Technology & Engineering Topics
Grades 6-7

1. Engineering Thinking, Design Process, and Safety

- Technology vs engineering in STEM contexts
- Design cycle: identify, imagine, plan, make, test, improve
- Problem definition and design criteria
- Constraints: time, cost, materials, safety, available tools, and responsible material use
- Sketching ideas and labelled design drawings
- Planning steps and selecting tools or materials
- Workshop, lab, and classroom safety routines
- Testing, feedback, and iterative improvement

2. Digital Literacy, Online Safety, and Responsible Technology Use

- Safe and responsible use of devices and online spaces
- Passwords, privacy, and digital wellbeing
- Digital communication and respectful collaboration
- Evaluating online information and sources
- Recognising bias, misinformation, and unreliable content at an introductory level
- AI tools: helpful uses and limitations at an introductory level
- Ownership, originality, and responsible content creation
- Digital footprint and positive online participation

3. Computational Thinking and Algorithm Design

- Decomposition: breaking problems into smaller parts
- Pattern recognition and repeated structures
- Abstraction: focusing on key information
- Algorithmic thinking: step-by-step solutions
- Flowcharts and simple pseudocode
- Inputs, processes, and outputs
- Logical sequencing and precision in instructions
- Debugging logic errors on paper and unplugged tasks

4. Programming Fundamentals and Debugging

- Text-based programming introduction
- Variables and basic data types
- Input and output commands
- Selection: if/else
- Iteration: loops
- Simple lists where appropriate
- Basic procedures/functions at an introductory level
- Testing programs with sample cases
- Debugging syntax and logic errors
- Writing readable code and comments

5. Data, Information, and Digital Representation

- Data vs information
- Collecting and organising data for a purpose
- Tables, spreadsheets, and simple formulas
- Sorting, filtering, and searching data
- Charts and graphs for communication
- Binary idea: computers represent data digitally
- File types and formats: text, image, audio, video
- Data quality and simple accuracy checks
- Using data to support decisions in STEM tasks

6. Computer Systems, Components, and Networks

- Hardware and software: differences and examples
- Main computer components and their roles: CPU, memory, storage, input/output
- Operating systems and basic file management
- How computers follow instructions
- Networks: devices connecting to share data
- Internet basics: web, browser, websites, servers
- Wired and wireless communication at an introductory level
- Network safety and responsible use
- Real-world systems: school networks, smart devices, automated systems

7. Materials, Structures, and Mechanical Systems

- Common materials: wood, metal, plastic, cardboard, and introductory composites
- Material properties and selection: strength, flexibility, durability, cost
- Structures and stability: frames, supports, introductory triangulation
- Forces in structures: push, pull, load, and balance
- Mechanisms: levers, linkages, pulleys, and gears in introductory applications
- Measuring, marking out, and joining materials safely
- Building and testing simple models or prototypes
- Evaluating design performance and improving the build

8. Electricity, Electronics, Control, and Automation

- Electrical safety and safe circuit work
- Basic circuits: power source, load, switch, conductor
- Series circuits and troubleshooting
- Inputs and outputs in systems: switches, buzzers, lamps, motors
- Sensors and control systems at an introductory level
- Simple automation examples: doors, alarms, traffic lights, robotics
- Flow of control in a system: logic sequence
- Energy use and efficiency in devices at an introductory level
- Designing a simple controlled-system model

9. STEM Media Analysis and Technical Communication

- Analysing STEM media, demonstrations, diagrams, videos, and short technical texts for evidence and ideas
- Identifying the core concept shown in a STEM media example or demonstration

- Distinguishing observation from explanation
- Extracting data, variables, or technical information from demonstrations where possible
- Evaluating whether a media claim or demonstration claim is supported by evidence
- Linking media content to science, technology, and engineering concepts
- Presenting a short technical summary
- Designing a follow-up mini investigation or prototype inspired by a STEM media example