Lake Mills School District
Year at a Glance Scope and Sequence for Career & Technical Education

Overarching Goal of the Curricular Area: Through technical Skills and employability development, students are able to apply and relate academic knowledge to succeed.

Computer Essentials Grades 9-12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Digital Citizenship	Students will assess digital citizenship scenarios Students will apply digital citizenship skills to their real life	Students will understand what digital citizenship means Students will understand that as a digital citizen you have rights & responsibilities Students will understand how to apply appropriate behavior to real world digital citizen scenarios	What are the most important rights & responsibilities of a digital citizen? Are the rights & responsibilities of being a digital citizen similar or different to being a citizen of a country? How do I know if I am being a good digital citizen?
PC Basics- File management, user interface, and components of a PC system	Students will assess what the key components of a PC system & user interface are Students will apply file management skills to a real world scenario	Students will understand that hardware & software are the main categories of computer components Students will understand that file management is an essential life skill to succeed in a digital world Students will understand the purpose and goal of designing a user interface	What key questions should be considered before designing a user interface? What are some key factors to consider when managing your digital files? What are the key components of a computer system?
Microsoft Word Basics	Students will assess the purpose of using Microsoft Word Students will design different real world documents using Microsoft Word	Students will understand that there are many different tools and settings that are used to format a document Students will understand that the purpose of the different ways to convey information in word these include lists, tables, charts, etc.	How do I determine what is the best way to convey information? What are the key settings to consider when formatting a document? How do I evaluate whether or not I have created a professional document?
Microsoft Excel Basics	Students will assess the purpose of using Microsoft Excel Students will design different real world documents using Microsoft Excel	Students will understand that Excel/spreadsheets can be very powerful for many functions Students will understand how to navigate & format a spreadsheet Students will understand how to create basic formulas & functions in an excel spreadsheet and the importance of referencing data when doing this	Why is it important to reference cell data when creating formulas and functions? What are the key settings or tools necessary to format a spreadsheet? Why is Excel such a powerful and industry demanded software?
Microsoft PowerPoint Basics	Students will assess the purpose of using Microsoft PowerPoint	Students will understand that PowerPoint is meant to enhance presentations not be the presentation	How do I create a PowerPoint that enhances my presentation? What are the key design principles that make a good PowerPoint?

| | Students will design different real world documents using Microsoft PowerPoint | Students will understand the key design factors that must be considered when designing a presentation | |

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Advanced Computer Applications Semester 1 Grades 10-12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Excel Basics 2	Students will apply basic formatting skills to manage an excel worksheet and workbook Students will create formulas and functions to perform quantitative analysis	Students will create charts to depict data Students will create tables to manage large volumes of data	Students will assess the benefits of using a PivotTable or PivotChart versus a regular table or chart Students will assess the benefits of combining multiple functions
Excel Charts/ Tables	Students will understand that some simple formatting settings can make the difference between an effective and not effective spreadsheet Students will understand how to use logical functions like the IF function and lookup functions like V-Lookup to solve real world problems Students will understand how to calculate loan payments using the PMT function	Students will understand how to choose the proper chart type given their data and goals Students will understand the benefits of turning a large set of data in Excel into a table	What do I need to consider before creating a chart? How can turning my data into a table help me manage it? How can conditional formatting help make sense of data?
Excel Advanced Functions/Combining Functions/Features	Students will assess the benefits of using a PivotTable or PivotChart versus a regular table or chart Students will assess the benefits of combining multiple functions	Students will understand how to combine functions such as IF and & to solve more complex problems Students will understand how to create PivotTables to quickly analyze data	What are the benefits of using PivotTables or Charts? How can combining functions help solve more complex questions?
Microsoft Access- Introduction to Databases	Students will assess the purpose of databases and using Microsoft Access Students will create a simple database that includes tables, and queries	Students will understand that a database can be used to organize and manage large amounts of information in a variety of personal and professional situations Students will understand the purpose of the four main components of a database are tables, queries, forms, and reports	How does a database differ from a spreadsheet? What information should be gathered to include in a database?

