Course: Introduction to Software Technology **Year:** Fall 2023 - Spring 2024
Teacher: Cmdr. Raymond Schenk, Ph.D., US Navy (ret) **Email**: schenkr@fultonschools.org
Website: http://www.hawkeyedriver.com **Room #**: 302

Microsoft Teams and Canvas:
We will continue to use Microsoft Teams as our hub for all course materials. All notes, handouts, resources, announcements and assignments will be disseminated and collected through Teams. While there is a web-based version of Teams, it is easier to use the app. (You can download the app to your computer, tablet, and/or phone). Please also get the OneNote app.

However, Canvas is our new Learning Management System that teachers are beginning to implement over the course of this year and next year. Be on the lookout for more information related to the use of this new tool.

Communication will also occur regularly through your school email address (studentid#@fcstu.org) which you should check multiple times a day.

Course Description:

Introduction to Software Technology is the foundational course for **Cloud Computing**, **Computer Science**, Game Design, **Internet of Things**, Programming, Web and Digital Design, and Web Development pathways. This course is designed for high school students to understand, communicate, and adapt to a digital world as it impacts their personal life, society, and the business world. Exposure to foundational knowledge in programming languages, software development, app creation, and user interfacing applications are all taught in a computer lab with hands-on activities and project-focused tasks. Johns Creek Computer Science has an approved seat-time-waiver for this course, so we are also covering the standards for Computer Science Principles. This feature rich course provides credits to completing students for both IST and on-level CSP.

Important note: Students who complete this course successfully will also receive credit for on-level Computer Science Principles, due to the rigor and seat-time waiver that was granted to the teacher for covering both sets of standards.
This credit shows up at the end of the year following the completion of the course.

Course Goals

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

- Identify the basic components of networks in homes, businesses, and across the Internet
- Hand code HTML and CSS3 based web pages without automated tools or software
- Identify work-based skills necessary to work in a highly technical workplace
- Perform basic algorithmic analysis to solve problems and write code in C, Python, and Scratch and other languages
- Create a web-based personal portfolio of artifacts that can lead to employment
- Perform basic public speaking centered on a technical topic
- Explain proper use and risks associated with the use of technology both personally and professionally
- Apply critical thinking to the design and use of technology for business.
- Understand fundamental embedded programming concepts using Raspberry Pi devices

- Understand fundamental syntax and programming operations in multiple languages
- Understand binary math, hexadecimal usages, and other computer science mathematical principles

Standards

IT-CSP-1, IT-IST-1 Demonstrate employability skills required by business and industry.

IT-CSP-2 Create digital artifacts that foster creative expression including programs, digital music, videos, images, documents, and combinations of these such as infographics, presentations, and web pages.

IT-IST-2 Establish a personal online career portfolio and begin uploading relevant artifacts.

IT-CSP-3 Apply abstractions in digital data to explain how bits are grouped to represent higher-level abstractions such as numbers and characters.

IT-IST-3 Explore, research, and present findings on positions and career paths in technology and the impact of technology on chosen career area.

IT-CSP-4 Design and create computer programs to process and extract information to gain insight and knowledge.

IT-IST-4 Demonstrate effective professional communication skills (oral, written, and digital) and practices that enable positive relationships with all audiences of a business.

IT-CSP-5 Develop, Express, implement, and analyze algorithms analytically and empirically.

IT-IST-5 Identify, describe, evaluate, and use appropriate technology for given situations.

IT-CSP-6 Create programs that translate human intention into computational artifacts including music, images, visualizations, and more while exploring the concepts, techniques and development used in writing programs.

IT-IST-6 Understand, communicate, and adapt to a digital world.
IT-CSP-7 Gain insight into the operation of the Internet, study characteristics of the Internet and systems built on it, and analyze important concerns, such as cybersecurity.
IT-IST-7 Use computational thinking procedures to analyze and solve problems.
IT-CSP-8 Develop a logical argument from the many ways in which computing enables innovation and our methods for communicating, collaborating, problem solving, and doing business, and analyze the potential benefits and harmful effects of computing in the way people think, work, live, and play.
IT-IST-8 Create and organize web pages through the use of a variety of web programming tools.
IT-IST-9 Identify and explain the building blocks, principles, and ways to access code within programming languages used today.
IT-IST-11 Describe, analyze, develop, and follow policies for managing ethical and legal issues in the business world and in technology-based society.
IT-IST-10 Design, develop, test, and implement programs using high-level programming languages.
IT-CSP-9, IT-IST-12 Explore how related student organizations are integral parts of career and technology education courses, through leadership development, school and community service projects, entrepreneurship development, and competitive events.

