Teacher	Cmdr. Schenk	**Semester and Year**	Fall 2021 – Spring 2022
Course	AP Computer Science Principles Harvard CS50 AP	**Email**	schenkr@fultonschools.org
Website	http://hawkeyedriver.com	**Room Number**	302

Textbook   None

Course Description:

This is CS50 AP

Johns Creek High School is proud to be in the fourth year of teaching the Harvard University CS50 AP version of AP-CSP. Our AP scores once again at the top of Fulton County.   We will be covering the very same information that Harvard Freshman tackle in their CS50 class every fall semester. We will have the entire year to complete the program, and it will provide outstanding preparation for the AP Exam. The goal of AP Computer Science Principles is comparable to introductory courses offered for all majors in many college and university computer science departments.

It is not expected that all students in this class will major in computer science. This class is intended to serve as an introduction course for all majors, and as a course for people who will major in other disciplines and want to be informed citizens in today's technological society.

This class is taught at the college freshman level, assuming no programming experience beforehand.

Course Goals

By the end of this course, students will be able to:

- Program visually in Scratch (First project only)
- Use fluently, correct algorithmic and technical vocabulary used in modern computer science.
- Perform fundamental software design in ANSII C using an online Linux based Integrated Development Environment (IDE).
- Submit two in-course artifacts to the College Board as part of their overall AP Evaluation Score.
- Perform fundamental software design in Python, using class and object data structures.
- Perform algorithmic analysis and design pursuant to the intellectual enterprise of computer science.
- Communicate fluently about emerging technologies in computer science.
- Perform embedded programming in C and Python on Internet of Things (IoT) devices.
- Properly understand the common data structures, algorithms, sorting, memory usages, and design planning criteria used in modern software design.
- Apply critical thinking to the design and use of technology for business.

Standards

CR1a Students are provided with opportunities to meet learning objectives connected to Computational Thinking Practice P1: Connecting Computing.
CR1b Students are provided with opportunities to meet learning objectives connected to Computational Thinking Practice P2: Creating Computational Artifacts. AP-CS-3 Program Analysis (Testing, De-bugging, Exception Handling, Code/Memory Analysis)
CR1c Students are provided with opportunities to meet learning objectives connected to Computational Thinking Practice P3: Abstracting. AP-CS-5 Standard Operations and Algorithms
CR1d Students are provided with opportunities to meet learning objectives connected to Computational Thinking Practice P4: Analyzing Problems and Artifacts.
CR1e Students are provided with opportunities to meet learning objectives connected to Computational Thinking Practice P5: Communicating.
CR1f Students are provided with opportunities to meet learning objectives connected to Computational Thinking Practice P6: Collaborating.
CR2a Students are provided with opportunities to meet learning objectives within Big Idea 1: Creativity. Such opportunities must occur in addition to the AP Computer Science Principles Performance Tasks.
CR2b Students are provided with opportunities to meet learning objectives within Big Idea 2: Abstraction. Such opportunities must occur in addition to the AP Computer Science Principles Performance Tasks.
CR2c Students are provided with opportunities to meet learning objectives within Big Idea 3: Data and Information. Such opportunities must occur in addition to the AP Computer Science Principles Performance Tasks.
CR2d Students are provided with opportunities to meet learning objectives within Big Idea 4: Algorithms. Such opportunities must occur in addition to the AP Computer Science Principles Performance Tasks.

CR2e Students are provided with opportunities to meet learning objectives within Big Idea 5: Programming. Such opportunities must occur in addition to the AP Computer Science Principles Performance Tasks.

CR2f Students are provided with opportunities to meet learning objectives within Big Idea 6: The Internet. Such opportunities must occur in addition to the AP Computer Science Principles Performance Tasks.

CR2g Students are provided with opportunities to meet learning objectives within Big Idea 7: Global Impact. Such opportunities must occur in addition to the AP Computer Science Principles Performance Tasks.

CR3 Students are provided with the required amount of class time to complete the AP Through-Course Assessment *Explore – Impact of Computing Innovations* Performance Task.

CR4 Students are provided with the required amount of class time to complete the AP Through-Course Assessment *Create – Applications from Ideas* Performance Task.

Expectations/Course Requirements:

Much of what we do in this class will emulate the real world. This is designed to help prepare students to be more productive, trusted and valued as employees. Participation and a positive attitude is expected of every student. Independence and on-task behavior is expected.

