

Wisconsin Technical College System

Curriculum Standards & Program Design Summary

50-410-1 CARPENTRY (CONSTRUCTION) APPRENTICE

Program Information

Program Description

Carpenters construct, erect, install or repair structures and fixtures made of wood; concrete forms; building frameworks including partitions, joists, studding and rafters; wood stairways, window and door frames; and hardwood floors using carpentry hand and power tools. They build wood framing for houses, roofs, stairs, decks and sheaths, and forms for concrete and frame buildings, walls, footings, columns and stairs. The trade also involves carpentry work to install cabinets, siding, drywall rails, building cabinets and counter tops and may include work on drywall, wood flooring, metal jambs and ceilings. They are skilled in interior and exterior finish work and are able to read blueprints, measure accurately and calculate dimensions.

There are several different types of carpenters that specialize in one or more of these many tasks, including the following types: Cabinet Maker Construction Floor Coverer Interior Systems Millwright Pile Driver. Apprentices who complete this apprenticeship have the opportunity to transfer course credits towards an AAS degree at one or more of the WTCS colleges.

Career/Job Titles

Carpenter Apprenticeship
Cabinet Maker
Construction
Floor Coverer
Interior Systems
Millwright
Pile Driver

Accreditation & Program Alignment Information

Competencies included in this program and curriculum model align with the North Central States Regional Carpentry Council's training program and UBC apprenticeship training standards.

External Requirements

- 4 year training program
- 6,240 hours on-the-job training
- 400 hours paid related instruction
- 250 hours unpaid related instruction
- Apprentice must, during their first two years, complete Red Cross First Aid and CPR Training courses.
- Apprentice must in his/her final year complete the Transition-To-Trainer course

Entry Requirements

- Applicants must be at least 17 years of age
- High school diploma or equivalent

- Meet required norms on aptitude test (if required)
- Physically able to perform trade
- Valid driver's license or reliable transportation

Program Configurations

50-410-1 WTCS Program Configuration Model for Construction Carpentry Apprenticeship Related Instruction

This program configuration model serves as a curriculum standard for related instruction in the Construction Carpentry apprenticeship. The model provides 7 semesters (terms) of related instruction, with each term having 80 hours each. The model outlines a total of 560 hours of related instruction with an additional 90 hours listed under local options.

Each term includes two courses, and each course is shown in a block schedule format of one 40-hour week. Alternative schedules may be developed in order to meet local needs, with the recommendation that the total hours of instruction be equivalent. Colleges and instructors may want to design capstone projects, papers, or team activities for use in the final course. The course may be used for review, refreshing certifications, and summative assessment. The Transition to Trainer course may be included in the last term or taken independently based on needs.

An additional term for unpaid related instruction is shown here at 90 hours to complete the training requirements. Local committees and colleges may consider local options as needed to provide URI. Required courses under URI are not established at this time.

Credits & Hours

1 - Occupation Specific 14.00 credits and 560 hours in 7 terms

2 - Occupation Supportive 0.00 (Transition-to-Trainer @ 8 hours if taken independently)

4 - Elective 2.50 (Shown here as 90 hours for local options for colleges and committees)

Total Credits 16.50 Credits and 650 total hours

Term 1

Course #	Course Title	Credits & Hours	Course Description
50-410-715	Construction Carpentry Safety	1.00 40 hrs.	Apprentices will be introduced to safe work practices, safety requirements, and personal protective equipment. Instruction includes the OSHA 10 course requirements, with an optional recommended Mine Safety and Health Act (MSHA) 6-hour safety certification. In addition, first aid, CPR, and AED training is included. Forklift safety and operations training and certification, rough terrain vehicle operations and safety, and aerial lift certifications are included. Construction trade safety best practices will be discussed. Hands-on training in construction vehicle operation as required for certification may be included in the course.

