Board/Authority Authorized Course Framework Template

School District/Independent School Authority Name: Chilliwack School District	**School District/Independent School Authority Number (e.g. SD43, Authority #432):** #33
Developed by: Heather Elliott	**Date Developed:** October 20th , 2025
School Name: Learning Services – Curriculum Department	**Principal's Name:** Sean Wicker
Superintendent Approval Date (for School Districts only):	**Superintendent Signature (for School Districts only):**
Board/Authority Approval Date:	**Board/Authority Chair Signature:**
Course Name: Technology Explorations	**Grade Level of Course:** 11B
Number of Course Credits: 2 & 4 credits	**Number of Hours of Instruction:** 50 hours – 2 credits & 100 hours – 4 credits

Board/Authority Prerequisite(s):

Technology Explorations 10

Special Training, Facilities or Equipment Required:

Technology shop space with assorted stationary, hand and power tool access.

Personal protective equipment – Safety Glasses, closed toed shoes, hearing protection etc.

Course Synopsis:

This course is designed for the further exploration of multiple areas of trades related training. It would provide students with the opportunity to explore a variety of ADST – Trades related subjects and the provides the ability for cross-curricular activities and project work.

Goals and Rationale:

• Develop skills and knowledge of an occupation for future career choices
• Create possible future employment opportunities, job experience and portfolio
• Safety awareness
• Connect what is learned in the classroom with the skills, knowledge and attitudes needed in the workplace
• Gain the knowledge, skills, and attitudes needed to be successful in the world of work
• Understand the similarities and differences in behaviour standards between the workplace and school

Aboriginal Worldviews and Perspectives:

- Learning ultimately supports the well-being of the self, the family, the community, the land, the spirits, and the ancestors.
- Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place).
- Learning involves patience and time.
- Learning requires exploration of one's identity

BIG IDEAS

Design for the life cycle includes consideration of social and environmental impacts.	Personal design interests require the evaluation and refinement of skills.	Tools and technologies can be adapted for specific purposes.

Learning Standards

Curricular Competencies	Content
Students are expected to do the following: **Applied Design:** ***Understanding context*** • Engage in a period of user-centred research and empathetic observation to understand design opportunities ***Defining*** • Establish a point of view for a chosen design opportunity • Identify potential users, intended impacts, and possible unintended negative consequences • Make decisions about premises and constraints that define the design space, and identify criteria for success • Determine whether activity is collaborative or self-directed • Ideating • Critically analyze how competing social, ethical, and sustainability considerations impact creation and development of solutions • Generate ideas to create a range of possibilities and add to others' ideas in ways that create additional possibilities • Choose an idea to pursue based on success criteria and maintain an open mind about potentially viable ideas ***Prototyping*** • Choose a form for prototyping and develop a plan that includes key stages and resources	*Students are expected to know at least six of the following from at least two curricular areas: If students are completing both 11A and 11B the curricular content areas must be different.* **Automotive 11** • simple automotive repair and maintenance • social, legal, and ethical responsibilities associated with vehicle operation • use of technical information and manuals for the purpose of diagnostics and repair • fundamental automotive tools and equipment • lifting equipment and procedures • chassis and body • engine diagnostic support systems • emerging and alternative energy sources used to power automotive vehicles • fundamentals of engine operation • vehicle systems • vehicle safety systems • design for the life cycle **Drafting 11** • simple drafting design projects

- Analyze the design for the life cycle and evaluate its impacts
- Visualize and construct prototypes, making changes to tools, materials, and procedures as needed
- Record iterations of prototyping

Testing

- Identify and communicate with sources of feedback
- Develop an appropriate test of the prototype, conduct the test, and collect and compile data
- Apply information from critiques, testing results, and success criteria to make changes

Making

- Identify appropriate tools, technologies, materials, processes, cost implications, and time needed
- Create design, incorporating feedback from self, others, and results from testing of the prototype
- Use materials in ways that minimize waste

Sharing

- Decide how and with whom to share creativity, or share and promote design and processes
- Share the product with users to evaluate its success
- Critically reflect on plans, products and processes, and identify new design goals
- Identify and analyze new possibilities for plans, products and processes, including how they or others might build on them

Applied Skills:

- Apply safety procedures for themselves, co-workers, and users in both physical and digital environments
- Individually or collaboratively identify and assess skills needed for design interests
- Demonstrate competency and proficiency in skills at various levels involving manual dexterity
- Develop specific plans to learn or refine identified skills over time

Applied Technologies:

- Explore existing, new, and emerging tools, technologies, and systems to evaluate suitability for design interests
- Evaluate impacts, including unintended negative consequences, of choices made about technology use

