

CARPENTRY COMPETENCIES
 South King County Tech Prep Consortium
 Green River Community College

SECTION I Basic Skills and Knowledge CARP 101.2 = 3 cr	
Unit 1: Carpentry as a Career	
1.01	Display behavior consistent with acceptable work habits, safety practices and interpersonal attributes
1.02	Use problem solving skills. Both Group and Individual
1.03	Understands relationships between contractors and subs and position of managers and trade unions
1.04	Can state at least 6 career opportunities in the field of construction
Unit 2: Carpentry Math	
2.01	Use algebraic concepts to solve practical math problems
2.01.1	Add & subtract whole numbers
2.01.2	Multiply & Divide Whole number
2.01.3	Add & subtract fractions
2.01.4	Multiply & divide fractions
2.01.5	Add & subtract decimal fractions
2.01.6	Multiply & divide decimal fractions
Unit 3: Materials, Fasteners and Hardware	
3.01	Identify and correctly/safely use material, fasteners and hardware common to the carpentry trade
3.01.1	Nail sizing and types
3.01.2	Screw sizing and types
3.01.3	Structural lumber sizing, grading, species, common application
3.01.4	Structural sheathing sizing, grading, species, common applications
3.01.5	Construction adhesives and sealants
3.01.6	Anchors, holddowns, strapping
3.01.7	Pneumatic fasteners
Unit 4: Measuring Tools	
4.01	Use linear measurement tools and gauges to tolerances of +/- 1/16"
4.01.1	Ruler
4.01.2	Speed square
4.01.3	Framing square
4.01.4	Elevation Rod
4.01.5	Leveling Instruments
4.01.5.1	Builder level
4.01.5.2	Laser Level
4.01.5.3	Water Level
4.01.5.4	Transit Level
4.01.6	Chalk line
4.01.7	Dry line
4.01.8	Plumb
Unit 5: Hand Tools	
5.01	Follow hand tool safety guidelines
5.02	Correctly and safely use hand tools common to the carpentry trade
5.02.1	Hammers
5.02.2	Chisels
5.02.3	Hand saws
5.02.4	Planes
5.02.5	Prying tools (nail pullers, crow bars, ripping chisels)
Unit 6: Portable and Pneumatic Tools	
6.01	Follow portable and pneumatic tool safety guidelines
6.02	Use portable and pneumatic tools
6.02.1	Circular saws
6.02.2	Drill motors
6.03.3	Reciprocating saws
6.03.4	Saber saws
6.02.5	Power plane

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	6.02.6	Compressors
	6.02.7	Pneumatic nailers
	6.02.8	Table saw
	6.02.9	Jointer
	6.02.10	Drill Press
	6.02.11	Sanding machines
	6.02.12	Miter saws
	Unit 7: Construction Safety	
7.01	Handle and store materials	
7.02	Erect/use ladders and scaffolding	
7.03	Be aware of and comply with OSHA/WISHA Construction Safety Standards	
	7.03.1	Part A - General Safety and Health Provision
	7.03.2	Part B - Occupational health and environmental control
	7.03.4	Part C - Personal Protective and Life saving equipment
	7.03.5	Part F - Material Handling
	7.03.6	Part J - Stairways and Ladders
	7.03.7	Part K - Floor openings, Wall openings and Stairways
	Unit 8: Blue Print Basics	
8.01	Read/use sketches, plans and blueprints	
	8.01.1	Use/read drawing scales
	8.01.2	Interpret symbols and abbreviations
	8.01.3	Interpret basic floor plans
	8.01.4	Interpret elevation plans
	8.01.5	Interpret sectional and detail plans
	8.01.6	Read construction notes
	SECTION II CONCRETE FORM WORK AND PLACEMENT CARP 101.1 = 3 cr	
	Unit 9: Types and Terminology	
9.01	Identify and know types of concrete and terminology	
9.02	Use industry vocabulary	
	Unit 10: Building Layout	
10.01	Layout Buildings	
	10.01.1	Read site plans
	10.01.2	Locate building corners
	10.01.3	Construct batter boards
	10.01.4	Use 3-4-5 rule to check for square
	10.01.5	Use builder transit to check for square
	10.01.6	Use $A^2 + B^2 = C^2$ to check for square
	10.01.7	Determine Finish Floor Height
	10.01.8	Determine Footing Depth
	Unit 11: Footing Forms	
11.01	Construct Footing and Pier Forms	
	11.01.1	Interpret Foundation Plans
	11.01.2	Know UBC concerning Footing Requirement
	11.01.3	Construct footing ribbon form to accepted practice
	11.01.4	Level Footing Forms
	11.01.5	Install re-bar per UBC
	11.01.6	Construct Stepped Footings
11.02	Calculate Concrete Volume	
	11.02.1	Determine total cubic yards of concrete for a set of footings/piers
11.03	Placing concrete	
	11.03.1	Place concrete from chute
	11.03.2	Place concrete from pump truck
	11.03.3	Screed concrete Level and straight