50-410-716	Scaffold Erector and Tool Safety for Carpentry Apprentices	1.00 40 hrs.	Apprentices will learn about scaffold systems, safety, and assembly in this course. Additional topics include tool safety and basic blueprint reading. Tube and clamp, welding frame, and mobile towers will be compared. Common scaffold systems and set-ups for various job site situations will be discussed. Beginning tool safety for protecting workers, equipment and property will be examined. Blueprint reading skills will be introduced. Optional scaffold certifications may be included in the course.
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Term 2

Course #	Course Title	Credits & Hours	Course Description
50-410-717	Basic Welding for Carpentry Apprentices	1.00 40 hrs.	Basic welding for the trade will include arc and wire welding. Welding principles will be discussed and basic processes examined. Safety, set-up, and welding techniques commonly used by the trade will be addressed. Skill development will include basic arc and wire welding as well as burning, torching, and plasma cutting. Blueprint reading, safety, and applicable commercial building codes will be reviewed.
50-410-718	Rigging & Signaling for Carpentry Apprentices	1.00 40 hrs.	Apprentices will examine safety and operating requirements associated with rigging and signaling. Rigging hardware and operations will be reviewed. Skills using voice signals and hand signals will be developed. Rigging and signalling safety certifications are recommended and may be optional course topics based on need.

Term 3

Course #	Course Title	Credits & Hours	Course Description
50-410-719	Site Development for Carpentry Apprentices	1.00 40 hrs.	This course will expose apprentices to trade practices related to site development. Use of a transit and level will be covered and skills developed related to working with building layouts. Elevation specifications and symbols will be examined. Total station fundamentals will be applied to various job sites. Blueprint reading, commercial building codes, safety, and related concepts when working on a job site.
50-410-720	Concrete Forms for Carpentry Apprentices	1.00 40 hrs.	Apprentices will explore trade practices related to concrete forms. Course topics include Symons handset forms, MEVA gang forming, hardware and rebar requirements, reinforcement techniques and concrete science. Key principles involved in slump testing and preparing concrete will be discussed. Blueprint reading, safety, commercial codes, and related requirements will be addressed in the course.

Term 4

Course #	Course Title	Credits & Hours	Course Description
50-410-721	Shoring & Floor Construction for Carpentry Apprentices	1.00 40 hrs.	Apprentices will learn trade practices involving concrete shoring and floor construction. Course topics include elevated slabs and beams, EFCO systems, decks and Ellis clamps, plywood and concrete systems, precast and tilt-up slabs, and slab-on-grade with slopes. Hands-on learning opportunities related to the course topics are included. Codes, safety, blueprint reading and other related requirements will be included.
50-410-722	Wall Construction for Carpentry Apprentices	1.00 40 hrs.	Apprentices will learn about wall construction techniques involved with wood framing. Course topics include stick framing walls and headers, wood framing practices, drywall and insulation, drywall taping, and wall finishing. Blueprint reading, safety, and tool use are included. Commercial building codes related to wall construction will be reviewed.

Term 5

Course #	Course Title	Credits & Hours	Course Description
50-410-723	Metal Framing for Carpentry Apprentices	1.00 40 hrs.	Apprentices will learn about metal framing requirements related to commercial building codes. Blueprint reading and safety related to metal stud work are included. Course topics include structural studs, walls and shafts, soffits, joists, firestops, and other related concepts. Hands-on skill development in cutting studs for various job requirements is included.
50-410-724	Interior Finishing for Carpentry Apprentices	1.00 40 hrs.	Apprentices will explore interior finishing techniques related to the trade. Trim and paneling will examine baseboard, casing, sills, jams, trims, and paneling installations. Cabinets and backing installation and blueprints are included in the course. Laminate and solid surface installation and manufacturing will be discussed. Acoustical ceiling basics, layouts, mains, and math are addressed.

Term 6

Course #	Course Title	Credits & Hours	Course Description
50-410-725	Exterior Finishing and Doors for Carpentry Apprentices	1.00 40 hrs.	Apprentices will examine exterior finishing and doors systems in this course. Exterior finishing topics include installation of windows and siding following specifications provided on blueprints. Door systems includes hollow metal door frames; doors; door hardware, hangers and closures; and other related components. Blueprint reading, commercial building codes, and other requirements for doors and exteriors will be covered.

