CONSTRUCTION TRADES TECHNOLOGY (CTT)

CTT F100 Construction Technology Core
3 Credits
Offered As Demand Warrants
Basic construction techniques using OSHA approved standards by stressing how to follow safe work practices and procedures, how to safely use hand and power tools, how to extract information from construction blueprints and drawings, good housekeeping habits, and material handling on the construction site. This course is divided into six modules. Each module must be successfully completed. May be repeated twice for credit. (Alternative: CTT F101; CTT F102; CTT F103; CTT F104.)
Lecture + Lab + Other: 2.5 + 1.5 + 0

CTT F101 Basic Construction Safety
1 Credit
Offered As Demand Warrants
Introduction to basic construction safety using OSHA approved standards. Focus is on safe work practices and procedures, the proper inspection of safety equipment before use and the proper use of safety equipment. (Alternative to CTT F100 when taken with CTT F102; CTT F103; CTT F104.)
Lecture + Lab + Other: 1 + 0.5 + 0

CTT F102 Introduction to Hand and Power Tools
1 Credit
Offered As Demand Warrants
Introduction to basic hand and power tools used in construction and maintenance and the importance of their care and use. Valuable safety usage helps trainees to prevent accidents. Some specialty tools used by different crafts are also introduced. (Alternative to CTT F100 when taken with CTT F101; CTT F103; CTT F104.)
Prerequisites: CTT F101.
Lecture + Lab + Other: 0.5 + 1 + 0

CTT F103 Introduction to Blueprint Reading
1 Credit
Offered As Demand Warrants
Introduction to basic blueprint terms, components and symbols. Different types of construction drawings commonly used on job sites and why each type of drawing is important will be presented. Standardized information contained on blueprints such as identification, revision status, symbols, project titles, dimension and scale will be covered. (Alternative to CTT F100 when taken with CTT F101; CTT F102; CTT F104.)
Prerequisites: CTT F102.
Lecture + Lab + Other: 1 + 1 + 0

CTT F104 Basic Communication and Employability Skills
2 Credits
Offered As Demand Warrants
Techniques for communicating effectively with co-workers and supervisors. Includes critical thinking and problem-solving skills and reviews effective relationship skills, effective presentation and key workforce issues such as sexual harassment, stress and substance abuse. (Alternative to CTT F100 when taken with CTT F101; CTT F102; CTT F103.)
Prerequisites: CTT F103.
Lecture + Lab + Other: 2 + 0 + 0

CTT F106 Construction Mathematics
3 Credits
Offered As Demand Warrants
Introduction to basic mathematical procedures commonly used in the construction and maintenance crafts. Includes multiplication, subtraction, addition, division, working with fractions and measuring areas, volume and capacity of shapes.
Lecture + Lab + Other: 3 + 0 + 0

CTT F110 Residential Carpentry I
8.5 Credits
Offered As Demand Warrants
Introduction to basic materials and framing techniques used in the construction trades. Includes an orientation, introduction to materials and advanced tools used in the trades. Includes techniques used in framing a structure and to exterior doors and windows commonly installed on construction projects and their proper installation. This course is divided into seven modules. Each module must be successfully completed. (Alternative: CTT F111; CTT F112; CTT F113; CTT F114.)
Prerequisites: CTT F100.
Lecture + Lab + Other: 5 + 7 + 0

CTT F111 Materials and Tools Used in the Trade
2.5 Credits
Offered As Demand Warrants
Examines the sources and uses of various softwoods and hardwoods, the grading system for lumber and plywood, composition and uses of various engineered sheet materials and laminated lumber products and the many kinds of fasteners and adhesives used with wood and masonry construction. Expands on the hand and power tool information provided in the construction technology core and introduces the carpentry trainee to additional tools used in the carpentry trade. (Alternative to CTT F110 when taken with CTT F112; CTT F113; CTT F114.)
Prerequisites: CTT F100.
Lecture + Lab + Other: 2 + 1 + 0

