SOUTHEAST COMMUNITY COLLEGE
DIVISION OF ARTS AND SCIENCES
Mathematics
Revision Date: 07-01-22

I. CATALOG DESCRIPTION

Course Number:	CSCI 1010
Course Title	Introduction to Computer Science
Prerequisite(s):	Completion of MATH1100 with a C or higher or completion of MATH1103 with a grade of B or higher or appropriate math placement score.
Catalog Description:	The course is designed to develop programming and problem-solving skills useful across engineering, mathematics, and the natural sciences and provide a coherent, intellectually compelling picture of computer science.
Credit Hours:	3
Class Hours:	45
Lab Hours:	0
Total Contact Hours:	45

II. COURSE OBJECTIVES: *Course will:*

A. Develop programming and problem-solving skills useful across engineering, mathematics, and the natural sciences;

B. Provide a coherent, intellectually compelling picture of computer science to all students;

C. Capture the interests of a diverse group of students and encourage them to take additional courses in computing and pursue a computing-related major.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

A. Student Learning Outcomes: *Student will be able to:*

1. Use computational and formal reasoning (including reasoning based on principles of logic) to solve problems, draw inferences, and determine reasonableness.

2. Use scientific methods and knowledge of the natural and physical world to address problems through inquiry, interpretation, analysis, and the making of inferences from data, to determine whether conclusions or solutions are reasonable.

B. General Education Learning Outcomes

1. GELO #3: Critical Thinking & Problem Solving
Outcome: Collect, identify, interpret and analyze data.

2. GELO #5: Analytical, Quantitative, and Scientific Reasoning
Outcome: Apply mathematical and scientific methods to solve problems from an array of contexts and everyday situations.
Outcome: Understand and create logical arguments supported by quantitative and scientific evidence and communicate those arguments in a variety of formats.
Outcome: Effectively develop strategies, algorithms, or experiments (or performing experiments) to better describe the systems or to solve the problems.

IV. CONTENT/TOPICAL OUTLINE (*course outline may provide more detailed information)*

A. The course will use Python rather than Java. Python's relatively simple syntax permits us to spend more time teaching concepts and less time teaching syntax.

B. The course emphasizes recursion and functional-style programming concepts early and imperative and object-oriented concepts later in the course. This helps to "level the playing field" and allows students to write relatively powerful programs with relatively little syntax;

C. The course uses a variety of existing packages and libraries, providing students with the ability to write useful and compelling applications for web applications, scientific computing, computer graphics, among others;

D. In order to demystify the inner workings of a computer, the course includes a module on digital logic, the von Neumann architecture, and assembly language programming;

E. In order to provide students with a sense of some of the intellectual challenges in the field, the course gently exposes students to theoretical ideas including analysis of algorithms, intractability, and uncomputability; and

F. The course provides a wide array of application areas, some choices of problems, and a choice of capstone project at the end of the term.

V. INSTRUCTIONAL MATERIALS

A. Required Text(s):

1. Alvarado, Christine, Zachary Dodds, Geoff Kuenning, Ran Libeskind-Hadas, *CS for All*, 2019.

An online book is available at (https://www.cs.hmc.edu/twiki/bin/view/CSforAll) until January 2020. After that a paperback book will be used.

B. Other Resources:

1. None.

VI. METHODS OF PRESENTATION/INSTRUCTION

A. Methods of presentation typically include a combination of the following:

1. Lecture

2. Lab work

3. Group work

VII. METHODS OF EVALUATION

A. Methods of evaluation typically include a combination of the following:

1. Labs

2. Homework

3. Mid-term exam

4. Final exam

B. SCC STANDARD GRADING SCALE POLICY

A+	95-100	C+	75-79	F	59 or less
A	90-94	C	70-74		
B+	85-89	D+	65-69		
B	80-84	D	60-64		

VIII. SPECIFIC COURSE REQUIREMENTS

A. None