50-410-726	Roof Framing for Carpentry Apprentices	1.00 40 hrs.	Apprentices will apply blueprint reading skills to roofing systems and framing requirements. Rafters, gables, hips, intersecting, valleys, cornices and trusses will be covered. Course includes the installation of pre-engineered components as well as the awareness of how to make trusses and related components. Applicable commercial building codes, safety requirements, and related concepts will be addressed.
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Term 7

Course #	Course Title	Credits & Hours	Course Description
50-410-727	Stair Design and Building for Carpentry Apprentices	1.00 40 hrs.	Examine stair design, layout, and building in this course. Interpret blueprints and building codes related to stairs and ADA accessibility. Layout and frame wood, metal and concrete stairs based on codes and standards. Build stairs in team or class projects. Apply use of concrete forms to stairways. Review and apply commercial codes to stairway construction for public buildings.
50-410-728	Final Capstone Course for Carpentry Apprentices	1.00 40 hrs.	This course is intended as a final review and comprehensive assessment. Review blueprint reading, math, commercial building codes, and other material covered in the program will be reviewed as needed. Apprentices may explore current issues, and emerging trends or technologies as appropriate. Opportunities for capstone hands-on projects or team activities may be designed by instructors for this course. The course may also provide opportunities to refresh trade certifications and could include the Transition to Trainer course based on need.
47-455-455	Transition to Trainer: Your Role as a Journey Worker	0.00 8 hours	<p>Apprenticeship training is a collaborative partnership: employer and employee associations, government, and educational institutions each play a part. In reality, most learning takes place through the daily interaction between an apprentice and his/her co-workers. Surveys have shown that the apprentices are least satisfied with the on-the-job portion of their training--particularly the ability of journey level workers and supervisors to pass on their knowledge of the trade.</p> <p>You have already learned to use the tools of your chosen trade. In this workshop you will be introduced to a new set of basic tools--the tools of a jobsite trainer. You will explore the skills that are necessary to be an effective trainer, discover how to deliver hands-on training, and examine the process for giving useful feedback. During the workshop you will build a Training Toolkit to take back to your work on the job.</p>

Local Options and Unpaid Related Instruction

Course #	Course Title	Credits & Hours	Course Description
Varies	Local Options as needed	2.50 90 hours	4 - Elective

Wisconsin Technical College System
50-410-715 Construction Carpentry Safety
Course Outcome Summary

Course Information

Description Apprentices will be introduced to safe work practices, safety requirements, and personal protective equipment. Instruction includes the OSHA 10 course requirements, with an optional recommended Mine Safety and Health Act (MSHA) 6-hour safety certification. In addition, first aid, CPR, and AED training is included. Forklift safety and operations training and certification, rough terrain vehicle operations and safety, and aerial lift certifications are included. Construction trade safety best practices will be discussed. Hands-on training in construction vehicle operation as required for certification may be included in the course.

Total Credits 1.00 & 40 hours

Course Competencies

- 1 Complete the OSHA 10 course requirements
- 2 Complete the Millwright 16 hour safety course requirements (OSHA 10 plus 6 hours for MSHA class)
- 3 Complete Red Cross First Aid certification course
- 4 Complete CPR course and AED training
- 5 Complete industrial forklift certification.
- 6 Complete rough terrain heavy tires vehicle operations training
- 7 Complete aerial lift certification with hands on operations

Wisconsin Technical College System

50-410-716 Scaffold Erector and Tool Safety for Carpentry Apprentices

Course Outcome Summary

Course Information

Description Apprentices will learn about scaffold systems, safety, and assembly in this course. Additional topics include tool safety and basic blueprint reading. Tube and clamp, welded frame, and mobile towers will be compared. Common scaffold systems and set-ups for various job site situations will be discussed. Beginning tool safety for protecting workers, equipment and property will be examined. Blueprint reading skills will be introduced. Optional scaffold certifications may be included in the course.