Class Units and Topics

	Topic	Class Periods
0	Course Introduction & Foundational Concepts	**10**
1	Vocabulary of Programming/Introduction to Böhm Jacopini	**17**
2	Programming: Textual Languages	**17**
3	Visual Programming and Animation (Scratch)	**19**
4	Robotics Projects	**17**
5	Algorithms	**16**
6	Python Fundamentals	**18**
7	Development Paradigms and Web 3.0 Introduction	**18**
8	Cloud Computing Fundamentals	**15**
9	Master Projects, Course and Exam Review, Bridge to CS50 AP	**21**

Course Expectations

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 are expected of every student. Independence and on-task behavior are expected.

Professionalism is expected at all times. Teamwork and group cooperation are 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** and **Embedded Programming (Internet of Things)** and **Cloud Computing** Pathways 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. Students with all four years in computer science can now complete TWO programming pathways in four years.

Grading Scale

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

Grading Rules –
All grades are available to students and families through Infinite Campus.

Grading Categories Weights (2023 Policy)

Major Assessments	55%
Minor Assessments	35%
Practice Assessments	10%
Total	100%

Late work/ make up work policy:

What happens when a student misses work due to being absent (excused/unexcused)?

- Students will have an equal number of days they were absent to make-up their major assessment. For missed major assessments, students will communicate with their teacher to develop a make-up plan. If the major assessment is not made up by the deadline of the agreed upon plan discussed between the teacher and student a zero will be entered. At this time, the student may enter the recovery process for a maximum grade of a 75. For example, if a student misses a major assessment due to being absent on Tuesday, upon their return on Wednesday they will be expected to take the make-up assessment unless they communicate and develop a make-up plan with their teacher.
- For practice and minor assessments after the deadline of an equal number of days a student was absent, teachers will deduct 10% from a late or missing assignment. After this, teachers will deduct 25%.
- If a student fails to turn in a late or missing practice or minor assessment by the end of the unit, teachers will enter a zero for the assessment in the gradebook.

What happens when a student is present in-class but does not turn in an assessment by the due date?

- Teachers will deduct 10% of the late or missing assessment grade for the first day it is late. After this the teacher will deduct 25%.
  If a student fails to turn in a late or missing assessment by the end of the unit, teachers will enter a zero in the gradebook.

Final Graded Experiences:

- Professional Learning Communities (PLCs) will administer their final graded experience during the last regular scheduled week (full school days) of each semester. The graded experience will count as a major assessment.
- PLC's will have the flexibility to determine if these graded experiences will be cumulative or not.
- These graded experiences will count as one major assessment and will be completed within one allotted class period.
- Final cumulative graded experiences will not be administered second semester if the course has a state- mandated End-of-Course (EOC) exam or national Advanced Placement (AP) exam.
- Students are limited to one recovery attempt as outlined above in the recovery section. The graded experience recovery will take place during the last three days of school (half-days).

Recovery:

- Students are limited to one recovery attempt per major assessment if they scored below 75% on the initial assessment. Recovery will not be provided for minor or practice assessments.
- Students can earn a maximum grade of 75% on the recovered major assessment. Students who earn between 75 – 100 on the recovered assessment will receive a 75%. Students who earn below a 75 on the recovered assessment will receive the grade earned or the original grade; whichever is higher.
- The original score will be noted in the comment section of the grade book when a student recovers a major assessment.
- Recovery must be requested by the student and completed prior to the due date of the next major assignment/assessment.
- Professional Learning Communities (PLC's) may require a student to complete any missing assessments, remediation activities, and/or attend extra-help sessions prior to recovery opportunities.

