

Boiler Maintenance Sequence

The Boiler Maintenance Sequence is designed to provide students with the knowledge, skills and certifications to have a basic understanding of boiler systems. Most modules includes both knowledge based material and performance tasks. Those modules that do not include performance tasks, only require a knowledge test in order to receive the certification for that module. Tests for certification can only be given by certified NCCER instructors.

NCCER CORE Module 00101-15- Basic Safety- 12.5 hours-

1. Describe the importance of safety, the causes of workplace incidents, and the process of hazard recognition and control.
 - a. Define incidents and the significant costs associated with them.
 - b. Identify the common causes of incidents and their related consequences.
 - c. Describe the processes related to hazard recognition and control, including the Hazard Communication (HAZCOM) Standard and the provisions of a Safety Data Sheet (SDS).
2. Describe the safe work requirements for elevated work, including fall protection guidelines.
 - a. Identify and describe various fall hazards.
 - b. Identify and describe equipment and methods used in fall prevention and fall arrest.
 - c. Identify and describe the safe use of ladders and stairs.
 - d. Identify and describe the safe use of scaffolds.
3. Identify and explain how to avoid struck-by and caught-in-between hazards.
 - a. Identify and explain how to avoid struck-by and caught-in-between hazards.
 - b. Identify and explain how to avoid caught-in and caught-between hazards.
4. Identify common energy-related hazards and explain how to avoid them.
 - a. Describe basic job-site electrical safety guidelines.
 - b. Explain the importance of lockout/tagout and describe basic procedures.
5. Identify and describe the proper use of personal protective equipment (PPE).
 - a. Identify and describe the basic use of PPE used to protect workers from bodily injury.
 - b. Identify potential respiratory hazards and the basic respirators used to protect workers against those hazards.

Performance Task 1 (Learning Objective 2)

- Properly set up and climb/descend an extension ladder, demonstrating proper three-point contact.

Performance Task 2 (Learning Objective 5)

- Inspect the following PPE items and determine if they are safe to use:
 - Eye protection
 - Hearing protection
 - Hard hat
 - Gloves
 - Fall arrest harnesses, lanyards, and connecting devices

- Approved footwear

Performance Task 3 (Learning Objective 5)

- Properly don, fit, and remove the following PPE items:
 - Eye protection
 - Hearing protection
 - Hard hat
 - Gloves
 - Fall arrest harness

Performance Task 4 (Learning Objective 4)

- Inspect a typical power cord and GFCI to ensure their serviceability.

Module 00103-15- Introduction to Hand Tools- 12.5 hours

1. Identify and explain how to use various types of hand tools.
 - a. Identify and explain how to use various types of hammers and demolition tools.
 - b. Identify and explain how to use various types of chisels and punches.
 - c. Identify and explain how to use various types of screwdrivers.
 - d. Identify and explain how to use various types of non-adjustable and adjustable wrenches.
 - e. Identify and explain how to use various types of socket and torque wrenches.
 - f. Identify and explain how to use various types of pliers and wire cutters.
2. Identify and describe how to use various types of measurement and layout tools.
 - a. Identify and explain how to use rules and other measuring tools.
 - b. Identify and explain how to use various types of levels and layout tools.
3. Identify and explain how to use various types of cutting and shaping tools.
 - a. Identify and explain how to use handsaws.
 - b. Identify and explain how to use various types of files and utility knives.
4. Identify and explain how to use other common hand tools.
 - a. Identify and explain how to use shovels and picks.
 - b. Identify and explain how to use chain falls and come-alongs.
 - c. Identify and explain how to use various types of clamps.

Performance Task 1

(Learning Objectives 1 through 4)

- Visually inspect a minimum of five of the following tools to determine if they are safe to use:
 - Hammer or demolition tool
 - Chisel or punch
 - Screwdriver
 - Adjustable or non-adjustable wrench
 - Socket
 - Torque wrench
 - Pliers
 - Wire cutters
 - Measuring tool
 - Layout tool
 - Level

- Hand saw
- File
- Utility knife
- Shovel or other earth tool
- Chain fall or hoist
- Clamps

Performance Task 2

(Learning Objectives 1 through 4)

- Safely and properly use a minimum of three of the following tools:
 - Hammer or demolition tool
 - Chisel or punch
 - Screwdriver
 - Adjustable or non-adjustable wrench
 - Socket
 - Torque wrench
 - Pliers
 - Wire cutters
 - Measuring tool
 - Layout tool
 - Level
 - File
 - Utility knife
 - Shovel or other earth tool
 - Chain fall or hoist
 - Clamps

Performance Task 3

(Learning Objectives 1 through 4)

- Make a straight, square

Module 02108-12- Cast Iron pipe and fittings- 12.5 hours

1. Identify the various types of cast-iron pipe.
 - a. Sizes
 - b. Labeling
2. Identify the material properties, storage, and handling requirements of cast-iron pipe.
 - a. Storage and Handling
 - b. PT/Laboratory- Have trainees select correct types of materials for cast-iron piping systems.
3. Identify the types of fittings and valves used with cast-iron pipe.
 - a. Bends
 - b. Branches
 - c. Increasers
 - d. Traps
 - e. PT/Laboratory- Have trainees identify types of fittings and their uses. Identify the techniques used in hanging and supporting cast-iron pipe.
4. Properly measure, cut, and join cast-iron pipe.
 - a. Measuring and cutting Hub-and-spigot Pipe

- b. Measuring and cutting No-Hub Pipe
 - c. Joining Hub-and-spigot Pipe
 - d. Joining, no-Hub-Spigot Pipe
 - e. Types of hangers and supports
 - f. Supporting Horizontal pipe runs
 - g. Supporting vertical pipe runs
 - h. trainees select the appropriate personal protective equipment for cast-iron piping and correctly measure, cut, and join cast-iron pipe.
5. Identify the hazards and safety precautions associated with cast-iron pipe.

Performance Tasks

1. Select correct types of materials for cast-iron piping systems.
2. Identify types of fittings and their uses.
3. Select the appropriate personal protective equipment for cast-iron piping.
4. Correctly measure, cut, and join cast-iron pipe.
5. Select the correct hanger or support and spacing for the application.

Module 02211-13- Fuel Gas and fuel Oil Systems- 20 Hours

1. Identify the safety precautions and potential hazards associated with fuel systems.
 - a. Identify the safety precautions and potential hazards of natural gas.
 - b. Identify the safety precautions and potential hazards of LP gas.
 - c. Identify the safety precautions and potential hazards of fuel oil.
2. Identify the major components of fuel systems:
 - a. Identify the properties and uses of natural gas.
 - b. Identify the properties and uses of LP gas liquefied petroleum gas).
 - c. Identify the properties and uses of fuel oil.
3. Apply local codes to various fuel gas systems.
 - a. Identify proper fuel gas connection techniques.
 - b. Size, purge, and test fuel gas systems.

Performance task 1 (Learning objective 3)

- Properly connect appliances to the fuel gas system.

Performance task 2 (Learning objective 3)

- Perform an air test or visual inspection of a connected fuel gas system.

Performance task 3 (Learning objective 3)

- Size and purge a fuel gas system.

Performance task 4 (Learning objective 3)

- Verify pressure of a fuel gas system, using a manometer.

Module 03202-13- Chimneys, Vents and Flues- 5 hours

1. Describe the principles of combustion.
 - a. Describe the requirements for combustion and flame characteristics.
 - b. Distinguish between complete and incomplete combustion.
 - c. Describe the contents of flue gases and related concerns.
2. Identify the basic requirements and components of a furnace venting system.
 - a. Explain the basic principles of combustion and ventilation.

- b. Identify vented appliance categories.
 - c. Describe the construction of various venting systems.
- 3. Describe the basic venting considerations for various gas-fired heating units.
 - a. Describe the venting considerations for natural-draft furnaces.
 - b. Describe the venting considerations for induced-draft furnaces.
 - c. Describe the venting considerations for condensing furnaces.

Performance Tasks

- This is a knowledge-based module; there are no performance tasks.

Module 03203-13- Introduction to Hydronic Systems- 15 hours

1. Describe hydronic systems and the principles of closed-system water flow.
 - a. Describe the basic properties of water and the significance of its contents.
 - b. Describe the relationship between water flow and system pressures.
2. Describe the primary types of hot-water heating systems and their components.
 - a. Identify gravity and forced hydronic systems.
 - b. Describe the different types of boilers used.
 - c. Identify primary boiler components.
 - d. Identify common components related to air and pressure control.
 - e. Identify common components related to water level and flow control.
3. Identify various hot-water heating piping systems and the various terminal devices used.
 - a. Describe the characteristics of one- and two-pipe systems.
 - b. Describe the function of hot-water zoning systems.
 - c. Identify various hot-water heating system terminal devices.
4. Describe the methods and devices used to select pumps and balance water flow in hydronic systems.
 - a. Identify the devices used to measure and control water flow in hydronic systems.
 - b. Describe how circulating pumps are selected based on required flow rates.
 - c. Explain how to measure pump pressures and system flow rates in an operating system.

Module 03209-13- Troubleshooting Gas Heating-12.5 Hours

1. Describe how to troubleshoot the components related to gas heating.
 - a. Describe the control circuits and typical sequence of operation of various gas heating units.
 - b. Describe the operation and troubleshooting process for thermocouples.
 - c. Describe the operation and troubleshooting process for ignition devices.
 - d. Describe the operation and troubleshooting process for flame sensors.
 - e. Identify common problems associated with system airflow.
2. Identify Infrared gas heaters and describe how they operate.
 - a. Identify various types of infrared gas heaters.
 - b. Describe the operating characteristics of infrared gas heaters.
3. Explain how to conduct a combustion analysis on a gas furnace.
 - a. Identify combustion analysis equipment and the combustion byproducts that are of importance to the analysis.
 - b. Describe the combustion analysis process and how to interpret basic results.

Performance Task 1 (Learning Objective 1)

- Using the proper tools, instruments, and control circuit diagrams, isolate and correct malfunctions in a gas heating system.

Performance Task 2 (Learning Objective 3)

- Complete a combustion analysis on a gas furnace or boiler.

Module 03310-13- Troubleshooting Oil Heating- 15 hours

1. Identify the primary components of an oil-fired furnace and explain its operation.
 - a. Describe a basic oil-fired heating system.
 - b. Describe the primary components and operation of a pressure-type oil burner.
 - c. Describe the safety controls used on oil furnaces.
 - d. Describe the fuel supply system used with oil furnaces.
2. Describe how to perform periodic servicing of a typical oil-fired heating system.
 - a. Describe the basic servicing procedures performed on an oil-fired system.
 - b. Describe how to perform a combustion efficiency test.
3. Describe how to troubleshoot a typical oil-fired heating system.
 - a. Describe troubleshooting procedures for typical oil furnace controls.
 - b. Describe troubleshooting procedures for common oil heating problems.

Performance Task 1 (Learning Objective 2)

- Remove and reinstall an oil pump in single-pipe and two-pipe systems.
- Test a cad cell flame detector.
- Conduct a complete combustion analysis (smoke test and draft included).
- Remove and replace an oil burner nozzle and set the electrode gap.

Module 03314-13- Control Circuit and Motor Troubleshooting- 30 hours

1. Identify and describe the operation of common HVAC control circuit devices.
 - a. Identify and describe the operation of relays, contactors, and motor starters.
 - b. Identify and describe the operation of other common safety and control circuit devices.
2. Describe the operation, installation, and testing of various thermostats and temperature controls.
 - a. Describe the operation of various thermostats and temperature controls.
 - b. Identify and describe how to troubleshoot thermistors.
 - c. Explain how to install and wire thermostats.
 - d. Explain how to troubleshoot the functions of a thermostat.
3. Describe the sequence of operation for basic HVAC systems.
 - a. Describe the sequence of operation of a basic cooling-only system.
 - b. Describe the sequence of operation for a common heating and cooling system.
 - c. Describe the operation of basic pneumatic control systems.
4. Explain how to troubleshoot common control circuits and load components.
 - a. Identify basic safety practices related to troubleshooting HVAC power and control circuits.
 - b. Explain how to approach HVAC-related problems and prepare for troubleshooting.

- c. Explain how to test high-voltage power sources.
- d. Explain how to troubleshoot control circuits and low-voltage power sources.
- e. Explain how to troubleshoot both resistive and Inductive loads, including motors and their related devices.
- f. Explain how to troubleshoot various hydronic control system components.
- 5. Describe the operation of variable frequency drives (VFD) and their selection considerations.
 - a. Describe the operation of a VFD.
 - b. Identify VFD parameters that can be programmed.
 - c. Describe the important considerations for the selection of a VFD.
 - d. Explain dynamic motor braking processes.
- 6. Identify and describe how to service electronically commutated motors (ECMs).
 - a. Identify and describe the operation of ECMs.
 - b. Describe how to install and set up an ECM.
 - c. Describe how to troubleshoot an ECM.

Performance Task 1 (Learning Objective 2)

- Wire, check the operation of, and adjust the heat anticipator/cycle rate of a thermostat.

Performance Task 2 (Learning Objectives 1, 3, and 4)

- Interpret control circuit diagrams.

Performance Task 3 (Learning Objectives 1, 3, 4, and 6)

- electrical tests and/or troubleshooting procedures on the following:
 - Single- and three-phase power sources
 - Fuses and circuit breakers
 - Resistive loads
 - Relays and/or contactors
 - Motor windings
 - Start and run capacitors
 - Start relays and thermistors

Culminating Project: Work as team

1. Survey and analyze 3 residential heating systems that are currently in homes in your village to determine the following:
 - a. Venting- Is it adequate for the heating system installed and meet industry standards. Consider
 - i. Weather- protection from wind, ice build-up and other hazards that could cause blockage
 - ii. Nature- Adequately protect from animals and debris that could cause blockage.
 - b. Identify the fuel used and fuel delivery system- Gas, Oil and determine the following:
 - i. Fuel storage is appropriate, in good condition and meets industry standards

- ii. Connections from fuel Storage to Heating unit is in good condition, properly connected and does not leak and meets industry standards. Locate emergency shut-off valves.
 - c. Check burning systems- Are the burning components clean? Is the fuel being burned efficiently? And does the burner system meet industry standards.
 - i. Is the burner system clean?
 - ii. Check flame color
 - iii. Exhaust- check for residue build-up and release from flame
 - iv. Check for appropriate airflow to support normal flame.
 - v. Check fuel flow to burner- Is it normal and meet industry standards.
 - d. Survey the boiler components- pumps, connections, glycol/water levels and quality. Is there air in the system? Does it meet industry standards.
- 2. Complete a report on home system and make recommendations for correcting any deficiencies as a result of inspection.

ILF Standards:

- **Environmental Realm**
 - Tools
 - Environment
- **Individual Realm**
 - Creating Balance
 - Leadership
 - Values and Beliefs
 - Women's roles
 - Men's Roles
 - Life Cycle
- **Community Realm**
 - Elders
 - Arts
 - Relationships

Academic Standards

ELA

RI.9-10.1 Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

W.9-10.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

W.9-10.2.d Use precise language and domain-specific vocabulary to manage the complexity of the topic.

W.9-10.3.c Use a variety of techniques to sequence events so that they build on one another to create a coherent whole.

W.9-10.4 Produce clear and coherent writing in which the development, organization, style, and features are appropriate to task, genre, purpose, and audience.

W.9-10.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

SL.9-10.1.a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.

SL.9-10.1.b Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed.

L.9-10.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9-10 reading and content, choosing flexibly from a range of strategies.

L.9-10.6 Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

RST.9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

RST.9-10.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.

WHST.9-10.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

WHST.9-10.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

WHST.9-10.10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Math:

N-Q.1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

N-Q.2. Define appropriate quantities for the purpose of descriptive modeling.

N-Q.3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

S-MD.6. (+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).

S-MD.7. (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).

S-IC.6- Evaluate reports based on data.

G-GMD.1. Explain how to find the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone.

G-MG.1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*

G-CO.1. Demonstrates understanding of key geometrical definitions, including angle, circle, perpendicular line, parallel line, line segment, and transformations in Euclidian geometry.

Understand undefined notions of point, line, distance along a line, and distance around a circular arc.

MP4. Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

MP5. Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

Carpentry I Yearlong Objectives

Module 27101-13- Orientation to the Trade- 2.5 hrs

1. Identify the career and entrepreneurial opportunities within the carpentry trade.
 - a. Identify the training opportunities within the carpentry trade.
2. Identify the skills, responsibilities, and characteristics needed to be a successful carpenter.
 - a. Identify the skills needed to be a successful carpenter.
 - b. Identify the responsibilities of a successful carpenter.
 - c. State the personal characteristics of a successful carpenter.
3. Summarize how to be connected to the industry through an organization like SkillsUSA.
 - a. Describe the program, curriculum, and SkillsUSA Championships.
 - b. State the benefits from being a SkillsUSA member.
 - c. List the seven goals of the SkillsUSA Program of Work.
4. Explain the importance of safety in the construction industry, and describe the obligations of the contractor, subcontractors, and you to ensure a safe work environment.
 - a. Describe the OSHA Outreach Training Program.
 - b. Explain hazard recognition and define your role in it.

Module 27102-13- Building Materials, Fasteners, and Adhesives- 20hrs

1. Identify various types of building materials and describe their uses.
 - a. State the uses of various types of hardwoods and softwoods.
 - b. Describe common lumber defects.
 - c. Identify the different grades of lumber and describe uses for each.
 - d. Explain how treated lumber differs from nontreated lumber.
 - e. Describe how plywood is manufactured and cite common applications for plywood on a construction project.
 - f. Identify uses of hardboard.
 - g. Identify uses of particleboard.
 - h. Identify uses of high- and medium-density overlay plywood.
 - i. Describe how oriented strand board differs from particleboard and cite common applications for OSB.
 - j. Cite common applications for mineral fiberboard.
 - k. State the uses of various types of engineered lumber.
 - l. applications for wood I-beams
 - m. List advantages of glulam lumber over conventional solid lumber.
 - n. Describe the composition of concrete and explain how hydration occurs.
 - o. List uses of concrete masonry units for a construction project.
 - p. Identify where metal framing members may be used in a structure.
2. List safety precautions associated with building materials.
 - a. List general safety guidelines for working with building materials.
 - b. Cite safety precautions for working with wood building materials.
 - c. Cite safety precautions for working with concrete building materials.
 - d. Cite safety precautions for working with metal building materials.
3. Describe the proper method of handling and storing building materials.
 - a. List basic material-handling guidelines.

- b. Describe how to handle and store wood building materials.
 - c. Describe how to handle and store concrete building materials.
 - d. Describe how to handle and store metal building materials.
4. Explain how to calculate the quantities of lumber, panel, and concrete products using industry-standard methods.
 - a. Calculate lumber quantities.
 - b. Calculate panel quantities.
 - c. Calculate the volume of concrete required for rectangular and cylindrical shapes.
5. Describe the fasteners, anchors, and adhesives used in construction and explain their uses.
 - a. Identify various types of nails and cite uses for each.
 - b. Identify applications for staples.
 - c. Identify various types of screws and cite uses for each.
 - d. Describe uses for hammer-driven pins and studs.
 - e. Identify various types of bolts and cite uses for each.
 - f. Identify various types of mechanical anchors and cite uses for each.
 - g. Identify various types of bolt anchors and explain how each is installed.
 - h. Identify various types of screw anchors and cite uses for each.
 - i. Identify various types of hollow-wall anchors and cite uses for each.
 - j. List the types of glues and adhesives used in construction.

Performance Task 1 (Learning Objective 1)

- Given a selection of building materials, identify a particular material and state its use.

Performance Task 2 (Learning Objective 4)

Calculate the quantities of lumber, panel, and concrete products using industry-standard methods.

Performance Task 3 (Learning Objective 5)

- Demonstrate safe and proper installation of drop-in anchors.

Module 27103-13- Hand and Power Tools- 10hrs

1. Identify the hand tools commonly used by carpenters.
 - a. Describe the safe use and maintenance of levels.
 - b. Describe the safe use and maintenance of squares.
 - c. Describe the safe use and maintenance of planes.
 - d. Describe the safe use and maintenance of clamps.
 - e. Describe the safe use and maintenance of hand saws.
2. Identify the power tools commonly used by carpenters.
 - a. Describe the general safe use and maintenance of power tools.
 - b. Describe the safe use of power saws.
 - c. Describe the safe use of drill presses.
 - d. Describe the safe use of routers and laminate trimmers.
 - e. Describe the safe use of portable power planes.
 - f. Describe the safe use of power metal shears.
 - g. Describe the safe use of pneumatic and cordless nailers and staplers.

Performance Task 1 (Learning Objective 1)

- Demonstrate the safe and proper use of the following hand tools:

- Level
- Square
- Clamp
- Saw

Performance Task 2 (Learning Objective 2)

- Demonstrate or describe the safe and proper use of five of the following power tools:
 - Circular saw
 - Portable table saw
 - Compound miter saw
 - Drill press
 - Router/laminate trimmer
 - Portable power plane
 - Power metal shears
 - Pneumatic nailer/stapler

Module 27104-13- Introduction to Construction Drawings, Specifications, and Layout- 22.5hrs

1. Describe the types of drawings usually included in a set of plans and describe the information found on each type.
 - a. Identify the different types of lines used on construction drawings.
 - b. Identify selected architectural symbols commonly used to represent materials on plans.
 - c. Identify selected electrical, mechanical, and plumbing symbols commonly used on plans.
 - d. Identify selected abbreviations commonly used on plans.
 - e. Describe the methods of dimensioning construction drawings.
 - f. List the various types of construction drawings and describe each.
2. State the purpose of written specifications.
 - a. Describe how specifications are organized.
 - b. Explain the importance of building codes in construction.
3. Identify the methods of squaring a building.

