

UTeach Computer Science

2020-21 Course Release Notes: UTeach Computer Science Principles

Big Picture Updates

- **Officially re-endorsed by the College Board.** This re-endorsement by College Board confirms that all components of UTeach CSP are aligned to the 2020-21 updates of the AP Curriculum Framework standards and the AP CSP assessment. By using a College Board–endorsed provider, teachers benefit from preapproved syllabi, lesson plans, and professional development so they have the instructional support needed to meet the College Board requirements for AP CSP implementation.
- **Updated Performance Tasks aligned to a new Course and Exam Description.** The Explore Performance Task has been removed, and all Explore Task curricular requirements have been incorporated into the curriculum, specifically into Unit 6. College Board has increased the rigor of the Create Task by requiring students to use and manipulate lists.
- **Changed text-based programming language from Processing to Python.** Python better prepares students for the newly revised AP Create Task, provides Chromebook-compatible access to an online text-based coding platform, and has wider applicability *beyond* the high school classroom. Although OpenProcessing still appears in the curriculum in several example programs, students only need to run the program and will not work with the Processing programming language to write code.
- **Improved look and feel of the UTeach Learning Management System (Canvas).** Changes to the LMS include the removal of redundant or unnecessary course pages, simplification of hyperlinks, and improvements to the layout to streamline navigation.

Teacher Materials Updates

- **Revised Unit Tests and additional test banks.** All Unit tests have been restructured to include 20 multiple choice questions, including both single-select and multi-select question types. Additional Unit Practice Tests include 15-20 questions, with explanations for correct and incorrect answers.
- **Revised project rubrics.** Project rubrics are now single-point, to approximate scoring on the Create Performance Task.
- **Integration of AP Classroom resources.** In the Teacher Materials now provide direction suggesting when to assign Topic Questions from the AP Classroom, including the Create PT Formative Topic Questions.
- **Scaffolding skills for Create Task submissions.** Coding assignments in Units 2, 3, and 4 now include a video submission component, so that students practice creating videos before completing their Create Performance Task. This also allows students to complete the Create PT Formative Topic Questions along with class assignments.

Student Online Textbook Updates

- **Complete alignment to College Board Framework.** The Student Online Textbook has been 100% aligned to the College Board AP CSP Curriculum Framework. All Enduring Understandings, Learning Objectives, and Essential Knowledge statements are incorporated into this curriculum. Curriculum framework components from the previous framework that are no longer in the framework have been removed.
- **Vocabulary terms.** Unit vocabulary terms are based on the definitions provided in the Essential Knowledge statements from the curriculum framework.
- **Pseudocode reference.** The pseudocode from the AP Exam Reference is referenced and aligned with Scratch and/or Python code in the Student Online Textbook.
- **Unit project rubrics.** All unit project rubrics have been changed to single-point rubrics with language similar to the Create Task Scoring Guidelines. Unit projects for the programming units (2, 3, and 4) now require students to complete written responses using a template with prompts that simulate the Create Task Written Response prompts.
- **Project workday pages added for students.**

Detailed Unit Updates

- **Unit 1**
 - Moved all Cybersecurity content except for the Encryption lesson to Unit 6.
 - Added content describing the Development Process in detail.
 - Added “Robot Maze Algorithm” problems where students create algorithms using the AP Exam Reference pseudocode to move a robot through a grid/maze.
 - Changed terminology in the Decidability and Efficiency lesson from solvable/unsolvable to decidable/undecidable to align with the AP curriculum framework.
 - Added a new lesson for Algorithmic Bias.
- **Unit 2**
 - Added step-by-step descriptions and increased scaffolding in student pages for getting started in Scratch.
 - Added a requirement to the Scratch Programming Project to incorporate procedural abstraction by implementing procedures (user-defined blocks) into the program.
 - Added a lesson to revisit the Robot Maze Algorithms for students to use Scratch blocks instead of AP Exam Reference pseudocode.
 - Added a new lesson to introduce Mathematical Expressions in Scratch.
 - Added a coding assignment, Math Mashup, for students to create a program using variables, text input, and mathematical expressions.
 - Added a new student page, Different Operators, to formally introduce relational and logical operators in Scratch.
 - Moved the Game of Tag assignment later in the unit after the topic of Selection statements.
 - Increased emphasis on documentation (program and user documentation) and crediting sources for the Scratch Programming Project.
- **Unit 3**
 - Added a requirement to the Unintend’o Controller Project for students to incorporate procedural abstraction by implementing procedures (user-defined blocks) into the program.
 - Revised the lessons for Binary to Decimal Conversion and Decimal to Binary Conversion that rely more on a procedural approach, rather than a Socratic approach.
 - Added a Binary to Decimal worksheet with problems for the students to practice conversions.
 - Updated the Digital Scavenger Hunt to rely on more current and widely available web tools.
 - Added a new assignment, Coding Skills: Lists in Action, for students to delve deeper into list processing and applying common list processing algorithms in order to be better prepared to complete the Create Performance Task.

- **Unit 4**
 - Revised the entire unit to change from Processing to Python programming language.
 - Moved the starter code to Repl.it online IDE for students to write, compile, and run Python programs online.
 - Maintained the Image Filter project guidelines using Python instead of Processing. Incorporated Python libraries for image processing and increased focus on using a list to process the image at the pixel level.
 - Introduced more scaffolding to the transition from block-based to text-based programming (Scratch to Python).
 - Added programming assignments in Python.
 - Added a new section on string manipulation in Python.
 - Added a complete Data Abstraction lesson for processing a list in Python.
 - Added a complete Procedural Abstraction lesson for creating functions in Python.
 - Added a mini-project to assess students' Python programming skills.
 - Kept Hexadecimal lesson although hexadecimal is no longer a topic in the curriculum framework, due to its relevance to the Image Filter Project. Students will not be tested on binary/hex conversions on the Unit 4 Test.
 - Switched the Digitizing Audio lessons to use Python programs instead of Processing programs.
 - Added an assignment to further explore Creative Commons.
- **Unit 5**
 - Added a “Google My Activity” activity to introduce the concept of big data.
 - Increased the variety of websites where students can retrieve data sets.
 - Removed lessons on data analysis strategies to simplify the unit project.
 - Added a lesson on using Python for reading, writing, and analyzing CSV files, which students can incorporate into their unit projects.
- **Unit 6**
 - Incorporated the Explore Task curricular requirements into a mini-unit at the beginning of Unit 6 using materials provided by the College Board.
 - Updated the Internet lessons to align with the curriculum framework.
 - Added a lesson and activity on Sequential, Distributed, and Parallel Computing.
 - Moved the Cybersecurity lessons from Unit 1 to Unit 6 to cover Restricted Information, Authentication, Malware and Viruses, and other security risks associated with data.
- **Create Performance Task**
 - Updated all the lessons and handouts to refer to updated Create Performance Task guidelines in the new Course and Exam Description.