Honor Code: Integrity is a core value of the Johns Creek High School community. Johns Creek students are expected to demonstrate honesty and integrity in all endeavors. All student work submitted must be the student's own work. The Honor Code applies to all students and to all assignments (classwork, homework, quizzes, exams, papers, projects, labs, etc.) Collaborating, copying, plagiarizing etc. all constitute attempts to present another's work as though it was one's own and will not be tolerated. This includes, but is not limited to:

- Any form of collaboration on any assignment unless explicitly allowed by the teacher
- Copying the work of another student
- Sharing one's own work with another student
- Sharing the content of an assessment or exam with another student
- Using information/resources on an assignment that are not explicitly allowed by the teacher
- Using electronic devices to aid on an assignment when not explicitly allowed by the teacher
- Plagiarism or the unauthorized use or close imitation of the language or thoughts of another and representing them as one's own. This includes copying or cutting-pasting (even with minor revisions) from any source without proper citation.
- Note that this list is not exhaustive and other actions may violate the spirit of the Honor Code

All electronic devices should be in the student's bag or away from their desk during all assessments unless explicitly allowed by the teacher. If a student is in possession of a phone or electronic device that can transmit or record information during a major it will result in automatic academic dishonesty. This means the student will receive a zero on the major with no option to recover. The student will not be eligible to bring this claim to the academic dishonesty panel.

Note that JCHS students enrolled in any courses with non-JCHS institutions (Fulton Virtual, Georgia Virtual, Dual Enrollment, etc.) are subject to the JCHS Honor Code policy as well as the Honor Code policies of the other institution. Johns Creek has no control over the decisions of other non-JCHS institutions.

Suspected violations of the honor code on major assignments will be referred to an Honor Code panel consisting of one teacher, one counselor, and one administrator who have no connection to the specific case. The panel will provide due process to determine if, in fact, the Honor Code has been violated. If the panel determines that a student has violated the Honor Code: *1st Offense* results in the student being assigned a 0% on the assignment with no possibility of recovery; *2nd Offense* results both in the 0% without possibility of recovery and an Honor Code Violation entered on the student's official record.

Honor code violations may also jeopardize membership in honor societies and any honors recognitions as well as a student's ability to represent Johns Creek High School.

Extra Credit Policy
No grades will be given for nonacademic assignments.

Extra Help
Extra help Is routinely available most days before and after school. Flex periods and even lunch period 4 are often available by appointments.

Proper use of technology

In grades 6 through 12, the use of Personal Communication Devices (PCDs) is not allowed during instructional time and will only be allowed when explicitly instructed to do so by a teacher or other school staff member. Teachers will either have a visual cue or will verbally notify students when they are allowed to have their cell phones out during the class period.

Please note: Use of (or participating in using) personal or school technology resources to distribute, display, or record inappropriate material is a serious, **Tier III violation of the Fulton Schools Student Code of Conduct.** Inappropriate material does not serve an instructional or educational purpose and includes, but is not limited to, the following:

- is profane, vulgar, lewd, obscene, offensive, indecent, or threatening
- advocates illegal or dangerous acts
- causes disruption to the Fulton County School District, its employees or students
- advocates violence
- contains knowingly false, recklessly false, or defamatory information
- is otherwise harmful to minors as defined by the Children's Internet Protection Act

The use of cell phones and other PCDs for noneducational purposes, including but not limited to, recording staff and/or students without permission or other inappropriate content is strictly prohibited.

Any report of inappropriate virtual conduct will be investigated by the Johns Creek High School administration and offenders will be subject to disciplinary consequences in line with the Fulton Schools Student Code of Conduct, **up to and including permanent expulsion from Fulton County Schools.**

Computer Science Lab Specific Instructions

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.**

Printing of all projects or assignments 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.

Computer Science-Specific Plagiarism and Hacking Policy

The computer science teacher has scanning tools to determine code and programmatic cheating, as well as artificial intelligence generation of code. These activities are considered plagiarism and will be handled according to the above stated policies. It typically takes less than .7-1.3 seconds for these tools to identify students turning in non-original code. These tools allow the teacher to rule out any false positives, so students doing their own work are never at risk.

Students are forbidden to bring any hacking tools on their computers to school. Use of programs such as Jack-and-Jill or other network penetration or scanning tools will not be tolerated and will subject students to referral for disciplinary action.

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.