Course Overview

This course teaches basic programming. Students learn fundamental computing skills while designing, coding, and debugging their own computer programs. Students will work on games, basic math and geometry, physical outputs using our laser cutter or 3D-printer, and visual design. Game designer John Romero says that “programming is a creative art form based in logic”, and this class aims to help students experience this from many angles. Communication and collaboration are emphasized. In the second semester, projects are the central focus while students learn new skills necessary to publish their work online. Additional topics include data-driven design and animation. Computer Programming I & II provide the background to ensure a smooth transition into AP and college-level computer science courses.

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

1. Creating Drawings
2. Functions, Mouse Events, and Properties
3. Mouse Motion Events, Conditionals, and Helper Functions
4. More Conditionals, Key Events, and Methods
5. Complex Conditionals and More Key Events
6. Groups, Step Events, and Motion
7. Local Variables, For Loops and Random Values
8. New Shapes, Types and Nested Loops
9. Strings and While Loops
10. Lists and Return Values
11. 2D Lists and Board Games
12. CS1 Creative Project with an Introduction to Images and Sounds

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

This course will assess the knowledge and skills students build in key Anchor Standards and Content Standards.

Anchor Standards:

- **Developing and Using Abstractions:** Abstractions are formed by identifying patterns and extracting common features from specific examples to create generalizations. Using generalized solutions and parts of solutions designed for broad reuse simplifies the development process by managing complexity.

- **Creating Computational Artifacts:** The process of developing computational artifacts embraces both creative expression and the exploration of ideas to create prototypes and solve computational problems. Students create artifacts that are personally relevant or beneficial to their community and beyond. Computational artifacts can be created by combining and modifying existing artifacts or by developing new artifacts. Examples of computational artifacts include programs, simulations, visualizations, digital animations, robotic systems, and apps.
Testing and Refining: Testing and refinement is the deliberate and iterative process of improving a computational artifact. This process includes debugging (identifying and fixing errors) and comparing actual outcomes to intended outcomes. Students also respond to the changing needs and expectations of end users and improve the performance, reliability, usability, and accessibility of artifacts.

Content Standards: This course builds student knowledge using the standards defined in the K12 Computer Science Framework. The content standards for this course are:

- **3A-AP-13** Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests.
- **3A-AP-14** Use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables.
- **3A-AP-16** Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions.
- **3A-AP-17** Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
- **3A-AP-19** Systematically design and develop programs for broad audiences by incorporating feedback from users.
- **3A-AP-21** Evaluate and refine computational artifacts to make them more usable and accessible.
- **3A-AP-22** Design and develop computational artifacts working in team roles using collaborative tools.
- **3A-AP-23** Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs.

Assessment of Learning

Assessment Types:

Three types of assessments will be used to determine if you have gained the necessary knowledge and skills of this course: Formative assessments, Summative assessments, and Habits of Work for Learning. Each is briefly described below:

- **Formative Assessments:** *Formative = Forming my knowledge and skills.* Formative Assessments receive a weight of .1 in the overall grade. Formative assessments are information for teachers, students, and parents on the progress students are making as they practice gaining knowledge and skills found in Anchor Standards. Teachers use the results of these assessments as data to understand individual student learning needs, adjust instructional pathways, and modify lessons to help students better meet course standards. Students use the results of these assessments to determine how they are progressing and to plan steps to ensure their success.

- **Summative Assessments:** *Summative = Summation of my knowledge and skills.* Summative Assessments can receive three different weights: 1, 1.5, or 2 depending on the size of the assessment, and therefore have the greatest impact on the Overall Course Mastery Grade. Summative assessments are used as a measure of independent student achievement in Anchor Standards. Throughout this course, summative assessments provide benchmark student achievement data. A summative assessment will always have clear scoring criteria for students to understand how they are performing.

- **Habits of Work for Learning:** Habits of Work for Learning (HOWLS) are skills and dispositions that are essential to the learning process but do not provide evidence of what a student knows or can do in relation to content. WUHSMS teachers work to foster Habits of Work for Learning in three categories: preparation, participation, and perseverance.

Assessment Scoring:

Teachers will provide framing for summative assessment scores using proficiency level scoring criteria for grading similar to the example below:
HOWL Scoring:
HOWLs will be scored at least once per checkpoint, and will be based on the frequency with which students demonstrate each of the habits: preparation, participation, and perseverance.

How is my Overall Course Grade Determined?
Overall course grades will be reported as letter grades and will be comprised of:

- Formative & Summative Scores: 95%
- HOWLs: 5%

For more information, please see the WUHSMS student handbook.

Communication:

How Do I Know My Grades?

- On Summative Assessments, a teacher 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
  - By monitoring the grades sent home quarterly through report cards
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.
- This syllabus will also be available, together with all other course documents, on the course website: http://wcs.tools/prog

How Do I See What’s Due?
- Summative assessment due dates and handouts are posted to the blue “Upcoming Assessment” section of the JumpRope Parent/Student Portal on or before the day they are assigned to students.

How Do I See What’s Past Due?
- If a student is missing an assessment, it will be listed in the red “Missing Assessment” section of the JumpRope Parent/Student Portal along with any attachments.

Best Way to Contact Me:
- Email at andrewsmith@wcsu.net
- Voicemail on my school phone at 457-1317 x1026
- I’m happy to have a conversation over the phone or in person -- please use email or voicemail to arrange this in advance.

Materials:
Student will need to bring the following to class every day:
- a 1 to 1.5 inch binder (no paper needed, paper will be provided)
- writing utensil with backup (pencil or pen is fine. a highlighter is also handy but not required)
- a functioning laptop with good internet connectivity and a charging cord

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

Teacher Contact Information:
- Email at andrewsmith@wcsu.net
- Voicemail on my school phone at 457-1317 x1026
- I’m happy to have a conversation over the phone or in person -- please use email or voicemail to arrange this in advance.
Student name (printed): ____________________________________________________________

Student Signed: ______________________________ Date: ________________

Parent/Guardian name (printed): ________________________________________________

Parent Signed: ______________________________ Date: ________________