CTT F112 Floor Systems, Wall and Ceiling Framing
2 Credits
Offered As Demand Warrants
Focuses on framing basics. Includes the procedures for laying out and constructing a wood floor using common lumber as well as engineered building materials, procedures for laying out and framing walls and ceilings, roughing in doors and window openings, construction corners and partition Ts, bracing walls and ceilings, and applying sheathing. (Alternative to CTT F110 when taken with CTT F111; CTT F113; CTT F114.)
Prerequisites: CTT F111.
Lecture + Lab + Other: 1 + 2 + 0

CTT F113 Roof Framing, Windows and Exterior Doors
2 Credits
Offered As Demand Warrants
Describes the various kinds of roofs and instructions for laying out rafters for gable roof, hip roof and valley intersections. Includes both stick built and truss built roofs, various types of windows, skylights, exterior doors, and instructions for installing weather stripping and lock sets. (Alternative to CTT F110 when taken with CTT F111; CTT F112; CTT F114.)
Prerequisites: CTT F112.
Lecture + Lab + Other: 1 + 2 + 0
CTT F114  Introduction to Concrete Materials and Forms  
2 Credits  
Offered As Demand Warrants  
Introduction to various cements and other materials which when mixed  
form various types of concrete. Includes concrete volume estimates,  
concrete tests, concrete curing methods, reinforcement materials such as  
rebar, bar supports and welded-wire fabric and tasks in the construction  
of foundations and flat work. (Alternative to CTT F110 when taken with  
CTT F111; CTT F112; CTT F113.)  
Prerequisites: CTT F113.  
Lecture + Lab + Other: 1 + 2 + 0

CTT F115  Residential Carpentry--Level II  
12 Credits  
Offered As Demand Warrants  
This course builds upon the skills learned in CTT F110. Includes methods  
and techniques used to locate structures and install exterior siding and  
related element protection. Various types of roofing and installation of  
those materials, types and methods of drywall and its installation and  
interior finish applications. This course is divided into eleven modules.  
Each module must be successfully completed. (Alternative: CTT F116;  
CTT F117; CTT F118; CTT F119.)  
Prerequisites: CTT F110.  
Lecture + Lab + Other: 6 + 12 + 0

CTT F116  Reading Plans and Site Layout--Level I  
2 Credits  
Offered As Demand Warrants  
This course builds upon CTT F110. Introduces the principles,  
equipment and methods used to perform site layout tasks of distance  
measurements, differential leveling and the site layout responsibilities  
of individuals on the site. (Alternative to CTT F115 when taken with  
CTT F117; CTT F118; CTT F119.)  
Prerequisites: CTT F110.  
Lecture + Lab + Other: 1 + 2 + 0

CTT F117  Exterior Finish and Moisture Protection  
2 Credits  
Offered As Demand Warrants  
Introduction to materials and installation techniques used in various  
types of siding. Includes the installation procedures and basic  
requirements for insulation, moisture control and ventilation. (Alternative  
to CTT F115 when taken with CTT F116; CTT F118; CTT F119.)  
Prerequisites: CTT F116.  
Lecture + Lab + Other: 1 + 2 + 0

CTT F118  Roofing, Stairs and Metal Studs Applications  
3 Credits  
Offered As Demand Warrants  
Introduction to materials and installation techniques for a number  
of basic types of roofing. Includes installation techniques of stairs  
and metal studs. (Alternative to CTT F115 when taken with CTT F116;  
CTT F117; CTT F119.)  
Prerequisites: CTT F117.  
Lecture + Lab + Other: 2 + 2 + 0

CTT F119  Drywall and Interior Finish Applications  
5 Credits  
Offered As Demand Warrants  
Introduction to materials, tools and procedures used to install and finish  
gypsum drywall on walls and ceilings and to correct drywall finishing  
problems. Includes installation of various types of doors and their related  
hardware in several types of walls, materials, tools and procedures used  
to lay out, install, and maintain suspended ceilings and the different types  
of trim. (Alternative to CTT F115 when taken with CTT F116; CTT F117;  
CTT F118.)  
Prerequisites: CTT F118.  
Lecture + Lab + Other: 2 + 6 + 0

