

DEPARTMENT: COMPUTER INSTRUCTION	COURSE TITLE: COMPUTER SCIENCE II/AP COURSE NUMBER: 583
GRADE(S): 9-12	PRE-REQUISITES (IF ANY): A GRADE OF B OR BETTER IN COMPUTER SCIENCE I

UNIT	LENGTH	CONTENT	SKILLS	METHODS OF ASSESSMENT	FRAMEWORK STRAND(S) & STANDARD(S)
Sorting	10 days	<ul style="list-style-type: none"> • Quadratic sorts (bubble, selection, insertion) • Merge & mergesort • Recursive mergesort • Recursive quicksort • Number of steps • Order of quicksort 		<ul style="list-style-type: none"> • Worksheets and programs • Quizzes 	This course, along with Computer Science I, covers the AP Computer Science AB curriculum of the College Board.
Searching	4 days	<ul style="list-style-type: none"> • Sequential & binary searching 		<ul style="list-style-type: none"> • Worksheets and programs • Quizzes 	
Strings	3 days	<ul style="list-style-type: none"> • Apstring class • String abstraction 		<ul style="list-style-type: none"> • Worksheets and programs • Quizzes & test on first 3 units 	
Structures, Enumerations, Classes, Abstractions, Constructors, Operator Overloading	10 days	<ul style="list-style-type: none"> • Vector of structures • Overloading input (>>) and output (<<) operators • Class constructors • Public member functions and private data members • Overloaded ++, -- • Relational operators 		<ul style="list-style-type: none"> • Worksheets and programs • Quizzes • Test 	
Pointers, Linked and Doubly Linked Lists	10 days	<ul style="list-style-type: none"> • Pointer variables • Indirection • Static vs. dynamic data structures • New & delete commands • Designing & building linked lists • Algorithms • Traversing • Inserting • Searching • Deleting • Merging 		<ul style="list-style-type: none"> • Worksheets and programs • Quizzes 	

		<ul style="list-style-type: none"> • Sorting • Reversing • Using struct constructors • Doubly linked lists and algorithms 			
Binary Trees	10 days	<ul style="list-style-type: none"> • Constructing ordered binary trees • Inorder, preorder, and postorder traversals • Searching • Deleting • Clearing • Counting nodes • Leaves • Height • Width • Binary tree algorithms 		Worksheets and Programs, Quizzes, Test on pointers, linked lists and binary trees	
Stacks, Queue, & Templated Classes	8 days	<ul style="list-style-type: none"> • Aystack & aqueue classes • Stack data structure • Queue data structure • Stack & queue operations 		Worksheets and Programs, Quizzes	
Hash Coded Data Storage	3 days	<ul style="list-style-type: none"> • Hashing • Data storage and searching • Order of hash-coded search 		Worksheets and Programs, Quiz, Trimester Exam	
Case Study	2-4 weeks*	<ul style="list-style-type: none"> • The case study describes the process of producing a solution to a programming problem. It is intended to provide an opportunity for “apprenticeship learning.” It is written as instruction from an expert to an apprentice, and study questions represent places where the expert would say, “Now you go try this.” 	Students will: <ul style="list-style-type: none"> • Demonstrate understanding of all skills learned in Computer Science I & II. 	<ul style="list-style-type: none"> • Questions • Worksheets • Quizzes 	
AP Test Review	3-4 weeks*	<ul style="list-style-type: none"> • The class will do practice questions and free response problems from previous AP exams. 	Students will: <ul style="list-style-type: none"> • Demonstrate understanding of all skills learned in Computer Science I & II. 	<ul style="list-style-type: none"> • Questions 	
Final Project	4-7 weeks	<ul style="list-style-type: none"> • Each student will design and write a substantial program of their own choosing. 	Students will: <ul style="list-style-type: none"> • Demonstrate understanding of all skills learned in Computer Science I & II. 	<ul style="list-style-type: none"> • Program 	