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Advanced Computer Applications Semester 2 Grades 10-12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Microsoft Access- Advanced Database Features	Students will create a database that includes forms and reports	Students will understand the purpose of forms and reports to a database Students will understand the purpose of creating advanced queries such as parameter, criteria, and crosstab Students will understand how to import data from a spreadsheet into a database	What are the benefits of using an advanced query? Why is it important for database users to only enter data in forms? How can reports be used to analyze information to make business decisions?
Microsoft Publisher- Basics	Students will assess the purpose of using Microsoft Publisher Students will create real world documents in Publisher following a style guide and the basic principles of design	Students will understand the advantages of using Publisher over Word to create desktop publishing Students will understand how to properly add and format objects in a publication this includes text, images, shapes, and other media Students will understand that all publications are evaluated using basic design principles such as color, composition, layout, line, shape, etc.	What advantages does making a document in Publisher have over doing it in Word? How is a publication judged?
Microsoft Publisher- Advanced	Students will create real world documents using more careful planning and advanced editing features	Students will understand the process to finalize a publication for print Students will understand how to select and edit images for their publication Students will understand how to select the correct type of publication to create	How do I decide what type of publication is best to create? What steps should I take before finalizing my publication? How do I decide what types of images to include in my publication?
Introduction to the Adobe Suite	Students will assess the differences between Adobe and Microsoft programs Students will create real world documents using InDesign, and Photoshop	Students will understand that using Photoshop can greatly enhance image quality Students will understand that using a high quality desktop publishing software like InDesign will result in higher productivity and higher quality finished products	What are the advantages of using InDesign to create professional publications and documents? What are the similarities and differences between Microsoft and Adobe products? How can Photoshop help you create products with a more professional look?

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Graphic Design Grades 10-12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Adobe Photoshop Basics	Students will design basic graphics using the main tools & features of Photoshop Students will assess the difference between raster & vector based graphics	Students will understand that the Adobe Photoshop interface is divided into categories for organization Students will understand how to use the Photoshop tools and features to manipulate & create graphics	How do I determine what tools & features of Photoshop are needed to create raster graphics? What is the purpose of using layers & masking in graphic design? How do graphic designers use Photoshop to make a living in the real world?
The Graphic Design Process	Students will design a graphic following the steps of the graphic design process Students will assess a graphic to see if it follows the basic principles of design	Students will understand that before designing a graphic, audience & purpose should be identified Students will understand that all graphics are evaluated using basic design principles such as color, composition, layout, line, shape, etc.	How do I determine who my purpose or who my audience is before designing a graphic? What are the key design principles that all graphics are evaluated on? What is the best way to judge a graphic objectively
Adobe Illustrator Basics	Students will design basic graphics using the main tools & features of Illustrator Students will assess the features of Illustrator (a vector based program) and what this means to design	Students will understand that the Adobe Illustrator interface is divided into similar categories to Photoshop Students will understand how to use Illustrators tools and features to manipulate and create graphics Students will understand which graphic design software (Photoshop or Illustrator) is best to use based on the task or goal to be achieved	How do I determine what tools & features of Illustrator are needed to create vector graphics? What are the different ways to create shapes, lines, and objects in Illustrator? How can graphic design influence the public's perception of a person or product?
Typography	Students will design different versions of the same text utilizing typography principles	Students will understand the different parts of a type face Students will understand how to manipulate type to create different meaning	What are the key components to a type face? How does manipulating type effect meaning?

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Intro to Computer Science Grades 10-12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Intro to the PC/Digital Information	Students will assess the key components of a computer system Students will assess how computers interpret data	Students will understand that all computers use a language called binary to interpret data Students will understand the difference between hardware & software Students will understand different ways to extract meaning from raw data	Are the ways in which digital information encoded more laws of nature or man-made? How does computing enhance communication, interaction, and cognition? What are the best ways to find, see, and extract meaningful trends and patterns from raw data?
Algorithms & Programming	Students will design an algorithm to solve a problem Students will assess computer program to find use of abstraction	Students will understand that algorithms are how all computers complete tasks Students will understand how to write an algorithm that addresses one component of a larger programming problem Students will understand forms of abstraction used in programming	Why do we computers need algorithms to solve problems? How do you design a solution to a problem so that it is programmable? What are the different reasons for the designing a computer program?
Big Data & Privacy	Students will assess what opportunities large data sets provide for solving problems or creating knowledge Students will assess how computing has a global affect- both beneficial and harmful- on people and society	Students will understand that algorithms solve many, but not all computational problems Students will understand that cybersecurity is an important concern for the internet and systems built on it Students will understand how computing facilitates exploration and the discover of connections in information	What opportunities do large data sets provide for solving problems and creating knowledge? How does cyber security impact internet users? How are computing innovations influenced by economic, social, and cultural contexts?
Building an App	Students will design an app that will build on programming learned previously as well as to include response to user interaction	Students will understand that computer programs (apps) have to respond to user interaction which is called events Students will understand the process to develop, test, and debug programs	How do you make computer programs respond to user interaction? How do people develop, test, and debug programs? How do you write programs to make decisions?