CTT F121  Train the Trainer  
2 Credits  
Journeypersons are needed to transfer their skills to younger workers  
and this program will provide the skilled person with an intense series  
of discussions related to teaching strategies, classroom management  
and leadership, group dynamics and evaluation of training. Program  
completers may qualify for adjunct status with UAF.  
Prerequisites: Skilled journeyperson in specific skill area.  
Lecture + Lab + Other: 2 + 0 + 0

CTT F130  Introduction to Facility Maintenance  
1 Credit  
Offered As Demand Warrants  
Introduction to building systems and different types of building  
maintenance; deferred, preventative, emergency, proactive and reactive.  
Provides students with basic safety instruction of hand and power tools  
and chemicals used in the facility maintenance occupation in accordance  
with Federal OSHA regulations. Instruction in Personal Protective  
Equipment (PPE) requirements.  
Lecture + Lab + Other: 1 + 0 + 0

CTT F131  Interior Repairs  
1 Credit  
Offered As Demand Warrants  
Provides students with basic skills needed to install and repair drywall.  
Students will learn how to identify components of drywall assembly  
and identify tools and fasteners needed to install drywall. Students will  
identify different materials and proper tools needed in drywall finishing.  
Lecture + Lab + Other: 1 + 0 + 0

CTT F132  Flooring Installation  
1 Credit  
Offered As Demand Warrants  
Introduces students to concepts and practical applications of floor  
coverings. Students will learn how to install underlayment, floor coverings  
and trim. Introduction to special tools necessary for safely and correctly  
installing flooring.  
Lecture + Lab + Other: 1 + 0 + 0

CTT F133  Cabinet Installation with Countertops  
1 Credit  
Offered As Demand Warrants  
Provides students with basic concepts of installing cabinets with  
countertops and identify different types of cabinet construction (stock,  
semi-custom and custom built). Students will be shown be different  
types of wood products and be introduced to special tools. Face-to-face  
instruction and practical application of different techniques of installing  
base cabinets and top or wall cabinets will be shown.  
Lecture + Lab + Other: 1 + 0 + 0
CTT F134  Garbage Disposal Installation
1 Credit
Offered As Demand Warrants
Inform students of the basic knowledge of installing a garbage disposal unit in a basic kitchen cabinet. Students will learn how to use special tools in connecting drain and waste piping and venting systems from a house unit. Students will review safety issues related to the proper handling of plumbing hand and power tools in the installation process.
Lecture + Lab + Other: 0.5 + 1 + 0

CTT F135  Boiler Troubleshooting and Burner Repair
2 Credits
Offered As Demand Warrants
Focuses on the basic components of boilers and burners used in industry for heating residential and commercial properties. Key concepts and strategies related to the process and safety operations of combustion, boiler thermodynamics, control systems, fuel pumps, ignition systems, draft and venting principles and boiler operation according to hydronic principals and Alaska code.
Lecture + Lab + Other: 0 + 0 + 0

CTT F136  Landscaping and Horticulture
2 Credits
Offered As Demand Warrants
Introduces students to the process/procedure of preparing and landscaping a grounded area. Students will be introduced to concepts of placement of appropriate plants and vegetation, maintenance of edged and mowed lawn area, weed and fertilization control and watering schedules.
Lecture + Lab + Other: 2 + 0 + 0

CTT F137  Appliance Troubleshooting and Repair
2 Credits
Offered As Demand Warrants
Provides students with conceptual and practical applications in troubleshooting and repairing appliances. Students will be instructed in diagnostic skills that support repairing and replacing components in various equipment such as refrigerators, washing machines, dishwashers, clothes dryer and oven and cook-tops.
Lecture + Lab + Other: 2 + 0 + 0

CTT F138  Residential Heating Controls
2 Credits
Offered As Demand Warrants
Provides conceptual and practical applications for students wishing to become a residential heating control technician. Topics will explore diagnosis of equipment problems in operation, testing and adjusting conventional and electronic thermostats. Students will also receive instruction on the operation of common electrical and electronic circuits used to control residential heating systems.
Recommended: Instructor approval if student has not taken CTT courses.
Lecture + Lab + Other: 0 + 0 + 0

