handbook.

Electronic Devices in Class Policy

Cellular phones, pagers, CD players, MP3 players, radios, and similar devices are prohibited in the classroom and laboratory facilities. Calculators and computers are prohibited during examinations and quizzes, unless specified. Reasonable laptop-size computers may be used in lecture to take notes and performing tasks as directed by the instructor.

Examination Policy

Several examinations will be administered. No make-up exams will be allowed without prior arrangements being made. Make-up exams must be taken when scheduled. A mid-term and a Final will be given and dates announced. During the final exam, the student will be required to use the computers in the classroom. You are welcome to use whichever platform of choice, but Visual Studios need to be used for the final exam.

Appeals Policy

To appeal a grade, send an e-mail to your instructors within two weeks of the grade having been received. Overdue appeals will not be considered.

Incomplete Policy

Students will not be given an incomplete grade in the course without sound reason and documented evidence as described in the Student Handbook. In any case, for a student to receive an incomplete, he or she must be passing and must have completed a significant portion of the course.

Academic Dishonesty:

Morehouse College students are expected to conduct themselves with the highest level of ethics and academic honesty at all times and abide by the terms set forth in the Student Handbook and Code of Conduct. Instances of academic dishonesty, including, but not limited to plagiarism and cheating on examinations and assignments, are taken seriously and may result in a failing grade for the assignment or course and may be reported to the Honor and Conduct Review Board for disciplinary action.

Students shall be guilty of violating the honor code if they:

1. Represent the work of others as their own.
2. Use or obtain unauthorized assistance in any academic work.
3. Give unauthorized assistance to other students.
4. Modify, without instructor approval, an examination, paper, record, or report for the purpose of obtaining additional credit.
5. Misrepresent the content of submitted work.

The penalty for violating the honor code is severe. Any student violating the honor code is subject to receive a failing grade for the course and will be reported to the Office of Student Affairs. If a student is unclear about whether a particular situation may constitute an honor code violation, the student should meet with the instructor to discuss the situation.

For this class, it is permissible to assist classmates in general discussions of computing techniques. General advice and interaction are encouraged. Each person, however, must develop his or her own solutions to the assigned projects, assignments, and tasks. A student may not use or copy (by any means) another's work (or portions of it) and represent it as his/her own.

Attendance Requirements:

Students are expected to attend each class meeting. Students with more than 3 unexcused absences will be referred to the Office of Student Success and may be administratively withdrawn from the course. Failure to meet minimum attendance requirements may result in the loss of the student's financial aid in accordance with federal financial aid requirements.

EEO & Disability Statement:

Morehouse College is an equal opportunity employer and educational institution. Students with disabilities or those who suspect they have a disability must register with the Office of Disability Services ("ODS") in order to receive accommodations. Students currently registered with the ODS are required to present their Disability Services Accommodation Letter to faculty immediately upon receiving the accommodation. If you have any questions, contact the Office of Disability Services, 104 Sale Hall Annex, Morehouse College, 830 Westview Dr. S.W., Atlanta, GA 30314, (404) 215-2636.

Syllabus is not a Contract:

A syllabus is not a contract between instructor and student, but rather a guide to course procedures. The instructor reserves the right to amend the syllabus when conflicts, emergencies or circumstances dictate. Students will be duly notified.

Inclement Weather Policy:

In the event of inclement weather, the College will announce any closures via the emergency notification system and/or through local news outlets. Absent an official closure, students are not excused from attending class due to weather and any absences will be considered unexcused.