Performance Task 1 (Learning Objective 1)

- Read and interpret foundation, floor, and other plan view drawings.

Performance Task 2 (Learning Objective 1)

- Read and interpret elevation view drawings.

Performance Task 3 (Learning Objective 1)

- Read and interpret section and detail drawings.

Performance Task 4 (Learning Objective 1)

- Read and interpret schedules.

Performance Task 5 (Learning Objective 2)

- Read and interpret written specifications.

Performance Task 6 (Learning Objective 3)

- Establish 90-degree angles using the 3-4-5 rule.

Module 27105-13- Floor Systems- 25hrs

1. Read and interpret specifications and drawings to determine floor system requirements.
 - a. Explain the importance of specifications.
 - b. List items commonly shown on architectural drawings.
 - c. Describe information typically shown on structural drawings.
 - d. Explain the importance of referencing mechanical, electrical, and plumbing plans.
 - e. Describe the proper procedure for reading a set of prints.
2. Identify the different types of framing systems.
 - a. Describe the general components of a platform-framed structure.
 - b. List differences between platform framing and balloon framing.
 - c. Describe the characteristics of post-and-beam framing.
3. Identify floor system components.
 - a. Define sill plate and describe its role in floor framing.
 - b. List and recognize different types of beams and girders and supports.
 - c. List and recognize different types of floor joists.
 - d. List and recognize different types of bridging.
 - e. Explain the purposes of subfloor and underlayment.
4. Describe the construction methods for floor systems, and identify floor system materials.
 - a. Describe how to check a foundation for squareness.
 - b. Name the methods used to lay out and fasten sill plates to the foundation.
 - c. Describe the proper procedure for installing a beam or girder.
 - d. Describe how to lay out sill plates and girders for floor joists.
 - e. Describe how to lay out and install floor joists for partitions and floor openings.
 - f. Identify different types of bridging and describe how to properly install each type.
 - g. Describe how to properly install subfloor.
 - h. Explain how to install joists for projections or cantilevered floors.
5. Estimate the amount of material needed for a floor assembly.
 - a. Describe how to estimate the amount of sill plate, sill sealer, and termite shield.
 - b. Describe how to estimate the amount of beam or girder material.
 - c. Describe how to estimate the amount of lumber needed for joists and joist headers.
 - d. Describe how to estimate the amount of bridging required.
 - e. Describe how to estimate the amount of subfloor material required.
6. Identify some common alternative floor systems.

Performance Task 1 (Learning Objective 4)

- Lay out and construct a floor assembly, including a rough opening and subfloor material.

Performance Task 2 (Learning Objective 5)

- Estimate the amount of material to frame a floor assembly from a set of plans.

Module 27111-13- Wall Systems- 10 hrs

1. Identify the components of a wall system.
 - a. Identify methods used to construct corner posts.
 - b. Describe how to frame partition intersections.
 - c. Explain the purpose of headers and describe how they are constructed.
 - d. Describe how metal-framed walls are constructed.

2. Describe the procedure for laying out a wood frame wall, including plates, corner posts, door and window openings, partition Ts, bracing, and fire-stops.
 - a. Describe how to properly lay out a wood frame wall.
 - b. Explain how to lay out wall openings.
3. Describe the correct procedure to assemble, erect, and brace exterior walls for a frame building.
 - a. List the steps involved in assembling a wall.
 - b. Identify where fire stops are to be installed and explain how they are installed.
 - c. List the four steps involved in erecting a wall.
4. Describe wall framing techniques used in masonry construction.
5. Describe the correct procedure to estimate the materials required to frame walls.
 - a. Explain how to estimate the amount of lumber required for soleplates and top plates.
 - b. Describe how to estimate the number of studs required.
 - c. Explain how to calculate the amount of material needed for a header.
 - d. Describe how to estimate the amount of diagonal bracing required.
6. Identify alternative wall systems.
 - a. Describe how concrete walls are constructed.
 - b. Explain the difference between standard interior wall systems and alternative interior wall systems.

Performance Task 1 (Learning Objective 2)

- Lay out a wood frame wall, including plates, corner posts, door and window openings, partition Ts, bracing, and fire-stops.

Performance Task 2 (Learning Objective 3)

- Assemble and erect a wood frame wall, including plates, corner posts, door and window openings, partition Ts, bracing, and fire-stops.

Performance Task 3 (Learning Objective 3)

- Correctly install sheathing on a wall.

Performance Task 4 (Learning Objective 5)

- Estimate the materials required to frame walls.

Module 27112-13 Ceiling and Roof Framing- 47.5

1. Identify the components of ceiling framing.
 - a. Describe the correct procedure for laying out ceiling joists.
 - b. Describe how to cut and install ceiling joists on a wood frame building.
 - c. Describe how to estimate the number of ceiling joists required for a building.
2. Identify common types of roofs used in residential construction.
3. Identify the components and define the terms associated with roof framing.
 - a. Identify the two types of dormers.
 - b. Describe how to use a framing square and a Speed Square™ for roof framing.
4. Describe the methods used to lay out a common rafter.
 - a. Explain how to lay out rafter locations.
 - b. Describe how to determine the length of a common rafter.
 - c. Explain the correct procedure for laying out and cutting a common rafter.
5. Describe how to erect a gable roof.

- a. Describe how to install rafters.
6. Describe how to frame a basic gable end wall.
 - a. Describe how to frame a gable overhang.
 - b. Explain how to frame an opening in a roof.
7. Recognize the use of trusses in basic roof framing.
 - a. Identify the various types and components of trusses.
 - b. Identify the basics of truss installation.
 - c. Identify the basics of truss bracing.
8. Describe the basics of roof sheathing installation.
9. Describe how to perform a material takeoff for a roof.
 - a. Determine the materials needed for a gable roof.

Performance Task 1 (Learning Objective 1)

- Lay out ceiling joists.

Performance Task 2 (Learning Objective 1)

- Cut and install ceiling joists for a wood frame building.

Performance Task 3 (Learning Objective 1)

- Estimate the number of ceiling joists required for a building.

Performance Task 4 (Learning Objective 4)

- Lay out common roof rafters.

Performance Task 5 (Learning Objective 5)

- Cut and install roof rafters for a gable roof.

Performance Task 6 (Learning Objective 6)

- Frame a gable end wall.

Performance Task 7 (Learning Objective 7)

- Erect a gable roof using trusses.

Performance Task 8 (Learning Objective 8)

- Sheath a gable roof with an opening.

Performance Task 9 (Learning Objective 9)

- Perform a material takeoff for a roof.

Module 27109-13- Introduction to Building Envelope Systems- 12.5hrs

1. Identify the components of the building envelope.
 - a. Describe various ways that air infiltration can be minimized or prevented.
 - b. Identify various types of fixed, sliding, and swinging windows.
 - c. Identify the common types of exterior doors and explain how they are constructed.
2. State the requirements for a proper window installation.
 - a. Explain when jamb extensions are used.
 - b. Identify common considerations when framing in glass blocks.
3. State the requirements for a proper door installation.
 - a. Identify the differences between residential and commercial doors.
4. Identify the various types of locksets used on exterior doors and explain how they are installed.

Performance Task 1 (Learning Objective 2)

- Prepare a rough opening for proper window installation.

Performance Task 2 (Learning Objective 3)

- Prepare a rough opening for proper door installation.

Performance Task 3 (Learning Objective 4)

- Install a lockset.

Module 27110-13- Basic Stair and Layout- 12.5

1. Identify the types of stairways.
 - a. Identify how residential and commercial stairways differ.
2. Identify the various components associated with stairs.
3. Identify terms associated with stair framing.
 - a. Define headroom.
 - b. Define stringer and explain when more than two stringers are used.
 - c. Define treads and risers and explain the importance of uniform tread depths and riser heights.
 - d. List the minimum stairway width requirements for residential and commercial structures.
 - e. Describe the difference between handrails and guards.
 - f. Identify situations that carpenters may be confronted with when framing stairwells.
4. Describe the procedure used to determine the total rise, number and size of risers, and number and size of treads required for a stairway.
 - a. Explain how to calculate the riser height, tread depth, and total run for a stairway.
 - b. Describe how to calculate stairwell opening sizes.
5. Describe the procedure to lay out and cut stringers, risers, and treads.
 - a. Explain how to lay out and cut a stringer.
 - b. Describe how to properly reinforce a stringer.
 - c. Summarize how concrete stairways are formed.

Performance Task 1 (Learning Objective 4)

- Calculate the total rise, number and size of risers, and number and size of treads required for a stairway.

Performance Task 2 (Learning Objective 5)

- Lay out and cut a stringer.

Culminating Intensive Project:

1. Build a shed, cabin or other structure such as a gazebo
 - a. Write out plan to include the following
 - i. Decide the size and shape of structure.
 - ii. Review various designs and choose a set of drawings and structure plans when applicable
 - iii. Determine the appropriate materials needed for activity
 - iv. Determine the appropriate tools and supplies for the project
 - v. Determine the approximate cost of activity
 - vi. Complete the various tasks after completing the appropriate modular training.

- b. Using the safety protocols and knowledge of tool and material use. Begin making or building the structure after completion of each applicable module.

ILF Standards:

- **Environmental Realm**
 - Tools
 - Environment
- **Individual Realm**
 - Creating Balance
 - Leadership
 - Values and Beliefs
 - Women's roles
 - Men's Roles
 - Life Cycle
- **Community Realm**
 - Elders
 - Arts
 - Relationships

Academic Standards

ELA

RI.9-10.1 Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

W.9-10.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

W.9-10.2.d Use precise language and domain-specific vocabulary to manage the complexity of the topic.

W.9-10.3.c Use a variety of techniques to sequence events so that they build on one another to create a coherent whole.

W.9-10.4 Produce clear and coherent writing in which the development, organization, style, and features are appropriate to task, genre, purpose, and audience.

W.9-10.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

SL.9-10.1.a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.

SL.9-10.1.b Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed.

L.9-10.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9-10 reading and content, choosing flexibly from a range of strategies.

L.9-10.6 Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level;

demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

RST.9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

RST.9-10.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.

WHST.9-10.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

WHST.9-10.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

WHST.9-10.10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Math:

N-Q.1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

N-Q.2. Define appropriate quantities for the purpose of descriptive modeling.

N-Q.3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

S-MD.6. (+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).

S-MD.7. (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).

S-IC.6- Evaluate reports based on data.

G-GMD.1. Explain how to find the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone.

G-MG.1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*

G-CO.1. Demonstrates understanding of key geometrical definitions, including angle, circle, perpendicular line, parallel line, line segment, and transformations in Euclidian geometry.

Understand undefined notions of point, line, distance along a line, and distance around a circular arc.

MP4. Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a

complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

MP5. Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

Carpentry 2- Yearlong Objectives

Module 27201-13- Commercial Drawings- 25 hrs

1. Identify the types and uses of commercial construction drawings and schedules.
 - a. Compare and contrast residential and commercial construction drawings.
 - b. Describe the purpose of a civil drawing.
 - c. Describe the use of architectural drawings and schedules.
 - d. Describe the use of structural drawings.
 - e. Describe the purpose of mechanical, electrical, and plumbing drawings.
 - f. Compare drawings from two different disciplines.
2. Define the use of specifications and how they are referenced.
 - a. Describe the format of specifications.
 - b. Explain how specifications are written.

Performance Task 1 (Learning Objective 1)

- Estimate the amount of materials to complete an instructor-specified steel framing project.

Performance Task 2 (Learning Objective 2)

- Lay out a steel stud wall with openings to include bracing and blocking.

Performance Task 3 (Learning Objective 2)

- Demonstrate the ability to build headers (back-to-back, box, and L-header).

Module 27205-13- Cold-Formed Steel Framing- 15hrs

1. Identify the tools and components of cold-formed steel framing systems and their safe use.
 - a. Identify the safety guidelines that should be followed when working with cold-formed steel.
 - b. Identify steel framing materials.
 - c. List the steel framing tools and fasteners.
 - d. Explain how to perform a material takeoff for a steel frame project.
2. Identify the steps to lay out and install a steel stud wall.
 - a. Describe the basic steel construction methods.
 - b. Explain how to frame nonstructural steel walls.
 - c. Explain how to frame structural steel walls.
3. Identify other steel framing applications.
 - a. Explain how steel framing members are used in floor and roof construction.
 - b. Explain how steel framing members are used in ceiling construction.

Performance Task 1 (Learning Objective 1)

- Estimate the amount of materials to complete an instructor-specified steel framing project.

Performance Task 2 (Learning Objective 2)

- Lay out a steel stud wall with openings to include bracing and blocking.

Performance Task 3 (Learning Objective 2)

- Demonstrate the ability to build headers (back-to-back, box, and L-header).

Module 27204-13- Exterior Finishing- 35hrs

1. Describe the safety hazards when working with exterior finish materials.
 - a. Identify safety hazards that are present when working at elevations.
 - b. Describe safety hazards when working with hand and power tools, equipment, and exterior finish materials.
2. Describe the various types and applications of exterior finish materials.
 - a. Identify the types of wood siding.
 - b. Identify vinyl and metal siding materials and components.
 - c. List applications for fiber-cement siding.
 - d. Discuss the types of veneer finishes.
 - e. List specialty exterior finishes.
 - f. Explain the purpose of flashing.
3. Explain how to install exterior finish materials.
 - a. Describe surface preparation that must be performed prior to installing exterior finish materials.
 - b. Discuss the types of furring and insulation that might be applied to exterior walls.
 - c. Explain how to establish a straight reference line.
 - d. Describe how to install wood siding.
 - e. Describe how to install vinyl and metal siding.
 - f. Describe how to install fiber-cement siding.
 - g. Explain how to install cornices.
4. Describe the estimating procedure for exterior finish projects.
 - a. Explain how to perform a takeoff on panel and board siding.

Performance Task 1 (Learning Objective 3)

- Install three of the most common siding types in your area.

Performance Task 2 (Learning Objective 4)

- Estimate the amount of lap or panel siding required for a structure.

Module 27203-13- Thermal and Moisture Protection- 7.5hrs

1. Describe the safety and health hazards when working with insulation.
 - a. List the personal protective equipment (PPE) that is required when working with insulation.
 - b. Describe how to safely handle insulation.
2. Describe the various types of insulation and their characteristics.
 - a. Explain how to determine R-value requirements.
 - b. Describe flexible insulation and list its characteristics.
 - c. Describe loose-fill insulation and list its characteristics.
 - d. Describe rigid or semirigid insulation and list its characteristics.
 - e. Describe reflective insulation and list its characteristics.
 - f. List miscellaneous types of insulation.
3. Describe the various installation methods for insulation.
 - a. Explain how to install flexible insulation.
 - b. Explain how to install loose-fill insulation.
 - c. Explain how to install rigid or semirigid insulation.
 - d. Explain how to install reflective insulation.

4. Identify the requirements for moisture control, waterproofing, and ventilation, and describe the related installation methods.
 - a. List various methods to control moisture in a structure.
 - b. Identify methods to waterproof a structure.

5. Describe the estimating procedure for thermal and moisture projects.

Performance Task 1 (Learning Objective 3)

- Install blanket insulation in a wall.

Performance Task 2 (Learning Objective 3)

- Install a vapor barrier on a wall.

Performance Task 3 (Learning Objective 4)

- Install selected building wraps.

Module 27202-13- Roofing Applications- 25hrs

1. Explain the safety requirements for roofing projects.
 - a. Identify potential hazards when working on roofs.
 - b. Discuss the fall protection equipment required when working on roofs.
 - c. Identify proper personal protective equipment (PPE) and hazard control devices used when working on roofs.
2. Identify the tools and fasteners used in roofing.
 - a. Identify the hand tools used when working on roofing projects.
 - b. Identify the power tools used when working on roofing projects.
 - c. Identify fasteners used on roofing projects.
3. Identify the different roofing systems and their associated materials.
 - a. Identify composition shingles and their applications.
 - b. Identify roll-roofing applications.
 - c. Identify wood shakes and shingles and their applications.
 - d. Identify tile/slate roofing materials and their applications.
 - e. Identify metal roofing and its applications.
 - f. Identify built-up roofing and its applications.
 - g. Identify single-ply roofing and its applications.
 - h. Explain the purpose of underlayment and waterproof membrane.
 - i. Discuss the purpose of drip edge, flashing, and roof ventilation.
4. Describe the installation techniques for common roofing systems.
 - a. Describe how to properly prepare a roof deck.
 - b. Explain how to install composition shingles.
 - c. Explain how to install metal roofing.
 - d. Describe how to install roll roofing.
 - e. Discuss roof projections, flashing, and ventilation.
5. Describe the estimating procedure for roofing projects.

Performance Task 1 (Learning Objective 4)

- Demonstrate how to install composition shingles on a specified roof and valley.

Performance Task 2 (Learning Objective 4)

- Demonstrate the method to properly cut and install the ridge cap using composition shingles.

Performance Task 3 (Learning Objective 4)

- Lay out, cut, and install a cricket or saddle.

Performance Task 4 (Learning Objective 4)

- Demonstrate the techniques for installing other selected types of roofing materials.

Module 27208-13 Doors and Door Hardware- 20hrs

1. Describe the safety hazards related to working with doors.
2. Identify the different types and composition of residential and commercial doors.
 - a. Identify the different types and composition of residential doors.
 - b. Identify the different types and composition of commercial doors.
3. Identify the various types of door jambs and frames.
 - a. Describe the uses and benefits of wood door jambs and frames.
 - b. Describe the uses and benefits of metal door jambs and frames.
4. Identify the different types of door hardware.
 - a. Identify the different types of door hardware used in residential applications.
 - b. Identify the different types of door hardware used in commercial applications.
5. Describe the various installation techniques for doors and hardware.
 - a. Describe the various installation techniques for residential doors and hardware.
 - b. Describe the various installation techniques for commercial doors and hardware.
6. List and identify specific items included on a typical door schedule.
 - a. Describe the hardware finish classifications.
 - b. Describe the information included in a typical door schedule.

Performance Task 1 (Learning Objective 5)

- Demonstrate the proper installation of a hollow metal frame and door using the proper safety precautions.

Performance Task 2 (Learning Objective 5)

- Install a prehung door unit or door hanging system using the proper safety precautions.

Performance Task 3 (Learning Objective 5)

- Lay out and cut hinges in an instructor-selected project.

Performance Task 4 (Learning Objective 5)

- Install a door closer using the proper safety precautions.

Module 27206-13- Drywall installation- 15hrs

1. Identify components of a drywall assembly.
 - a. List the types of gypsum products.
 - b. Identify drywall fasteners and list their uses.
 - c. Identify drywall accessories and state their applications.
2. Describe the installation of drywall.
 - a. Describe the purpose of a finish schedule.
 - b. List the tools used for drywall application.
 - c. Identify methods of sound-isolation construction.
 - d. Describe the procedure for drywall construction.
 - e. List special applications for drywall.
3. Contrast rated assemblies to nonrated assemblies.
 - a. Describe single-ply drywall application.
 - b. Describe how fire-rated walls are constructed.
 - c. List multi-ply drywall applications.
 - d. Describe how to prioritize walls.

4. Identify how to calculate a quantity takeoff for proper drywall installation.
 - a. Explain how to perform a material takeoff for drywall.
 - b. Explain how to perform a material takeoff for drywall fasteners.

Performance Task 1 (Learning Objective 1)

- Select the type and thickness of drywall required for an installation.

Performance Task 2 (Learning Objective 2)

- Install gypsum drywall panels on a stud wall and a ceiling using any or all of the following fastening systems:
 - Nails
 - Screws
 - Adhesives

Performance Task 3 (Learning Objective 4)

- Estimate material quantities for an installation.

Module 27207-13- Drywall Finishing- 17.5

1. Identify differences between the six levels of finish established by industry standards.
2. Identify the different materials for proper drywall finishing.
 - a. Describe how to select the proper trim.
 - b. Describe the purposes of tapes, compounds, coatings, and sanding materials.
3. Identify the proper tools used in drywall finishing.
 - a. Identify the hand tools used in drywall finishing.
 - b. Identify the automatic tools used in drywall finishing.
4. Describe proper drywall finishing procedures.
 - a. Identify ideal site conditions for drywall finishing.
 - b. Describe the process for finishing drywall.
 - c. Describe the hand-finishing procedures involved in drywall finishing.
 - d. Describe the automatic taping and finishing procedures involved in drywall finishing.
 - e. Identify common joint problems when finishing drywall.
 - f. Identify common compound problems when finishing drywall.
 - g. Identify common fastener problems when finishing drywall.
 - h. Identify common problems when finishing drywall.
5. Explain how to estimate the proper amount of drywall finishing materials.

Performance Task 1 (Learning Objective 1)

- State the differences between the six levels of finish established by industry standards and distinguish a finish level by observation.

Performance Task 2 (Learning Objective 4)

- Properly apply a corner bead, tape, and finish to a drywall panel.

Performance Task 3 (Learning Objective 4)

- Patch damaged drywall.

Module 27209-13- Suspended Ceilings- 15hrs

1. Identify the components necessary to properly install a suspended ceiling system.
 - a. Identify the system components necessary to properly frame a suspended ceiling system.

- b. Identify the suspension systems and hardware necessary to properly install a suspended ceiling system.
 - c. Identify the safe material handling and storage procedures required when installing a suspended ceiling system.
2. Interpret a reflected ceiling plan.
 - a. Interpret the layout information.
 - b. Interpret the MEP locations.
3. Identify the procedures to lay out and install a suspended ceiling system.
 - a. Identify the layout and takeoff procedures to procure materials to lay out and install a suspended ceiling system.
 - b. Identify the tools and equipment to lay out and install a suspended ceiling system.
 - c. Identify the installation methods and procedures for a suspended ceiling system.

Performance Task 1 (Learning Objective 2)

- Estimate the quantities of materials needed to install a lay-in suspended ceiling system in a typical room from an instructor-supplied drawing.

