Computer Science Track Overview

By Immy Tree

What is Computer Science (CS)?

Definition: “The study of how computers work, how software is built, and how data is processed.”

How Computers Think:

- *Algorithms*: Step by step programs to solve problems.
- *Data Structures*: Ways to store data efficiently (ex. lists, trees, graphs...).

What Computers Do:

- *Web and App Development*: Making softwares and websites.
- *Artificial Intelligence*: Teach computers how to learn from data, and to generate data.

Why Choose CS?

- **High Demand and Future Job Opportunities**
  - Demand for workers in AI occupation is strong
  - High potential earnings

- **Creative + Problem Solving Skills**
  - Improves critical thinking and problem solving skills

- **Impact Across Industries**
  - CS impacts multiple industries
  - Ex. healthcare: Analyzing medical data, AI diagnostics, hospital systems

What You'll Learn/Do

Programming Language(s)

Popular coding include Python, Java, and C++.

Tech Skills

Algorithms, data structure, web development, cybersecurity awareness

Skills

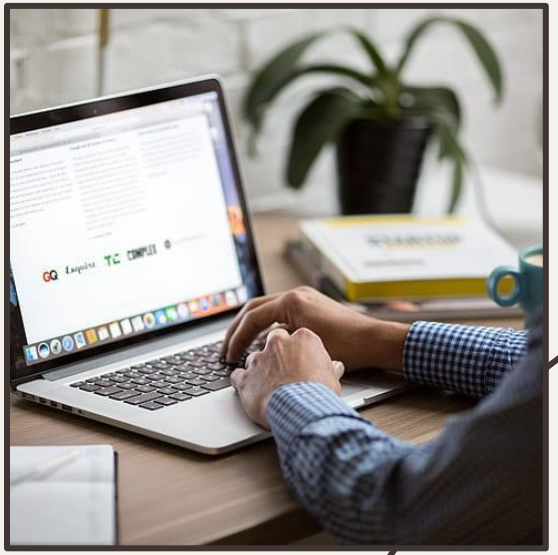
Statistics, math, creativity, communication and teamwork

Projects

Create apps, games, robotics

Courses/Paths

- **Intro to Computer Science / Programming 1:** Basic coding, problem-solving, algorithms, logic.
- **AP Computer Science A:** Java programming, object-oriented design, algorithms.
- **Cybersecurity:** Encryption, network safety, ethical hacking basics.
- **Artificial Intelligence / Machine Learning:** How AI models learn, data collection, real-world uses.
- **Independent Project:** Build your own app, website, or hardware project.
- **Internship / Work Experience:** Apply classroom knowledge to real-world settings.



Careers/College Majors

Career Paths

- Software engineer / developer
- Data scientist / data analyst
- Cybersecurity analyst / penetration tester
- Web / mobile app developer
- AI / ML engineer or researcher
- UX/UI designer

College Majors

- Computer Science
- Data Science
- Software Engineering
- Cybersecurity
- Artificial Intelligence
- Computer Engineering

How to Begin?

Clubs & Competitions:

- CS Club / Coding Club
- Robotics Team / FIRST Robotics
- Girls Who Code
- Hackathons (local or online)
- CyberPatriot, USACO, CodeQuest, HackerRank challenges

Online Learning & Practice:

- Codecademy, Khan Academy, Coursera, W3Schools
- GitHub for sharing projects
- LeetCode / HackerRank for coding practice

Community & Career Exploration:

- Internships / shadowing / summer programs
- Volunteer to build a website or app for a local organization

Complete this form to show off what you've learned!

Quiz Form:

https://forms.gle/MtNpudxdzE4F5YYv9