

## BIG IDEAS

Design for the life cycle includes consideration of social and **environmental impacts**.

Personal design choices require self-exploration, collaboration, and evaluation and refinement of skills.

Tools and technologies can be adapted for specific purposes.

## Learning Standards

| Curricular Competencies  | Content   |
|--|---|
| <p><i>Students are expected to be able to do the following:</i></p> <p><b>Applied Design</b></p> <p><i>Understanding context</i></p> <ul style="list-style-type: none"> <li>• Conduct <b>user-centred research</b> to understand design opportunities and barriers</li> </ul> <p><i>Defining</i></p> <ul style="list-style-type: none"> <li>• Establish a point of view for a chosen design opportunity</li> <li>• Identify potential users, intended impact, and possible unintended negative consequences</li> <li>• Make decisions about premises and <b>constraints</b> that define the design space</li> </ul> <p><i>Ideating</i></p> <ul style="list-style-type: none"> <li>• Identify gaps to explore a design space</li> <li>• Generate ideas and add to others' ideas to create possibilities, and prioritize them for prototyping</li> <li>• Critically analyze how competing social, ethical, and sustainability considerations impact designed solutions to meet global needs for preferred futures</li> <li>• Work with users throughout the design process</li> </ul> <p><i>Prototyping</i></p> <ul style="list-style-type: none"> <li>• Identify and apply <b>sources of inspiration and information</b></li> <li>• Choose an appropriate form, scale, and level of detail for prototyping, and plan procedures for prototyping multiple ideas</li> </ul> | <p><i>Students are expected to know the following:</i></p> <ul style="list-style-type: none"> <li>• design opportunities</li> <li>• global and societal shifts resulting from emerging technologies, the Internet, and the <b>ubiquity of online access</b></li> <li>• <b>environmental impacts of technology consumption</b></li> <li>• <b>design for the life cycle</b></li> <li>• personalized online portfolios</li> <li>• awareness and understanding of <b>digital security risks</b></li> <li>• advanced hardware and software troubleshooting techniques</li> <li>• <b>interpersonal skills</b> necessary to work effectively within the IT sector</li> <li>• design requirements of network devices, cabling, test equipment, management plans, operation manuals and <b>documentation</b>, deployment strategies, ongoing upgrades, <b>maintenance</b>, and security</li> <li>• network management tools, including security, imaging, backup, and remote access</li> </ul> |

### Learning Standards (continued)

| Curricular Competencies  | Content   |
|--|---|
| <ul style="list-style-type: none"> <li>• Analyze the design for the life cycle and evaluate its <b>impacts</b></li> <li>• Construct prototypes, making changes to tools, materials, and procedures as needed</li> <li>• Record <b>iterations</b> of prototyping</li> </ul> <p><b>Testing</b></p> <ul style="list-style-type: none"> <li>• Identify feedback most needed and possible <b>sources of feedback</b></li> <li>• Develop an <b>appropriate test</b> of the prototype</li> <li>• Collect feedback to critically evaluate design and make changes to product design or processes</li> <li>• Iterate the prototype or abandon the design idea</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Identify appropriate tools, technologies, materials, processes, and time needed for production</li> <li>• Use <b>project management processes</b> when working individually or collaboratively to coordinate production</li> </ul> <p><b>Sharing</b></p> <ul style="list-style-type: none"> <li>• <b>Share</b> their progress while making to increase feedback, collaboration, and, if applicable, marketing</li> <li>• Decide on how and with whom to share or promote their product, creativity, and, if applicable, <b>intellectual property</b></li> <li>• Consider how others might build upon the design concept</li> <li>• Critically reflect on their design thinking and processes, and identify new design goals</li> <li>• Assess ability to work effectively both as individuals and collaboratively while implementing project management processes</li> </ul> | <ul style="list-style-type: none"> <li>• <b>functional and operational differences between hardware servers</b></li> <li>• virtual terminal applications</li> <li>• command line operations</li> <li>• appropriate use of technology, including digital citizenship, etiquette, and literacy</li> </ul> |

Learning Standards (continued)

| Curricular Competencies  | Content |
|--|---------|
| <p><b>Applied Skills</b></p> <ul style="list-style-type: none"> <li>• Apply safety procedures for themselves, co-workers, and users in both physical and digital environments</li> <li>• Identify and assess skills needed for design interests, and develop specific plans to learn or refine them over time</li> </ul> <p><b>Applied Technologies</b></p> <ul style="list-style-type: none"> <li>• Explore existing, new, and emerging tools, <b>technologies</b>, and systems and evaluate their suitability for their design interests</li> <li>• Evaluate impacts, including unintended negative consequences, of choices made about technology use</li> <li>• Analyze the role technologies play in societal change</li> </ul> |         |