Construction Technology		*Course to Program Map*						
Program Outcomes: Upon completion of the program, graduates will be able to…	Institutional Skills	demonstrate knowledge of safety involved with the building construction industry.	demonstrate knowledge of building materials and tools.	demonstrate knowledge of building plans and elevations.	communicate effectively in written, oral, and visual modes.	perform tasks of entry level building construction employment (floors, framing, windows, doors, and stairs).	demonstrate mathematical reasoning skills.	complete a resume and cover letter.
Courses								
CNTR 100: Safety and Orientation		I						
CNTR 110: Introductory Craft Skills	c	IR	I	I			I	
								IRMA
CNTR 120: Carpentry Basics		R	I					
CNTR 130: Floors, Walls, and Ceiling Framing			R	R	I	I	R	
CNTR 140: Roof and Framing		R	R	R	R	R	R	
CNTR 150: Windows, Doors, and Stairs			RM	RM		RM	R	
CNTR 160: Concrete Basics		R	RM			R	R	
CNTR 200: Building Blueprints and Codes		R			RMA	R	R	
CNTR 210: Carpentry Plumbing and HVAC		R	RM	R		R	R	
CNTR 220: Carpentry Electrical		R	R	R		R	R	
CNTR 230: Exterior Finish		MA	MA	MA	MA	MA	MA	
CNTR 240: Drywall & Insulation		RM	R	RM		RM	RM	
CNTR 250: Interior Finishing		MA	MA	MA	MA	MA	MA	

Mapping	
I	Introduced
R	Reinforced
M	Mastered
A	Assessed/Artifact

Essential Skills	
1	written communication
2	oral communication
3	critical thinking
4	cultural diversity
5	social responsibility

Employability Skills	
C	communication
P	problem solving
W	work ethic

CNTR 100: Safety and Orientation

	Curriculum Map						
Program Outcomes	**demonstrate knowledge of safety involved with the building construction industry.**	**demonstrate knowledge of building materials and tools.**	**demonstrate knowledge of building plans and elevations.**	**communicate effectively in written, oral, and visual modes.**	**perform tasks of entry level building construction employment (floors, framing, windows, doors, and stairs).**	**demonstrate mathematical reasoning skills.**	**complete a resume and cover letter.**
Course SLO: Students will be able to							
explain the role of OSHA in job-site safety.	I						
explain OSHA's General Duty Clause and 1926 CFR Subpart C.	I						
describe the impact of accidents.	I						
identify the four high-hazard areas.	I						
demonstrate hazard recognition and risk assessment techniques.	I						
explain the basics of construction health.	I						
identify basic fall, electrical, fire, trenching, materials handling, and heavy equipment hazards and explain the general safety procedures associated with them.	I						
explain and demonstrate the use of appropriate personal protective equipment.	I						
explain and identify the various signs, signals, barricades, markers, and tags used on a job site.	I						
demonstrate proper housekeeping procedures.	I						
demonstrate an understanding of assured equipment grounding conductor programs and the use of GFCIs.	I						
demonstrate and explain general hand- and power-tool safety guidelines.	I						
explain your company- or site-specific fall protection procedures and requirements.	I						

demonstrate and explain the proper use of ladders and scaffolding.	I						
explain the use of work permits and lockout/tagout procedures.	I						
demonstrate and explain the emergency procedures for trenching accidents.	I						
demonstrate proper manual lifting procedures.	I						
identify the hazards of working around or on heavy equipment.	I						
describe proper rigging safety procedures.	I						
demonstrate use of hand signals.	I						