Performance Task 2 (Learning Objective 3)

- Establish a level line at ceiling level such as is required when installing the wall angle for a suspended ceiling.

Performance Task 3 (Learning Objective 3)

- Lay out and install a lay-in suspended ceiling system according to an instructor-supplied drawing.

Module 27210-13- Window, Door, Floor, and Ceiling Trim-25hrs

1. Describe the safety hazards related to working with window, door, floor, and ceiling trim.
 - a. Identify the proper personal protection equipment required when working with window, door, floor, and ceiling trim.
 - b. Identify tool and equipment safety guidelines when working with window, door, floor, and ceiling trim tools.
2. Identify the different types of standard moldings and materials.
 - a. Identify the different types of base moldings.
 - b. Identify the different types of wall moldings.
 - c. Identify the different types of ceiling moldings.
 - d. Identify the different types of window and door trim.
3. Explain how to install different types of molding.
 - a. Explain how to properly cut trim.
 - b. Explain how to properly fasten trim.
 - c. Explain how to properly install base molding.
 - d. Explain how to properly install ceiling molding.
 - e. Explain how to properly install door trim.
 - f. Explain how to properly install window trim.
4. Explain how to estimate window, door, floor, and ceiling trim.

Performance Task 1 (Learning Objective 3)

- Make square and miter cuts to selected moldings using a hand miter box.

Performance Task 2 (Learning Objective 3)

- Make square and miter cuts to selected moldings using a power miter/compound miter saw.

Performance Task 3 (Learning Objective 3)

- Make a coped joint using a coping saw.

Performance Task 4 (Learning Objective 3)

- Install interior trim using a finish nailer and hand nailing methods.
 - Door trim
 - Window trim
 - Base trim
 - Ceiling trim

Performance Task 5 (Learning Objective 4)

- Estimate the quantities of different trim materials required for selected rooms.

Module 27211-13- Cabinet Installation- 10hrs

1. Describe the safety hazards when installing cabinets.
 - a. Identify tool and material hazards that may be present when installing cabinets.
 - b. Explain how to prevent back injuries through proper ergonomics.
2. Identify the different types of cabinets.
 - a. Identify wall cabinets.
 - b. Identify base cabinets.
 - c. Describe the purpose of countertop.
3. Identify cabinet components and hardware and describe their purpose.
 - a. Identify cabinet components.
 - b. Describe various types of hardware used on cabinets.
4. Explain how to lay out and install a basic set of cabinets.
 - a. Describe the surface preparation needed before cabinet installation.
 - b. Explain how to install wall cabinets.
 - c. Explain how to install base cabinets and countertops.

Performance Task 1 (Learning Objective 4)

- Lay out and identify various types of base and wall units following a specified layout scheme.

Project:

Building a shed or cabin or similar structure to include fixture preparation, insulation, roofing, windows to arctic standards.

- a. Write out plan to include the following
 - i. Decide the size and shape of structure.
 - ii. Review various designs and choose a set of drawings and structure plans when applicable
 - iii. Determine the appropriate materials needed for activity
 - iv. Determine the appropriate tools and supplies for the project
 - v. Determine the approximate cost of activity
 - vi. Complete the various tasks after completing the appropriate modular training.
- b. Using the safety protocols and knowledge of tool and material use. Begin making or building the structure after completion of each applicable module.

ILF Standards:

- **Environmental Realm**
 - **Tools**
 - **Environment**
- **Individual Realm**
 - **Creating Balance**
 - **Leadership**
 - **Values and Beliefs**
 - **Women's roles**
 - **Men's Roles**
 - **Life Cycle**
- **Community Realm**
 - **Elders**
 - **Arts**
 - **Relationships**

Academic Standards: ELA

RST.9-12.3- Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.

RI.9-12.4 Determine the meaning of words and phrases as they are used in various genres, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text.

W.9-12.3.a Engage and orient the reader by setting out a problem, situation, or observation and its significance, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.

W.9-12.3.b Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.

W.9-12.3.c Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and build toward a particular tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution).

W.9-12.3.d Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.

W.9-12.3.e Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.

W.9-12.10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

SL.9-12.1.a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.

SL.9-12.1.b Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.

SL.9-12.1.c Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.

SL.9-12.1.d Respond thoughtfully to diverse perspectives or arguments; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.

L.9-12.2 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

L.9-12.2.a Observe hyphenation conventions.

L.9-12.2.b Spell correctly.

RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

WHST.11-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

WHST.11-12.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

WHST.11-12.10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Math:

N-Q.1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

N-Q.2. Define appropriate quantities for the purpose of descriptive modeling.

N-Q.3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

S-MD.6. (+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).

S-MD.7. (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).

S-IC.6- Evaluate reports based on data.

G-GMD.1. Explain how to find the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone.

G-MG.1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*

G-CO.1. Demonstrates understanding of key geometrical definitions, including angle, circle, perpendicular line, parallel line, line segment, and transformations in Euclidian geometry.

Understand undefined notions of point, line, distance along a line, and distance around a circular arc.

MP4. Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high

school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

MP5. Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

Intro to Construction Trades

Module 00101-15- Basic Safety- 12.5 hrs

1. Describe the importance of safety, the causes of workplace incidents, and the process of hazard recognition and control.
 - a. Define incidents and the significant costs associated with them.
 - b. Identify the common causes of incidents and their related consequences.
 - c. Describe the processes related to hazard recognition and control, including the Hazard Communication (HAZCOM) Standard and the provisions of a Safety Data Sheet (SDS)."
2. Describe the safe work requirements for elevated work, including fall protection guidelines.
 - a. Identify and describe various fall hazards.
 - b. Identify and describe equipment and methods used in fall prevention and fall arrest.
 - c. Identify and describe the safe use of ladders and stairs.
 - d. Identify and describe the safe use of scaffolds.
3. Identify and explain how to avoid struck-by and caught-in-between hazards.
 - a. Identify and explain how to avoid struck-by and caught-in-between hazards.
 - b. Identify and explain how to avoid caught-in and caught-between hazards.
4. Identify common energy-related hazards and explain how to avoid them.
 - a. Describe basic job-site electrical safety guidelines.
 - b. Explain the importance of lockout/tagout and describe basic procedures.
5. Identify and describe the proper use of personal protective equipment (PPE).
 - a. Identify and describe the basic use of PPE used to protect workers from bodily injury.
 - b. Identify potential respiratory hazards and the basic respirators used to protect workers against those hazards.
6. Identify and describe other specific job-site safety hazards.
 - a. Identify various exposure hazards commonly found on job sites.
 - b. Identify hazards associated with environmental extremes.
 - c. Identify hazards associated with hot work.
 - d. Identify fire hazards and describe basic firefighting procedures.
 - e. Identify confined spaces and describe related safety considerations.

Performance Tasks

Performance Task 1 (Learning Objective 2)

- Properly set up and climb/descend an extension ladder, demonstrating proper three-point contact.

Performance Task 2 (Learning Objective 5)

- Inspect the following PPE items and determine if they are safe to use:
 - Eye protection
 - Hearing protection
 - Hard hat
 - Gloves
 - Fall arrest harnesses, lanyards, and connecting devices

- Approved footwear

Performance Task 3 (Learning Objective 5)

- Properly don, fit, and remove the following PPE items:
 - Eye protection
 - Hearing protection
 - Hard hat
 - Gloves
 - Fall arrest harness

Performance Task 4 (Learning Objective 4)

- Inspect a typical power cord and GFCI to ensure their serviceability.

Module 00109-15- Introduction to Materials Handling-5 hrs

1. Describe the basic concepts of material handling and common safety precautions.
 - a. Describe the basic concepts of material handling and manual lifting.
 - b. Identify common material-handling safety precautions.
 - c. Identify and describe how to tie knots commonly used in material handling.
2. Identify various types of material handling equipment and describe how they are used.
 - a. Identify non-motorized material-handling equipment and describe how they are used.
 - b. Identify motorized material-handling equipment and describe how they are used.

Performance Task 1 (Learning Objective 1)

- Demonstrate safe manual lifting techniques.

Performance Task 2 (Learning Objective 1)

- Demonstrate how to tie two of the following common knots:
 - Square
 - Bowline
 - Half hitch
 - Clove hitch

Module 00102-15-Introduction to Construction Math-10 hrs

1. Identify whole numbers and demonstrate how to work with them mathematically.
 - a. Identify different whole numbers and their place values.
 - b. Demonstrate the ability to add and subtract whole numbers.
 - c. Demonstrate the ability to multiply and divide whole numbers.
2. Explain how to work with fractions.
 - a. Define equivalent fractions and show how to find lowest common denominators.
 - b. Describe improper fractions and demonstrate how to change an improper fraction to a mixed number.
 - c. Demonstrate the ability to add and subtract fractions.
 - d. Demonstrate the ability to multiply and divide fractions.
3. Describe the decimal system and explain how to work with decimals.
 - a. Describe decimals and their place values.
 - b. Demonstrate the ability to add, subtract, multiply, and divide decimals.
 - c. Demonstrate the ability to convert between decimals, fractions, and percentages.
4. Identify various tools used to measure length and show how they are used.
 - a. Identify and demonstrate how to use rulers.
 - b. Identify and demonstrate how to use measuring tapes.

5. Identify and convert units of length, weight, volume, and temperature between the imperial and metric systems of measurement.
 - a. Identify and convert units of length measurement between the imperial and metric systems.
 - b. Identify and convert units of weight measurement between the imperial and metric systems.
 - c. Identify and convert units of volume measurement between the imperial and metric systems.
 - d. Identify and convert units of temperature measurement between the imperial and metric systems.
6. Identify basic angles and geometric shapes and explain how to calculate their area and volume.
 - a. Identify various types of angles.
 - b. Identify basic geometric shapes and their characteristics.
 - c. Demonstrate the ability to calculate the area of two-dimensional shapes.
 - d. Demonstrate the ability to calculate the volume of three-dimensional shapes.

No Performance Task other than math concept practice.

Module 00103-15- introduction to Hand Tools- 10hrs

1. Identify and explain how to use various types of hand tools.
 - a. Identify and explain how to use various types of hammers and demolition tools.
 - b. Identify and explain how to use various types of chisels and punches.
 - c. Identify and explain how to use various types of screwdrivers.
 - d. Identify and explain how to use various types of non-adjustable and adjustable wrenches.
 - e. Identify and explain how to use various types of socket and torque wrenches.
 - f. Identify and explain how to use various types of pliers and wire cutters.
2. Identify and describe how to use various types of measurement and layout tools.
 - a. Identify and explain how to use rules and other measuring tools.
 - b. Identify and explain how to use various types of levels and layout tools.
3. Identify and explain how to use various types of cutting and shaping tools.
 - a. Identify and explain how to use handsaws.
 - b. Identify and explain how to use various types of files and utility knives.
4. Identify and explain how to use other common hand tools.
 - a. Identify and explain how to use shovels and picks.
 - b. Identify and explain how to use chain fall and come-alongs.
 - c. Identify and explain how to use various types of clamps.

Performance Task 1

(Learning Objectives 1 through 4)

- Visually inspect a minimum of five of the following tools to determine if they are safe to use:
 - Hammer or demolition tool
 - Chisel or punch
 - Screwdriver
 - Adjustable or non-adjustable wrench
 - Socket
 - Torque wrench
 - Pliers
 - Wire cutters

- Measuring tool
- Layout tool
- Level
- Hand saw
- File
- Utility knife
- Shovel or other earth tool
- Chain fall or hoist
- Clamps

Performance Task 2

(Learning Objectives 1 through 4)

- Safely and properly use a minimum of three of the following tools:
 - Hammer or demolition tool
 - Chisel or punch
 - Screwdriver
 - Adjustable or non-adjustable wrench
 - Socket
 - Torque wrench
 - Pliers
 - Wire cutters
 - Measuring tool
 - Layout tool
 - Level
 - File
 - Utility knife
 - Shovel or other earth tool
 - Chain fall or hoist
 - Clamps

Performance Task 3

(Learning Objectives 1 through 4)

Make a straight, square cut in framing lumber using a crosscut saw.

Module 00104-15- Introduction to Power Tools- 10hrs

1. Identify and explain how to use various types of power drills and impact wrenches.
 - a. Identify and explain how to use common power drills and bits.
 - b. Identify and explain how to use a hammer drill.
 - c. Identify and explain how to use pneumatic drills and impact wrenches.
2. Identify and explain how to use various types of power saws.
 - a. Identify and explain how to use a circular saw.
 - b. Identify and explain how to use saber and reciprocating saws.
 - c. Identify and explain how to use a portable band saw. Identify and explain how to use miter and cutoff saws.
3. Identify and explain how to use various grinders and grinder attachments.
 - a. Identify and explain how to use various types of grinders.
 - b. Identify and explain how to use various grinder accessories and attachments.
4. Identify and explain how to use miscellaneous power tools.

- a. Identify and explain how to use pneumatic and powder-actuated fastening tools.
- b. Identify and explain how to use pavement breakers.
- c. Identify and explain the uses of hydraulic jacks.

Performance Task 1

(Learning Objectives 1 through 4)

- Safely and properly demonstrate the use of three of the following tools:
 - Electric drill
 - Hammer drill or rotary hammer
 - Circular saw
 - Reciprocating saw
 - Portable band saw
 - Miter or cutoff saw
 - Portable or bench grinder
 - Pneumatic nail gun
 - Pavement breaker

Module 00105-15-Introduction to Construction Drawings- 10hrs

1. Identify and describe various types of construction drawings, including their fundamental components and features.
 - a. Identify various types of construction drawings.
 - b. Identify and describe the purpose of the five basic construction drawing components.
 - c. Identify and explain the significance of various drawing elements, such as lines of construction, symbols, and grid lines.
 - d. Identify and explain the use of dimensions and various drawing scales.
 - e. Identify and describe how to use engineer's and architect's scales.

Performance Task 1 (Learning Objective 1)

- Using the floor plan supplied with this module:
 - Locate the wall common to both interview rooms.
 - Determine the overall width of the structure studio.
 - Determine the distance from the outside east wall to the center of the beam in the structure studio.
 - Determine the elevation of the slab.

Module 00107-15- Basic Communication skills- 7.5hrs

1. Describe the communication, listening, and speaking processes and their relationship to job performance.
 - a. Describe the communication process and the importance of listening and speaking skills.
 - b. Describe the listening process and identify good listening skills.
 - c. Describe the speaking process and identify good speaking skills.
2. Describe good reading and writing skills and their relationship to job performance.
 - a. Describe the importance of good reading and writing skills.
 - b. Describe job-related reading requirements and identify good reading skills.

- c. Describe job-related writing requirements and identify good writing skills.

Performance Task 1 (Learning Objective 1)

- Perform a given task after listening to oral instructions.

Performance Task 2 (Learning Objective 2)

- Fill out a work-related form provided by your instructor.

Performance Task 3 (Learning Objectives 1 and 2)

- Read and interpret a set of instructions for properly donning a safety harness and then orally instruct another person on how to don the harness.

Module 00108-15- Basic Employability Skills- 7.5 hrs

1. Describe the opportunities in the construction business and how to enter the construction workforce.
 - a. Describe the construction business and the opportunities offered by the trades.
 - b. Explain how workers can enter the construction workforce.
2. Explain the importance of critical thinking and how to solve problems.
 - a. Describe critical thinking and barriers to solving problems.
 - b. Describe how to solve problems using critical thinking.
 - c. Describe problems related to planning and scheduling.
3. Explain the importance of social skills and identify ways good social skills are applied in the construction trade.
 - a. Identify good personal and social skills.
 - b. Explain how to resolve conflicts with co-workers and supervisors.
 - c. Explain how to give and receive constructive criticism.
 - d. Identify and describe various social issues of concern in the workplace.
 - e. Describe how to work in a team environment and how to be an effective leader.

No Performance Tasks, this is a knowledge-based module

Project/Activities:

Using the skills and knowledge developed in the NCCER CORE Students will choose from the following activities:

- Create a cutting board, bird feeder, dog house, bench
 - Write out plan to include the following
 - Decide the size and shape of the cutting board or read through the drawings and structure plans when applicable
 - Determine the appropriate materials needed for activity
 - Determine the appropriate tools and supplies for the project
 - Determine the approximate cost of activity
 - Using the safety protocols and knowledge of tool and material use. Begin making or building the structure.

ILF Standards:

- **Environmental Realm**
 - **Tools**
 - **Environment**

- **Individual Realm**
 - **Creating Balance**
 - **Leadership**
 - **Values and Beliefs**
 - **Women's roles**
 - **Men's Roles**
 - **Life Cycle**
- **Community Realm**
 - **Elders**
 - **Arts**
 - **Relationships**

Academic Standards

ELA

RI.9-10.1 Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

W.9-10.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

W.9-10.2.d Use precise language and domain-specific vocabulary to manage the complexity of the topic.

W.9-10.3.c Use a variety of techniques to sequence events so that they build on one another to create a coherent whole.

W.9-10.4 Produce clear and coherent writing in which the development, organization, style, and features are appropriate to task, genre, purpose, and audience.

W.9-10.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

SL.9-10.1.a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.

SL.9-10.1.b Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed.

L.9-10.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9-10 reading and content, choosing flexibly from a range of strategies.

L.9-10.6 Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

RST.9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

RST.9-10.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.

WHST.9-10.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

WHST.9-10.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

WHST.9-10.10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Math:

N-Q.1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

N-Q.2. Define appropriate quantities for the purpose of descriptive modeling.

N-Q.3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

S-MD.6. (+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).

S-MD.7. (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).

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Understand undefined notions of point, line, distance along a line, and distance around a circular arc.

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context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

MP5. Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

Education Courses 1-4 Objectives

Course 1

- Students will be able to define their personal identity
- Students will be able to understand how the term "learner" applies outside the classroom
- Name and describe characteristics of a learner
- Describe the value of identifying and reflecting on personal strengths
- Analyze personal strengths and weaknesses in relation to future goals
- Describe and apply techniques for cultivating a reflective mindset (e.g. journals, observations, dialogue with peers and mentors, watching recordings)
- Describe how and why a reflective mindset is critical to learning
- Reflect on themselves as learners
- Describe reflection as a habit of mind that requires time, openness, honesty, intention, discipline, and dedication and that helps what is meaningful and why and thus space identity
- Analyze and critique individual biases
 - a. Define bias
 - b. Analyze and explain how personal histories and identities shape histories and identities shape personal attitudes towards others
- Describe the benefits of being open to multiple viewpoints
- Explain how community members benefit from various perspectives and viewpoints
- Reflect on how everyday citizens/peers/students act as leaders and role models
- Describe the characteristic of a successful leader
 - a. Analyze the skills and dispositions required to lead effectively
 - b. Describe ethical practices of successful leaders
 - c. Explain how empathy helps leaders connect to community members
- Recognize different leadership styles
- Explain what a persona is and describe different types of personas they inhabit as students, friends, teammates, community members, employees, etc.
- Understand that mentors, leaders, ambassadors, elders, coaches and other role models serve as educators
 - a. Name and describe characteristics of an educator persona, including why these characteristics are important.
- Practice inhabiting and presenting an educator persona
- Explain how appropriate dress, behavior, and interactions as professionals affect one's credibility and trustworthiness
- Distinguish between social media posts that reflect positively on oneself and those that do not
- Discern how successful professionals manage a synthesis between maintaining their values as individuals and upholding the values and policies of the institutions that employ them
- Determine how to use different modes of communication in different contexts.
- Investigate possible career paths
- Reflect on the differences between short term and long term goals
 - a. Identify short term and long term goals

- b. Analyze personal traits, strengths and weaknesses in relation to short term and long term goals

Course 2

- Describe the impact that child development has on instruction.
- Seek to understand the social, emotional, physical, and cognitive development factors that shape student identity and how this can affect the ability to learn.
- Understand that each student is an individual with spheres of influence
- Describe the major approaches to learning theories (behavioral, cognitive, developmental, constructivist, transformative) and their implications for teaching
 - a. Explain the concept of constructivism
 - b. Describe the theoretical basis of constructivism
 - c. Explain how constructivism can be applied within the classroom
 - d. Describe practical applications of constructivism
 - e. Explain how the concept of constructivism influences the way teachers plan, design, and provide instruction based on students' individual talents and learning needs
- Describe the process of instructional design and common design models and tools
 - a. Classify the cognitive nature and complexity of given tasks
 - b. Identify the variety of learning modalities as identified as Gardner's Theory of Multiple Intelligences
 - c. Cultivate a growth mindset
- Explain the importance of interpersonal relationships within the learning environment
 - a. Explain why establishing mutual respect between you and the instructor and your students is important
 - b. Describe the methods teachers use to establish a sense of mutual respect
 - c. Describe how a school culture that promotes mutual respect and rapport will support the growth of all students
 - d. Analyze how cultural knowledge affects how you as the teacher perceive the students and how they perceive you
 - e. Understand how individual personality types differ and how they affect the dynamics of relationships
- Demonstrate an understanding of the various types of teaching relationships including teacher to student, student to student, teacher to parent/caregivers, and teacher to peers
- Reflect on the need to empathize with students while maintaining a high bar and professional boundaries
 - a. Describe appropriate boundaries between teachers and students
 - b. Explain why establishing boundaries is important in the classroom
 - c. Evaluate successful methods for achieving boundaries
 - d. Describe how ethical practices help in establishing boundaries between teachers and students
- Integrate knowledge of interpersonal skills to enhance educator effectiveness, including verbal and nonverbal communication, listening skills, negotiation, problem solving, decision making and assertiveness
- Understand the relationship of culture to interpersonal communication