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	Unit 12: Wall Forms
12.01	Construct Wall Forms
	12.01.1 Interpret Foundation Plans
	12.01.2 Locate wall lines
	12.01.3 Build single lift foundation wall
	12.01.4 Build 2-4 lift foundation wall using forming hardware
	12.01.5 Locate anchor bolts
	12.01.6 Brace and plumb forms
	12.01.7 Install opening bucks
	12.01.8 Install re-bar per UBC
	12.01.9 Determine final wall height and locate and snap lines
12.02	Calculate Concrete Volume
	12.02.1 Estimate cubic yards of concrete for a single lift wall
	12.02.2 Estimate cubic yards of concrete for a 2-4 lift wall
12.03	Placing Concrete
	12.03.1 Place concrete in wall forms with chute
	12.03.2 Place concrete in wall forms with Pump Truck
	Unit 13: Materials and Specifications
13.01	Estimate concrete for projects
13.02	Identify other foundation materials and products and know their application
	SECTION III FRAMING LEVEL I CARP 102.1 = 2 cr and 102.2 = 3 cr
	Unit 14: Types and Terminology
14.01	Identify floor, wall and truss roof framing styles and structural members
	14.01.1 Identify grade, species, and nominal sizes of framing structural members
14.02	Use floor, wall and truss roof framing terms and vocabulary
	Unit 15: Framing Layout Methods
15.01	Perform Floor, wall and truss roof layout
	15.01.1 Know why most framing members are placed at 16" O.C.
	15.01.2 Know how to read floor, wall and truss roof framing plans
	15.01.3 Layout for standard members 16" O.C. +/- 1/16"
	15.01.4 Layout and label "specials" as shown on plans +/- 1/16"
	Unit 16: Floor Construction
16.01	Frame wooden floor systems
	16.01.1 Read and interpret floor framing plans
	16.01.2 Identify common floor framing structural members
	16.01.2.1 Standard framing material
	16.01.2.2 Engineered/composite framing material
	16.01.3 Check foundation for square, level and locate high corners
	16.01.4 Install mud sill level and straight
	16.01.5 Frame pony walls level/plumb and to UBC requirements
	16.01.6 Locate, layout and install post & girders level & straight to UBC requirements and/or plan specifications
	16.01.7 Layout for floor joist 16" O.C. and 19.2"
	16.01.7.1 Explain the purpose of 19.2" O.C. layout
	16.01.8 Layout for stair and access openings
	16.01.9 Layout for other specials (double joist, bearing points, etc.)
	16.01.10 Locate and label crown on standard joist
	16.01.11 Roll out joist safely and correctly
	16.01.12 Install joists, specials and rim joists to UBC requirements and/or plan specifications
	16.01.12.1 Identify and install floor framing hardware to UBC requirements and/or specification
	16.01.13 Install blocking and bridging to UBC requirements and/or plan specifications
	16.01.14 Install sub-floor to UBC requirements and/or plan specifications
	16.01.15 Understand and comply with OSHA/WISHA Construction Safety Standards

