**Course Overview:**
This course helps you develop problem solving skills in the domains of computer science. Computing impacts humanity in big and small ways, and at the end of this course you will be empowered to make real, positive contributions.

We'll study Creative Development, Data, Algorithms and Programming, Computer Systems and Networks, and the Social Impact of Computing, as laid out in the College Board's AP Computer Science Principles Conceptual Framework (linked here). Students are expected to take the AP Exam, which has two parts: (1) a programming project that you'll send to the College Board during the school year, and (2) a 2-hour multiple choice test in May.

**Units and Activities: What will we be learning about and doing in this course?**

Our year will be split into these units of study:
1. Digital Information
2. Python Coding
3. Loops and Lists
4. Data Analysis
5. Independent Project (which you'll send to the College Board)
6. How the Internet Works
7. Online Data Security
8. Algorithms and Simulations
9. Computing Innovations

And here's the basic roadmap of our activities:
Our three main “textbooks” for the year will be:

**Harvard University's CS50**
Watch their introduction video [linked here.](#)

**Code.org**
Preview the widgets we’ll use [linked here.](#)

**Khan Academy**
View their curriculum overview [linked here.](#)

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**Standards: What knowledge and skills will I gain by the end of this course?**

**Anchor Standards:**

*Creating Computational Artifacts:* Students write programs that combine building blocks to implement algorithms, and judge the efficiency of different approaches to solving problems computationally.

*Digital Citizenship:* Students work collaboratively to design and develop programs using an iterative development process. Additionally, students explore unintended effects of computing innovations, legal and ethical concerns, and the responsibilities of programmers.

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**Course Standards:** This course builds student knowledge using the College Board’s AP CSP Conceptual Framework, which asks students to learn:
Skills with Data:
- DAT-1: translate between data represented internally by a computer and a representation more easily understood by people
- DAT-2: process data to discover information and create new knowledge

Skills with Computer Systems and Networks:
- CSN-1: explain how computer networks facilitate the transfer of data
- CSN-2: explain how parallel and distributed computing process large data sets

Skills with Algorithms and Programming:
- AAP-1: program a computer to represent and organize data in multiple ways, in order to find specific solutions to generalizable problems
- AAP-2: use sequencing, iteration, and selection when programming a computer to handle varied input values
- AAP-3: use procedures and parameters to break down problems into smaller pieces that can be reused
- AAP-4: identify problems that computers cannot solve or can only solve in an unreasonable amount of time

Skills with Creative Development:
- CRD-1: create programs that incorporate multiple perspectives through collaboration
- CRD-2: create programs using an iterative design process that is user-focused, incorporates implementation-feedback cycles, and leaves ample room for experimentation and risk-taking

Skills with Analyzing the Impact of Computing
- IOC-1: explain the unintended consequences of computing innovations
- IOC-2: explain the risks to personal safety and identity that are involved in the use of computing innovations

Assessment of Learning:
Units are organized around discrete skills. Students learn and practice the skills, then when they are ready the students demonstrate their mastery of a skill. Formative assessments track a student's progress throughout a unit.

Summative assessments are generally composed of two parts:
- Part 1 = a portfolio of the skills you mastered throughout a unit
- Part 2 = a project in which you integrate those skills or apply them in a new context

Distinguished level grades indicate that a student has consistently engaged more deeply with the skills throughout a unit, not just during the summative assessment at the end. A "Spicy 🌶 Menu" describes these opportunities for deeper engagement, and is published at the start of each unit.

For information about assessment types, scoring, and overall grade calculation: click here.

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**Communication:**

**How Do I Access Work from Home, and What Should I Expect?**

- All work will be posted in Google Classroom.
- The work will be explained during our in-person meetings and/or by video posted to Google Classroom.
- The work will also be explained in our Class Planner posted to Google Classroom.
- If you have any questions, email your teacher.

**How Do I Know What My Grades Are?**

- On Summative Assessments, teachers will provide both a 4-point grade and a letter grade.
- You can monitor your progress in the following ways:
  - By reading feedback and scoring returned to students on summative assessments.
  - By monitoring the scores and Overall Course Mastery Grade in the Parent/Student portal on JumpRope. Reminders to check grades will be sent from the school.
  - Communicating with your teacher if you are unclear.

**Where Can I Find This Syllabus during the School Year?**

- This syllabus will be available on the school website in each subject’s department tab once the school year is up and running. It will also be available in our Google Classroom.

**How Do I See What’s Due?**

- Assignment and summative assessment due dates with handouts are posted in Google Classroom, with connection to Google Calendar, for student access.

**How Do I See What’s Past Due?**

- If a student is missing a grade on an assessment, it will be listed in the red “Missing Assessment” section of the JumpRope Parent/Student Portal along with any attachments. Please contact your teacher if you have any questions.

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**Materials:**

You’ll need a laptop with a working internet connection. You can use a personal device or the school can issue you a device on request.

Sometimes you’ll be asked to post digital photos of work you’ve done at home or on paper. For this you’ll need access to a phone camera.

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**Accounts:**

To support learning I may ask students to create accounts using your school email on one or more of the following educational or professional websites: github.com, khanacademy.org, glitch.me, code.org,
Schoolwide Procedures:
Please see the Student Handbook for Procedures and Policies related to: Due dates and deadlines, extra credit, retaking assessments, and turnaround time for grade entry.

Personal Mobile Devices: This class will follow the procedures outlined in the student handbook.