- Explain the concept of equity in general and education-specific terms, including its application in broader society and in specific educational contexts
 - a. Explain why it's important for teachers to understand equity
 - b. Explain how a teacher's understanding of equity or lack thereof influence student growth and development
- Understand that students come from different social, cultural, ethnic and economic backgrounds and have different family structures, religious beliefs, physical traits, intellectual attributes, and career ambitions and use that understanding to promote an inclusive learning environment
 - a. Define cultural competence as the ability to teach students who come from a culture or cultures other than their own.
 - b. Describe the importance of learning about students' backgrounds, interests, motivations, and stages of development (i.e. social, emotional, cognitive) when developing cultural competence
 - c. Identify and describe the personal and interpersonal awareness and sensitivities, understanding of bodies of cultural knowledge, and skills that are necessary to demonstrate cultural competence
 - d. Identify, describe, and apply best practices for developing cultural competence
 - e. Analyze how cultural knowledge affects cross-cultural teaching and culturally responsive teaching
- Support a sustainable, equitable classroom culture by implementing the five critical components of classroom culture: honoring student experience, thoughtful classroom setup and structure, shared inquiry and dialogue, social and emotional safety, and values-based classroom management.
 - a. Distinguish between cultural bias and ideological bias
 - b. Describe the importance of working vigilantly to provide all students with fair and equitable access to resources and learning opportunities
 - c. Explain how identifying and examining passions, strengths, weaknesses and biases will help students prosper
 - d. Evaluate beliefs and biases throughout reflection
- Identify appropriate strategies to differentiate instruction to meet diverse student needs
 - a. Explain how students are individuals and that instruction should be designed based on individual needs
 - b. Explain the importance of customized interactions with students
 - c. Describe how teachers must plan, design, and provide instruction based on students' individual talents and learning needs
 - d. Describe how accomplished teachers customize their interaction with students by forming relationships with them as people and distinguishing them as learners
 - e. Describe how a collaborative space that builds trust among students lays the groundwork for high expectations and successful classroom management while engaging and challenging all students
- Recognize and accommodate individuals with special needs
 - a. Recognize that the Individuals with Disabilities Education Act (IDEA) requires schools to provide special education and related services to students who are "adversely affected" by one of the 13 conditions identified in the law
 - b. Identify the 13 conditions described in IDEA

- c. Describe how a school culture that respects the individual and changing needs of students will help students with special needs prosper
 - d. Explain what an individualized education program (IEP) is and how it helps students
 - e. Name and describe the specific responsibilities of teachers in fulfilling the requirements of IEPs
 - f. Explain how instruction should be designed based on individual needs
 - g. Explain the importance of customized interactions with students
- Demonstrate an understanding of students needs to inform all aspects of the planning process to create a dynamic and productive learning environment
 - a. Identify a variety of lesson structure blocks, such as learner outcomes, openers / teasers, direct instruction, and summative and formative assessments used in developing lesson plans
 - b. Explore a variety of pedagogical approaches, such as open-ended instruction (multiple, complex answers possible), interdisciplinary learning, discovery learning, experiential learning, cooperative learning, peer teaching, and case studies.
- Analyze the underlying strategies and active practices of anti-bias instruction that skilled educators implement and sustain utilizing the critical components of anti-bias instruction: critical engagement with material, differentiated instruction, cooperative and collaborative learning, real-world connections, and value-based assessment, evaluation, and grading

Course 3

- Define and describe norms and routines and procedures, including what they are, why they are important, and how to use them to create a safe and supportive learning environment.
 - a. Cite specific examples of norms and routines that can be implemented for classroom discourse and work for different purpose
 - b. Practice planning and/or implementing norms and routines for classroom discourse and work
- Analyze how physical layouts, available resources, and student groupings can affect the classroom culture and management
 - a. Describe the importance of addressing physical and social aspects of the learning environment while planning to meet students' individual needs
 - b. Describe how a collaborative space that builds trust among students lays the groundwork for high expectations and successful classroom management while engaging and challenging all students
 - c. Practice setting up classrooms in a way that fosters learning and creates a safe and inclusive environment for all students
- Analyze the relevance of values-based behavior management
 - a. Explain how and why behavior management strategies should be used to create a dynamic, productive, safe and supportive learning environment.
 - b. Describe strategies for responding to student behavioral issues using values-based behavior management

- Practice using value-based behavior management strategies
- Describe ways to strengthen relationships with students in order to help them feel valued, important, and capable of realizing their potential
- Describe strategies for communicating with students and fostering communication among students to foster learning within a safe and supportive learning environment (de-escalation and conflict management strategies)
- Consider methods of communication with students, determining how to share information and exchange ideas to help develop an equitable, empowering learning environment
- Describe a range of communication strategies and facilitation techniques to influence students positively by capturing their interest, nurturing their voices, and supporting their leadership skills.
- Analyze methods of proper alignment between standards, curriculum, instruction and assessment
 - a. Explain what standards are and why educators use standards
 - b. Name and explain common standard systems
 - c. Address alignment issues while developing lesson plans
- Explain the importance of aligning lesson plans by balancing objectives with short and long term curricular goals, academic content standards, and student needs and interests
- Define curriculum and review different curriculum models
- Describe the steps in the backwards design planning method
- Describe how teachers measure learning based on curricular goals and objectives as well as diverse needs of learners
 - a. Explain how teachers select, create, modify, and administer a broad range of assessments
- Analyze the differences between formative and summative assessments.
- Explain how teachers analyze and interpret assessment data to advance student learning
 - a. Create and use assessment materials to evaluate student achievement and growth
- Explain how teachers view assessment as a step within a larger process that involves planning, teaching, assessing, reflecting, and adjusting to strengthen instructional practices and promote learning
 - a. Describe how teachers use assessment to obtain information about student learning before, during and after instruction
- Describe what modeling is and in which contexts it works best
 - a. Practice modeling techniques
- Explain the importance of scaffolding instruction to encourage higher levels of performance
- Practice techniques that will elicit individual student thinking
- Describe types of questions teachers should ask students to encourage them to share their thoughts
- Describe a few common patterns of student thinking and development in a subject matter domain
- Demonstrate preparedness to make adjustments in instruction as needed
 - a. List common instructional strategies
 - b. Identify common problems that may require adjusting instruction

- Describe and explain the purpose of composition of single lessons and sequence of lessons

Course 4

- Be able to demonstrate success practices that lead one to be a highly skilled educational professional
- Demonstrate organizational, planning and quality of work skills
- Be able to identify quality work that will demonstrate their skills as an educator
- Demonstrate their ability to market themselves through a professional portfolio
- Describe and prove why they should consider pursuing an education career
- Be able to identify the qualities of a person who could be a positive mentor that supports their professional growth
- Demonstrate their ability to develop a professional network in and outside the classroom
- Demonstrate professional communication in and outside the classroom
- Describe and demonstrate the meaning of verbal and nonverbal communication, with a focus on cues that students are aware of in their community
- Self-evaluate their teaching abilities
- Be able to describe who they are in their current context and situation
- Be able to communicate their identify in their current context and situation
- Be able to describe their spheres of influence and how they influence others both positively and negatively
- Identify the educational and professional experiences that they need to continue working toward their goal of becoming an educator
- Will be able to create a comprehensive PLCP to support career and life goals
- Will be able to identify various funding sources for support of ongoing education

Education ILF realms:

- **Environmental Realm**
 - Environment
- **Individual realm**
 - Creating Balance
 - Leadership
 - Values and Beliefs
 - Women's Roles and Men's Roles
 - Life Cycle
- **Historical Realm**
 - Storytelling
- **Community Realm**
 - Elders
 - Celebrations and Ceremonies
 - Singing and Dancing
 - Storytelling

- Arts
- Parenting
- Games
- Relationships

Small Gas Engines I and II Standards and Objectives

Workshop and Job Performance Fundamentals:

The Small engines year long course the prepares students for the Precision Exam Small Engine industry standards that will result in a Nationally recognized Small Engine Certification. The text is Small Gas Engines, by Roth, Blake, Gauthier, (Goodherat-Willcox Publisher, 2017.)

1. Learns safe working habits and procedures, complies with safety rules
 - a. Shop safety
 - i. Follows proper ventilation procedures in the workshop
 - ii. Identifies marked safety areas and stays within shop boundaries
 - iii. Explains where to find and how to use fire extinguishers
 - iv. Explains where to find and how to use eye wash and shower stations
 - v. Explains where to find and how to follow posted evacuation routes
 - vi. Works safely
 - b. Personal safety
 - i. Wears appropriate clothing and shoes during workshop
 - ii. Secures hair and jewelry during workshop
 - iii. Uses required safety glasses/goggles, ear protection, and gloves during workshop
 - iv. Informs instructor immediately in case of any injury or accident
 - c. Workplace safety
 - i. Understands and identifies the hazardous exhaust gases encountered in engine work
 - ii. Identifies chemical hazards in engine workshops and demonstrates safe procedures associated with chemicals
 - iii. Identifies the purpose, location, and contents of Safety Data Sheets (SDS), required by the Hazard Communication Standard (as adopted by OSHA of US Department of Labor).
 - iv. Reads descriptions of the 16 sections of the SDS format and summarizes the central ideas of each section.
2. Identifies and uses tools and equipment safely
 - a. Identifies, sizes and measures metric and standard fasteners
 - i. Identifies and uses bolts, nuts, lock washers, cotter pins, snap rings correctly
 - ii. Identifies right-hand and left-hand threads, coarse and fine threads
 - b. Correctly identifies and uses basic hand tools
 - i. Identifies screwdrivers, wrenches, sockets, ratchets, drive handles, extensions, pliers, hammers, chisels, punches, files, hacksaws, pullers, vises, drill bits, grinding tools and uses them correctly and safely
 - ii. Uses a torque wrench to tighten specific bolts to specified torque.
 - c. Cleans and maintains tools and equipment properly
 - d. Identifies and demonstrates use of basic measuring tools (accurate to 1/32", 0.005" and 0.01mm)
 - i. Micrometers, calipers, telescoping gauges, small hole gauges, feeler gauges, compression gauges, digital multimeters, dial indicators
 - e. Identifies and uses engine-specific tools correctly and safely
 - i. Flywheel holder, flywheel puller, valve spring compressor, compression tester, leakdown tester, piston ring compressor, piston ring expander, valve grinder and cutter (face and seat), cylinder hone, glaze breaker, spark tester, spark plug gauge/gapper, starter clutch sockets, valve lapper, oil filter wrench, tachometer

- f. Uses reference manuals or information systems to find service procedures and specifications, parts ordering information
 - i. Computer oriented manufacturer's information
 - ii. Printed manuals, manufacturer's repair manuals
 - iii. Owner's manuals
- 3. Locates and identifies basic engine components
 - a. Identifies engine components including block, crankshaft, camshaft, piston, piston rings, cylinder head, connecting rod, valves and valve faces, timing components and describes their functions
 - b. Identifies fuel systems including carburetors, fuel filters, fuel lines, tanks
 - c. Identifies ignition systems including spark plug, points and condenser, magneto, coil, associated wiring switches, kill switch
 - d. Describes cooling system including cooling fins, shroud/blower housing, flywheel
 - e. Describes lubrication system including dip stick, oil slinger or pump, oil plug, oil
 - f. Identifies exhaust system including muffler, exhaust gasket
- 4. Performs basic engine services on small gas engines
 - a. Changes oil and filter, uses proper fluid disposal methods for waste oil
 - b. Checks, cleans and changes air filter
 - c. Checks, changes and gaps spark plug
 - d. Checks and manages oil level
- 5. Understands and describes the four-stroke cycle and the two-stroke cycle with project, model or diagram
 - a. Compares and contrasts four-stroke and two-stroke engine operation by discussing advantages/disadvantages of each for specific applications (snowmachine, motorcycle, 4wheeler, generator etc)
- 6. Understands external and internal combustion as related to the four elements of combustion; fuel, air, compression, spark and tests engine for presence of each element.
- 7. Performs disassembly, reassembly and troubleshooting of a small gas engine
 - a. Identifies, inspects and measures parts including cylinder block, sump/cover, cylinder, crankshaft and timing gear, connecting rod, bearings, piston, wrist pin, rings, tappets/lifters, valves, valve springs and retainers, camshaft, head, head gasket, reed valve (2-stroke)
 - b. Disassembles a small gas engine using appropriate tools
 - c. Cleans, measures and inspects all parts of a small gas engine
 - d. Evaluates parameters for reassembly including
 - i. Cylinder dimensions
 - ii. Ring end gap
 - iii. Connecting rod/bearing clearance (use plastigage)
 - iv. Crankshaft end play
 - v. Valve and valve seat fit, lapping
 - e. Reconditions, repairs or replaces component and parts
 - f. Reassembles a small gas engine using appropriate tools
- 8. Solves basic mathematical equations and functions related to small gas engines such as measuring and calculating engine compression ratio, horsepower, cylinder volume and piston displacement
 - a. Solves whole number problems with 2 and 3 digits. Adds, subtracts, multiplies, divides
 - b. Solves fraction problems with addition, subtraction, multiplication and division
 - c. Solves decimal problems with addition, subtraction, multiplication and division
 - d. Solves basic ratio-to-proportion problems, especially fuel/air and oil/gas mixtures
 - e. Mixes two-cycle gas and oil correctly

9. Performs diagnosis on a small gas engine using methodical procedures to determine fuel, air, compression and spark problems
 - a. Troubleshoots fuel system problems
 - i. Examines carburetor, fuel tank/filter, fuel lines/pumps, air filters, exhaust color
 - b. Troubleshoots ignition system problems
 - i. Performs spark test, remove/replace/check/gap spark plug, check magneto, air gap, kill switch and checks timing
 - c. Troubleshoots compression problems
 - i. Performs compression test, leak-down test
 - ii. Discusses appropriateness of compression vs leak-down tests
 - iii. Defines a wet test
 - d. Troubleshoots lubrication system
 - i. Understands and makes recommendations for oil specifications
 - ii. Evaluates burnt oil
 - iii. Inspects crankcase
 - iv. Examines exhaust color
 - e. Evaluates fuel available for use in small gas engines
 - i. Understands fuel grades and octane
 - ii. Understands issues with fuel including freshness, contaminants, and proper storage
10. Understands the importance of employability and work habits
 - a. Understands small gas engine repair as a profession and develops professional skills for the workplace
 - b. Describes and demonstrates integrity
 - c. Describes and demonstrates punctuality
 - d. Describes and demonstrates staying on task
 - e. Describes and models being a productive team worker
 - f. Describes and demonstrates leadership

Certification: Precision Exam: Small Engines-

Culminating Project:

- I. Task 1- The instructor altered a working small engine to where it is not longer working properly. Student will do the following tasks:
 - a. Based on skills learned in this course, the student will analyze, evaluate and troubleshoot possible reasons.
 - i. Journal the process and steps that you followed to trouble shoot: Identify the tests, observations, and your thinking process that lead you to determine a fix.
 - ii. Test the fix, (does the engine operate correctly?) If not continue troubleshooting and journaling your actions.
 - iii. When engine is running properly, demonstrate the working engine to the instructor and explain how you determined the problem and fix. Turn in your journal entries.
 - b. Completely disassemble the working engine and reassemble that same engine. Document your process using the following:
 - i. Journal steps that you used to disassemble the small engine.
 - ii. Take pictures at different stages as you disassemble an engine and how you organized and staged parts.
 - iii. Journal your reassembly process. Take pictures of progress.
 - iv. Test reassembled engine to make sure it is working properly. If not, trouble shoot the problem and journal your troubleshooting process.

Academic Standards covered:
ELA:

RST.9-12.3- Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.

RI.9-12.4 Determine the meaning of words and phrases as they are used in various genres, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text.

W.9-12.3.a Engage and orient the reader by setting out a problem, situation, or observation and its significance, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.

W.9-12.3.b Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.

W.9-12.3.c Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and build toward a particular tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution).

W.9-12.3.d Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.

W.9-12.3.e Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.

W.9-12.10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

SL.9-12.1.a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.

SL.9-12.1.b Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.

SL.9-12.1.c Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.

SL.9-12.1.d Respond thoughtfully to diverse perspectives or arguments; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.

L.9-12.2 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

L.9-12.2.a Observe hyphenation conventions.

L.9-12.2.b Spell correctly.

Literacy for Technical subjects

R9-12-3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

R9-12-4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.

R9-12-7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

W9-12-2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

Math:

N-Q.1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

N-Q.2. Define appropriate quantities for the purpose of descriptive modeling.

N-Q.3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

S-MD.6. (+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).

S-MD.7. (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).

S-IC.6- Evaluate reports based on data.

G-GMD.1. Explain how to find the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone.

G-MG.1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*

G-MG.2. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).

Textiles and Clothing—Standards and Objectives

Proposed on December 6, 2018

Career Paths

1. Explain the roles and functions of individuals engaged in fashion, textiles, and apparel careers.
 - a. Differentiate between fashion merchandising careers and fashion design careers
 - b. Determine physical and emotional traits and characteristics of individuals engaged in fashion, textiles, and apparel careers.
2. Explain employment opportunities related to clothing construction.
3. Analyze opportunities for employment and entrepreneurial endeavors.
 - a. Determine the cost/benefit analysis of job requirements.
 - b. Determine any entrepreneurial possibilities.
4. Summarize education and training requirements and opportunities for career paths in fashion, textiles, and apparel.
5. Analyze the effects of fashion, textiles, and apparel occupations on local, state, national and global economies.
 - a. Understand the developmental stages of fashion, textiles, and apparel production.
 - b. Explain the impact of the industry on the economies globally.
6. Create an employment portfolio for use when applying for internships and work-based learning.
 - a. Personality assessments
 - b. Resume development
 - c. Interviewing skills
 - d. Internships and job shadowing opportunities
 - e. Career and employment resources
 - f. Portfolio development
7. Analyze the role of professional organizations in fashion, textiles, and apparel industries.

Textile Fiber Products and Materials

1. Apply appropriate terminology for the most common generic textile fibers.
2. Evaluate performance characteristics of textile fibers and fabrics.
 - a. Comfort properties
 - b. Durability properties
 - c. Fiber blends
 - d. Aesthetic properties
 - e. Appearance retention properties
3. Summarize textile legislation, standards, and labeling in the global economy.
 - a. Explain the legal and environmental concerns of the industry
4. Analyze effects of textile characteristics on design, construction, care, use, and maintenance of products.
 - a. Understand the suitability of fibers and fabrics
 - b. Understand different fabric performance abilities
 - i. Wicking
 - ii. Stretching
 - c. Explain the different finishes

- i. Flame retardant
 - ii. Mercerization
 - d. Explain the construction effects of different textiles
 - i. Knitting
 - ii. Weaving
- 5. Apply appropriate procedures for care of textile products.
 - a. Soil removal
 - b. Laundering
 - c. Dry cleaning
 - d. Understand garment care labels
 - e. Explain the environmental concerns of laundry or care products

Design Skills

1. Explain ways in which fiber, fabric, texture, pattern and finish can affect visual appearance.
 - a. Optical illusions
 - b. Understand how design elements influence appearances
 - c. Understand how design principles influence appearances
 - d. Demonstrate the harmonious use of fibers, fabrics, textures, patterns and finishes.
2. Apply basic and complex color schemes and color theory to develop and enhance visual effects.
3. Utilize elements and principles of design in designing, constructing, and/or altering fashion, textiles, and apparel products.
 - a. Understand the elements of design
 - b. Understand the principles of design
 - c. Apply design elements and principles in apparel products
4. Demonstrate design concepts with fabric or technology, using draping and/or flat pattern making techniques.
5. Generate design that takes into consideration ecological, environmental, sociological, psychological, technical, and economic trends and issues.
 - a. Explain “green” or eco-friendly textile and apparel products
6. Demonstrate ability to use technology for fashion, textile, and apparel design.

Fashion, Textile, and Apparel Production

1. Demonstrate professional skills in using a variety of equipment, tools, and supplies for fashion, textile and apparel construction, alteration or repair.
2. Demonstrate basic and specialized techniques in the construction of a garment.
3. Explain production processes for creating fibers, yarns, woven, knit, and non-woven textile products.
4. Use appropriate industry products and materials for cleaning, pressing, and finishing fashion, textile and apparel products.
5. Analyze current technology and trends that facilitate design and production of fashion, textile and apparel products.
6. Demonstrate basic skills of pattern selection, alteration and layout.
7. Demonstrate basic skills for producing and altering textile and apparel products.

Fashion Merchandising

1. Apply marketing strategies for fashion, textile, and apparel products.
2. Analyze the cost of constructing, manufacturing, altering, or repairing fashion, textile and apparel products.
3. Analyze ethical considerations for merchandising textile and apparel products.
 - a. Differentiate between authentic and counterfeit goods.
 - b. Sweatshops
 - c. Child labor
 - d. Exploitation
 - e. Employee theft
4. Apply external factors that influence merchandising.
5. Critique varied methods for promoting textile and apparel products.
6. Apply research methods, including forecasting techniques for marketing textile and apparel products.

Customer Service

1. Analyze factors that contribute to quality customer relations.
2. Analyze the influences cultural diversity as a factor in customer relations.
3. Demonstrate the skills necessary for quality customer service.
4. Use consumer skills to evaluate the quality of ready-made garments.
5. Create solutions to address customer concerns.

Operational Procedures

1. Analyze legislation, regulations, and public policy affecting the fashion, textile and apparel industries.
 - a. Understand laws regarding textile and apparel production, labeling, care, and disposal.
 - b. Understand legal and environmental concerns
2. Analyze personal and employer responsibilities and liabilities regarding industry-related safety, security, and environmental factors.
 - a. Fraud
 - b. Identity theft
 - c. Privacy policies
 - d. Credit issues
 - e. Employee theft
3. Analyze the effects of security and inventory control strategies, cash, and credit transaction methods, laws, and worksite policies, on loss prevention and store profit.
4. Demonstrate procedures for reporting and handling accidents, safety, and security incidents.
5. Analyze operational costs such as mark ups, mark downs, cash flow, and other factors affecting profit.