Total Credits 1.00 & 40 hours

Course Competencies

- 1 Demonstrate tube & clamp scaffold assembly and applications
- 2 Demonstrate welded frame scaffold assembly and applications
- 3 Examine mobile tower scaffolding systems
- 4 Compare scaffold systems, components, and safety for various trade practices
- 5 Explore beginning tool safety for the trade
- 6 Read basic blueprints used in construction and carpentry
- 7 Complete UBC scaffold certification requirements

Wisconsin Technical College System

50-410-717 Basic Welding for Carpentry Apprentices

Course Outcome Summary

Course Information

Description Basic welding for the trade will include arc and wire welding. Welding principles will be discussed and basic processes examined. Safety, set-up, and welding techniques commonly used by the trade will be addressed. Skill development will include basic arc and wire welding as well as burning, torching, and plasma cutting. Blueprint reading, safety, and applicable commercial building codes will be reviewed.

Total Credits 1.00 & 40 hours

Course Competencies

- 1 Examine welding principles commonly used in the trade
- 2 Compare welding processes for various applications
- 3 Demonstrate hands-on arc welding
- 4 Demonstrate hands-on wire welding
- 5 Demonstrate welding safety requirements
- 6 Demonstrate welding set-up techniques
- 7 Use burning and torching equipment safely
- 8 Use plasma cutting equipment safely

Wisconsin Technical College System

50-410-718 Rigging & Signaling for Carpentry Apprentices

Course Outcome Summary

Course Information

Description Apprentices will examine safety and operating requirements associated with rigging and signaling. Rigging hardware and operations will be reviewed. Skills using voice signals and hand signals will be developed. Rigging and signalling safety certifications are recommended and may be optional course topics based on need.

Total Credits 1.00 & 40 hours

Course Competencies

- 1 Identify rigging hardware, devices, and components
- 2 Compare rigging operations for various job sites and trade practices
- 3 Demonstrate correct voice signals for different operations
- 4 Demonstrate correct hand signals for different operations
- 5 Complete signaling and rigging certifications (optional)

Wisconsin Technical College System

50-410-719 Site Development for Carpentry Apprentices

Course Outcome Summary

Course Information

Description This course will expose apprentices to trade practices related to site development. Use of a transit and level will be covered and skills developed related to working with building layouts. Elevation specifications and symbols will be examined. Total station fundamentals will be applied to various job sites. Blueprint reading, commercial building codes, safety, and related concepts when working on a job site.

Total Credits 1.00 & 40 hours

Course Competencies

- 1 Demonstrate the proper use of transits, building levels, and lasers
- 2 Interpret building layouts using blueprints
- 3 Determine elevations & datum points
- 4 Apply total station fundamentals to job site development
- 5 Apply site development concepts to various field experiences
- 6 Apply commercial building codes to applicable course competencies

Wisconsin Technical College System

50-410-720 Concrete Forms for Carpentry Apprentices

Course Outcome Summary

Course Information

Description Apprentices will explore trade practices related to concrete forms. Course topics include Symons handset forms, MEVA gang forming, hardware and rebar requirements, reinforcement techniques and concrete science. Key principles involved in slump testing and preparing concrete will be discussed. Blueprint reading, safety, commercial codes, and related requirements will be addressed in the course.

Total Credits 1.00 & 40 hours

Course Competencies

- 1 Examine job site requirements for Symons handset forms
- 2 Examine job site requirements for MEVA gang forming
- 3 Identify hardware and rebar used in concrete forming
- 4 Compare concrete forming reinforcement requirements
- 5 Apply concrete science principles to job site requirements
- 6 Be aware of slump testing and other analyses done on concrete
- 7 Apply commercial building codes to applicable course competencies

Wisconsin Technical College System

50-410-721 Shoring & Floor Construction for Carpentry Apprentices

Course Outcome Summary

Course Information

Description Apprentices will learn trade practices involving concrete shoring and floor construction. Course topics include elevated slabs and beams, EFCO systems, decks and Ellis clamps, plywood and concrete systems, precast and tilt-up slabs, and slab-on-grade with slopes. Hands-on learning opportunities related to the course topics are included. Codes, safety, blueprint reading and other related requirements will be included.