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	Unit 17: Wall and Ceiling Constructions
17.01	Frame and erect exterior and interior walls
	17.01.1 Read and interpret floor plans
	17.01.2 Check floor for square and level
	17.01.3 Locate, snap and label wall lines
	17.01.3.1 Describe how to "preserve" chalk lines
	17.01.4 Cut plates to correct length and tack to wall lines
	17.01.5 Determine rough openings for doors and windows
	17.01.6 Layout and label specials
	17.01.6.1 Exterior and interior doors
	17.01.6.2 Vinyl, wood, aluminum windows
	17.01.6.3 Intersecting walls, corners, bearing/load points, beam pockets
	17.01.7 Layout and label stud locations
	17.01.8 Calculate and develop material cutting list
	17.01.8.1 Stud lengths
	17.01.8.2 Trimmers, headers, sills, cripples
	17.01.9 Assemble wall framing members to UBC requirements and/or plan specifications
	17.01.10 Square walls
	17.01.11 Install sheathing material to UBC requirements and/or plan specifications
	17.01.12 Raise, brace, plumb, secure, tie in, and straighten walls
	17.01.13 Install beams/girders to UBC requirements an/or plan specifications
	17.01.14 Layout and construct rake walls
	17.01.15 Layout and install ceiling joist
	17.01.16 Understand and comply with OSHA/WISHA Construction Safety Standards
	Unit 18: Truss Roof Construction
18.01	Layout, erect, brace and sheath a truss roof system
	18.01.1 Identify 6 different types of trusses
	18.01.2 Interpret truss installation guide and specifications
	18.01.3 Locate, layout and label truss locations
	18.01.4 Load truss package(s) on walls in proper locations and orientation
	18.01.5 Understand and comply with OSHA/WISHA regulations regarding working on elevated surfaces and roofs
	18.01.6 Erect, brace and plumb trusses to standard practice
	18.01.7 Install blocking to standard practice
	18.01.8 Install look-outs, barge rafters, and fascia material to standard practice
	18.01.9 Install sheathing to UBC requirements and/or plan specifications
	18.01.10 Understand and comply with OSHA/WISHA Construction Safety Standards
	Unit 19: Materials and specifications
19.01	Identify and install various materials and fasteners related to framing
	19.01.1 Nails
	19.01.2 Screws
	19.01.3 Standard structural lumber
	19.01.4 Engineered and composite structural lumber
	19.01.5 Adhesives
	19.01.6 Hardware and connectors
	Unit 20: Light Steel Construction
20.01	Identify and install various light steel framing members
	20.01.1 Identify and use tools for cutting and installing metal stud material
	20.01.2 Install metal track and metal studs to standard practice
	SECTION IV EXTERIOR FINISH CARP 103.1 = 3 cr
	Unit 21: Types and Terminology
21.01	Identify exterior finishes types and specialized tools as well as use industry terminology
	Unit 22: Roof Coverings

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22.01	Identify and apply asphalt shingles
	22.01.1 Identify 3-tab and architectural style shingles
	22.01.2 Understand and comply with OSHA/WISHA regulations regarding working on elevated surfaces and roofs
	22.01.3 Install roof felt to standard practices
	22.01.4 Install starter course to standard practice
	22.01.5 Cut "book" for 3 tab shingles
	22.01.6 Install asphalt shingles to standard practice
	22.01.6.1 Hand nail shingles
	22.01.6.2 Pneumatic fasteners
	22.01.7 Install roof vents
	22.01.7.1 Roof Jacks
	22.01.7.2 Ridge Vents
	22.01.8 Install shingles in a valley to standard practice
	22.01.9 Identify and install flashing to standard practice
	22.01.10 Understand and comply with OSHA/WISHA Construction Safety Standards
22.02	Identify and explain basic installation of other types of roof coverings
	22.02.1 Shakes
	22.02.2 Shingle
	22.02.3 Cement/Fiberglass tile
	22.02.4 Metal
	Unit 23: Door and Window Installation
23.01	Install doors and windows
	23.01.1 Check rough openings for plumb and level
	23.01.2 Flash openings to standard practices
	23.01.3 Install exterior doors plumb, level and operating freely
	23.01.4 Install sliding patio doors plumb, level and operating freely
	23.01.5 Install vinyl/aluminum windows plumb, level and operating freely
	23.01.6 Install door hardware neatly and securely
	Unit 24: Siding and Trim Installation
24.01	Apply Siding
	24.01.1 Interpret elevation views to determine exterior trim material
	24.01.2 Identify standard siding material
	24.01.2.1 Cedar Bevel/clapboard
	24.01.2.2 T-1-11/Sheet Material
	24.01.2.3 Composite/laminate siding
	24.01.2.4 Vinyl
	24.01.2.4.1 Identify vinyl siding accessory pieces
	24.01.3 Install building paper/house wrap to standard practice
	24.01.3.1 Explain purpose of building paper/house wrap
	24.01.4 Install outside and inside corners to standard practice
	24.01.5 Layout and explain purpose of story pole
	24.01.6 Install horizontal siding to standard practice
	24.01.7 Install Sheet siding to standard practice and UBC requirements
	24.01.8 Install window/door trim to given specifications
	24.01.9 Apply caulking & flashing to standard practice
	24.01.10 Understand and comply with OSHA/WISHA regulations regarding scaffolding and ladders
	24.01.11 Understand and comply with OSHA/WISHA Construction Safety Standards
	Unit 25: Materials and Specifications
25.01	Identify and specify products/tools related to exterior trim
	SECTION V INTERIOR FINISH CARP 103.1 = 3 cr
	Unit 26: Types and Terminology
26.01	Identify terms, types, specialized tools and use industry vocabulary pertaining to interior finish

