Semiconductors

Discover the tiny chips that power modern life — and the people who design, make and test them.

What are semiconductors?

Semiconductors, often called chips or microchips, are tiny electronic components inside phones, cars, medical equipment, robots and AI systems. They help devices sense, process and store information, and manage power. Chips are designed, manufactured and tested through a global supply chain; UK strengths include chip design, advanced materials and research.

Why do they matter?

Semiconductors are one of the UK government's six frontier technologies. They underpin innovations in healthcare, clean energy, transport and communications. Careers include chip design, materials science, manufacturing, testing and electronics engineering.

Our TechFirst semiconductor activities

DISCOVER · 45 MIN · KS3 | TF-SEM-DIS-001

Discover Semiconductors

Students explore where microchips are found, how they help electronic devices work and the people who design and make them.

EXPLORE · 60–75 MIN · KS3–KS4 | TF-SEM-EXP-001

Robert's Next Mission

Teams design a new mission for a robot dog, considering its sensors, processors, real-world uses and responsible deployment.

EXPLORE · PROPOSED · KS3–KS4 | TF-SEM-EXP-002

Build a Microchip

A proposed hands-on model-building challenge exploring how electronic circuits and components work together inside chips.

EXPLORE · PROPOSED · KS3–KS4 | TF-SEM-EXP-003

Become a Chip Engineer

A proposed chip-fabrication team challenge introducing design, manufacturing, testing and quality control.

EXPLORE · PROPOSED · KS3–KS4 | TF-SEM-EXP-004

Can Connected Cars Prevent a Crash?

A proposed micro:bit challenge investigating how sensors, chips and communications can help vehicles detect hazards.

EXPLORE · PROPOSED · KS3–KS4 | TF-SEM-EXP-005

Build a Connected Smart City

A proposed micro:bit activity in which teams design connected systems for a safer, more efficient city.

EXPLORE · 60–75 MIN · KS3–KS4 | TF-SEM-EXP-006

Chips in Motion — Ozobot Semiconductor Challenge

Using Ozobot robots, teams explore how chips control movement, test instructions and diagnose simulated chip faults.

How we learn

Our coach-led sessions use tell–do–reflect: introduce a concept, tackle a practical team challenge, then discuss discoveries, decisions and careers. Students build curiosity, collaboration, creativity and problem-solving.

For schools, students and employers: discover the programme and enquire about taking part at techfirst@digitalinnovators.co.uk.