# AP Computer Science Principles

**Midland High School**
**Semester:** Fall, 2025
**Academic Year: 2025–2026**
**Length of Course:** 1 Year
**Number of Credit Hours:** 1
**Prerequisite:**

Successful Completion of Algebra 1 with a strong foundation of basic linear functions, composition of functions, and problem solving strategies that require multiple approaches and collaborative efforts. In addition, students should be able to use a Cartesian (x, y) coordinate system to represent points on a plane.

**Instructor**: Staci Rogers
**Email**: staci.rogers@midlandisd.net
**Conference Period**: 10:35 - 11:50 AM

## Course Description

AP Computer Science Principles introduces students to the breadth of the field of computer science. In this course, students will learn to design and evaluate solutions and to apply computer science to solve problems through the development of algorithms and programs. They will incorporate abstraction into programs and use data to discover new knowledge. Students will also explain how computing innovations and computing systems, including the Internet, work, explore their potential impacts, and contribute to a computing culture that is collaborative and ethical.

## Course Objectives

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

| College Board Big Ideas | |
|---|---|
| Big Idea 1 | Creative Development (10-13%)<br>• Collaboration<br>• Program Function and Purpose<br>• Program Design and Development<br>• Identifying and Correcting Errors |
| Big Idea 2 | Data (17 -22%)<br>• Binary Numbers<br>• Data Compression |

| | |
|---|---|
| | • Extracting Information from Data<br>• Using Programs with Data |
| Big Idea 3 | Algorithms and Programming (30-35%)<br>• Variables and Assignments<br>• Data Abstraction<br>• Mathematical Expressions<br>• Strings<br>• Boolean Expressions<br>• Conditionals<br>• Nested Conditionals<br>• Iteration<br>• Developing Algorithms<br>• Lists<br>• Binary Search<br>• Calling Procedures<br>• Developing Procedures<br>• Libraries<br>• Random Values<br>• Simulations<br>• Algorithm Efficiency<br>• Undecidable Problems |
| Big Idea 4 | Computing Systems and Networks (11-15%)<br>• The Internet<br>• Fault Tolerance<br>• Parallel and Distributed Computing |
| Big Idea 5 | Impact of Computing (21-26%)<br>• Beneficial and Harmful Effects<br>• Digital Divide<br>• Computing Bias<br>• Crowdsourcing<br>• Legal and Ethical Concerns<br>• Safe Computing |
| College Board Computational Thinking Practices | |
| • Computational Solution Design<br>• Algorithms and Program Development | |

- Abstraction in Program Development
- Code Analysis
- Computing Innovations
- Responsible Computing

## Instructional Materials & Supplies

### Programming Language & Environment:

- JavaScript
- Runestone Academy (Mobile CSP)
- Off-Line IDEs
  - Visual Studio
- AP Classroom
- www.CodeHS.com
- Code.org

### Supplies Needed

- Spiral Notebook
- Pens (multi-color)
- Glue Sticks

## Course Outline

| UNIT | TOPIC | APPROXIMATE TIME |
|---|---|---|
| Programming with JavaScript | What is Code?<br>Uses of Programs<br>Introduction to Karel<br>The Main Function<br>Top Down Design<br>Hello World<br>Variables<br>User Input<br>Basic Math in JavaScript<br>Commenting Your Code<br>Using Graphics<br>Mouse Events | 6 Weeks |
| JavaScript Control Structures | Booleans<br>Logical Operators<br>Comparison Operators<br>If Statements and Conditionals<br>Key Events<br>For Loops<br>Random Numbers | 3 Weeks |

| | | |
|---|---|---|
| | While Loops | |
| Functions and Parameters | Functions and Parameters<br>Functions and Return Values | 2 Weeks |
| Basic Data Structures | Intro to Lists/Arrays<br>Indexing<br>Adding/Removing from Arrays<br>Array Length & Looping Through Arrays<br>Finding an Element in an Array<br>Removing an Element<br>Simulation | 3 Weeks |
| Create Performance Task | Students create own application - part of the AP Exam | 2 Weeks (Minimum 9 hours) |
| Digital Information | Number Systems<br>Encoding Text with Binary<br>Image Manipulation<br>Data Compression<br>Lossy Compression<br>Cryptology | 3 Weeks |
| The Internet | Internet Hardware<br>Internet Addresses<br>Websites, DNS, and Routing<br>Packets & Protocols<br>Sequential, Parallel, & Distributed Computing<br>Cybersecurity<br>The Impact of the Internet<br>Creative Credit and Copyright | 2 Weeks |
| Data | Getting Started with Data<br>Visualizing & Interpreting Data<br>Data Collection & Limitations | 1 Week |

## Grading Breakdown

Major assignments are those that allow you to demonstrate mastery of the course objectives. Minor assignments include skill checks, quizzes, homework, and other short assessments that contribute to your overall understanding of the course material.

| Category | Percentage |
|---|---|
| Major Assignments(Tests, Projects) | 60% |
| Minor Assignments (Quizzes / Skills Checks) | 40% |
| Semester Exam / Project | 15% |

Grade Scale: A = 90–100 | B = 80–89 | C = 70–79 | F = < 70

Semester grades include a grade for each of the three six-week periods and an exam or project that is weighted 15% of the overall semester grade.