Total Credits 1.00 & 40 hours

Course Competencies

- 1 Example elevated slabs & beam installations including EFCO
- 2 Demonstrate use of Decks & Ellis Clamps
- 3 Use plywood and concrete systems for shoring and floor construction
- 4 Describe precast & tilt-up construction practices which are poured on jobsites
- 5 Compare slab-on-grade & slope–slab-on-dirt installation requirements
- 6 Apply commercial building codes to applicable course competencies

Wisconsin Technical College System

50-410-722 Wall Construction for Carpentry Apprentices

Course Outcome Summary

Course Information

Description Apprentices will learn about wall construction techniques involved with wood framing. Course topics include stick framing walls and headers, wood framing practices, drywall and insulation, drywall taping, and wall finishing. Blueprint reading, safety, and tool use are included. Commercial building codes related to wall construction will be reviewed.

Total Credits 1.00 & 40 hours

Course Competencies

- 1 Demonstrate stick framing for walls and headers
- 2 Demonstrate wood framing
- 3 Demonstrate drywall and insulation installation
- 4 Demonstrate drywall taping and finishing
- 5 Read blueprints and locate job requirements related to wood framing and wall construction
- 6 Apply applicable commercial building codes
- 7 Apply commercial building codes to applicable course competencies

Wisconsin Technical College System

50-410-723 Metal Framing for Carpentry Apprentices

Course Outcome Summary

Course Information

Description Apprentices will learn about metal framing requirements related to commercial building codes. Blueprint reading and safety related to metal stud work are included. Course topics include structural studs, walls and shafts, soffits, joists, firestops, and other related concepts. Hands-on skill development in cutting studs for various job requirements is included.

Total Credits 1.00 & 40 hours

Course Competencies

- 1 Demonstrate structural stud construction using steel
- 2 Demonstrate wall and shaft installation requirements
- 3 Demonstrate soffits construction
- 4 Demonstrate installation of joists
- 5 Demonstration installation of firestops and shaft walls around elevators and HVAC
- 6 Use blueprints for job specifications and requirements
- 7 Demonstrate hands-on cutting of studs for various jobs
- 8 Apply applicable commercial building codes
- 9 Apply commercial building codes to applicable course competencies

Wisconsin Technical College System

50-410-724 Interior Finishing for Carpentry Apprentices

Course Outcome Summary

Course Information

Description Apprentices will explore interior finishing techniques related to the trade. Trim and paneling will examine baseboard, casing, sills, jams, trims, and paneling installations. Cabinets and backing installation and blueprints are included in the course. Laminate and solid surface installation and manufacturing will be discussed. Acoustical ceiling basics, layouts, mains, and math are addressed.

Total Credits 1.00 & 40 hours

Course Competencies

- 1 Demonstrate trim & paneling installations for baseboards, casings, sills, jams, trim, and paneling
- 2 Demonstrate cabinet & backing installations according to prints and specifications
- 3 Demonstrate laminate & solid surface installation and manufacturing
- 4 Demonstrate basic layout for acoustical ceilings
- 5 Apply commercial building codes to applicable course competencies

Wisconsin Technical College System

50-410-725 Exterior Finishing and Doors for Carpentry Apprentices

Course Outcome Summary

Course Information

Description Apprentices will examine exterior finishing and doors systems in this course. Exterior finishing topics include installation of windows and siding following specifications provided on blueprints. Door systems include hollow metal door frames; doors; door hardware, hangers and closures; and other related components. Blueprint reading, commercial building codes, and other requirements for doors and exteriors will be covered.

