# Course Outline

## Ranking:

This is a ranking of the standards we find easiest for the middle schoolers to understand, and is the order we suggest teaching them in

1. Differences between Human and Machine
2. Tools and Resources
3. Impact of Technology
4. Access to Technology
5. Accuracy and Bias
6. Hardware and Software
7. Troubleshooting
8. Data
9. Network
10. Computational Thinking
11. Algorithmic Problem Solving
12. Flexibility in Problem Solving
13. Abstraction and Hierarchy
14. Feedback
15. Legal
16. Collaboration Design and Publication
17. Parallelization - Michael Bratton
18. Problem Solving with Programming

## Overview:

- Using google docs, sheets, and slides for a computer science project (2-3 weeks)
- A week of the impact of technology
- An intro to computing (hardware vs software, humans vs computers)
- Troubleshooting, Networks, and Data
- Problem solving with programming (2-3 weeks)
    - Other topics spread throughout

Week 1-3

- For the first two or three weeks, we suggest having each student work on an overarching project about a computer-related topic of their choice that utilizes the Google Suite (Google Docs, Sheets, and Slides). This could be a project that introduces how to use each Google Suite Software and then asks the student to create one of their own about a computer related topic. Not only would this teach them how to use each software, they can learn about some of the topics you may cover later on.

Week 4

- After completing the project, start teaching students about the significant impact technology has on our everyday lives. This will help students understand the importance of learning these technology-related topics. Many Indiana state standards for computer science cover the impact technology has on our lives. We put this earlier in the course because it doesn't require any prior knowledge and is important for the students to know as we delve deeper into the course.

Week 5

- During week five, we suggest giving your students a general introduction to computers. This includes two main topics: the differences between humans and computers, and the differences between hardware and software. This also includes simple computer knowledge that will help the rest of the course go smoothly. We suggest this because the student should know what they're using before they use it.

Week 6

- By now, students should have a basic understanding of computers. Therefore, we suggest starting more involved topics during week six. These topics include troubleshooting, networks, and data. These topics are moderately difficult, and so they will act as a transition into more challenging topics. We tried to build up as much knowledge as we could before starting these topics.

Week 7-9

- For the last three weeks, we suggest starting an *Intro to Programming* course provided by Khan Academy. This is free and teaches simple JavaScript while making it fun for middle schoolers. During these weeks, you can take breaks to teach the last standards such as algorithms and parallelization. The programming course includes many of the standards within it making it a great finish to the class and an easy way to cover them. These are the hardest topics to cover, which is why we spent the weeks before preparing them for the more challenging work.