Welding 1-1 thru Welding 1-3

Module 29101- Welding Safety- 5 hours

- 1. Describe basic welding processes, the welding trade, and training/apprenticeship programs.**
 - a. Describe basic welding processes and the welding trade.
 - b. Describe NCCER standardized training and explain apprenticeship programs.
- 2. Identify, and describe personal protective equipment (PPE) related to the welding trade.**
 - a. Identify and describe body, foot, and hand protective gear.
 - b. Identify and describe ear, eye, face, and head protective gear.
- 3. Identify and describe welding safety practices related to specific hazards or environments**
 - a. Describe the importance of welding safety and identify factors related to accidents.
 - b. Describe basic welding safety practices related to the general work area.
 - c. Describe hot work permits and fire watch requirements.
 - d. Describe confined spaces and their related safety practices.
 - e. Identify safety practices related to welding equipment.
 - f. Identify and describe respiratory hazards, respiratory safety equipment, and ways to ventilate welding work areas.
 - g. Explain the purpose of the SDS/MSDS and how it is used.

Module 29102- Oxyfuel Cutting- 17.5 hours

- 1. Describe oxyfuel cutting and identify related safe work practices.**
 - a. Describe basic oxyfuel cutting.
 - b. Identify safe work practices related to oxyfuel cutting.
- 2. Identify and describe oxyfuel cutting equipment and consumables.**
 - a. Identify and describe various gases and cylinders used for oxyfuel cutting.
 - b. Identify and describe hoses and various types of regulators.
 - c. Identify and describe cutting torches and tips.
 - d. Identify and describe other miscellaneous oxyfuel cutting accessories.
 - e. Identify and describe specialized cutting equipment.
- 3. Explain how to setup, light, and shut down oxyfuel equipment.**
 - a. Explain how to properly prepare a torch set for operation.
 - b. Explain how to leak test oxyfuel equipment.
 - c. Explain how to light the torch and adjust for the proper flame.
 - d. Explain how to properly shut down oxyfuel cutting equipment
- 4. Explain how to perform various oxyfuel cutting procedures.**
 - a. Identify the appearance of both good and inferior cuts and their causes.
 - b. Explain how to cut both thick and thin steel.
 - c. Explain how to bevel, wash, and gouge.
 - d. Explain how to make straight and bevel cuts with portable oxyfuel cutting machines.

Performance Tasks

Performance Task 1 (Learning Objective 3)

- Set up oxyfuel cutting equipment.

Performance Task 2 (Learning Objective 3)

- Light and adjust an oxyfuel torch.

Performance Task 3 (Learning Objective 3)

- Shut down oxyfuel cutting equipment.

Performance Task 4 (Learning Objective 3)

- Disassemble oxyfuel cutting equipment.

Performance Task 5 (Learning Objective 3)

- Change empty gas cylinders.

Performance Task 6 (Learning Objective 4)

- Cut shapes from various thicknesses of steel, emphasizing:
 - Straight line cutting
 - Square shape cutting
 - Piercing
 - Beveling
 - Cutting slot

Performance Task 7 (Learning Objective 4)

- Perform washing.

Performance Task 8 (Learning Objective 4)

- Perform gouging.

Performance Task 9 (Learning Objective 4)

- Use a track burner to cut straight lines and bevels.

Module 29103- Plasma Arc Cutting- 7.5 hours

- 1. Explain plasma arc cutting processes and identify related safety precautions.**
 - a. Describe the plasma arc cutting processes.
 - b. Identify safety practices related to plasma arc cutting.
- 2. Identify and describe plasma arc cutting equipment.**
 - c. Identify and describe plasma arc power units.
 - d. Identify and describe plasma arc torches and accessories.
 - e. Identify and describe plasma arc cutting gases and gas control devices.
- 3. Describe how to set up, safely operate, and care for plasma arc cutting equipment.**
 - a. Describe how to set up plasma arc cutting equipment and the adjacent work area.
 - b. Describe how to safely operate plasma arc cutting equipment.
 - c. Describe how to care for plasma arc cutting equipment.

Performance Task 1

(Learning Objectives 1, 2, and 3)

- Set up plasma arc cutting equipment.

Performance Task 2

(Learning Objectives 2 and 3)

- Set the amperage and gas pressures or flow rates for the type and thickness of metal to be cut using plasma arc equipment.

Performance Task 3 (Learning Objective 3)

- Square-cut metal using plasma arc equipment.

Performance Task 4 (Learning Objective 3)

- Bevel-cut metal using plasma arc equipment.

Performance Task 5 (Learning Objective 3)

- Pierce and cut slots in metal using plasma arc equipment.

Performance Task 6 (Learning Objective 3)

- Dismantle and store the equipment.

Module 29104- Air-Carbon Arc Cutting and Gouging- 10 hours

- 1. Define air-carbon arc cutting and identify the related equipment and consumables.**
 - a. Define air-carbon arc cutting.
 - b. Identify and describe air-carbon arc cutting equipment.
 - c. Identify and describe various types of electrodes.
 - d. Identify safety practices related to air-carbon arc cutting.
- 2. Describe how to set up, safely operate, and care for air-carbon arc cutting equipment.**
 - a. Describe how to prepare the equipment and work area for air-carbon arc cutting.
 - b. Describe how to wash and gouge metals.
 - c. Describe how to care for air-carbon arc cutting equipment.

Performance Task 1

(Learning Objectives 1 and 2)

- Select and install air-carbon arc cutting electrodes.

Performance Task 2 (Learning Objective 2)

- Prepare the work area and air-carbon arc cutting equipment for safe operation.

Performance Task 3 (Learning Objective 2)

- Use air-carbon arc cutting equipment for washing.

Performance Task 4 (Learning Objective 2)

- Use air-carbon arc cutting equipment for gouging.

Performance Task 5 (Learning Objective 2)

- Perform storage and housekeeping activities for air-carbon arc cutting equipment.

Module 29105- Base Metal Preparation-12.5 hours

- 1. Identify safety practices related to preparing base metals and describe basic cleaning procedures.**
 - a. Identify safety practices related to preparing base metals.
 - b. Describe the basic properties and types of carbon and stainless steel.
 - c. Describe basic metal cleaning procedures and concerns.
- 2. Identify and describe basic weld joint design and types of welds.**
 - a. Identify and describe the loads that are routinely placed on weld joints.

- b. Identify and describe the various types of weld joints.
 - c. Describe a welding procedure specification (WPS) and the information it provides.
- 3. **Describe how to prepare joints for welding.**
 - a. Describe how to mechanically prepare joints for welding.
 - b. Describe how to thermally prepare joints for welding.

Performance Task 1

(Learning Objectives 1 and 3)

- Mechanically or hand grind a bevel on the edge of a 1/4"- to 3/4"-thick mild steel plate (6 to 20 mm metric plate) at 22 1/2 degrees.

Performance Task 2

(Learning Objectives 1 and 3)

- Thermally bevel the edge of a 1/4"- to 3/4"-thick mild steel plate (6 to 20 mm metric plate) at 22 1/2 degrees.

Module 29106- Weld Quality- 10 hours

1. **Identify and describe the various code organizations that apply to welding and their basic elements.**
 - a. Identify the various welding code organizations and their sponsoring organizations.
 - b. Identify and describe the basic provisions of welding codes.
2. **Identify and describe weld discontinuities and their causes.**
 - a. Identify and describe discontinuities related to porosity and inclusions.
 - b. Identify and describe discontinuities that result in cracking.
 - c. Identify and describe discontinuities related to joint penetration, fusion, and undercutting.
 - d. Identify and describe acceptable and unacceptable weld profiles.
3. **Describe various non-destructive and destructive weld examination practices.**
 - a. Describe basic visual inspection methods including measuring devices and liquid penetrants.
 - b. Describe magnetic particle and electromagnetic inspection processes.
 - c. Describe the radiographic and ultrasonic inspection processes.
 - d. Describe destructive testing processes.
4. **Describe the welder performance testing process.**
 - a. Describe the qualification of welders by position.
 - b. Describe welder qualification testing to meet American Welding Society (AWS) and American Society of Mechanical Engineers (ASME) requirements.
 - c. Describe the process for completing a weld test.

Performance Task 1

(Learning Objectives 2 and 3)

- Perform a visual inspection (VT) on a fillet and/or groove weld and complete an inspection report.

Module 29107- SMAW- Equipment and Setup- 5 hours

- 1. Identify SMAW-related safety practices and explain how electrical characteristics apply to SMAW.**
 - a. Define SMAW and identify related safety practices.
 - b. Explain how various current characteristics apply to SMAW.
- 2. Identify and describe SMAW equipment.**
 - a. Identify and describe various types of SMAW machines.
 - b. Identify and describe SMAW welding cable and connectors.
 - c. Identify common tools used to clean a weld.
- 3. Explain how to set up and start SMAW equipment.**
 - a. Explain how to set up SMAW equipment.
 - b. Explain how to start, stop, and maintain SMAW equipment.

Performance Task 1

(Learning Objectives 2 and 3)

- Set up a machine for SMAW.

Module 29108- SMAW Electrodes- 2.5 hours

1. Describe the SMAW electrode classification system and how to select the proper electrode for the task.
 - a. Describe the AWS filler metal specification system and various electrode characteristics.
 - b. Describe the characteristics of the four main electrode groups.
2. Explain how to select electrodes and describe their proper care and handling.
 - a. Identify various considerations in the selection of the proper electrode
 - b. Describe the proper handling and storage of electrodes.

Module 29109- SMAW- Beads and Fillet Welds- 100 hours-*This Module needs a minimum of 100 hours and will continue in Welding 1-2- Introduce this module for at least 2-weeks in welding 1-1.*

1. Explain how to prepare for SMAW welding and how to strike an arc.
 - a. Identify safety practices related to SMAW.
 - b. Explain how to prepare the area and equipment for welding.
 - c. Explain how to strike an arc and respond to arc blow.
2. Explain how to successfully complete various types of beads and welds.
 - a. Explain how to properly restart and terminate a weld pass.
 - b. Describe the technique required to produce stringer beads.
 - c. Describe the technique required to produce weave and overlapping beads.
 - d. Describe the techniques required to produce fillet welds in various positions

Performance Task 1 (Learning Objective 1)

- Set up welding equipment.

Performance Task 2 (Learning Objective 1)

- Strike an arc.

Performance Task 3 (Learning Objective 2)

- Make stringer, weave, and overlapping beads using E6010 and E7018 electrodes.

Performance Task 4 (Learning Objective 2)

- Make corner welds on an angle iron section end welded to a plate coupon.

Performance Task 5 (Learning Objective 2)

- Make fillet welds using E6010 and E7018 electrodes in the specified positions:
 - Flat (1F)
 - Horizontal (2F)
 - Vertical (3F)
 - Overhead (4F)

Module 29110- Joint Fit-Up and Alignment- 7.5 hours

- 1. Identify and describe various types of fit-up and alignment tools.**
 - a. Identify and describe various fit-up gauges and measuring devices.
 - b. Identify and describe common weldment positioning equipment.
 - c. Identify and describe various plate alignment tools.
 - d. Identify and describe various pipe and flange alignment tools.
- 2. Describe techniques to avoid weldment distortion and describe the role of codes and specifications.**
 - a. Describe the causes of weldment distortion.
 - b. Describe the techniques and tools used to control weldment distortion.
 - c. Describe the role of codes and specifications in welding procedures and techniques.

Performance Task 1

(Learning Objectives 1 and 2)

- Fit up joints using plate and pipe fit-up tools.

Performance Task 2

(Learning Objectives 1 and 2)

- Check the joint for proper fit-up and alignment using gauges and measuring devices.

Module 29111- SMAW- Groove Welds with Backing- 50 hours- *This module minimum time expectation is 50 hours- It can begin in Welding 1-2 and will continue in Welding 1-3.*

- 1. Identify various types of groove welds and describe how to prepare for groove welding.**
 - a. Identify various types of groove welds and define related terms.
 - b. Describe how to prepare for groove welding.
- 2. Describe the technique required to produce various groove welds.**
 - a. Describe the technique required to produce groove welds in the 1G and 2G positions.
 - b. Describe the technique required to produce groove welds in the 3G and 4G positions.

Performance Task 1 (Learning Objective 1)

- Safely set up arc welding equipment for making groove welds.

Performance Task 2 (Learning Objective 2)

- Make flat welds with backing on V-groove joints using E7018 electrodes.

Performance Task 3 (Learning Objective 2)

- Make horizontal welds with backing on V-groove joints using E7018 electrodes.

Performance Task 4 (Learning Objective 2)

- Make vertical welds with backing on V-groove joints using E7018 electrodes.

Performance Task 5 (Learning Objective 2)

- Make overhead welds with backing on V-groove joints using E7018 electrodes.

Module 29112- SMAW- Open Root Groove Welds- Plate-60 hours

1. Identify various types of groove welds and describe how to prepare for groove welding.
 - a. Identify various types of groove welds and define related terms.
 - b. Describe how to prepare the work area and plate for groove welding.
2. Describe the technique required to produce various open V-groove welds.
 - a. Describe the technique required to produce open V-groove welds in the 1G and 2G positions.
 - b. Describe the technique required to produce open V-groove welds in the 3G and 4G positions.

Performance Task 1

(Learning Objective 2)

- Make open V-groove welds with E6010 and E7018 electrodes in the following positions:
 - Flat (1G) position
 - Horizontal (2G) position
 - Vertical (3G) position
 - Overhead (4G) position

Culminating Projects for Welding I Intensive:

1. Goal: Demonstrate successful cutting processes through the creation of an artistic piece such as a shadow box/lantern cover, wind chimes, or whaling captain logo.
 - Role: Students are local artists
 - Audience: Community members
 - Situation: students are designing a piece of art for display in the community.
 - Performance: Create a piece of art from metal (steel, aluminum, brass, or available), through the use of metal cutting processes.
2. Goal: Create a larger scale project that incorporates multiple weld styles and positions.
 - Role: You are a welder!!!
 - Audience: Aapa and Aaka
 - Situation: Your Aapa and Aaka are in need of a welded item for the house. It is necessary for survival. They need you to put forth the highest quality in completing this project.
 - Performance: You are to create a needed project for the family. It could be a sled, a shelf, a trailer, a _____, insert student choice.

ILF Standards:

- **Environmental Realm**
 - Tools
 - Environment
- **Individual Realm**
 - Creating Balance
 - Leadership
 - Values and Beliefs
 - Women's roles
 - Men's Roles
 - Life Cycle
- **Community Realm**
 - Elders
 - Arts
 - Relationships

Academic Standards

ELA

RI.9-10.1 Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

W.9-10.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

W.9-10.2.d Use precise language and domain-specific vocabulary to manage the complexity of the topic.

W.9-10.3.c Use a variety of techniques to sequence events so that they build on one another to create a coherent whole.

W.9-10.4 Produce clear and coherent writing in which the development, organization, style, and features are appropriate to task, genre, purpose, and audience.

W.9-10.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

SL.9-10.1.a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.

SL.9-10.1.b Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed.

L.9-10.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9-10 reading and content, choosing flexibly from a range of strategies.

L.9-10.6 Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

RST.9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

Textiles and Clothing—Standards and Objectives

Proposed on December 6, 2018

Career Paths

1. Explain the roles and functions of individuals engaged in fashion, textiles, and apparel careers.
 - a. Differentiate between fashion merchandising careers and fashion design careers
 - b. Determine physical and emotional traits and characteristics of individuals engaged in fashion, textiles, and apparel careers.
2. Explain employment opportunities related to clothing construction.
3. Analyze opportunities for employment and entrepreneurial endeavors.
 - a. Determine the cost/benefit analysis of job requirements.
 - b. Determine any entrepreneurial possibilities.
4. Summarize education and training requirements and opportunities for career paths in fashion, textiles, and apparel.
5. Analyze the effects of fashion, textiles, and apparel occupations on local, state, national and global economies.
 - a. Understand the developmental stages of fashion, textiles, and apparel production.
 - b. Explain the impact of the industry on the economies globally.
6. Create an employment portfolio for use when applying for internships and work-based learning.
 - a. Personality assessments
 - b. Resume development
 - c. Interviewing skills
 - d. Internships and job shadowing opportunities
 - e. Career and employment resources
 - f. Portfolio development
7. Analyze the role of professional organizations in fashion, textiles, and apparel industries.

Textile Fiber Products and Materials

1. Apply appropriate terminology for the most common generic textile fibers.
2. Evaluate performance characteristics of textile fibers and fabrics.
 - a. Comfort properties
 - b. Durability properties
 - c. Fiber blends
 - d. Aesthetic properties
 - e. Appearance retention properties
3. Summarize textile legislation, standards, and labeling in the global economy.
 - a. Explain the legal and environmental concerns of the industry
4. Analyze effects of textile characteristics on design, construction, care, use, and maintenance of products.
 - a. Understand the suitability of fibers and fabrics
 - b. Understand different fabric performance abilities
 - i. Wicking
 - ii. Stretching
 - c. Explain the different finishes

- i. Flame retardant
 - ii. Mercerization
 - d. Explain the construction effects of different textiles
 - i. Knitting
 - ii. Weaving
- 5. Apply appropriate procedures for care of textile products.
 - a. Soil removal
 - b. Laundering
 - c. Dry cleaning
 - d. Understand garment care labels
 - e. Explain the environmental concerns of laundry or care products

Design Skills

- 1. Explain ways in which fiber, fabric, texture, pattern and finish can affect visual appearance.
 - a. Optical illusions
 - b. Understand how design elements influence appearances
 - c. Understand how design principles influence appearances
 - d. Demonstrate the harmonious use of fibers, fabrics, textures, patterns and finishes.
- 2. Apply basic and complex color schemes and color theory to develop and enhance visual effects.
- 3. Utilize elements and principles of design in designing, constructing, and/or altering fashion, textiles, and apparel products.
 - a. Understand the elements of design
 - b. Understand the principles of design
 - c. Apply design elements and principles in apparel products
- 4. Demonstrate design concepts with fabric or technology, using draping and/or flat pattern making techniques.
- 5. Generate design that takes into consideration ecological, environmental, sociological, psychological, technical, and economic trends and issues.
 - a. Explain “green” or eco-friendly textile and apparel products
- 6. Demonstrate ability to use technology for fashion, textile, and apparel design.

Fashion, Textile, and Apparel Production

- 1. Demonstrate professional skills in using a variety of equipment, tools, and supplies for fashion, textile and apparel construction, alteration or repair.
- 2. Demonstrate basic and specialized techniques in the construction of a garment.
- 3. Explain production processes for creating fibers, yarns, woven, knit, and non-woven textile products.
- 4. Use appropriate industry products and materials for cleaning, pressing, and finishing fashion, textile and apparel products.
- 5. Analyze current technology and trends that facilitate design and production of fashion, textile and apparel products.
- 6. Demonstrate basic skills of pattern selection, alteration and layout.
- 7. Demonstrate basic skills for producing and altering textile and apparel products.

Fashion Merchandising

1. Apply marketing strategies for fashion, textile, and apparel products.
2. Analyze the cost of constructing, manufacturing, altering, or repairing fashion, textile and apparel products.
3. Analyze ethical considerations for merchandising textile and apparel products.
 - a. Differentiate between authentic and counterfeit goods.
 - b. Sweatshops
 - c. Child labor
 - d. Exploitation
 - e. Employee theft
4. Apply external factors that influence merchandising.
5. Critique varied methods for promoting textile and apparel products.
6. Apply research methods, including forecasting techniques for marketing textile and apparel products.

Customer Service

1. Analyze factors that contribute to quality customer relations.
2. Analyze the influences cultural diversity as a factor in customer relations.
3. Demonstrate the skills necessary for quality customer service.
4. Use consumer skills to evaluate the quality of ready-made garments.
5. Create solutions to address customer concerns.

Operational Procedures

1. Analyze legislation, regulations, and public policy affecting the fashion, textile and apparel industries.
 - a. Understand laws regarding textile and apparel production, labeling, care, and disposal.
 - b. Understand legal and environmental concerns
2. Analyze personal and employer responsibilities and liabilities regarding industry-related safety, security, and environmental factors.
 - a. Fraud
 - b. Identity theft
 - c. Privacy policies
 - d. Credit issues
 - e. Employee theft
3. Analyze the effects of security and inventory control strategies, cash, and credit transaction methods, laws, and worksite policies, on loss prevention and store profit.
4. Demonstrate procedures for reporting and handling accidents, safety, and security incidents.
5. Analyze operational costs such as mark ups, mark downs, cash flow, and other factors affecting profit.

Education ILF realms:

- **Environmental Realm**
 - **Environment**

- **Individual realm**
 - Creating Balance
 - Leadership
 - Values and Beliefs
 - Women's Roles and Men's Roles
 - Life Cycle
- **Historical Realm**
 - Storytelling
- **Community Realm**
 - Elders
 - Celebrations and Ceremonies
 - Singing and Dancing
 - Storytelling
 - Arts

RST.9-10.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.

WHST.9-10.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

WHST.9-10.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

WHST.9-10.10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Math:

Quantities*

N - Q Reason quantitatively and use units to solve problems.

N-Q.1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

N-Q.2. Define appropriate quantities for the purpose of descriptive modeling.

N-Q.3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

HS: Geometry

Congruence

G - CO Experiment with transformations in the plane.

G-CO.1. Demonstrates understanding of key geometrical definitions, including angle, circle, perpendicular line, parallel line, line segment, and transformations in Euclidian geometry. Understand undefined notions of point, line, distance along a line, and distance around a circular arc.

G - CO Make geometric constructions.

G-CO.12. Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.

Modeling with Geometry

G - MG Apply geometric concepts in modeling situations.

G-MG.1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*

G-MG.2. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).*

G-MG.3. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).*

HS: Algebra

Creating Equations and Inequalities*

A - CED Create equations and inequalities that describe numbers or relationships.

