FROM LOGIC TO CHIPS

A Year-Long Hands-On Technology & Engineering Program

Program Overview: This year-long program will take the place of a study hall and give students an engaging, beginner-friendly introduction to how computers, electronics, and modern engineering tools are actually used. Students will move from simple ideas like 1s and 0s to designing digital circuits, laying out chips, working in Linux, applying cutting-edge AI workflows, and creating printed circuit boards through hands-on projects.

WHY THIS PROGRAM MATTERS

Students use computers, phones, games, and AI every day, but most never get to see what is happening underneath the screen. This program opens that door. It introduces real engineering concepts in an approachable way while building problem-solving, creativity, persistence, and confidence with technical tools.

WHAT STUDENTS WILL EXPLORE

- **Binary Numbers & Boolean Logic —** Learn how computers represent information using 1s and 0s and how simple rules become the foundation of computation.
- **Logic Gates & Digital Circuits —** Build the basic building blocks used inside processors, memory, and nearly every modern electronic system.
- **Chip Design —** See how engineers combine digital circuits into larger systems and begin creating designs that could become real silicon.
- **Layout Design —** Move beyond diagrams and learn how a chip is physically arranged, connecting abstract designs to the shapes that are manufactured.
- **Linux & Engineering Tools —** Gain practical experience using Linux and the kinds of software tools commonly used by engineers and technologists.
- **Agentic Engineering & AI Workflows** — Learn how today's engineers use advanced AI tools and AI agents to research ideas, write and review code, troubleshoot designs, automate repetitive work, and turn concepts into real engineering output—while learning to verify results and use human judgment.
- **Printed Circuit Board (PCB) Design —** Design boards that connect electronic components together and learn how ideas become physical hardware.
- **Hands-On Projects —** Apply each topic through approachable builds and challenges so students are making, testing, and experimenting—not just listening.

STUDENT TAKEAWAYS

Understand modern technology
Develop an intuitive picture of what is happening inside computers and electronic devices.

Learn real engineering skills
Get early exposure to tools, AI-assisted workflows, and concepts normally encountered later in college or technical training.

Build confidence by creating
Practice turning ideas into working designs through projects, troubleshooting, and iteration.

Explore future pathways
Discover possible interests in electrical engineering, computer engineering, computer science, chip design, and advanced manufacturing.

PROGRAM FORMAT

Year-long • Study hall replacement • Beginner-friendly • No prior experience required • Hands-on and project-based

Student invitation: "Ever wonder how computers, phones, or even AI actually work? Come build the story from the ground up—from simple logic to real chips and circuit boards."