



# Palm Springs Unified School District Secondary Course Description

**Please read:** Sections 1 and 2 must be completed and submitted to the Director of Secondary Curriculum and Instruction for all courses seeking PSUSD Cabinet and Board approval. Sections 3 and/or 5 must be completed if the course will be submitted to the University of California (UC) for placement on your school's a-g list and/or Career and technical educational (CTE).

\*\*\*NOTE: If this is a COD "Dual Enrollment" course then the course cannot be changed.

## District Office Use Only

Transcript Title(s)/Abbreviation: AP Computer Science A

Transcript Course Code(s)/Number(s): 4538 Cabinet/BOE Approval Date: November 13, 2018

## Section 1: Course Content

1. Course Title: AP Computer Science A

Date this course was first submitted to the Curriculum Advisory: October 18, 2018

2. Is this a re-write of an existing course? No If "Yes," what is the District Course Code: \_\_\_\_\_

3. CALPADS Code : 2471

4. PSUSD graduation requirement subject area: General Elective

5. Unit Value for complete course: 10

6. Grade Level:  
9 10 11 12

Course can be repeated for Credit?

*Note: Grade level pertains to which grades the course has been designed.*

7. PSUSD Department: Mathematics

8. PSUSD weighted GPA? Yes 9. Is this an "online" learning course? No

Dual Enrollment?

If "Yes," list the online provider: \_\_\_\_\_

*Note: If "Yes," an additional course code will be created by ETIS with a virtual designation.*

10. Will this course be offered only through the Alternative Education Program? No

11. Career Pathway Relationship

*Note: Refer to the list of Industries and their associated Pathways in Section 5, Item #38*

Is this course an Industry and Career Pathway-related Course? No

If "Yes," which Industry? --

Which Pathway? \_\_\_\_\_

What sequence level? --

12. Is this course an Academy-related Course? No If "Yes," which Academy? \_\_\_\_\_

### 13. Course Content:

For each unit of the course, provide:

1. A brief description (5-10 sentences) of topics to be addressed that demonstrates the critical thinking, depth and progression of content covered.
2. A brief summary (2-4 sentences) of at least one assignment that explains what a student produces, how the student completes the assignment and what the student learns.

**AP Computer Science Program** There are two AP computer science offerings, and students can take either course in any order. The AP Computer Science A course and exam continues to focus on computing skills related to programming in Java. The new AP Computer Science Principles course complements AP Computer Science A as it aims to broaden participation in the study of computer science. The courses underscore the importance of communicating solutions appropriately and in ways that are relevant to current societal needs. AP Computer Science courses can help address traditional issues of equity, access, and broadening participation in computing while providing a strong and engaging introduction to fundamental areas of the discipline.

**AP Computer Science A Course Overview** AP Computer Science A is equivalent to a first-semester, college level course in computer science. The course introduces students to computer science with fundamental topics that include problem solving, design strategies and methodologies, organization of data (data structures), approaches to processing data (algorithms), analysis of potential solutions, and the ethical and social implications of computing. The course emphasizes both object-oriented and imperative problem solving and design using Java language. These techniques represent proven approaches for developing solutions that can scale up from small, simple problems to large, complex problems. The AP Computer Science A course curriculum is compatible with many CS1 courses in colleges and universities.

**RECOMMENDED PREREQUISITES** The assumed prerequisites for entering the AP Computer Science A course include knowledge of basic English and algebra. A student in the AP Computer Science A course should be comfortable with functions and the concepts found in the uses of function notation, such as  $f(x) = x + 2$  and  $f(x) = g(h(x))$ . It is important that students and their advisers understand that any significant computer science course builds upon a foundation of mathematical reasoning that should be acquired before attempting such a course.

**Lab Requirements** The AP Computer Science A course must include a minimum of 20 hours of hands-on structured lab experiences to engage students in individual or group problem solving. Thus, each AP Computer Science A course includes a substantial laboratory component in which students design solutions to problems, express their solutions precisely (e.g., in the Java programming language), test their solutions, identify and correct errors (when mistakes occur), and compare possible solutions.

**Computer Language** The AP Computer Science A course requires that solutions of problems be written in the Java programming language. Because the Java programming language is extensive with far more features than could be covered in a single introductory course, the AP Computer Science A Exam covers a subset of Java. The AP Java subset can be found in Appendix A of the Course Description.