Professionalism is expected at all times. Teamwork and group cooperation is a necessity. All students are expected to act as young professionals in the classroom. Students will treat each other with respect and dignity. Failure to act responsibility can result in disciplinary action and expulsion from the computer science lab.

This course is the gateway to the AP Computer Science Courses offered here at Johns Creek. Completion of this course gives priority to limited seats in those courses based on performance and intent to complete pathway. Top performing students will be recommended for advancement into AP Computer Science Principles as the second step in the pathway of Computer Science.

Class Units and Topics

	Topic	Class Periods
0	Computers and Computing	10
1	Building Blocks of Programming	19
2	Putting the Blocks Together	18
3	**C Programming Projects**	19
4	Thinking Computationally	16
5	Transitioning to Python	14
6	**AP-CSP CREATE**	19
7	Design, Elegance and Efficiency, Networking and the Internet	19
8	Capstone Projects	15
9	Capstone Presentations, Peer Reviews, AP Exam Prep	21

Grading Scale

90-100 A   **80-89** B   **70-79** C   **0-69** F

Grading Weights

Majors	60%
Minors	20%
Semester Diagnostic	20%
Total	100%

Course Policies Specific to this Course

It is very important for students to arrive on time, and to maintain a continuous attendance routine. Our class content builds rapidly, and missing class makes keeping up with the pace of class significantly harder.

With specific prior permission, and only in very extenuating situations, the teacher may authorize some projects to be submitted via email. **These rare situations are the only circumstances in which email collection is accepted.**

While most submissions will be completed via Microsoft Teams, and printing of projects or assignments, if required, shall be completed *prior to the due date*. If projects are not available for collection on arrival on their due dates, they will be penalized as late.

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COVID-19 Guidelines

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Should COVID-19 cases require remote learning, all grading and turn-in requirements shall be in accordance with county-directed policies and will be enforced. Student attendance daily is expected, and attendance will also be enforced according to county guidelines.

Opportunities for extra help or study sessions:

Help sessions may be scheduled for before school, and when possible after school. Students must request help sessions twenty-four hours in advance.

During URL, Teams extra instruction will be by appointment or open office hours which will be announced.

Honor Code/Plagiarism Policy

Integrity is a Johns Creek High School core value. Johns Creek students are expected to demonstrate honesty and integrity in all work submitted to a teacher. The honor code ensures the validity of student work which guides instruction. All JCHS students are bound by the Johns Creek Honor Code. (See Student Handbook for more detailed explanation.)

Recovery Policy

Recovery for student work is strictly in accordance with 2021-2022 Fulton County policy.

Make Up Work Policy

Students may make up all work missed on an excused and preapproved absence. Work assigned during the absence must be returned to the teacher within the same number of days as the absence which was

excused. Unexcused absences may result in grade reduction. There will never be new instruction the day before an assessment. This time will be used for review. Students absent the day of an assessment will take the assessment on arrival back at school.

Late Work Guidelines

Late work will be governed strictly by Fulton County guidelines for 2021-2022.

Technology/Cell Phones at JCHS

Johns Creek High School supports the use of technology for academic pursuits. This includes cell phones, tablets, and laptops. The use and type of technology in a classroom is at the sole discretion of the teacher. All technology must be turned off and put away upon entering each classroom. Permission to use technology in a classroom will be explicitly stated by the teacher. Students may possess technology for personal use outside of classrooms in common areas. All devices must remain in silent mode, and students should use headphones when listening to sound. Students are responsible for the safety and security of their own devices and are not required to possess personal technology for instruction. In the case of an emergency, all technology should be turned off and put away as not to interfere with administrative emergency procedures.

Absolutely no earbuds or earphones are to be worn in class. On specific lab days, they may be authorized at the teacher's discretion. The pacing of our class requires full attention of students.

Computer Science Portal – We now have an online portal for our computer science classes, that will provide real-time blog information, all content presented in classes, assignments, and other information germane to each class. The blog is visible to anyone at http://www.hawkeyedriver.net.

Students are expected to routinely: Be in attendance of Teams classes, check the Team & portal for their assignments and feedback, and to be active in their educational process.

If we have any digital learning days due to inclement weather, all assignments will be given via the course pages and the blog.

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   Student/Date   Parent/Date