CTT F150  Plumbing--Level I
4 Credits
Offered As Demand Warrants
Introduction to basic plumbing techniques, math, hand and power tools, extraction of information from construction drawings and materials used in the plumbing trade. This course is divided into ten (10) modules. Each module must be successfully completed. (Alternative: CTT F151; CTT F152; CTT F153; and CTT F154.)
Prerequisites: CTT F110.
Lecture + Lab + Other: 3 + 2 + 0

CTT F151  Introduction to Plumbing Tools and Drawings
1 Credit
Offered As Demand Warrants
Introduction to a plumber’s basic hand and power tools, their care and maintenance, and safety procedures. Includes the basics of reading plumbing blueprints and drawings and specific plumbing drawings such as isometric and oblique pictorial drawings, orthographic drawings and schematic drawings. (Alternative to CTT F150 when taken with CTT F152; CTT F153; and CTT F154.)
Prerequisites: CTT F110.
Lecture + Lab + Other: 1 + 0.5 + 0

CTT F153  Plastic and Copper Pipe and Fittings
1 Credit
Offered As Demand Warrants
Introduction to the various types of plastic and copper pipe used in the plumbing industry. Includes various methods of joining plastic and copper pipe and a variety of fittings commonly found in commercial and residential dwellings. (Alternative to CTT F150 when taken with CTT F152; CTT F153.)
Prerequisites: CTT F152.
Lecture + Lab + Other: 0.5 + 1 + 0

CTT F154  Fixtures, Faucets and Venting Systems
1 Credit
Offered As Demand Warrants
Covers the various types of fixtures plumbers install, including sinks, bathtubs, water closets, garbage disposals, dishwashers and mop basins. An overview of the drain, waste and vent system from inside the building, where the liquid drains into pipes, to the sewer and waste treatment plants. (Alternative to CTT F150 when taken with CTT F151; CTT F152; CTT F153.)
Prerequisites: CTT F153.
Lecture + Lab + Other: 0.5 + 1 + 0

CTT F155  Plumbing--Level II
8 Credits
Offered As Demand Warrants
Introduction to basic plumbing techniques, math, hand and power tools, extraction of information from construction drawings and materials used in the plumbing trade. This course is divided into thirteen modules. Each module must be successfully completed. Generally, each will have two components, a written exam and a hands-on competency test. (Alternative: CTT F156; CTT F157; CTT F158; CTT F159.)
Prerequisites: CTT F150.
Lecture + Lab + Other: 4.5 + 7 + 0

CTT F160  Photovoltaic Systems I
5 Credits
Offered As Demand Warrants
This course is a practical introduction to electric power generation through photovoltaic cells. During this course the student will build a solar panel to understand its operation, installation and maintenance.
Prerequisites: CTT F106 and CTT F100.
Lecture + Lab + Other: 4 + 2 + 0

CTT F161  Photovoltaic Systems II
5 Credits
Offered As Demand Warrants
This course covers practical methods of installing photovoltaic systems in residential settings. The students will also learn basic troubleshooting techniques.
Prerequisites: CTT F160.
Lecture + Lab + Other: 4 + 2 + 0
CTT F170  Residential Electrical--Level I  
9 Credits  
Offered As Demand Warrants  
Introduction to basic electrical techniques, electrical theory, and extraction of information from construction drawings, tools, and materials used in the electrical trades. Course is divided into twelve modules. Each module must be successfully completed. (Alternative: CTT F171, CTT F172, CTT F173, CTT F174.)  
Prerequisites: CTT F115.  
Lecture + Lab + Other: 8 + 2 + 0  

CTT F171  Electrical Safety and Electric Theory  
2 Credits  
Offered As Demand Warrants  
Course covers the safety rules as applied to handling and working with electrical systems and circuits. Includes the required OSHA mandated lockout/tagout procedure, basic electric theory and circuit calculations involving the application of Ohm’s and Kirchoff’s laws. The student is made aware of precautions to take for various electrical hazards found on the job site. (Alternative to CTT F170 when taken with CTT F172, CTT F173, CTT F174.)  
Prerequisites: CTT F115.  
Lecture + Lab + Other: 2 + 0 + 0  