Evaluation Policy:***Weighting of Tests and Assignments***

The elements used to assess student performance will be weighted as follows in the computation of the numerical grade average.

| Category | Percentage |
|------------------------------|-------------------|
| Exams (3) | 25 % |
| Final | 25 % |
| Programs, Homework & Quizzes | 20 % |
| Final Project | 15 % |
| Labs | 15 % |

Grade Assignment

| Numerical Grade | Letter Grade |
|------------------------|---------------------|
| ≥ 90% | A |
| ≥ 87% | B+ |
| ≥ 84% | B |
| ≥ 80% | B- |
| ≥ 77% | C+ |
| ≥ 74% | C |
| ≥ 70% | C- |
| ≥ 65% | D+ |
| ≥ 60% | D |
| < 60% | F |

CSC 110
Computer Programming I
Spring 2019
TTh 1:00 – 2:15pm CRN: 43810
LAB: W 4:00 – 4:40pm CRN: 43843

Instructor: Dr. Sonya M. Dennis
Office: Tech Tower Room 230
Office Hours: MW 10:00am – 2:00pm
(Other times by appointment)
Office Number: 470-635-0347
Email: sonya.dennis@morehouse.edu

COURSE DESCRIPTION

This course engages the student in the principles of software design. This includes problem solving, program design, code development and program testing. The programming language is C++.

TEXTBOOK

Starting Out With C++ From Control Structures through Objects, 9th edition, Tony Gaddis
ISBN: 13: 978-0-13-449837-9

LEARNING OUTCOMES

As a result of completing this course, students will be able to do the following:

- Apply problem- solving techniques, to a given problem, to design an executable C++ programs.
- When given an arbitrary problem, construct an algorithmic, step-by-step procedure that will lead to an accurately executed C++ program.
- Enhance critical thinking skills through analyzing a problem, composing an algorithm, designing a C++ program, debugging (correct) the program, formulating a working program using Visual Studios.
- Given a problem, implement a C++ program using C++ types, control structures, i/o streams, and functions, using Visual Studios.
- Given a problem, design, implement, and use a programmer-defined C++ class
- Given a problem, construct and use a C++ single-dimensional array, using Visual Studios/Codeblocks/XCode or preferred IDE.
- Given a problem, understand and apply syntax
- When given an incorrect program, debug and correct the program written and using Visual Studios/Codeblocks/XCode or preferred IDE.

TOPICS TO BE DISCUSSED

- A brief introduction to Computers and Programming
- Introduction to C++

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- Expressions and Interactivity
- Making Decisions
- Loops and Files
- Functions
- Arrays and Vectors
- Searching and Sorting Arrays

GRADING

| <i>Course Assignments</i> | <i>Percentage</i> |
|---|-------------------|
| Class activities (Homework, in-class work, etc) | 25% |
| Examinations | 35% |
| Mid-term | 20% |
| Final | 20% |

Grading Scale

| | |
|----------|---|
| 100-90 | A |
| 89-80 | B |
| 79-70 | C |
| 69-60 | D |
| Below 60 | F |

+/- Awarded upon instructor's discretion.

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disabilities. Any student requesting academic accommodations based on his disability is required to register with our Student Counseling & Disability Center (the "Center") at 104 Sale Hall Annex, Suite 100 every semester. A disability accommodation letter can be obtained from ODS. Students are required to provide a copy of the disability accommodation letter to each of their professors upon approval of their accommodations. Please contact our Coordinator of Disability and Counseling Services with any questions at (470) 639-0231.

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Important Dates:

| | |
|--------------------|--|
| Tue. January 26 | Last Day to Drop/Add |
| Thurs. February 13 | Founder's Day Celebration |
| Mar 2 – Mar.6 | Mid-semester Exams |
| Mar 9 – Mar 13 | Spring Break |
| Tue. Mar. 17 | Last day to make up (I)/ Mid Semester Grades due by 12pm |
| Mar. 30 | Last Day to Withdraw/ Academic Advisement begins |
| April 10 | Holiday: No classes |
| Mon. April 6 | Web Registration for Fall and Summer 2020 begins |
| Wed. April 29 | Last Day of classes |
| Apr 30 – May 1. | Reading Period |
| May 4 – May 8 | Final examinations |
| Wed. May 5 | Seniors Grades due by 5pm |
| Thurs. May 12 | Grades due by 12:00pm |
| May 11 – May 15 | Senior Week |
| Sat. May 16 | Baccalaureate Services |
| Sun. May 17 | Commencement Services |

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