- geometric construction to create drawings and images
- drawing management and problem solving using computer-assisted design (CAD) software
- use of scale and proportion when outputting to 3D models
- geometric dimensioning and tolerancing in both imperial and SI units.
- types, sizes, and applications of drawing media
- applicable visual formats and media for presenting design solutions
- technical problem solving using geometry, trigonometry, and algebra
- design for the life cycle
- ethics of cultural appropriation and plagiarism

Electronics 11

- simple circuit design and construction
- Ohm's law
- Watt's law
- circuit board manufacturing processes
- potential electrical hazards
- measurement using advanced diagnostic and testing instruments
- function and application of common electronic components
- schematic diagrams
- operation and application of circuits
- purpose and operation of microcontrollers/microprocessors
- strategies for isolating problems and implementing solutions in circuit construction
- design for the life cycle

Engineering 11

- design for the life cycle
- history of manufacturing and production
- product development and manufacturing processes
- manufacturing to meet the needs of the end user
- sustainable production, upcycling, and product life cycle
- mathematics in engineering projects
- measurement techniques in engineering projects
- physics in engineering projects
- static analysis of structures
- use of hand tools and power tools

- programming languages for robotics and computer numerical control (CNC)
- methods of implementing computer control
- technical communications
- approaches to innovative engineering projects
- fundamentals of robotics and robotic manufacturing
- modelling and simulation

Metal Work 11

- simple metalworking and design
- orthographic and pictorial drawings
- measuring instruments
- tables and charts for tolerancing and machining
- operation and safety of stationary power equipment and stationary non-power equipment in the processing of material
- size and layout of metal
- types of metals and alloys and their characteristics
- selection of metal type, size, structural shape, and finish for specific applications
- ferrous and non-ferrous metals and their applications
- heat treatments
- welding and cutting
- common mechanical fastening methods
- forging and foundry applications
- design for the life cycle
- ethics of cultural appropriation in design process

Robotics 11

- simple robotics design and production
- interaction of robotic subsystems
- relation of structure and power to motion
- relation of sensors and control to logic
- friction and traction
- power and torque
- developments in robotic technology
- robotic technologies in the community and industry
- similarities and differences between remotely controlled and autonomous robots
- programming related to microcontrollers
- design for the life cycle

	Woodwork 11 • simple woodworking and design • orthographic and pictorial drawings • preparation of a bill of materials and a cutting list • measuring instruments • problem-solving techniques using ratio, proportion, and geometry • selection and identification of wood species appropriate for a given purpose • material conservation and sustainability • operation of stationary power equipment in the processing of material • hand-tool processes in the creation of a product • machine and equipment set up, change, and adjustment • project finishing methods • design for the life cycle ethics of cultural appropriation in design process

Big Ideas – Elaborations

Curricular Competencies – Elaborations

• research: seeking knowledge from other people as experts (e.g., First Peoples Elders), secondary sources, and collective pools of knowledge in communities and collaborative atmospheres
• empathetic observation: aimed at understanding the values and beliefs of other cultures and the diverse motivations and needs of different people
• Defining: setting parameters
• constraints: limiting factors such as task or user requirements, materials, expense, environmental impact, issues of appropriation, and knowledge that is considered sacred
• Ideating: forming ideas or concepts
• sources of inspiration: may include experiences; traditional cultural knowledge and approaches, including those of First Peoples; places, including the land and its natural resources and analogous settings; and people, including users, experts, and thought leaders
• plan: for example, pictorial drawings, sketches, flow charts
• iterations: repetitions of a process with the aim of approaching a desired result
• sources of feedback: may include peers; users; keepers of traditional cultural knowledge and approaches, including those of First Peoples; and other experts
• appropriate test: consider conditions, number of trials
• technologies: things that extend human capabilities
• share: may include showing to others, use by others, giving away, or marketing and selling
• product: for example, a physical product, a process, a system, a service, or a designed environment

Content – Elaborations

Recommended Instructional Components:

Instruction should be provided in a manner that connects different types of learners: visual, auditory, and written. For example, a lesson may be taught that utilizes lectures, includes visual aids and group discussion, and handouts or notes that the students can take away for later processing of the information. Then a physical demonstration can be done before students utilize the new skill by making a project of their own.

Recommended Assessment Components: Ensure alignment with the Principles of Quality Assessment

- Ongoing formative assessment is provided throughout the course
- Rubrics are used with clearly defined expectations. Students will perform self-assessment on their personal work and their group work.
- Written feedback will be provided on the completion of different components of projects.
- Students will demonstrate understanding of important facts through written work and quizzes.
- Summative Marks and comments will be made public (via MyEd or other) to students and parents on an on-going basis.
- Communication with parents of students will be made as necessary to keep them informed and involved in their students' success. This may be done by face-to-face meetings, phone, email or other digital communications.

Learning Resources:

- Digital presentations
- Classroom Hands on Demonstrations
- Textbook resources specific to the subject module – ie: Exploring Metalworking – Basic fundamentals: John A. Walker

Additional Information:

Maximum enrolment of 24 students per block