We designed our innovative high school computer science program around these **principles:**

- emphasize computational thinking and its interdisciplinary nature
- elevate experimentation, the courage to fail, and intrinsic motivation
- use project-based learning and mastery learning
- empower students with choice and a mix of independent and structured learning
- promote accessibility to all students
- employ multiple delivery methods and resources.

Students in the Burke computer science program progress through **three levels of proficiency** in **five domains** of computer science:

- Ethics of Computing
- Algorithms and Programming
- Data and Analysis
- Networks and the Internet
- Computing Systems

**Required Courses**

- Starting with the Class of 2022, all students take Introduction to Computer Science

**Electives**

- Game Development
- Internet of Things
- Web Development
- Embedded System
- App Development
- Data Visualization
- Java/Python
- Robotics
- Networks and Cybersecurity
- Wearable Tech
- Artificial Intelligence
- Augmented and Virtual Reality
Independent Projects

- Students can complete individual or small team projects that link computer science with other fields of study, that develop deeper or specialized understanding in a particular area of computer science, or a pinnacle project created to advance social justice.

Sample Record of Achievement

Student achievement in these domains is tracked on a Record of Achievement that students may choose to include with their transcript:

```
BURKE
EDMUND BURKE SCHOOL

Record of Achievement for: Sample Student Name
Creative Portfolio: http://burkecs.org/sites/SampleStudent

Computer Science Program

OVERVIEW OF ACHIEVEMENT

<table>
<thead>
<tr>
<th>Domains</th>
<th>Introductory</th>
<th>Proficient</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ethics in Computing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Algorithms and Programming</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3. Data and Analysis</td>
<td>✓</td>
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<tr>
<td>4. Networks and the Internet</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>5. Computing Systems</td>
<td>✓</td>
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</tbody>
</table>

Independent Project in CS: Developed a steganography and encryption app allowing users to encrypt messages and hide those messages within an image, and to retrieve and decrypt hidden messages from an image with a key. Developed and published a website to distribute the app for both PC and MAC. Technologies used include Python, PIL, tKinter, HTML, and CSS.

Web Development: Produced web pages with HTML, CSS, and JavaScript.

Back-end Web Development: As lead developer of a team from the web development class, Robbie built a back-end system for a website using PHP and MySQL.

Domains in Computer Science
- Ethics of Computing – social implications and issues of equity, justice, and access
- Algorithms and Programming – creating instructions and controls to power computing devices
- Data and Analysis – effectively collecting, organizing, storing, analyzing, and utilizing data
- Networks and the Internet – communication, connectivity, and security between devices
- Computing Systems – hardware, operating systems, and applications

Mastery Learning
Edmund Burke School is a member of the Mastery Transcript Consortium, and aspects of our program are utilizing the principles of mastery learning. This record of achievement serves as our mastery transcript for computer science.