A-CED.1. Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.

A-CED.4. Rearrange formulas (literal equations) to highlight a quantity of interest, using the same reasoning as in solving equations.

Reasoning with Equations and Inequalities

A - REI Understand solving equations as a process of reasoning and explain the reasoning.

A-REI.1. Apply properties of mathematics to justify steps in solving equations in one variable.

A-REI.2. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

A - REI Solve equations and inequalities in one variable.

A-REI.3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

MP4. Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another.

Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

MP5. Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

Personal Finance

1. 44% of Americans do not have enough cash to cover a \$400 emergency
2. 43% of student loan borrowers are in default
3. 38% of United States households have credit card debt
4. 33% of adults have credit card debt averaging over \$16 Thousands
5. 66% of adults can not pass a basic Financial Literacy test

Personal Finance



Digital Foundations is a turn-key on-line
Personal Finance class

Certified Financially Literate

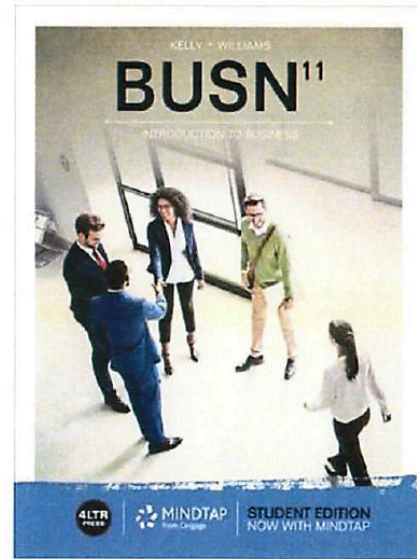
Demonstrates to colleges & Employers
the individual is financially savvy.



Intro to Business

This course is designed to introduce students to how business functions in today's society and will provide a foundation for other business courses. Course Rationale: General Business education is an important course for any student.

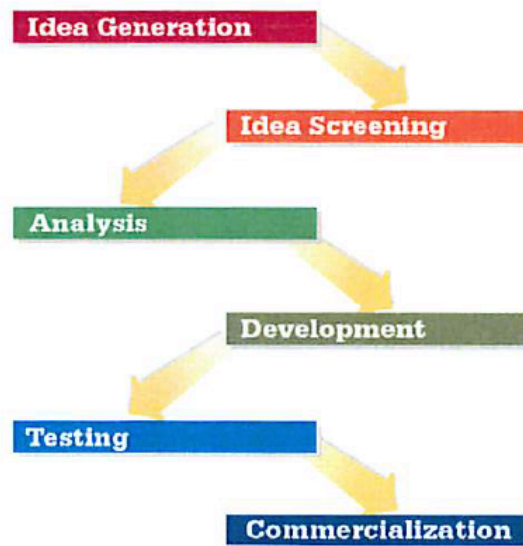
Dual Credit Course with Iḷisaḡvik College
8 students will receive credit from fall 2018
2 classes this semester in AIN & ATQ



Small Business Enterprises

- Extension on Intro to Business
- Go deeper into the different functions of business
- Innovation, Forecasting, More research into actualization

New Product Development Process



Business Education

James Bowers
CTE Business Specialist
NSBSD

Explain the Basics of Banking

1. Develop a filing system for keeping financial records, both paper and electronic.
2. Describe recordkeeping features that financial institutions provide for online account management.
3. Describe how to use different payment methods and banking features.

Debunking the Credit Myths - Students will be able use credit wisely.

1. Evaluate and refute the myths associated with debt.
2. Apply systematic decision making to identify the most cost-effective option for purchasing a car.
3. Identify various types of mortgage loans and the most cost-effective option for purchasing a home.
4. Evaluate ways that debt can negatively affect your financial future and how to overcome personal debt.
5. Identify the costs of using various types of credit.

Explain how a Credit Score is calculated

1. Describe the elements of a credit score.
2. Understand how to obtain a credit report.
3. Explain how a credit score affects creditworthiness and the cost of credit.
4. Explain the factors that affect a credit score.
5. Analyze a credit report, indicate the time that certain negative data can be retained, and describe how to dispute inaccurate entries.

How to stay safe on-line - Credit Bureaus and Identity Theft

1. Identify organizations that maintain consumer credit records.
2. Summarize major consumer credit laws.
3. Develop a plan for protecting personal information.

Demonstrate how to plan for Higher Education and complete FAFSA, Grants, Scholarships, and student loan applications

1. Develop a plan to attend college without acquiring debt.
2. Demonstrate how to apply for financial aid.

Education Options for the 21st Century – Student will be able to explain current job market and understand what training is needed.

1. Identify the educational requirements, training and cost for your career of choice.
2. Analyze post-high school education and career training options.

Describe what motivates purchasing decisions

1. Identify ways companies compete for your money.
2. Be familiar with marketing strategies that encourage people to go into debt or finance large purchases.
3. Evaluate how peer pressure can affect spending decisions.
4. Summarize factors that influence consumer decisions.
5. List five steps you should take before making a major purchase.

Define Opportunity Cost

1. Evaluate the role opportunity cost plays in purchasing decisions.
2. Describe the effect of inflation on buying power.

Demonstrate the value proposition - Bargain Shopping: Part of a Healthy Financial Plan

1. Understand how shopping for bargains is part of a healthy financial plan.
2. Analyze and use the three keys to getting bargains: Negotiate, have patience, and know where to find deals.
3. where to find deals.

Demonstrate the Seven Basic Rules of Negotiating

1. Develop skills for negotiating deals on products or services.
2. Understand that integrity and honesty are important when it comes to negotiating with others.

Describe Places to Find Great Deals

1. Know the best places to shop for deals.
2. Evaluate the benefits of not buying brand-name products, taking advantage of seasonal shopping, buying slightly outdated products, etc.

Understand how the financial markets work: Investing 101

1. Explain how investing builds wealth and helps meet financial goals.
2. Examine the relationship between diversification and risk.
3. Identify regulatory agencies and their functions.

List and explain different types of Investments

1. Evaluate investment alternatives: money markets, bonds, single stocks, mutual fund,
2. annuities, and real estate.
3. Explain the Rule of 72.
4. Identify different types of retirement plans.
5. Explain how taxes affect the rate of return on investments.
6. Understand how pre-tax and after-tax investments work.
7. Understand how the stock market works.
8. Be familiar with the various retirement account tax treatments.

9. Develop a plan for investing, and describe how to buy and sell investments.

Understand Compensation Packages: Employer Benefits and Retirement Plans

1. Analyze the components of employer benefits package.
2. Explain how compound interest works.

Describe real world examples of Risk Management: Protecting Your Wealth

1. Explain why insurance is an essential part of a healthy financial plan.
2. Understand how people manage risk through transfer.
3. Identify ways to lower the cost of insurance premiums.
4. Identify insurance for the types of risks that young adults might face.

Explain Basic Types of Insurance Coverage

1. Identify common types of risks and basic risk management methods.
2. Distinguish between necessary and unnecessary types of coverage.
3. Understand the importance of identity theft insurance in the 21st Century.
4. Define common insurance terms like "premium" and "deductible."
5. Understand the importance of property and liability protection.
6. Be familiar with policies that offer duplicate coverage.
7. Know the types of insurance to avoid.

Understanding Your Money Personality: Explain how an individual's attitudes and value influence purchasing

1. Identify differences among people's values and attitudes as they relate to money.
2. Evaluate your own money personality.

Describe the correlation of Marriage and Money

1. Evaluate how discussing important financial matters with household members can
2. reduce conflict.
3. Understand how having a budget or a money plan can reduce conflict.

Practice Responsible Business Communication: Communication Is Key

1. Understand the value of discussing individual and shared financial responsibilities.
2. Develop communication strategies for discussing financial issues.
3. Integrate healthy communication about money with parents, friends and others.

Complete a SWOT Analysis

1. Identify your personal strengths and weaknesses.

Create short- and long-term goals: Goal Setting

2. Clarify your educational and career goals.
3. Understand the components of goal setting.

Develop Interview Skills: You Won't Love the Entry Level

1. Understand the value of entry-level jobs.
2. Identify valuable work attributes outside of one's general skill set.

Complete a self-assessment

1. Identify your core values.
2. Identify your own specific talents and evaluate ways you could use those talents to help others.

Understand and demonstrate the importance of community service Make an Impact

1. Identify ways in which giving benefits both the giver and the receiver.

How to Give Your Time and Talents

1. Identify various types of charitable giving (time, money, talents).
2. Examine various areas of need in your own community.
3. Identify a variety of charitable organizations.

Define Your Legacy

1. Explain the concept of leaving a legacy.
2. Illustrate the importance of giving to others throughout your life, starting now.

Global Economics

1. Define global economics.
2. Explain the difference between imports and exports.
3. Describe what is considered a capital good.

Economic Systems describe and differentiate

1. Describe the differences between a command economic system and a market economic system.
3. Explain the difference between microeconomics and macroeconomics.
4. Differentiate between the four primary sectors in the chain of production.

Define Gross Domestic Product (GDP)

1. Explain what GDP means.
2. Describe how GDP is measured.
3. Explain what G7 means.

Economic Impact: Demonstrate knowledge of Macro-economics

1. Explain how the concept of supply and demand works.
2. Describe the global impact of poverty.
3. Differentiate between comparative advantage and absolute advantage.

Business Environment

1. Defining business and discuss the role of business in the economy
2. Explain the evolution of Modern business
3. Discuss the role of nonprofit organizations in the economy
4. Outline the core factors of production and how they affect the economy
5. Describe today's business environment and discuss each key dimension
6. Explain how current business trends might affect your career choices

Business Formation

1. Describe the characteristics of the four basic forms of ownership
2. Discuss the advantages and disadvantages of a sole proprietorship
3. Evaluate the pros and cons of the partnership as a form of business ownership
4. Explain why corporations have become the dominant form of business ownership
5. Explain why a limited liability companies are becoming an increasing form of business ownership
6. Evaluate the advantages and disadvantages of franchising

Small Business and Entrepreneurship

1. Explain the key reason to launch a small business
2. Describe the typical entrepreneurial mindset and characteristics
3. Discuss funding options for small business
4. Analyze the opportunities and threats that small businesses face
5. Discuss ways to become a new business owner and tools to facilitate success
6. Explain the size, scope, and economic contribution of small businesses

Business Ethics and Social Responsibility

1. Define ethics and explain the concept of universal ethical standards
2. Describe business ethics and ethical dilemmas
3. Discuss how ethics relates to both the individual and the organization
4. Define social responsibility in the global arena
5. Describe how companies evaluate their efforts to be socially responsible

Management, Motivation, and Leadership

1. Discuss the role of Management and its importance to organizational success
2. Explain key theories and current practices of motivation
3. Outline the categories of business planning and explain strategic planning
4. Discuss the organizing function of management
5. Explain the role of managerial leadership and the key leadership styles
6. Describe the management control process

Human Resource Management

1. Explain the importance of human resource management to business success
2. Discuss the key human resource issue in today's economy
3. Outline the challenges and opportunities that the human resource function faces
4. Discuss human resource planning and core human resources responsibility
5. Explain the key federal legislation that affects human resources

Business Communication: Creating and Delivering Messages that Matter

1. Explain the importance of excellent business communication
2. Describe the key elements of nonverbal communication
3. Compare, contrast, and choose effective communication channels
4. Choose the right words for effective communication
5. Write more effective communication
6. Create and deliver successful verbal presentation

Managing Information and Technology

1. Explain the basic elements of computer technology - including hardware, software and networks-and describe the key trends in each area
2. Discuss the reasons for the increasing popularity of cloud computing
3. Describe how data become information and how decision support systems can provide high-quality information that helps managers make better decisions
4. Explain how internet-based technologies have changed business-to-consumer and business to business commerce
5. Describe the problems posed by the rapid changes in internet-based technologies, and explain ways to address these problems

Operations Management

1. Define operations management and describe how the role of operations management has changed over the past 50 years
2. Discuss the key responsibilities of operations managers
3. Describe how operations managers face the special challenges posed by the provision of services
4. Describe how changes in technology have revolutionized operations management
5. Describe the strategies operations managers have used to improve the quality of goods and services
6. Explain how lean and green practices can help both the organization and the environment

Marketing: Building Profitable Customer Connections

1. Discuss the objectives, the process, and the scope of marketing
2. Identify the role of the customer in marketing
3. Explain each element of the marketing strategy
4. Describe the consumer and decision-making process
5. Discuss the key element of marketing research
6. Explain the roles of social responsibility and technology in marketing

Product and Promotion

1. Explain "Product" and identify product classifications
2. Describe Product differentiation and the key elements of product planning
3. Discuss innovation and the product life cycle
4. Analyze and explain promotion and integrated marketing communications
5. Discuss development of the promotional message
6. Discuss the promotional mix and the various promotional tools

Distribution and Pricing

1. Define distribution and differentiate between channels of distribution and physical distribution
2. Describe the various types of wholesale distribution
3. Discuss strategies and trends in store and non-store retailing
4. Explain the key factors in physical distribution
5. Outline the core pricing objectives and strategies
6. Discuss pricing in practice, including the role of the consumer

Accounting

1. Define accounting and describe how accounting information is used by a variety of stakeholders
2. Identify purposes and goals of generally accepted accounting principles
3. Describe the key elements of the major financial statements
4. Describe several methods stakeholders can use to obtain useful insights from a company's financial statements
5. Explain how the budget process can help managers plan, motivate, and evaluate their organizations performance
6. Explain the role of managerial accounting and describe the various cost concepts identified by managerial accountants

Finance: Acquiring and using funds to maximize Value

1. Identify the goal of financial management and explain the issues financial managers confront as they seek to achieve this goal
2. Describe the tools financial managers use to evaluate their company's current financial condition and develop financial plans
3. Evaluate the major sources of funds available to meet the firm's short term and long- term financial needs
4. Identify the key issues involved in determining a firm's capital structure
5. Describe how financial managers acquire and manage current assets
6. Explain how financial managers evaluate capital budgeting proposals to identify the best long-term investment options for their company

Financial Markets

1. Explain the role of financial markets in the US economy and identify key players
2. Identify the key laws that govern the way financial markets operate and explain the impact of each law
3. Describe and compare the major types of securities that are traded in security markets
4. Explain how securities are used in the primary market and traded on secondary markets
5. Compare several strategies that investors use to invest in securities.
6. Interpret the information provided in stock quotes available in financial websites.

The World Marketplace

1. Discuss the business opportunities in the world economy
2. Explain the key reasons for international trade
3. Describe the tools for measuring international trade
4. Analyze strategies for reaching global markets
5. Discuss barriers to international trade and strategies to surmount them
6. Describe the free-trade movement and discuss key benefits and criticisms

Entrepreneurial Processes -Understands concepts and processes associated with successful entrepreneurial performance

- a. Discovery, Concept Development, Resourcing, Actualization, Harvesting

Entrepreneurial Traits/Behaviors – Understands the personal traits/behaviors associated with successful entrepreneurial performance

- b. Leadership, Personal Assessment, Personal Management

Business Foundations – Understands fundamental business concepts that affect business decision making

- c. Business Concepts

Communications and Interpersonal Skills – Understands concepts, strategies, and systems needed to interact effectively with others

- d. Fundamental Communication, Dealing with Conflict

Digital Skills – Understands concepts and procedures needed for basic computer operations

- e. Computer Applications

Economics – Understands the economic principles and concepts fundamental to entrepreneurship/small business ownership

- f. Basic Concepts, Economic Systems

Financial Literacy – understands personal money-management concepts, procedures and strategies

- g. Money Basics

Professional Development – Understands concepts and strategies needed for career exploration, development and growth

- h. Career Planning, Job Seeking Skills

Business Functions – The business activities performed by entrepreneurs in managing the business

- i. Financial Management, Human Resource Management, Information Management, Marketing Management, Operations Management, Risk Management, Strategic Management,

Personal Finance is a year-long blended learning course. The on-line turn-key platform is Dave Ramsey's, *"Foundation in Personal Finance."* Personal Finance competes in a stock market simulation twice a year. The Stock Market Game introduces students to Global financial markets through the buying and selling of mutual funds, stocks and bonds.

Students will be able to define Personal Finance and communicate the importance of Financial Literacy

1. Describe what personal finance is.
2. Outline the components of effective financial planning.
3. Identify focuses of study throughout this course.
4. Develop communication strategies for managing money and discussing financial issues.
5. Evaluate your own money personality

Describe the historical perspective of Money, the American Way

1. Understand the evolution of America's dependence on credit.
2. Observe and analyze the "normal" American family as it relates to personal finance.

Demonstrate Saving Is an Exercise of Character

1. Identify the Five Foundations of personal finance.
2. Understand the purpose of having an emergency fund.
3. Explain the three basic reasons for saving money.
4. Understand the importance of saving for both long-term and short-term goals.
5. Describe what a sinking fund is and identify purchases for which you would use a sinking fund.

Communicate the Power of Compound Interest

1. Demonstrate how compound interest works and understand the impact of annual interest rate.
2. Describe the difference between simple and compound interest.
3. Understand the importance of beginning to save now.

Develop and implement a budget: Budgeting 101

1. Understand the purpose of cash flow planning.
2. Identify reasons some people avoid having or sticking to a budget.
3. Identify changes in personal spending behavior that contribute to wealth building.
4. Explain the difference between a cash flow statement and a budget.
5. Define zero-based budget.
6. Develop a plan for spending and saving that has both long-term and short-term components
7. Analyze how changes in circumstances can affect a personal budget.

CULINARY ARTS PROGRAM OVERVIEW

CULINARY ARTS PROGRAM OVERVIEW

- **Arctic Home Economics**

- Teaching students how to run their own home
- Basic cooking, sewing, money management, family management, child care, nutrition, and house management skills
- Opportunity to earn State of Alaska Food Worker certification.
- Customizable to each village

- **Introduction to Food Service**

- Teaching students the first steps to obtain a job in foodservice
- Learn career opportunities, communication skills, professional etiquette, the job interview process, food safety and sanitation, identifying equipment used in the industry, and math used in the industry.
- Opportunities to earn State of Alaska Food Worker certification and First Aid/CPR certification.
- Uses the ***Foundations of Restaurant Management and Culinary Arts Level 1*** textbook that is designed by industry and is the material for the ProStart curriculum, a school-to-career based curriculum developed by the National Restaurant Association Educational Foundation

- **Culinary Arts I**

- Teaching the fundamental skills for working in commercial kitchens.
- Learn knife skills, prepare various foods, cooking methods, principles of great customer service, and basic management skills
- Opportunity to earn ProStart Level 1 certification
- Uses the ***Foundations of Restaurant Management and Culinary Arts Level 1*** textbook that is designed by industry and is the material for the ProStart curriculum, a school-to-career based curriculum developed by the National Restaurant Association Educational Foundation.

CULINARY ARTS PROGRAM OVERVIEW, CONT.

- **Culinary Arts II**

- Teaching the fundamental skills for working in commercial kitchens.
- Continue to build knife skills and prepare various foods.
- Learn new skills such as food costing, labor costing, menu management, purchasing, and successful teambuilding.
- Uses the ***Foundations of Restaurant Management and Culinary Arts Level 2*** textbook that is designed by industry and is the material for the ProStart curriculum, a school-to-career based curriculum developed by the National Restaurant Association Educational Foundation.

- **Culinary Arts III**

- Teaching the fundamental skills for working in commercial kitchens.
- Continue to build knife skills and prepare various foods.
- Learn new skills such nutrition, preparing various desserts and plating and garnishing.
-
- Opportunity to earn ServSafe Food Protection Manager certification, ProStart Level 2 certification, and ProStart Certificate of Achievement.
- Uses the ***Foundations of Restaurant Management and Culinary Arts Level 2*** textbook that is designed by industry and is the material for the ProStart curriculum, a school-to-career based curriculum developed by the National Restaurant Association Educational Foundation.

- **Hospitality Service**

- Teaching students crucial customer service skills that benefit the industry.
- Continue to develop their communication and teamwork skills.
- Learn new skills such serving, bussing, cashiering, hosting, and table topography (how to properly set a table).

CULINARY ARTS PROGRAM OVERVIEW, CONT.

- **Catering Management**

- Teaching students how to planning, starting and operating a successful catering business.
- Continue to develop their culinary, communication, customer service, and teamwork skills.
- Learn new skills such as staffing, marketing, menu planning and costing, management, and food preparations and services related to catering

- **Hospitality Concept Design**

- Teaching students restaurant concept development and business planning for professional foodservice facilities.
- Learn new skills such as menu planning and pricing, operating, budgeting, production, technology, human resource management, and financing in the foodservice industry.

- **Foodservice Management**

- Teaching students comprehensive supervisory and management responsibilities within hospitality foodservice operations.
- Continue to build proper communication, problem solving, leadership, human resource planning, training, motivating, organizational skills.
- Learn new skills such as labor costs, cost control, and the legal environment involved during operations.

FALL 2018

- 5 schools incorporated Arctic Home Economics classes
 - Tikigaq School– 9 students
 - Alak School – 4 students
 - Meade River School– 3 students
 - Kiita Learning Center– 13 students
 - Barrow High School– 7 students
- 1 Culinary Arts Intensive
 - Kali School- 5 days, 10 students
- 44 State of Alaska Food Worker certifications awarded
- In the process of building an articulated agreement with the University of Alaska

SPRING 2019

- 6 schools incorporating a culinary arts class
 - Tikigaq School– Arctic Home Economics, 5 students
 - Alak School– Arctic Home Economics, 5 students
 - Nunamiut School– Arctic Home Economics, 9 students
 - Meade River School– Introduction to Foodservice, 4 students
 - Harold Kaveolook School– Introduction to Foodservice, 6 students
 - Barrow High School– Introduction to Foodservice, 10 students
- 4 new State of Alaska Food Worker certifications awarded as of February 28th
- In the process of building a program partnership with Ilisagviik College

STUDENT PICTURES



*John O. making
pancakes*



*Brandon, Anna, and
Lillian making Christmas
treat boxes*



*Brandon making
sure the class has
clean dishes*



Khaleah dicing an onion



*Paul showing off his potato
to Lillian and Amy*

*Joyce showcasing
her made from
scratch pineapple
upside down cake*



STUDENT PICTURES CONT.



