

Engineer's Toolkit

Students will explore and develop innovation skills related to engineering design and design thinking. Engineers use their creativity and analytical skills to invent, design, and build things that matter.

The design thinking process brings the lens of human-centred design to solving real world problems. These design processes will enable students to further develop mindsets that include creativity, critical thinking and project management.

I-STEM ROADMAP - YEAR 1



PROTOTYPING

Students will learn how to use prototyping to test and improve their own designs by iterating on their design challenges and failures.

ENGINEER'S TOOLKIT

Design Thinking
Teamwork
Technical Drawings

ENGINEERING DESIGN CHALLENGE PART 1

Students will follow a process that engineers employ to address a problem. The solution involves designing a product that meets identified criteria and/or accomplishes a certain task.

ENGINEER'S TOOLKIT

Design Thinking
Professionalism
Technical Drawings

ENGINEERING DESIGN CHALLENGE PART 2

Students will finalize their work on the Engineering Design Challenge by presenting their solutions to I-STEM Faculty, community partners and parents.

ENGINEER'S TOOLKIT

Presentation and Communication
Professionalism
Writing for an Audience

UN SUSTAINABLE DEVELOPMENT GOALS

The UN Sustainable Development Goals will be an I-STEM focus in Grade 11/12. In Grade 9, students will be introduced to the 17 Global Goals and, through this lens, work to address a global issue.

ENGINEER'S TOOLKIT

Understanding Diversity
Teamwork
Writing for an Audience

INNOVATION PROJECT PART 1

With an emphasis on the design thinking process, development of innovation skills and engineering design, students will apply their learning to analyze, invent, design and build things that matter in a project of their choice.

ENGINEER'S TOOLKIT

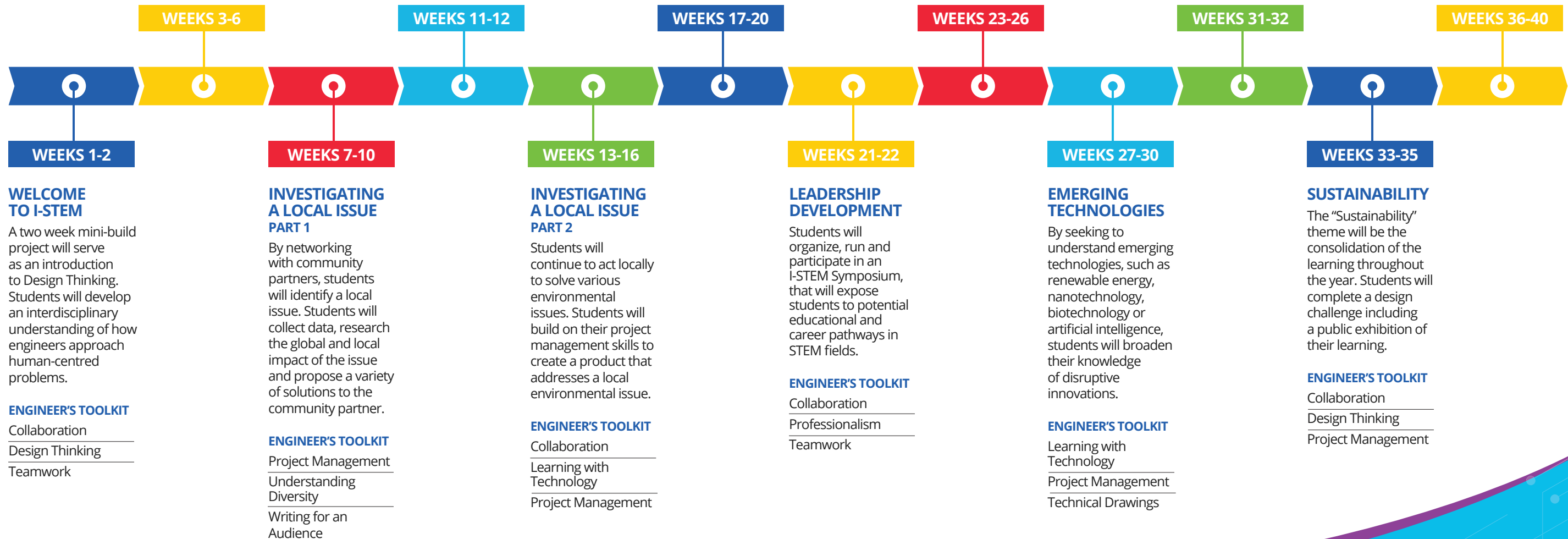
Design Thinking
Professionalism
Project Management

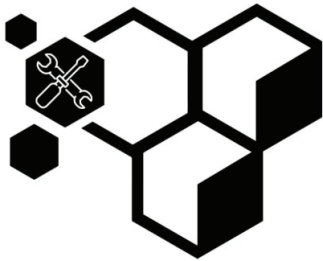
INNOVATION PROJECT PART 2

Students will continue to seek feedback on their design, product and/or presentation from I-STEM mentors and advisors. Students will end the year by presenting their Innovation Project.

ENGINEER'S TOOLKIT

Collaboration
Design Thinking
Learning with Technology
Presentation and Communication
Project Management
Professionalism
Teamwork
Technical Drawings
Understanding Diversity
Writing for an Audience





ENGINEERING

In their Grade 9 year, students will develop their Engineer's Toolkit. With an emphasis on the design thinking process, development of innovation skills and engineering design, I-STEM students will use their creativity to analyze, invent, design and build things that matter.

In addition to learning the curriculum of Grade 9 Science, Technology, Geography and Mathematics, students will further develop the following skills to add to their Engineer's Toolkit:

Collaboration

Design Thinking

Learning with Technology

Presentation and Communication

Professionalism

Project Management

Teamwork

Technical Drawings

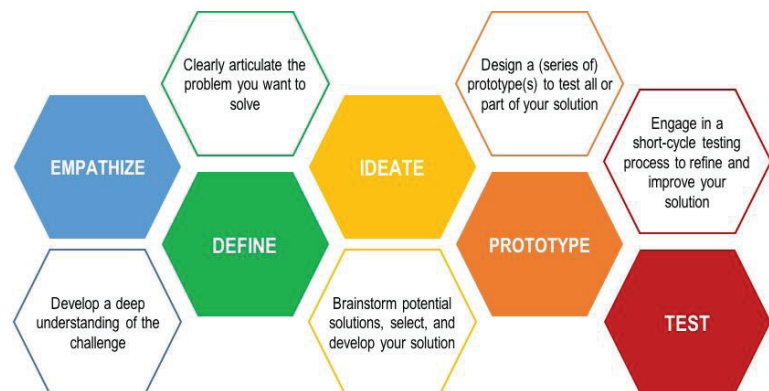
Understanding Diversity

Writing for an Audience

I-STEM students will connect with and be mentored by professional engineers who will give them the confidence to prototype, test, fail, learn and try again!

Students will research, reflect and refine their designs while solving real world problems. In June, students will be implementing an engineering challenge of their own design, which will be showcased at a public exhibition.

DESIGN THINKING PROCESS



Source: d.school, Stanford University