Behind the Screen

Discover the engineering inside the technology you use every day.

8 Saturday sessions • 75 minutes each • Starts 21 November 2026

For high-school students | Lecturer: Riad Asllani

Your invitation to explore

Follow a message across the internet, unlock the logic of encryption and discover why games lag. Through live demos, group experiments and short code examples, you will learn to ask better questions about how technology works. No previous coding experience is required.

01 From electricity to code

Bits, logic gates, CPU, memory and storage. Discover how instructions turn data into something you can see and use.

IN CLASS Act as a processor, then change a small JavaScript program.

EXPLORE AT HOME Create a pixel pattern and explain how bits represent it.

02 What happens when you press Send?

Clients, servers, DNS, addresses and packets. Follow a message from one browser to another and explore how delivery is confirmed.

IN CLASS Trace a message through a prepared chat application.

EXPLORE AT HOME Map a message's journey or add timestamps to the starter chat.

03 Secrets in plain sight

Encryption and decryption, shared keys, public/private keys, and the difference between encoding, encryption and hashing.

IN CLASS Crack a simple cipher, then try a modern encryption demo.

EXPLORE AT HOME Create a cipher puzzle and explain who holds its key.

04 Finding a needle in digital data

Search algorithms, databases, indexes and ranking. Explore why organizing information changes how quickly you can find it.

IN CLASS Search a sample collection with SQL and change its ranking rules.

EXPLORE AT HOME Design a ranking rule for a school library and explain its tradeoffs.

Explore. Experiment. Explain.

Continue from individual mechanisms to systems that work together.

05 Why games lag

Latency, bandwidth, shared state and prediction. Discover why two players can see different versions of the same moment.

IN CLASS Play a multiplayer demo with adjustable simulated network delay.

EXPLORE AT HOME Compare delay settings and explain when movement feels unfair.

06 How systems get fooled

Authentication, permissions and input validation. Learn why a server must check important claims made by a browser.

IN CLASS Investigate and fix a fictional shop that trusts a submitted price.

EXPLORE AT HOME Identify which actions a school app should check on its server.

07 One video, thousands of screens

Frames, bitrate, compression, buffering and content delivery networks. Explore the tradeoffs behind smooth video playback.

IN CLASS Compare video quality and watch a player respond to a slow connection.

EXPLORE AT HOME Compare two versions of a clip for quality and file size.

08 Connect the pieces

Bring networking, data, security and streaming together in a design for a private school video-sharing platform.

IN CLASS Design in teams, respond to a surprise scenario and explain your choices.

EXPLORE AT HOME Choose one part of your design to explore or prototype further.

How we will learn

Each session: a surprising demo, a clear explanation, a guided experiment and time to compare ideas. Short JavaScript and SQL examples make the concepts visible.

Keep exploring

Home challenges are optional: explain an idea, test a prediction or extend starter code. Ask questions, work together and test security ideas only in the provided classroom lab.

By the end, you will be able to trace data through a system, explain core security and performance ideas, and defend the choices in your own simple system design.