*John K. carefully reading
over his recipe*



*Nathan and Lillian making
Eskimo donuts*



*All hands on deck decorating Christmas
cookies*



*Enjoying some potato soup in
a bread bowl*

Arctic Home Economics — Standards and Objectives
Proposed September 26, 2018

Cooking in the Home

- 1. Demonstrate safety and sanitation procedures with food and beverages**
 1. Demonstrate exemplary appearance and hygiene
 2. Practice consistent use of protective gloves and clothing
 3. Demonstrate correct food handling and production techniques
 - i. Storing food properly
 - ii. Reheating and thawing food properly
 4. Illustrate correct cleaning and storage of knives and kitchen equipment
 5. Practice appropriate safety and health procedures
- 2. Use information from cultural and geographical studies to guide decision with food and beverages**
 1. Identify ethnicities and their dining habits and rules
 2. Identify countries and their native food resources
 3. Describe or demonstrate how to show respect for the plants and animals
 - i. Spirituality connection between the land and people.
 4. Explain which foods are appropriate for different occasions
- 3. Demonstrate leadership qualities and collaboration with others**
 1. Use people skills to build effective working relationships
 - i. Learning to work together in the household
 2. Model conflict management skills to facilitate solutions in the house
 3. Model proper food etiquette in the house and the community
 - i. Managing waste, ex. cleaning up after yourself
 - ii. Serving elders before everyone else
- 4. Demonstrate food preparation methods and techniques**
 1. Handle knives, tools, and equipment safely
 2. Demonstrate a variety of cooking methods
 - i. Sauté
 - ii. Grill
 - iii. Bake
 - iv. Fry
 - v. Steam
 3. Know how to measure and portion correctly
 4. Prepare various meats, seafood, and poultry safely
 5. Prepare various soups and sauces safely
 6. Prepare various fruits, vegetables, starches, legumes, dairy products, fats, and oils safely
 7. Prepare various salads and dressings safely
 8. Prepare breads, baked goods, and desserts safely
 9. Demonstrate cooking methods that increase nutritional value
- 5. Apply listening, reading, writing, and speaking skills**
 1. Read and follow recipes
 2. Read and follow ingredients
 3. Translate various English vocabulary to Inupiaq

Nutrition

- 1. Apply risk management procedures to food safety, food testing, and sanitation**

- a. Analyze factors that contribute to food borne illness
 - b. Demonstrate practices and procedures that assure personal health and hygiene
 - c. Demonstrate waste disposal and recycling methods
 - i. Use all parts of food
- 2. Evaluate nutrition principles, food plans, preparation techniques and specialized dietary plans**
 - a. Analyze nutrient requirements across the life span addressing the diversity of people, culture, and religions
 - b. Analyze nutritional data
 - i. Calories
 - ii. Vitamins
 - iii. Carbohydrates
 - iv. Lipids
 - v. Fats
 - c. Determine different cooking methods to maximize nutrient retention.
 - i. Use fresh ingredients instead of processed ingredients
 - d. Understand the influence of cultural factors on food and nutrition and behavior.
 - i. Expressing how specific foods are integral to the Inupiaq values
 - e. Select foods to promote a healthy lifestyle
 - f. Plan menus to meet various nutrient needs
- 3. Apply basic concepts of nutrition in a variety of settings**
 - a. Compose a balanced diet consisting of traditional foods
 - b. Construct a diet based on nutritional needs and health conditions
 - i. Food allergies
 - ii. Medications
 - iii. Physical impairments
 - iv. Lifestyle
 - c. Promote nutrition concepts for wellness and disease prevention
- 4. Demonstrate food science, dietetics, and nutrition management principles and practices**
 - a. Manage food production to meet needs and preferences of diverse customer populations
 - b. Create recipes
 - c. Prepare food for presentation and assessment

Sewing in the Home

- 1. Evaluate textiles, fashion, and apparel products and materials and their use in diverse settings**
 - a. Identify the names of different clothing styles
 - b. Identify different animal furs
 - c. Evaluate clothing for sustainability factors
 - d. Identifying furs appropriate for wearing in wet, very cold, and mild conditions
 - e. Discuss the social and cultural use of fur in clothing
- 2. Demonstrate skills needed to produce, alter, or repair clothing**
 - a. Demonstrate basic hand sewing stitches such as straight stitch, blanket stitch, etc.
 - b. Replace a button and repair a buttonhole
 - c. Demonstrate ability to patch holes and repair seams in worn clothing

- d. Demonstrate ability to patch holes, waterproof and repair seams in canvas, ripstop and other outdoor fabric
- e. Complete hand sewing projects.

Managing House Hold Expenses

- 1. Personal Decision Making**
 - a. Explore personal financial choices
 - b. Demonstrate responsible spending
 - c. Practice making informed financial decisions
 - d. Differentiate between “wants” and “needs”
 - e. Evaluate spending choices
 - f. Explore the purpose of financial goals
 - g. Examine common obstacles to achieving goals
- 2. Earning and Reporting Income**
 - a. Explore different payroll deductions
 - b. Understanding the components of personal income
 - c. Discuss how to maximize their earnings and savings
- 3. Managing Finances and Budgeting**
 - a. Understand what is a budget
 - b. Learn to create a personal budget
 - c. Demonstrate effective decision-making skills in spending and saving
 - d. Compare costs between different goods and services
 - e. Exercise skills needed for saving
 - f. Examine how saving is a part of financial well-being.
- 4. Using Credit**
 - a. Understand what “credit” is.
 - b. Evaluate and explain the purpose of a credit score
 - c. Understand the elements of credit scores and what impacts them
 - d. Discover the best way to maintain a high credit score
- 5. Protecting Against Risk**
 - a. Explore why debt occurs and how to prevent it
 - b. Learn how debt impacts credit potential
 - c. Discover ways to alleviate debt.

Family Health and Wellbeing

- 1. Demonstrate integration to meet developmental needs and interests of children, youth, and adults considering gender, ethnicity, geographical, cultural, and global influences.**
 - a. Create a plan to provide an environment for children to read, play, and follow everyday routines.
 - b. Implement activities that incorporate a learner’s language, learning styles, early experiences, and cultural values.
 - c. Demonstrate a variety of parenting methods to meet the individual needs of child development- Social/emotional/educational
 - d. Develop effective activities, routines, and transitions to support child development for various age groups

- 2. Demonstrate a safe and healthy home for children, youth, and adults.**
 - a. Manage physical space to maintain an environment that is safe and healthy and encourages physical activity.
 - b. Plan safe and healthy meals and snacks that meet USDA needs
 - c. Identify and document symptoms of abuse and neglect and use appropriate procedures to report suspected abuse or neglect to the designated authorities
- 3. Demonstrate a home that provides safety and security**
 - a. Create a plan for external and internal emergencies
 - b. Receive a CPR/First Aid certification card
- 4. Analyze the impact of conditions that could influence the well-being of individuals and families**
 - a. Analyze management and living environment issues of individuals and family conditions that influence their wellbeing
 - b. Analyze personal, social, emotional, economic, vocational, education, and recreational issues of individuals and family conditions that influence their wellbeing
- 5. Evaluate services for individuals and families with a variety of conditions that could impact their well-being**
 - a. Describe needs and accommodations for people with a variety of conditions that could affect their well-being
 - b. Illustrate coping or adjustment strategies and stress management practices for the participant, a caregiver, and family members
 - c. Summarize the importance of friends, family, and community relationships for individuals with a variety of conditions that affect their well-being.
 - d. Identify strategies that help participants make informed choices, access resources and support, follow through on responsibilities, and take appropriate risks
 - e. Demonstrate effective verbal and nonverbal communication skills that support individuals and families with a variety of conditions that could affect their well-being.
- 6. Analyze personal needs and characteristics and their effects on interpersonal relationships**
 - a. Analyze the effects of personal characteristics on relationships
 - b. Analyze the effects of self-esteem and self-image on relationships
 - c. Explain the effects of personal standards and behaviors on interpersonal relationships
- 7. Demonstrate communication skills that contribute to positive relationships**
 - a. Analyze communication styles and their effects on relationships
 - b. Identify and explain verbal and nonverbal behaviors and attitudes that contribute to effective communication
 - c. Demonstrate effective listening and feedback techniques
 - d. Analyze the roles and functions of communications in family, work, and community settings
- 8. Demonstrate teamwork and leadership skills in the family, workplace, and community**
 - a. Create an environment that encourages and respects the ideas, perspectives, and contributions of all group members
 - b. Demonstrate strategies to motivate, encourage, and build trust in group members
 - c. Demonstrate ways to organize and delegate responsibilities

- d. Demonstrate processes for cooperating, compromising, and collaborating.

Child Care

1. **Analyze developmentally appropriate and culturally responsive practices to plan for early childhood, education, and services.**
 - a. Explore tools and methods to observe and interpret children's growth and development.
2. **Demonstrate integration to meet developmental needs and interests of children, youth and adults considering gender, ethnicity, geographical, cultural, and global influences.**
 - a. Create a plan to provide an environment for children to read, play, and follow everyday routines.
 - b. Implement learning activities that meet the developmental needs of the child
 - c. Implement activities that incorporates a learner's language, learning styles, early experiences, and cultural values.
3. **Demonstrate a safe and healthy home for children**
 - a. Manage physical space to maintain an environment that is safe and healthy and encourages physical activity
 - b. Implement strategies to teach health, safety, and sanitation habits
 - c. Plan safe and healthy meals and snacks that meet USDA standards
 - d. Identify and document symptoms of abuse and neglect and use appropriate procedures to report suspected abuse or neglect to the designated authorities
4. **Apply risk management procedures to food safety, food testing, and sanitation**
 - a. Demonstrate practices and procedures that assure personal health and hygiene
5. **Examine the nutritional needs of individuals and families in relation to health and wellness across the life span.**
 - a. Evaluate the effect of nutrition on health, wellness, and performance
 - b. Analyze the effects of food and diet fads, food addictions, and eating disorders on wellness.
6. **Demonstrate ability to acquire, handle, and use foods to meet nutrition and wellness needs of individuals and families across the life span.**
 - a. Apply current dietary guidelines in planning to meet nutrition and wellness needs.
7. **Evaluate parenting practices that maximize human growth**
 - a. Learn about and analyze nurturing practices that support human growth and development
 - b. Learn about and analyze the effects of abuse and neglect on children and families and determine methods for prevention
 - c. Prepare criteria for selecting care and services for children and youth.

House Hold Management

1. **Demonstrate management of individual and family resources such as food, clothing, shelter, health care, recreation, transportation, time, and human capital.**
 - a. Apply consumer skills to decisions about housing, utilities, and furnishings
 - b. Demonstrate how to obtain and maintain health care to meet the needs of the family
 - i. Compare and contrast Indian and public health insurance coverage

- 2. Demonstrate a safe and healthy learning environment for children, youth, and adults**
 - a. Plan safe and healthy meals and snacks to meet USDA standards
 - b. Create a plan to support child development at various life stages
- 3. Demonstrate skills for building and maintaining positive collaborative relationships with children, youth, and adults in their family and community**
 - a. Demonstrate problem-solving and decision-making skills
 - b. Demonstrate interpersonal skills that promote positive and productive relationships.
- 4. Apply hazardous materials and waste management procedures**
 - a. Create a waste minimization plan.
 - b. Develop a recycling program for conservation of resources.
 - c. Identify local requirements and procedures for safely handling, storing, and disposing for hazardous materials and waste products
- 5. Apply risk management procedures to food safety, food testing, and sanitation**
 - a. Demonstrate practices that assure personal health and hygiene
 - b. Classify cleaning and sanitizing materials and their correct use
- 6. Demonstrate laundering processes aligned with laundry standards and regulations**
 - a. Summarize the functions of machines and equipment used in laundering operations
 - b. Demonstrate standard laundry procedures
 - c. Apply procedures for the selection of textiles, chemicals, and equipment in the laundering process.
- 7. Analyze the effects of family as a system on individuals and society**
 - a. Analyze the role of family in teaching culture and tradition across the life span.

Introduction to Food Service—Standards and Objectives

Proposed October 29, 2018

Unit 1: Overview of the Restaurant and Food Service Industry

- 1. Analyze career paths within the food production and food service industries**
 - a. Explain the roles, duties, and functions of individuals engaged in food production and services careers
 - b. Categorize the types of business that make up the hospitality, lodging, and tourism industries and identify their foodservice opportunities.
 - i. List various types of food service operations
 - ii. List advantages and disadvantages of different operations
 - c. Summarize education and training requirements and opportunities for career paths in food production and services.
 - i. List the qualifications for various careers in the food service industry
 - ii. Describe major duties and tasks for each job option
 - d. Act out an effective job interview
 - e. Explain the follow-up steps for a job interview
 - f. Outline the steps to resigning from a job
- 2. Demonstrate leadership qualities and collaboration with others**
 - a. Model conflict management skills to facilitate solutions
 - b. Identify skills needed by foodservice professionals
 - c. Describe ethics and explain their importance
 - d. List the basic expectations that employers have for an employee
 - e. Explain how stereotypes and prejudices can negatively affect working together
 - f. Demonstrate processes for cooperating, compromising, and collaborating with others.
 - g. Demonstrate ways to organize and delegate responsibilities
- 3. Apply listening, reading, writing, and speaking skills to enhance operations and customer service in food and beverage service facilities**
 - a. Describe communication skills that contribute to positive relationships
 - b. Demonstrate strategies to motivate, encourage, and build trust in group members
 - c. Identify obstacles to effective communication and their preventions
 - i. Auditory and visual distractions
 - d. Understand verbal and nonverbal communications
 - i. Listen and understand others
 - ii. Interpret verbal and nonverbal cues to enhance communications with others.
 - e. Demonstrate effective listening, speaking, and writing skills
 - f. Translate various English vocabulary to Inupiaq
 - g. Explain the importance of time management
- 4. Use information from cultural and geographical studies to guide decisions with food and beverages.**
 - a. Identify ethnicities and their dining habits and rules
 - b. Identify countries and their native food resources
 - c. Describe or demonstrate how to show respect for the plants and animals
 - i. Spirituality connection between the land and people
 - d. Explain which foods are appropriate for different occasions.

Unit 2: A Safe Operation

- 1. Demonstrate food safety and sanitation procedures**
 - a. Identify characteristics of major food borne pathogens, their role in causing illness, foods involved in outbreaks, and methods of prevention.
 - i. Understand FAT TOM and how it relates to foodborne pathogens
 - ii. Identify TCS food and their characteristics
 - b. Identify most common allergens and methods for preventing allergic reactions
 - c. Practice appropriate safety and health procedures
 - i. Show exemplary appearance and hygiene
 - ii. Use protective gloves and clothing
 - iii. Demonstrate proper handwashing
 - iv. Explain how to maintain a clean and sanitary operation
 - d. Demonstrate safe food handling and preparation techniques
 - i. Identify ways to prevent cross-contamination and time-temperature abuse
 - ii. Identify criteria for accepting or rejecting food during receiving
 - iii. Store food properly
 - iv. Explain how to reheat and thaw food properly
 - v. Explain how to handle ready to eat foods properly
 - e. Demonstrate waste disposal and recycling methods
 - i. Understand what is OSHA and MSDS and their roles
 - ii. Express the requirements for the safe handling and storage of hazardous materials
 - f. Demonstrate emergency and first aid knowledge and procedures applicable to the workplace
 - i. Learn proper first aid and CPR techniques
 - ii. Understand the different kitchen hazards and their preventions
 - g. Describe various types of protective clothing, footwear, and equipment
 - i. Non-slip shoes
 - ii. Aprons
 - iii. Single-use gloves
 - iv. Hair restraints

Unit 3: Introduction to the Kitchen

- 1. Demonstrate industry standards in selecting, using, and maintaining food production and food service equipment.**
 - a. Identify a variety of equipment for food processing, cooking, holding, storing, and serving
 - b. Demonstrate procedures for safe and secure storage of equipment and tools
 - c. Demonstrate procedures for cleaning and sanitizing equipment, serving dishes, glassware, and utensils.
- 2. Demonstrate professional food preparation methods and techniques for all menu categories to produce a variety of food products that meet customer needs**
 - a. Demonstrate professional skills in safe handling of knives, tools, and equipment
 - b. Demonstrate knowledge of portion control and proper scaling and measurement techniques
- 3. Research costs, pricing, market demands and marketing strategies to manage profitability in food and beverage service facilities**
 - a. Perform basic math calculations using numbers and fractions

- b. Identify the components and functions of a standardized recipe
- c. Convert recipes to yield smaller and large quantities
- d. Demonstrate measuring and portioning using the appropriate small wares and utensils
- e. Calculate as purchased and edible portion amounts
 - i. Determine food waste
- f. Calculate the total cost and portion costs of a standardized recipe
 - i. Determine menu pricing

Culinary Arts I—Standards and Objectives

Proposed November 8, 2018

Unit 4: Culinary Exploration

- 1. Use information from cultural and geographical studies to guide decisions in food and beverage service facilities.**
 - a. Identify ethnicities and their dining habits and rules
 - b. Identify countries and their native food resources
 - c. Describe or demonstrate how to show respect for the plants and animals
 - i. Spirituality connection between the land and people
 - ii. Explain which foods are appropriate for different occasions
- 2. Demonstrate food safety and sanitation procedures in food and beverage service facilities.**
 - a. Practice appropriate safety and health procedures
 - i. Show exemplary appearance and hygiene
 - ii. Demonstrate proper handwashing
 - iii. Illustrate correct use of knives and kitchen equipment
 - iv. Demonstrate how to maintain a clean and sanitary operation
 - b. Demonstrate safe food handling and preparation techniques
 - i. Prevent cross-contamination and time-temperature abuse
 - ii. Calibrate bimetallic stemmed thermometers correctly
 - iii. Identify criteria for accepting or rejecting food
 - iv. Store food properly
 - v. Reheat and thaw food properly
 - vi. Handle ready to eat foods properly
 - c. Identify overall safety procedures necessary to maintain a safe work area
 - i. Demonstrate proper waste disposal and recycling methods
 - ii. Demonstrate safe handling and storage of hazardous materials
 - iii. Demonstrate emergency and first aid knowledge and procedures applicable to the workplace
 - iv. Understand the different kitchen hazards and their preventions
 - d. Utilize various types of protective clothing, footwear, and equipment
 - i. Non-slip shoes
 - ii. Aprons
 - iii. Side towels
 - iv. Chef coat
 - v. Chef pants
 - vi. Hair restraints
 - vii. Single-use gloves
 - viii. Knife kit
- 3. Demonstrate industry standards in selecting, using, and maintaining food production and food service equipment.**
 - a. Utilize a variety of equipment for food processing, cooking, holding, storing, and serving.
 - b. Demonstrate procedures for safe and secure storage of equipment and tools
 - c. Demonstrate procedures for cleaning and sanitizing equipment, serving dishes, glassware, and utensils to meet industry standards.