**Goals of AP Computer Science A** Students should be able to • Design, implement, and analyze solutions to problems; • Use and implement commonly used algorithms; • Develop and select appropriate algorithms and data structures to solve new problems; • Write solutions fluently in an object-oriented paradigm; • Write, run, test, and debug solutions in the Java programming language, utilizing standard Java library classes and interfaces from the AP Java subset; • Read and understand programs consisting of several classes and interacting objects; • Read and understand a description of the design and development process leading to such a program; and • Understand the ethical and social implications of computer use.

**Topic Outline for AP Computer Science A** I. Object-Oriented Program Design A. Program and class design II. Program Implementation A. Implementation techniques B. Programming constructs C. Java library classes and interfaces included in the AP Java Subset III. Program Analysis A. Testing B. Debugging C. Runtime exceptions D. Program correctness E. Algorithm analysis F. Numerical representations of integers IV. Standard Data Structures A. Primitive data types (int, boolean, double) B. Strings C. Classes D. Lists E. Arrays (1-dimensional and 2-dimensional) V. Standard Operations and Algorithms A. Operations on data structures B. Searching C. Sorting VI. Computing in Context A. System reliability B. Privacy C. Legal issues and intellectual property D. Social and ethical ramifications of computer use

**AP COMPUTER SCIENCE A EXAM: 3 HOURS** Assessment Overview All code on the AP Computer Science A Exam is consistent with the AP Java subset that can be found in Appendix A of the Course Description. All questions involving code should be answered in Java. Students are not tested on minor points of syntax. Format of Assessment Section I: Multiple Choice Discrete Question topics will include: programming fundamentals, data structures, logic, algorithms/problem solving, object-oriented programming, recursion, and software engineering. Section II: Free Response Short Answer (each requiring Java programming language) • Solve problems involving more extended reasoning.

14. Course Overview [Provide a brief summary/snapshot (3-5 sentences) of the course's content]:

AP Computer Science A is a full year Java course, geared towards beginning programmers who wish to take the AP Computer Science A exam. Computer Science A emphasizes object-oriented programming methodology with an emphasis on problem solving and algorithm development and is meant to be the equivalent of a first-semester course in computer science. It also includes the study of data structures and abstraction. AP Computer Science promotes critical thinking and problem solving skills.

AP Computer Science A is equivalent to a first-semester, college-level course in computer science. The course introduces students to computer science with fundamental topics that include problem solving, design strategies and methodologies, organization of data (data structures), approaches to processing data (algorithms), analysis of potential solutions, and the ethical and social implications of computing. The course emphasizes both object-oriented and imperative problem solving and design using Java language. These techniques represent proven approaches for developing solutions that can scale up from small, simple problems to large, complex problems. The AP Computer Science A course curriculum is compatible with many CS1 courses in colleges and universities.

15. Texts and Supplemental Instructional Materials (*all non-core instructional materials are the responsibility of individual schools to purchase.*)

Texts: n/a

Supplemental Materials: n/a

16. Will this course be submitted for approval by UC? Yes

## Section 2: School and District Information

### School Information

1. School Name: Palm Springs High School

School District: Palm Springs Unified School District

City and State: Palm Springs, California District Web Site: http://www.psusd.us

### School Course List Contact Information (Name of AP of Curriculum or Principal)

2. Name: Janel Hunt

Position/Title: Asst. Principal Email: jhunt@psusd.us

Phone #: 760.778.0400 Ext: ext 1408

### Teacher Contact Information (Name of teacher/administrator who authored this course)

3. Name: Mr. Goehring

Position/Title: Teacher Email: cgoehring@psusd.us

Phone #: 760.778.0400 Ext.



# Palm Springs Unified School District Secondary Course Description

## Section 3: Course Information

1. Was this course "Previously Approved" by UC? No

*Note: if this course is to be submitted to UC and it was "Previously Approved," the exact same course title as the previously approved course must be used. Complete outlines are not needed for courses previously approved by UC. Courses that are defined as "previously approved" are courses from the following programs (Advanced Placement, International Baccalaureate, ROP courses, etc.), or courses from within the same district, or courses that have been removed within a three-year window are being reinstated, and/or courses from UC-approved online providers. Courses modeled after courses from outside the school district are also defined as "previously approved" but a complete course description will be required for submission to UC. Each section below represents an individual page on the UC electronic submission site.*

If "No," proceed to the Course Description Section (Section 4).

