

DEPARTMENT: COMPUTER INSTRUCTION	COURSE TITLE: COMPUTER SCIENCE I COURSE NUMBER: 582
GRADE(S): 9-12	PRE-REQUISITES (IF ANY): B- OR BETTER IN BASIC PROGRAMMING OR DEMONSTRATED PROGRAMMING EXPERIENCE AND PERMISSION OF THE INSTRUCTOR

UNIT	LENGTH	CONTENT	SKILLS	METHODS OF ASSESSMENT	FRAMEWORK STRAND(S) & STANDARD(S)
Introduction	10 days	<ul style="list-style-type: none"> ● Streams ● Cout ● Documentation ● Identifier rules ● Standard types ● Variables and initialization ● ASCII ● Binary math, ● I/O operators (>>) & (<<) ● Formatting ● Math functions and precedence ● Assignment operators and constants ● Programming methodology, design, implementation, analysis, abstraction 	Students will: <ul style="list-style-type: none"> ● Print text. ● Write, compile, and run a program. 	<ul style="list-style-type: none"> ● Worksheets ● Programs 	This course, along with Computer Science II, covers the AP Computer Science AB curriculum of the College Board
Functions	5 days	<ul style="list-style-type: none"> ● Functions ● Value and reference parameters ● Return values ● Scope ● Inline functions ● Overloaded functions ● Templated functions ● Default arguments 		<ul style="list-style-type: none"> ● Worksheets ● Programs 	
Control, Structures, Branches, Structured Programming, Loops	15 days	<ul style="list-style-type: none"> ● Fundamental Theorem of Programming ● Boolean expressions ● If/else ● Compound statements ● While loops ● For loops, do-while loops and nested loops ● Boundaries ● Switch statements ● Break 	Students will: <ul style="list-style-type: none"> ● Write pseudocode. 	<ul style="list-style-type: none"> ● Worksheets ● Programs ● Quizzes 	

Program Design, Classes, Recursion, Text Files	10 days	<ul style="list-style-type: none"> • Stepwise refinement and design • OO design • Classes • Recursion • Base case • Stacks • Recursion problems • Eoln & eof • Fstreams • Stream I/O 		<ul style="list-style-type: none"> • Worksheets • Programs • Quizzes 	
Program Correctness & Order of Algorithms	5 days	<ul style="list-style-type: none"> • Boolean assertions • Negation • DeMorgan's laws • Assert statements • Big O Notation 		<ul style="list-style-type: none"> • Worksheets 	
Vectors, Matrices, & Recursive Array Programming	15 days	<ul style="list-style-type: none"> • Apvector and apmatrix classes • Insertion, deletion, and transversal algorithms • 2D array algorithms • Backtracking 		<ul style="list-style-type: none"> • Worksheets • Programs • Quizzes • Final exam 	