- 4. Demonstrate professional food preparation methods and techniques for all menu categories to produce a variety of food products that meet customer needs**
 - a. Demonstrate professional skills in safe handling knives, tools, and equipment
 - b. Demonstrate professional skills for a variety of cooking methods
 - i. Searing
 - ii. Sautéing
 - iii. Frying
 - iv. Steaming
 - v. Baking
 - c. Demonstrate knowledge of portion control and proper scaling and measurement techniques
 - d. Apply fundamentals of time, temperature, and cooking methods to cooking, cooling, reheating, and holding of a variety of foods.
 - e. Prepare various stocks, stoups, and sauces using safe handling and professional preparation techniques
 - f. Prepare various salads, dressings, marinades, and spices using safe handling and professional preparation techniques.
 - g. Prepare sandwiches using safe handling and professional preparation techniques.
 - h. Prepare breads and baked goods using safe handling and professional preparation techniques

Unit 5: Service and Management

- 1. Demonstrate leadership qualities and collaborations with others**
 - a. Model conflict management skills and facilitate solutions
 - b. Identify skills needed by foodservice professionals
 - c. Describe ethics and explain their importance
 - d. List the basic expectations that employers have for an employee
 - e. Use people skills to build effective working relationships
 - f. Identify how employees' roles impact an organization's mission and goals
 - g. Explain how stereotypes and prejudices can negatively affect working together
- 2. Apply listening, reading, writing, and speaking skills to enhance operations and customer service in food and beverage facilities**
 - a. Understand verbal and nonverbal communications
 - b. Demonstrate effective listening, speaking, and writing skills
 - c. Translate various English vocabulary to Inupiaq
 - d. Explain the importance of time management
- 3. Demonstrate the concept of internal and external customer service**
 - a. Explain the importance of customer service
 - b. List the reasons for making a good impression and how to make one
 - c. Describe special needs that some customers might have
 - d. List ways to obtain feedback from guests and determine their satisfaction
 - e. Explain how customer complaints should be resolved
- 4. Determine the appropriate type of food service to provide quality customer service**
 - a. Identify types of dining utensils and proper uses
 - b. Show proper set up procedures for dining room/counter service
 - c. Explain menu items
 - d. Detail the process of upselling and other forms of marketing at tableside
 - e. Demonstrate taking orders at the table, beginning with the greeting

- 5. Demonstrate professional food preparation methods and techniques for all menu categories to produce a variety of food products that meet customer needs**
 - a. Prepare various hot and cold beverages using safe handling and professional preparation techniques
- 6. Demonstrate implementation of food service management and leadership functions**
 - a. List the major responsibilities of a manager
 - b. Explain what a SMART goal is
 - c. Explain the purpose of vision statements and mission statements, and contrast their differences
 - d. List the steps for problem solving, and explain each step's contribution to finding a solution

Culinary Arts II—Standards and Objectives

Proposed December 4, 2018

Unit 1: Reaching Your Customers

- 1. Describe the key components of marketing and promoting hospitality and tourism and services**
 - a. Demonstrate knowledge of marketing techniques commonly used in the hospitality and tourism industry to sell a product or service.
 - i. Identify elements of marketing
 - ii. Compare and contrast different marketing styles
 - iii. Develop strategies for making a sale
 - iv. Identify the parts of a SWOT analysis
 - v. List the benefits of public relations
 - vi. Recognize different types of sales promotions
 - b. Identify effects of the economy on the hospitality and tourism industry to effectively plan products and services.
 - i. Describe how economics applies to the industry
 - ii. Discuss the importance of the industry to the U.S. economy
 - iii. Explain the effects that supply and demand have on the industry
- 2. Research costs, pricing, market demands and marketing strategies to manage profitability in food and beverage service facilities.**
 - a. Compare alternative ways of marketing to develop a promotional package.
 - i. Develop promotional materials
 - ii. Create methods to market materials
 - b. Anticipate future needs using information about current trends that contribute to effectively price and market food and beverage offerings.
 - i. Demonstrate awareness of operational needs
 - ii. Demonstrate awareness of capabilities and limitations of the operation
 - c. Discuss sustainable practices and how it impacts profitability and customer demands
 - i. Purchasing locally grown products or organics
 - ii. Purchasing recycled or recyclable products
- 3. Implement standard operating procedures related to food and beverage production and guest services.**
 - a. Determine the appropriate type of food service to provide quality customer service
 - i. Detail the process of upselling and other forms of marketing at tableside
 - b. Describe the role of the menu as a marketing and planning tool.
 - i. Explain the importance of the menu
 - ii. Detail the menu's role in communicating an image.
 - iii. Classify menu items according to their popularity
 - iv. Organize the information on a menu
 - v. Explain principles of menu layout and design
 - vi. Explain the purposes of a menu sales mix analysis

Unit 2: Culinary Exploration

- 1. Use information from cultural and geographical studies to guide customer service decisions in food and beverage service facilities.**
 - a. Identify ethnicities and their dining habits and rules
 - b. Identify countries and their native food resources
 - c. Describe or demonstrate how to show respect for the plants and animals
 - i. Spirituality connection between the land and people
 - ii. Explain which foods are appropriate for different occasions
- 2. Demonstrate food safety and sanitation procedures in food and beverage service facilities.**
 - a. Practice appropriate safety and health procedures
 - i. Show exemplary appearance and hygiene
 - ii. Demonstrate proper handwashing
 - iii. Illustrate correct use of knives and kitchen equipment
 - iv. Demonstrate how to maintain a clean and sanitary operation
 - b. Demonstrate safe food handling and preparation techniques
 - i. Prevent cross-contamination and time-temperature abuse
 - ii. Calibrate bimetallic stemmed thermometers correctly
 - iii. Identify criteria for accepting or rejecting food
 - iv. Store, reheat, and thaw food properly
 - v. Handle ready to eat foods properly
 - c. Identify overall safety procedures necessary to maintain a safe work area.
 - i. Demonstrate emergency first aid and CPR knowledge procedures applicable to the workplace.
 - ii. Demonstrate proper waste disposal and recycling methods
 - iii. Demonstrate safe handling and storage of chemicals
 - iv. Understand the different kitchen hazards and their preventions.
 - d. Utilize various types of protective clothing, footwear, and equipment.
 - i. Non-slip shoes
 - ii. Aprons
 - iii. Side towels
 - iv. Chef coat
 - v. Chef pants
 - vi. Hair restraints
 - vii. Single-use gloves
 - viii. Knife kit
- 3. Demonstrate industry standards in selecting, using, and maintain food production and food service equipment.**
 - a. Utilize a variety of equipment for food processing, cooking, holding, storing, and serving.
 - b. Demonstrate safe and secure storage of equipment and tools.
 - c. Demonstrate procedures for cleaning and sanitizing equipment, serving dishes, glassware, and utensils to meet industry standards.
- 4. Demonstrate professional food preparation methods and techniques for all menu categories to produce a variety of food products that meet customer needs.**
 - a. Demonstrate professional skills in safe handling knives, tools, and equipment.
 - b. Demonstrate professional skills for a variety of cooking methods.
 - i. Poaching

- ii. Searing
 - iii. Sautéing
 - iv. Frying
 - v. Baking
- c. Demonstrate knowledge of portion control and proper scaling and measurement techniques.
- d. Apply fundamentals of time, temperature, and cooking methods to cooking, cooling, reheating, and holding of a variety of foods.
- e. Prepare various breakfast meats, eggs, cereals, and batter products using safe handling and professional preparation techniques.
- f. Prepare various fruits, vegetables, starches, legumes, dairy products, fats, and oils using safe handling and professional preparation techniques.

Unit 3: Managing Costs

- 1. Demonstrate leadership qualities and collaboration with others.**
 - a. Demonstrate skills needed by foodservice professionals
 - b. Demonstrate professional employer expectations
 - c. Use people skills to build effective working relationships
 - d. Manage unexpected situations to ensure continuity of quality services.
 - i. Provide feedback to management in order to enhance operations
 - e. Demonstrate proper time management skills
- 2. Apply listening, reading, writing, and speaking skills to enhance operations and customer service in food and beverage facilities.**
 - a. Understand verbal and nonverbal communications
 - i. Listen and understand others
 - ii. Interpret verbal and nonverbal cues to enhance communications with coworkers and customers.
 - b. Demonstrate effective listening, speaking, and writing skills
 - c. Translate various English vocabulary to Inupiaq
- 3. Research costs, pricing, market demands and marketing strategies to manage profitability in food and beverage service facilities.**
 - a. Interpret calculations of food, labor and pricing to ensure profitability.
 - i. Calculate food and labor costs and determine ways to meet goals.
 - ii. Determine the values of inventory or stock.
 - iii. Determine menu pricing
 - iv. Define portion control
 - v. Explain the purpose of invoices, budgets, and profit-loss reports
- 4. Utilize technical resources for food services and beverage operations to update or enhance present practice.**
 - a. Use software applications to manage food service operations.
 - i. Demonstrate the use of software programs for inventory control, point of sale, profit loss, etc.
 - b. Retrieve website information to use in menu planning, recipes, and for product information.
 - i. Access relevant websites
 - ii. Download recipes.
 - iii. Bookmark websites.

Culinary Arts III—Standards and Objectives

Proposed December 10, 2018

Unit 4: Today's Operational Concerns

- 1. Analyze resource consumption for conservation and waste management practices.**
 - a. Investigate sources and types of residential and commercial energy, water policy and usage, waste disposal, and pollution issues.
 - i. List ways foodservice facilities can improve its energy usage efficiency.
 - ii. Identify ways to reduce the total amount of waste in a foodservice facility.
 - b. Explore a variety of strategies and practices to conserve energy and reduce waste.
 - i. Describe different types of growing practices.
 - ii. List ways foodservice facilities can build or make structural improvements to become more sustainable.
 - c. Identify the issues surrounding the global production of seafood, coffee, animals, and organic food.
 - d. Examine roles of government, culture, industry, and family in energy consumption.
 - e. Explain why water conservation is important
- 2. Examine the nutritional needs of individuals and families in relation to health and wellness across the life span.**
 - a. Analyze sources of food and nutrition information, including food labels, related to health and wellness
 - i. Understand food additives and their function in food
 - b. Evaluate the effect of nutrition on health, wellness, and performance.
 - i. Explain the role of digestion in nutrition and health
 - ii. Identify the six basic types of nutrients found in food and their sources
- 3. Demonstrate ability to acquire, handle, and use foods to meet nutrition and wellness needs of individuals and families across the life span.**
 - a. Apply current dietary guidelines in planning to meet nutrition and wellness needs.
 - i. Describe a healthy diet and the reasons to follow one.
 - ii. Understand different diets
 - b. Demonstrate ability to select, store, prepare, and serve nutritious, aesthetically pleasing food and food product.
 - i. Suggest ways to make menus and recipes more healthful
- 4. Demonstrate food science, dietetics, and nutrition management principles and practices.**
 - a. Apply standards for food quality and sustainability
 - b. Create standardized recipes
 - c. Manage food production to meet needs and preferences of diverse customer populations.
 - d. Implement procedures that provide cost effective products
 - e. Build menus to customer/client preferences

Unit 5: Meat, Poultry, and Seafood

- 1. Use information from cultural and geographical studies to guide customer service decisions in food and beverage service facilities.**
 - a. Identify ethnicities and their dining habits and rules
 - b. Identify countries and their native food resources

- c. Describe or demonstrate how to show respect for the plants and animals
 - i. Spirituality connection between the land and people
 - ii. Explain which foods are appropriate for different occasions
- 2. Demonstrate food safety and sanitation procedures in food and beverage service facilities.**
 - a. Practice appropriate safety and health procedures
 - i. Show exemplary appearance and hygiene
 - ii. Demonstrate proper handwashing
 - iii. Illustrate correct use of knives and kitchen equipment
 - iv. Demonstrate how to maintain a clean and sanitary operation
 - b. Demonstrate safe food handling and preparation techniques
 - i. Prevent cross-contamination and time-temperature abuse
 - ii. Calibrate bimetallic stemmed thermometers correctly
 - iii. Identify criteria for accepting or rejecting food
 - iv. Store, reheat, and thaw food properly
 - v. Handle ready to eat foods properly
 - c. Identify overall safety procedures necessary to maintain a safe work area.
 - i. Demonstrate emergency first aid and CPR knowledge procedures applicable to the workplace.
 - ii. Demonstrate proper waste disposal and recycling methods
 - iii. Demonstrate safe handling and storage of chemicals
 - iv. Understand the different kitchen hazards and their preventions.
 - d. Utilize various types of protective clothing, footwear, and equipment.
 - i. Non-slip shoes
 - ii. Aprons
 - iii. Side towels
 - iv. Chef coat
 - v. Chef pants
 - vi. Hair restraints
 - vii. Single-use gloves
 - viii. Knife kit
- 3. Demonstrate industry standards in selecting, using, and maintain food production and food service equipment.**
 - a. Utilize a variety of equipment for food processing, cooking, holding, storing, and serving.
 - b. Demonstrate safe and secure storage of equipment and tools.
 - c. Demonstrate procedures for cleaning and sanitizing equipment, serving dishes, glassware, and utensils to meet industry standards.
- 4. Demonstrate professional food preparation methods and techniques for all menu categories to produce a variety of food products that meet customer needs.**
 - a. Demonstrate professional skills in safe handling knives, tools, and equipment.
 - b. Demonstrate professional skills for a variety of cooking methods.
 - i. Broiling
 - ii. Grilling
 - iii. Searing
 - iv. Frying
 - v. Baking
 - vi. Braising

- vii. Stewing
 - viii. Smoking
 - ix. Roasting
- c. Demonstrate knowledge of portion control and proper scaling and measurement techniques.
- d. Apply fundamentals of time, temperature, and cooking methods to cooking, cooling, reheating, and holding of a variety of foods.
- e. Prepare various meats, seafood, and poultry products using safe handling and professional preparation techniques.
- 5. Demonstrate leadership qualities and collaboration with others.**
 - a. Demonstrate skills needed by foodservice professionals
 - b. Demonstrate professional employer expectations
 - c. Use people skills to build effective working relationships
 - d. Manage unexpected situations to ensure continuity of quality services.
 - i. Provide feedback to management in order to enhance operations
 - e. Demonstrate proper time management skills
- 6. Apply listening, reading, writing, and speaking skills to enhance operations and customer service in food and beverage facilities.**
 - a. Understand verbal and nonverbal communications
 - i. Listen and understand others
 - ii. Interpret verbal and nonverbal cues to enhance communications with coworkers and customers.
 - b. Demonstrate effective listening, speaking, and writing skills
 - c. Translate various English vocabulary to Inupiaq

Unit 6: Baking and Desserts

- 1. Use information from cultural and geographical studies to guide customer service decisions in food and beverage service facilities.**
 - a. Identify ethnicities and their dining habits and rules
 - b. Identify countries and their native food resources
 - c. Describe or demonstrate how to show respect for the plants and animals
 - i. Spirituality connection between the land and people
 - ii. Explain which foods are appropriate for different occasions
- 2. Demonstrate food safety and sanitation procedures in food and beverage service facilities.**
 - a. Practice appropriate safety and health procedures
 - i. Show exemplary appearance and hygiene
 - ii. Demonstrate proper handwashing
 - iii. Illustrate correct use of knives and kitchen equipment
 - iv. Demonstrate how to maintain a clean and sanitary operation
 - b. Demonstrate safe food handling and preparation techniques
 - i. Prevent cross-contamination and time-temperature abuse
 - ii. Identify criteria for accepting or rejecting food
 - iii. Store food properly
 - iv. Handle ready to eat foods properly
 - c. Identify overall safety procedures necessary to maintain a safe work area.
 - i. Demonstrate emergency first aid and CPR knowledge procedures applicable to the workplace.

- ii. Demonstrate proper waste disposal and recycling methods
 - iii. Demonstrate safe handling and storage of chemicals
 - iv. Understand the different kitchen hazards and their preventions.
- d. Utilize various types of protective clothing, footwear, and equipment.
 - i. Non-slip shoes
 - ii. Aprons
 - iii. Side towels
 - iv. Chef coat
 - v. Chef pants
 - vi. Hair restraints
 - vii. Single-use gloves
- 3. Demonstrate industry standards in selecting, using, and maintain food production and food service equipment.**
 - a. Utilize a variety of equipment for food processing, cooking, holding, storing, and serving.
 - b. Demonstrate safe and secure storage of equipment and tools.
 - c. Demonstrate procedures for cleaning and sanitizing equipment, serving dishes, glassware, and utensils to meet industry standards.
- 4. Demonstrate professional food preparation methods and techniques for all menu categories to produce a variety of food products that meet customer needs.**
 - a. Demonstrate professional skills in safe handling knives, tools, and equipment.
 - b. Demonstrate professional skills for a variety of baking methods:
 - i. Creaming
 - ii. Blooming
 - iii. Tempering
 - iv. Steaming
 - c. Demonstrate knowledge of portion control and proper scaling and measurement techniques.
 - d. Apply fundamentals of time, temperature, and cooking methods to cooking, cooling, reheating, and holding of a variety of foods.
 - e. Prepare various baked good, breads and dessert products using safe handling and professional preparation techniques.
 - f. Demonstrate professional plating, garnishing, and food presentation techniques
- 5. Demonstrate leadership qualities and collaboration with others.**
 - a. Demonstrate skills needed by foodservice professionals
 - b. Demonstrate professional employer expectations
 - c. Use people skills to build effective working relationships
 - d. Manage unexpected situations to ensure continuity of quality services.
 - i. Provide feedback to management in order to enhance operations
 - e. Demonstrate proper time management skills
- 6. Apply listening, reading, writing, and speaking skills to enhance operations and customer service in food and beverage facilities.**
 - a. Understand verbal and nonverbal communications
 - i. Listen and understand others
 - ii. Interpret verbal and nonverbal cues to enhance communications with coworkers and customers.
 - b. Demonstrate effective listening, speaking, and writing skills
 - c. Translate various English vocabulary to Inupiaq



Qatqiññiaġvik Music Program

March 7th, 2019

QATQIÑÑIAGVIK MUSIC - Class Schedule

SPRING 2018

8:00 AM 9:00 AM 10:00 AM 11:00 AM 12:00 PM 1:00 PM 2:00 PM 3:00 PM 4:00 PM 5:00 PM

Sun

MORNING CLASSES (8:00 AM – 12:00 PM)

ATQ K / 1 st	ATQ 2 nd / 3 rd	ATQ 4 th / 5 th / 6 th	NUI 6 th grade						
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Class w/out
EMAN →

ATQ: 4th 5th 6th
8:55 – 9:45

NUI 6th grade
8:50 – 9:40

PIZ: 5th 6th
2:00 – 2:45

PIZ: 9th 12th
2:55 – 3:45

tue

Class w/out
EMAN →

ATQ: 2nd 3rd
8:55 – 9:45

NUI 6th grade
8:50 – 9:40

PIZ: 1st 2nd
2:00 – 2:45

PIZ: 9th 12th
2:55 – 3:45

wed

NUI 6th grade
8:50 – 9:40

AIN: 3rd
12:30 – 1:00

PIZ: 3rd 4th
2:00 – 2:45

thu

Class w/out
EMAN →

NUI 6th grade
8:50 – 9:40

ATQ: 4th 5th 6th
8:55 – 9:45

PHO: 2nd
2:00 – 2:45

PHO: 4th
2:00 – 2:45

PIZ: 9th 12th
2:55 – 3:45

fri

Alternate weekly

NUI 6th grade
8:50 – 9:40

ATQ: 4th 5th 6th
8:55 – 9:45

PIZ: 7th 8th
2:00 – 2:45

PIZ: 9th 12th
2:55 – 3:45

sat

AFTERNOON CLASSES (12:00 PM – 6:00 PM)

AIN 3 rd grade	PHO 2 nd grade	PHO 4 th grade	PIZ 1 st / 2 nd	PIZ 3 rd / 4 th	PIZ 5 th / 6 th	PIZ 7 th / 8 th	PIZ 9 th - 12 th	BHS Afterschool 9 TH - 12 TH		
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Music Classes going on right now!

K-6th: General Music

- Quaver Music Curriculum
- Constant growth in student abilities
- More and more teachers jumping onboard

7th-12th: Intro to Music Performance & Production

- Students are learning to play instruments and use technology simultaneously.
(GarageBand, Zoom, etc.)
- Building *NEW Music Program
- Merging different standards/curriculum (nation-wide)

Standards

- 2018 Quality CTE (CTE Standards)
- Alaska Arts Standards (Music Standards)
- NSBSD I.L.F. (District Standards)
- California Arts CTE Standards (example of Curriculum for H.S.)
- National Career Clusters Framework
- Arizona's Music and Audio Production program (H.S. example)

Qatqinniagvik Music Program

Courses: Fall 2018

Elementary: General Music

Middle/High: Music Performance and Production

Atqasuk – Meade River School

Pre-K: 8 students

K-1st grade: 10 students

2nd-3rd grade: 13 students

4th, 5th, 6th grade: 14 students

Nuigsut – Trapper School

7th-8th grade: 18 students

Wainwright – Alak School

1st grade: 7 students

3rd grade: 13 students

Pt. Lay – Kali School (Week-Long Intensive)

9th-12th: 10 students

Pt. Hope – Tikigaq School (One-Day Music Class Previews)

K-6th: about 40 students

Barrow – Kiita Learning Center

9th-12th: 7 students

About 150 students District-Wide

-Also do visits to Boys & Girls Club to do music activities (about 50 students)

Courses: Spring 2019

Elementary: General Music

Middle/High: Music Performance and Production

Atqasuk – Meade River School

K-1st grade: about 10 students

2nd-3rd grade: about 13 students

4th, 5th, 6th grade: about 14 students

Nuigsut – Trapper School

6th grade: about 7 students

Wainwright – Alak School

3rd grade: about 13 students

Pt. Lay – Kali School (Week-Long Intensive)

1st-2nd: about 13 students

3rd-4th: about 15 students

5th-6th: about 12 students

7th-8th: about 10 students

9th-12th: 2 students

Pt. Hope – Tikigag School

2nd grade: 12 students

4TH grade: 16 students

More classes being added in Pt. Hope and Anaktuvuk Pass soon.

Same classes will continue but expanded to more locations for next semester. As we open the music program to middle school and high school next semester, we are hoping to have our students to participate in...

Course Outlines (K-12th):

- General Music (K-5th)
 - o We are currently using the *Quaver Music Curriculum* and their K-8th sequence. More details are available upon request (too much to fit on this document)

- Intro Music Performance & Production (6th-12th)
 - o Identify and apply fundamentals of basic music theory.
 - o Perform basic recording tasks on a digital audio workstation. (DAW)
 - o Learn basic songs & progressions using sheet music, chord charts, and by rote.
 - o Use technology in conjunction with musical instruments.
 - o Perform basic maintenance on musical instruments and equipment.
 - o Identify major scales, major/minor chords, song patterns, and other foundational principles.

Performance:

- *Rhythms*
 - Identifying the steady beat and meter of a song.
 - Saying rhythms using Kodaly Rhythm Syllables
 - Counting rhythms using numbers. (1, and, 2, and, 3-e-and-a, 4)
 - Applying rhythms to instruments. (Clapping, ukuleles, keyboards)

- Applying rhythms to projects on GarageBand. (Record C major scale in different rhythms)
- *Note Duration*
 - Differences between: Whole notes, Half notes, Quarter notes, Eighth notes, and Sixteenth notes.
 - How does math apply to these notes?
 - Apply various rhythms to a song already made or created. (Record a drum beat)

Production:

- *Digital Audio Workstation (DAW)*
 - Articulate the purpose of a DAW.
 - Understand the different controls and functions in GarageBand.
 - Use GarageBand to produce basic recordings. (Vocals, acoustic instruments, electronic instruments, loops, song parts, radio segments, voice-overs, etc.)
 - Mix different elements in a song together.
 - Ability to use various effects on a sound track or file.

Future Program Goals:

Goal within the next few years: Our hope in the long is to help and play a part in all of the music programs going on in the district, and to have music classes being taught in all villages, in all grades, via VTC, regular site visits, intensives, 1-to-1 lessons, after school programs, and more.