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	Unit 27: Insulation and Sound Control
27.01	Install insulation and sound control material
	27.01.1 Identify different types of insulation and its R-value
	27.01.1.1 Batts
	27.01.1.2 Blown in
	27.01.1.3 Polyurethane
	27.01.2 Install batt insulation to Washington State Energy Code Requirements
	27.01.3 Identify different types of vapor barriers and explain their purpose
	27.01.4 Describe basic requirements of the Washington State Energy Code
	27.01.5 Understand and comply with OSHA/WISHA Construction Safety Standards
	Unit 28: Interior Wall and Ceiling Finish
28.01	Install and tape drywall to standard practice
	28.01.1 Know the different types and application requirements of drywall
	28.01.2 Check walls for plumb, straight, & square
	28.01.2.1 Correct walls for errors
	28.01.3 Measure, cut and install drywall to standard practice
	28.01.4 Locate and cut out openings for outlets using router with spiral cutter
	28.01.5 Know UBC requirements for securing drywall
	28.01.6 Identify drywall metal/vinyl accessories
	28.01.7 Install corner beading
	28.01.8 Apply drywall tape and compound using hand tools
	28.01.9 Repair/patch holes or damage in drywall
28.02	Identify material and components of a suspended ceiling system
	28.02.1 Describe how a suspended ceiling is installed
	Unit 29: Installing Interior Doors
29.01	Install interior doors
	29.01.1 Identify typical interior doors and accessories
	29.01.2 Check and correct rough openings for plumb and square
	29.01.3 Install passage way doors and hardware
	29.01.4 Install bi-fold doors and hardware
	29.01.5 Install pocket doors and hardware
	29.01.6 Install bi-pass doors and hardware
	29.01.7 Layout and install hinges for door blank
	29.01.8 Build jamb for door blank and assemble door/jamb unit
	Unit 30: Standing and Running Trim
30.01	Install standing and running trim
	30.01.1 Layout and cut butt, mitered and coped joints
	30.01.2 Measure and layout a room for base
	30.01.3 Cut, fit and install base to "no trace" standards
	30.01.4 Measure, cut, fit and install door casing with equal reveals to "no trace" standards
	30.01.5 Measure, cut, fit and install contemporary and traditional window trim to "no trace" standards
	Unit 31: Cabinet Installation
31.01	Install Kitchen/Bath Cabinets
	31.01.1 Know Kitchen/bath cabinet standard sizes
	31.01.2 Check walls and floors for plumb and level prior to installation
	31.01.3 Locate high floor corner
	31.01.4 Establish level line
	31.01.5 Locate studs/backing
	31.01.6 Install base and wall cabinet level, plumb and square
	31.01.7 Assembly modular cabinets together
	31.01.8 Reinstall door and drawers and align properly
31.02	Construct/install countertops
	31.02.1 Install sub-strate level, straight and smooth