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Web Design Grades 10-12

Unit Theme	Unit Goal	Enduring Understandings for the Unit	Essential Questions for the Unit
Internet History, & Importance	Students will self-assess positive & negative examples of how the internet as impacted their life Students will be able to evaluate effective web sites	Students will understand that the internet provides humans with a worldwide connection with limitless space to communicate Students will understand that the internet has both positive and negative impacts on society Students will understand how design impacts web site usability	How can we use the internet to improve our lives? How has the internet negatively and positively impacted our lives? How does the fast changing pace of technology impact our use of the internet?
HTML- The building block of all web pages	Students will design a simple web page using HTML	Students will understand that there are many different programming languages each with different purposes Students will understand the importance of using the correct programming language	What is HTML's impact on the internet? Is HTML the best/only language to build content?
Building & Adding content to a web page	Students will use their knowledge of coding to utilize visual images for their web site	Students will understand that every website is a visual representation of something someone creates and makes a first impression on the viewer Students will understand that web sites should provide the user with some sort of clear path of navigation	How can we use technology to simplify working with data and images? How do visual images impact our lives? What are the most important items to include on a web site?
Links & Navigation	Students will apply the basic principles of links and navigation in order to design a website	Students will understand that links are the foundation of the web and allow you to move from page to page Students will understand that a logical and intuitive path of navigation makes a web site much stronger and allows for better continuity for the user	How does the placement of links affect a website? How does the navigation of a web site effect its usability?
CSS- Adding style to a web page	Students will design a simple web page using CSS	Students will understand that there are many different programming languages each with different purposes Students will understand the importance of using the correct programming language	What is CSS's impact on the internet? Is CSS the best/only language to enhance the look and feel of the webpage?

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Advanced Web Design Grades 10-12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Box Model/ Positioning (Advanced CSS)	Students will design a web site that effectively uses the concept of the box model & positioning Students will apply concepts and evaluate websites on whether they have effectively used the box model	Students will understand that all block level elements on a web page are inside a box that can be changed using margin, border, and padding properties Students will understand that the position property allows elements to move to specific locations on a webpage	What is the best way to use the box model properties to make an effective web page layout? What are the four main values of the position property and when should you use each one?
Javascript	Students will design a web site that uses Javascript to add interactivity to their web pages Students will assess algorithms to see if they effectively enhance a website	Students will understand that all computer tasks (Apps, Software, Web Sites) are a written series of steps called algorithms Students will understand that computer programs/algorithms are written to do one thing: solve problems	What is the most efficient way to write an algorithm to solve a problem? What is effective use of Javascript to create interactive websites?
The Web Development Process	Students will apply concepts and evaluate the process for developing a website that include figuring out purpose, audience, navigation structure, design concepts, and content Students will design a web site after completing each step of the web development process	Students will understand that before a web site can be designed its audience, purpose, and content must be clearly defined. Students will understand how to use key design concepts such as typography, use of white space, etc to create an effective website Students will understand how to structure web site files in folders on a web server	What are the most important questions to ask a client before building their website? How do I meet a client's needs and develop ideas for a website before entering code? What is and how can one identify a target audience?
Server/Client Side Languages (PHP)	Students will apply concepts and evaluate the difference between client & server side web programming languages Students will assess when to use client or server side language in regards to form creation	Students will understand the difference between client side (HTML, CSS) languages and server side (PHP) languages. Students will understand how to write and customize valid server-side scripting PHP to create dynamic, data-driven websites.	What is the PHP web language and how does it impact web design? Which type of web language client or sever side is best for gathering form data?

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Game Design Grades 10-12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Game Design Purpose & History	Students will assess the purpose of games in society Students will assess key events in game design history	Students will understand that there are many different reasons for why games are designed which lead to different game types Students will understand that there are many different events that have helped shape & change the game design industry	What are reasons to create a game? What event in gaming history changed the industry the most? How does the ever changing world of technology effect games?
Introduction to Game Programming	Students will design a game using basic programming skills	Students will understand core programming constructs necessary to build different components of a game Students will understand how to create & implement a plan for building a game by describing its major components	How does programming enable creativity and individual expression? How is programming used to construct different components of a game?
Game Design Careers & Roles	Students will assess which roles or careers in game design would most interest them	Students will understand that there are many different careers in game design Students will understand that most games are created using a team of people with different roles	What are the various careers in the game design industry? How are games developed? What are the most important roles in a game development team?
Microsoft Kodu, RPG Maker, & Click Team Fusion (Advanced Game Design Software)	Students will assess the key factors that make a game good Students will design games using advanced game design software	Students will understand that there are many different programs to design games Students will understand factors that make a good game	What is the best way to learn a new game design program? What are the key factors that make a good game? What strategies can be implemented to ensure I have made a good game?
Game Design Process (Creating a proposal)	Students will design a game based on an approved proposal	Students will understand what needs to be included in a good game proposal Students will understand the steps involved in the game design process	What are the most important steps to be completed when designing a game? How are the various tasks in completing a game divided up? What is included in a game proposal?