# Grading Policies

1. All assignments must be done during class time or in the computer lab!
2. Quizzes and tests are 60% of your overall grade.
3. Computer Science Students
    a. Each unit we will complete a minimum of 3 coding activities.
    b. All coding activities will be averaged as one assignment.
4. Daily warm up grades will be combined into a weekly grade every week.
5. There will be a minimum of 6 graded assignments each six weeks. Each unit will have a minimum of 4 graded assignments.

## Classroom Expectations

- Stay engaged during class. Keep your phone put away during class.
- Be persistent about your assignments
- Take notes! Use your notes!
- Come to tutorials when you are struggling
- You may request to retest when your score on a test is below 75%.
    - It is mandatory that you complete at least one tutorial session to complete error analysis on the original assessment.
    - All retake assessments must be completed during tutorials.

### Tutorial Times

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|---|
| 8:00 to 8:30 AM | X | | X | X | X |
| Lunch | X | X | | X | X |
| 4:15 to 5:00 PM | X | | | | |

Your full participation ON A WEEKLY BASIS is not only a requirement, it is also an essential aspect of the course process. The course content will build off of skills from previous instruction.

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## Attendance & Participation

### Attendance

- All work must be completed regardless of being absent.
- Projects will have pre-determined due dates. If you are absent when a project is due, you will receive late penalties if it is not turned in prior to the absence!
- All tests and quizzes must be made-up during tutorial times - NOT during class time.
- Programs must be completed by the due date!

### Tardiness

- The MHS Tardy policy will be enforced!
- You are expected to be logged into the computers by the time the tardy bell rings.
- A daily warm-up is expected to be completed within the first 5 minutes of class.

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## Late Work & Make-Up Policy

- Students are allowed one day of make-up time for each day of absence
- Late assignment penalties:
  - 1 School Day Late- Maximum Grade of 90
  - 2 School Days Late- Maximum grade of 80
  - 3-5 School Days Late- Maximum grade of 70
- Missed assessments must be rescheduled
- Late work will be assessed as follows:
  - 1 Day Late: - 10% deducted

- 2 Days Late: - 20% deducted
- 3 Days Late: - 30% deducted
- 4 Days Late: - 40% deducted
- 5 Days Late: - 50%  deducted

- More than 5 Days Late: Not Accepted

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## Academic Integrity

Cheating or plagiarism is not tolerated. First offense may result in a zero and parent contact. Further violations follow district policy.

# Use of AI Tools

## School Policy

Academic Achievement Grading System, pg. 12

> B. The use of Artificial Intelligence (AI) refers to computer systems and machines that mimic human processing and cognitive abilities.  Student use of unapproved AI is considered academic dishonesty and will result in academic penalties.  All work submitted by students should be original.

While some AI tools may be permitted, ALL submitted work will be subject to AI Detection tools. Should work be determined to be substantially AI generated, students will receive a score of no greater than a 1 with the option to redo the assignment under teacher supervision. Also, if it is suspected that AI tools were used to write coding assignments, students will be required to provide detailed explanations of how their code works.

### College Board Policy

AP Computer Science Principles Student Handouts, page 8

#### Plagiarism

The use of program code, media (e.g., video, images, sound), data, information, or evidence created by someone else or with generative AI tools in the creation of a program and/or a program code segment(s), without appropriate acknowledgment (i.e., through citation, through attribution, and/or by reference), is considered **plagiarism**. A student who commits plagiarism will receive a score of 0 on the Create performance task, including their responses to the written response prompts on the end-of-course AP Exam.

To the best of their ability, teachers will ensure that students understand how to ethically incorporate ideas that are not their own and provide credit to the original creator or source, as well as the consequences of plagiarism.

#### Acceptable Generative AI Use

Students are permitted to utilize generative AI tools as supplementary resources for understanding coding principles, assisting in code development, and debugging. This responsible use aligns with current guidelines for peer collaboration on developing code.

Students should be aware that generative AI tools can produce incomplete code, code that creates or introduces biases, code with errors, inefficiencies in how the code executes, or code complexities that make it difficult to understand and therefore explain the code. It is the student's responsibility to review and understand any code co-written with AI tools, ensuring its functionality. Additionally, students must be prepared to explain their code in detail, as required on the end-of-course AP Exam.

## Industry-Based Certifications

### Required Testing

- Complete a Mock AP Exam
- AP Computer Science Principles Exam
    - Multiple Choice Exam (May 15, 2026)
    - Completion of the Create Task Portfolio project (Due 11:59 PM Eastern Standard Time on April 30, 2026)

## Career & Technical Student Organization (CTSO) Involvement

Students are encouraged to participate in:

- **Academic UIL in Computer Science**
- **BPA**

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## Safety & Equipment Use

### Equipment Use

- Students will be assigned seats.
- Any issues with the computer system must be reported IMMEDIATELY!
- Students are not to mark their assigned area with writing utensils
- Do not lean back in the chairs
- Do not unplug or plug anything into the outlets or powerstrips without permission first!
- Do not tamper with the cords, wires, plugs, etc. on the desktop computers!
- Do not move keyboards or mice around the room to different computers!
- Any damage to equipment may result in disciplinary action!

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## Parent/Guardian Communication

- Progress reports emailed every 3 weeks if grade is below 70.
- Grades available in Skyward
- Please email or call with questions or concerns
- Use of all school communication platforms
  - Class Dojo
  - Blackboard
  - Email

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## Acknowledgment of Understanding

Please return this signed page by September 2, 2025.

**Student Name:** _____ **Signature:** _____

**Guardian Name:** _____ **Signature:** _____

**Preferred Contact (Email/Phone):** _____