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	31.02.2	Layout, cut, and fit plastic laminate
	31.02.3	Install plastic laminate to standard practice
	31.02.4	Create/install self edge
	31.02.5	Trim, smooth, clean and finish plastic laminate to "no trace" standard
	Unit 32: Materials and Specifications	
32.01	Identify materials, fasteners, tools and equipment used in interior finish applications	
	BASIC CABINET CONSTRUCTION CARP 146 = 4 cr	
1.	Identify and select common hardwoods and softwoods	
	a.	Understands softwood/hardwood grading system
	b.	ID plain sawn, quarter sawn and rift sawn softwood, hardwood
	c.	ID white oak, red oak, birch, maple, alder
	d.	ID pine, spruce, fir, hemlock
2.	ID and select various hardwood and softwood plywood	
	a.	Understands softwood/hardwood grading system
	b.	ID quarter sliced, plain sliced, rotary cut veneers
	c.	ID book, slip, random "V" matched veneers
3.	ID and select various sheet goods common to cabinetry	
	a.	ID high density particle board.
		Describe advantages and disadvantages
		Describe machineability
	b.	ID melamine
		Describe advantages and disadvantages
		Describe machineability
	c.	ID medium density fiberboard
		Describe advantages and disadvantages
		Describe machineability
	d.	ID masonite
		Describe advantages and disadvantages
		Describe machineability
4.	Set up and use jointer correctly and safely	
	a.	Set up fence square and at 45 degrees
	b.	Zero in front and rear tables
	c.	Set required depth of cut
	d.	Joint edges straight and square
	e.	Describe and demonstrate safe operation for various sizes of material
	f.	Describe safety guidelines related to jointer
5.	Set up and use surface/planer correctly and safely	
	a.	Describe and demonstrate how to set up for first initial cut
	b.	Describe and demonstrate how to plane material to a set thickness
	c.	Describe safety guidelines related to surfacer
6.	Set up and use table saw correctly and safely	
	a.	Identify common blades used in basic cabinetry
	b.	Demonstrate how to change blades
	c.	Describe and demonstrate how to safely rip large and small pieces
	d.	Describe and demonstrate how to use miter gage
	e.	Describe and demonstrate how to use a "cut-off" box
	f.	Describe and demonstrate how to prevent "kick backs"
	g.	Describe safety guidelines related to the table saw
7.	Set up and use router and router tables	
	a.	Describe how routers are sized
	b.	Identify and correctly install router bits related to basic cabinetry
	c.	Describe and demonstrate how to correctly use hand held routers
	d.	Describe and demonstrate how to correctly set up and use a simple router table

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	e. Describe safety guidelines related to routers and router tables
8.	From basic shop drawing develop a cutting list for all required parts
	a. Interpret all given dimension
	b. Identify all joinery required
	c. Develop a cutting list that calls out length, width and thickness of all parts
9.	Layout, cut, and assemble basic cabinetry joints using various woodworking machinery
	a. Butt joints
	b. Rabbet joints
	c. Dado joints
	d. Doweled butt joints
	e. Blind screw joints
	f. Miter joints
	g. Biscuit joints
10.	Layout, cut, and assemble face frames to specifications
	a. Identify faceframe parts by proper terminology
	b. Cut all pieces within 1/32" of required spec's
	c. Use proper glues and fasteners to assemble
11.	Layout, cut and assemble cabinet carcass
	a. All dimensions within 1/32" of given dimensions
	b. Use various fasteners and glues to assemble
	c. Carcass square within 1/32"
12.	Identify and use common cabinet fasteners
	a. ID and use common wood screws
	b. ID and use specialized wood screws
	c. ID and use common nails
	d. ID and use common pneumatic fasteners
13.	Identify and machine various overlay doors and drawer fronts
	a. Machine and install 30 degree Bevel Door/drawer front
	b. Machine and install 3/8" rabbet door/drawer front
14.	Layout, construct and install basic drawer boxes
	a. Machine and assemble basic butt joint drawer box
	b. Machine and assemble basic rabbet joint drawer box with dadoed bottom
	c. Install basic BLUM drawer guide hardware
	d. Describe and demonstrate installing drawer fronts
15.	Prep wood surface
	a. Identify and use various grits and types of sanding paper
	b. Safely and correctly use belt, palm and orbital sanders
	c. Describe and demonstrate how to remove moderate dents in wood 15.3.1 steaming
	d. Identify and use various putties
	e. Prep all exposed cabinet surfaces to a scratch-free finish
16.	Set up, correctly use and maintain pneumatic nailers
	a. Finish nail guns
	b. Brad nail guns
	c. Staple guns
17.	Use and understand terminology related to basic cabinet construction
	a. Carcass parts
	b. Hand tool names
	c. Material names
	d. Machining terms
	Approved 09/30/09