Total Credits 1.00 & 40 hours

Course Competencies

- 1 Compare door and hollow metal frame installation requirements
- 2 Identify door hardware, hanging devices, and closers
- 3 Demonstrate window installation according to specifications
- 4 Demonstrate siding installation according to shop drawings
- 5 Use shop drawings for exterior finishing and doors
- 6 Apply commercial building codes to applicable course competencies

Wisconsin Technical College System

50-410-726 Roof Framing for Carpentry Apprentices

Course Outcome Summary

Course Information

Description Apprentices will apply blueprint reading skills to roofing systems and framing requirements. Rafters, gables, hips, intersecting, valleys, cornices and trusses will be covered. Course includes the installation of pre-engineered components as well as the awareness of how to make trusses and related components. Applicable commercial building codes, safety requirements, and related concepts will be addressed.

Total Credits 1.00 & 40 hours

Course Competencies

- 1 Read blueprints for roofs and roof framing
- 2 Describe rafter installation and construction practices
- 3 Compare gables, hips, and intersecting valleys
- 4 Identify installation requirements for cornices
- 5 Identify installation requirements for trusses
- 6 Examine the installation practices for pre-engineered components
- 7 Be aware of how to make roofing components
- 8 Apply commercial building codes to applicable course competencies

Wisconsin Technical College System

50-410-727 Stair Design and Building for Carpentry Apprentices

Course Outcome Summary

Course Information

Description Examine stair design, layout, and building in this course. Interpret blueprints and building codes related to stairs and ADA accessibility. Layout and frame wood, metal and concrete stairs based on codes and standards. Build stairs in team or class projects. Apply use of concrete forms to stairways. Review and apply commercial codes to stairway construction for public buildings.

Total Credits 1.00 & 40 hours

Course Competencies

- 1 Interpret blueprints for stairs and codes including ADA
- 2 Examine stair design
- 3 Layout and frame wood, metal and concrete stairways
- 4 Demonstrate building stairs according to job specifications
- 5 Explain the use of concrete forms and stairways in various job sites
- 6 Apply commercial building codes to applicable course competencies

Wisconsin Technical College System

50-410-728 Final Capstone Course for Carpentry Apprentices

Course Outcome Summary

Course Information

Description This course is intended as a final review and comprehensive assessment. Review blueprint reading, math, commercial building codes, and other material covered in the program will be reviewed as needed. Apprentices may explore current issues, and emerging trends or technologies as appropriate. Opportunities for capstone hands-on projects or team activities may be designed by instructors for this course. The course may also provide opportunities to refresh trade certifications and could include the Transition to Trainer course based on need.

Total Credits 1.00 & 40 hours

Course Competencies

- 1 Complete the final course review
- 2 Complete comprehensive tests and assessments for blueprint reading and codes
- 3 Complete capstone project or team activities as selected by the instructor
- 4 Examine emerging trends, technologies or issues as selected by the instructor
- 5 Review additional concepts covered in the apprenticeship program
- 6 Refresh certifications as needed
- 7 Complete Transition to Trainer course

Wisconsin Technical College System

47-455-455 Transition to Trainer: Your Role as a Journey Worker

Course Outcome Summary

Course Information

Description Apprenticeship training is a collaborative partnership: employer and employee associations, government, and educational institutions each play a part. In reality, most learning takes place through the daily interaction between an apprentice and his/her co-workers. Surveys have shown that the apprentices are least satisfied with the on-the-job portion of their training--particularly the ability of journey level workers and supervisors to pass on their knowledge of the trade.

You have already learned to use the tools of your chosen trade. In this workshop you will be introduced to a new set of basic tools--the tools of a jobsite trainer. You will explore the skills that are necessary to be an effective trainer, discover how to deliver hands-on training, and examine the process for giving useful feedback. During the workshop you will build a Training Toolkit to take back to your work on the job.

Course Competencies

- 1 Value your role as a journey worker trainer
- 2 Serve as a mentor and job coach
- 3 Foster a positive work environment by acting as an ally/advocate
- 4 Provide hands-on skills training
- 5 Provide feedback on apprentice performance