CTT F172  Alternating Current, Electrical Test Equipment and the NEC  
2 Credits  
Offered As Demand Warrants  
Introduction to the principles of alternating current and the operation and applications of various types of electrical test equipment. Includes National Electrical Code. (Alternative to CTT F170 when taken with CTT F171, CTT F173, CTT F174.)  
Prerequisites: CTT F171.  
Lecture + Lab + Other: 2 + 0 + 0  

CTT F175  Residential Electrical--Level II  
8 Credits  
Offered As Demand Warrants  
Introduction to basic electrical techniques, electrical theory and extraction of information from construction drawings, tools and materials used in the electrical trades. This course is divided into ten modules. Each module must be successfully completed. (Alternative: CTT F176; CTT F177; CTT F178; CTT F179.)  
Prerequisites: CTT F170.  
Lecture + Lab + Other: 4 + 8 + 0  

CTT F199  Student Practicum I  
1-3 Credits  
Provides the student the opportunity to practice and develop the skills learned in the classroom. Skills will be developed under the guidance of journeyman and/or qualified personnel on the job site. Course may be repeated twice for a total of three credits.  
Prerequisites: CTT F115.  
Lecture + Lab + Other: 0 + 2.6 + 0  

CTT F240  Introduction to Project Development for Tribal Residential Construction  
3 Credits  
Offered As Demand Warrants  
This course introduces the roles and responsibilities of project managers who manage and supervise the construction of housing projects in rural Alaska. Because they are funded predominantly by the U.S. Department of Housing and Urban Development (HUD) through the Native American Housing Assistance and Self-Determination Act (NAHASDA), projects conducted by rural housing authorities and tribal organizations have unique planning and administrative requirements. Project managers working in rural Alaska also require specialized training due to complicating factors such as problematic soil conditions, materials availability, transportation and other logistical challenges, and variable workforce capacity. Students will gain skills in developing plans and specifications for rural construction projects, ensure building codes are met during project development, and learn processes and materials unique to isolated locations with limited services.  
Prerequisites: CIOS F150, CTT F106, Certificate in Construction Trades Technology.  
Lecture + Lab + Other: 3 + 0 + 0  

CTT F241  Introduction to Estimating, Cost Control, and Quality Control for Tribal Residential Construction  
3 Credits  
Offered As Demand Warrants  
This course builds upon the skills obtained in CTT F240 by introducing the roles and responsibilities of project managers relative to project scheduling, estimating, cost control and quality control. Because they are funded predominately by the U.S. Department of Housing and Urban Development (HUD) through the Native American Housing Assistance and Self-Determination Act (NAHASDA), projects conducted by rural housing authorities and tribal organizations have unique planning and administrative requirements. Students will learn to use project scheduling and cost control tools which incorporate these requirements and that have been developed for and proven effective in the management of residential construction projects in rural Alaska. Complicating factors for rural Alaska projects such as materials availability, transportation and other logistical challenges, variable workforce capacity, and complex political environment as they relate to project estimating, cost control and quality assurance will also be discussed.  
Prerequisites: CTT F240, Certificate in Construction Trades Technology.  
Lecture + Lab + Other: 3 + 0 + 0  

CTT F250  Current Topics in Construction Trades  
1-3 Credits  
Offered As Demand Warrants  
Various topics of current interest in the Construction Trades. Topics announced prior to each semester. Course may be repeated for credit.  
Prerequisites: CTT F100.  
Recommended: CTT F106.  
Lecture + Lab + Other: 1.3 + 0.5:1.5 + 0  

CTT F299  Student Practicum II  
1.5 Credits  
Offered As Demand Warrants  
Provides the student the opportunity to practice and develop the skills learned in the classroom. Skills will be developed under the guidance of journeyman and/or qualified personnel on the job site.  
Prerequisites: CTT F155.  
Lecture + Lab + Other: 0 + 3 + 0
CTT F299P  Student Practicum II
1.5 Credits
Offered As Demand Warrants
Provides the student the opportunity to practice and develop the skills
learned in the classroom. Skills will be developed under the guidance of
journeyman and/or qualified personnel on the job site.
Prerequisites: CTT F155.
Lecture + Lab + Other: 0 + 3 + 0