If "Yes," indicate which category applies:

2. Is this course modeled after a UC-approved course from another high school outside of our district? No

*Note: If "Yes," you will be required to submit a complete course description. UC will review the previous submission, if it is available, to assist them in their review process.*

If "Yes," list which school:

Exact Course Title: \_\_\_\_\_

3. Is this course modeled after an identical course approved by UC for the current year at another high school in PSUSD: No

If "Yes," what school? \_\_\_\_\_

Exact Course Title: \_\_\_\_\_

4. Is this course being reinstated after removal within 3 years: No

If "Yes," what year was the course removed from the list? \_\_\_\_\_

Exact Course Title: \_\_\_\_\_

5. Has this course been provided program status, is not an online course, and is it listed below? Yes

If "Yes," select an option from the Program

Status list: Advanced Placement (AP)

6. If "Advanced Placement," has it been authorized by the College Board through the AP audit process? Yes

*Note: UC will only allow Advanced Placement courses that have passed or are in the AP audit process. UC requires all AP courses on your list, including those approved in prior years, to be verified via the College Board AP audit process. UC will run quarterly reports based on AP Audit data. AP courses not listed on the AP audit list will be removed.*

If "In Progress," date submitted to AP: \_\_\_\_\_  
MM/DD/YYYY

Exact Program Course Title: --

7(a). Is this course provided by one of the UC-approved online curriculum providers listed in #8? No

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7(b). Have you signed the appropriate partnership agreement with the provider regarding methods of delivery and instruction? No

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*Note: You must have signed an agreement with the appropriate provider and filed with UC in order to use their courses.*

8. If the answer to either 7(a) or (b) is “No,” UC will not approve this course. If “Yes” to both 7(a) and (b)., then select the appropriate option from the Online Provider List below:

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### 9. Seeking “Honors” Distinction

*Note: To receive “Honors” distinction for both UC and PSUSD, the course content must satisfy certain requirements. For information about these requirements, refer to the a-g Guide: <http://www.ucop.edu/a-gGuide/ag/a-g/honors.html>. For “Previously Approved” courses (including AP and IB), the honors information will be pre-populated as applicable on your UC submission template.*

Yes, AP

*Note: “Other Honors” is defined by UC as a course specifically designed with distinctive features which set it apart from regular high school courses in the same discipline areas. The course should be seen as comparable in terms of workload and emphasis to AP, IB or introductory college courses in the subject. Honors courses must be designed for the 11<sup>th</sup> and 12<sup>th</sup> grade level to be UC approved and require a comprehensive, year-long written final exam. In addition to AP and IB higher level courses, **high schools may certify not more than one honors level course per grade level in each of the following subject areas only: history, English, advanced mathematics, each laboratory science course, each language other than English, and each of the four VPA disciplines.** If there are no AP or IB or higher level courses in a given subject area, the high school may certify up to, but not more than two honors level courses in that area.*

### 10. Subject Area and Category

“a” - History/Social Science

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“b” - English

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“c” - Mathematics

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“d” - Laboratory Science

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*Note: Students electing to enroll in an integrated-science program (ISP) are strongly advised by UC to complete the entire three-year sequence. In most cases, the first year of an integrated science sequence fulfills only the “g” elective requirement: the second and third years of the sequence then fulfill the two-year “d” laboratory science requirement. Accordingly, if only ISP 1 and only one of ISP 2 or ISP 3 are completed, then one additional course from the categories of Biology, Chemistry, or Physics from the “d” subject area must be taken to fulfill the “d” requirement.*

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*Note: This category demonstrates that the course is cross-disciplinary and is often used for advanced science courses such as AP Environmental Science or Biochemistry*

“e” - Language Other than English

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Language --

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“f” - Visual and Performing Arts

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“g” - Elective

Other

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# Palm Springs Unified School District High School Course Description

## Section 4: Course Attributes

1. Is this course classified as a Career Technical Education Course?

No

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If no, skip item #2

2. If "Yes," select the name of the industry **and** Career Pathway:

- Agriculture and Natural Resources --  
\_\_\_\_\_
- Arts, Media, and Entertainment --  
\_\_\_\_\_
- Building and Construction Trades --  
\_\_\_\_\_
- Business and Finance --  
\_\_\_\_\_
- Education, Child Development and Family Services --  
\_\_\_\_\_
- Energy, Environment, and Utilities --  
\_\_\_\_\_
- Engineering and Architecture --  
\_\_\_\_\_
- Fashion and Interior Design --  
\_\_\_\_\_
- Finance and Business --  
\_\_\_\_\_
- Health Science and Medical Technology --  
\_\_\_\_\_
- Hospitality, Tourism, and Recreation --  
\_\_\_\_\_
- Information and Communication Technologies --  
\_\_\_\_\_
- Manufacturing and Product Development --  
\_\_\_\_\_
- Marketing, Sales, and Service --  
\_\_\_\_\_
- Public Services --  
\_\_\_\_\_
- Transportation --  
\_\_\_\_\_