**Area of Learning: Applied Design, Skills, and Technologies —   
Computer Information Systems Grade 12**

**BIG IDEAS**

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| 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**

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| **Curricular Competencies** | **Content** |
| *Students are expected to be able to do the following:*  Applied Design  Understanding context   * Conduct **user-centred research** to understand design opportunities and barriers   Defining   * Establish a point of view for a chosen design opportunity * Identify potential users, intended impact, and possible unintended negative consequences * Make decisions about premises and **constraints** that define the design space   Ideating   * Identify gaps to explore a design space * Generate ideas and add to others’ ideas to create possibilities, and prioritize them for prototyping * Critically analyze how competing social, ethical, and sustainability considerations impact designed solutions to meet global needs for preferred futures * Work with users throughout the design process   Prototyping   * Identify and apply **sources of inspiration** and **information** * Choose an appropriate form, scale, and level of detail for prototyping, and plan procedures for prototyping multiple ideas | *Students are expected to know the following:*   * design opportunities * global and societal shifts resulting from emerging technologies, the Internet, and the **ubiquity of  online access** * environmental **impacts of technology consumption** * **design for the life cycle** * personalized online portfolios * awareness and understanding of **digital security** **risks** * advanced hardware and software troubleshooting techniques * **interpersonal skills** necessary to work effectively  within the IT sector * design requirements of network devices, cabling, test equipment, management plans, operation manuals  and **documentation**, deployment strategies, ongoing upgrades, **maintenance**, and security * network management tools, including security, imaging, backup, and remote access |

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**Learning Standards (continued)**

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| **Curricular Competencies** | **Content** |
| * Analyze the design for the life cycle and evaluate its **impacts** * Construct prototypes, making changes to tools, materials, and procedures  as needed * Record **iterations** of prototyping   Testing   * Identify feedback most needed and possible **sources of feedback** * Develop an **appropriate test** of the prototype * Collect feedback to critically evaluate design and make changes to product design  or processes * Iterate the prototype or abandon the design idea   Making   * Identify appropriate tools, technologies, materials, processes, and time needed  for production * Use **project management processes** when working individually or collaboratively  to coordinate production   Sharing   * **Share** their progress while making to increase feedback, collaboration, and,  if applicable, marketing * Decide on how and with whom to share or promote their product, creativity, and,  if applicable, **intellectual property** * Consider how others might build upon the design concept * Critically reflect on their design thinking and processes, and identify new  design goals * Assess ability to work effectively both as individuals and collaboratively while implementing project management processes | * **functional and operational differences between hardware servers** * virtual terminal applications * command line operations * appropriate use of technology, including digital citizenship, etiquette, and literacy |

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**Learning Standards (continued)**

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| --- | --- |
| **Curricular Competencies** | **Content** |
| Applied Skills   * Apply safety procedures for themselves, co-workers, and users in both physical  and digital environments * Identify and assess skills needed for design interests, and develop specific plans  to learn or refine them over time   Applied Technologies   * Explore existing, new, and emerging tools, **technologies**, and systems and evaluate their suitability for their design interests * Evaluate impacts, including unintended negative consequences, of choices made about technology use * Analyze the role technologies play in societal change |  |