CNTR 110: Introductory Craft Skills

	Curriculum Map						
Program Outcomes	**demonstrate knowledge of safety involved with the building construction industry.**	**demonstrate knowledge of building materials and tools.**	**demonstrate knowledge of building plans and elevations.**	**communicate effectively in written, oral, and visual modes.**	**perform tasks of entry level building construction employment (floors, framing, windows, doors, and stairs).**	**demonstrate mathematical reasoning skills.**	**complete a resume and cover letter.**
Course SLO: Students will be able to							
BASIC SAFETY	**R**						
explain the role that safety plays in the construction crafts.	**R**						
describe the meaning of job-site safety.	**R**						
describe the characteristics of a competent person and a qualified person.	**R**						
explain the appropriate safety precautions to take around common job-site hazards.	**R**						
demonstrate the use and care of appropriate personal protective equipment (PPE).	**R**						
properly don and remove personal protective equipment (safety goggles, hard hat, and personal fall protection).	**R**						
follow the safety procedures required for lifting heavy objects.	**R**						
describe safe behavior on and around ladders and scaffolds.	**R**						
explain the important of Hazard Communications (Haz Com) and material safety data sheets (MSDSs).	**R**						
describe fire prevention and firefighting techniques.	**R**						
define safe work procedures to use around electrical hazards.	**R**						
	R						
INTRODUCTION TO CONSTRUCTION MATH							

add, subtract, multiply, and divide whole numbers, with and without a calculator.						I	
use a standard ruler and a metric ruler to measure.						I	
add, subtract, multiply, and divide fractions.						I	
add, subtract, multiply, and divide decimals, with and without a calculator.						I	
convert decimals to percentages and percentages to decimals.						I	
convert fractions to decimals and decimals to fractions.						I	
explain what the metric system is and how it is important in the construction trade.						I	
recognize and use metric units of length, weight, volume, and temperature.						I	
recognize some of the basic shapes used in the construction industry and apply basic geometry to measure them						I	
INTRODUCTION TO HAND TOOLS							
recognize and identify some of the		I					
use power tools safely.		I					
describe the basic procedures for		I					
		I					
INTRODUCTION TO POWER TOOLS							
identify power tools commonly used		I					
use power tools safely.		I					
explain how to maintain power tools		I					
INTRODUCTION TO BLUEPRINTS							
recognize and identify basic blueprint terms, components, and symbols.		I					
relate information on blueprints to actual locations on the print.		I					
recognize different classifications of drawings.		I					
interpret and use drawing dimensions.		I					

BASIC RIGGING							
identify and describe the use of slings and common rigging hardware.	I						
describe basic inspection techniques and rejection criteria used for slings and hardware.	I						
describe basic hitch configurations and their proper connections.	I						
describe basic load-handling safety practices.	I						
demonstrate proper use of American National Standards Institute (ANSI) hand signals.	I						
BASIC COMMUNICATION SKILLS							
demonstrate the ability to interpret information and instructions presented in both written and verbal form				I			
demonstrate the ability to communicate effectively in on-the-job situations using written and verbal skills							
BASIC EMPLOYABILITY SKILLS							
explain the construction industry, the role of the companies that make up the industry, and the role of individual professionals in the industry				I			
demonstrate critical thinking skills and the ability to solve problems using those skills.				I			
demonstrate knowledge of computer systems, and explain common uses for computers in the construction industry				I			
demonstrate effective relationship skills with teammates and supervisors, the ability to work on a team, and appropriate leadership skills				I			

be aware of workplace issues such as sexual harassment, stress, and substance abuse.				I			

CNTR 120: Carpentry Basics

Curriculum Map

Program Outcomes	demonstrate knowledge of safety involved with the building construction industry.	demonstrate knowledge of building materials and tools.	demonstrate knowledge of building plans and elevations.	communicate effectively in written, oral, and visual modes.	perform tasks of entry level building construction employment (floors, framing, windows, doors, and stairs).	demonstrate mathematical reasoning skills.	complete a resume and cover letter.
Course SLO: Students will be able to							
ORIENTATION TO THE TRADE							
describe the history of the carpentry trade.	**R**						
identify the aptitudes, behaviors, and skills needed to be a successful carpenter.	**R**						**IRMA**
identify the trianing opportunities within the carpentry trade.	**R**						
identify the career and entrepreneurial opportunities within the carpentry trade.	**R**						
identify the responsibilities of a person working in the construction industry.	**R**						
state the personal characteristics of a professional.	**R**						**IRMA**
explain the importance of safety in the construction industry.	**R**						
BUILDING MATERIALS, FASTENERS, AND ADHESIVES							
identify various types of building materials and their uses.		**I**					
state the uses of various types of hardwoods and softwoods.		**I**					
identify the different grades and markings of wood building materials.		**I**					
identify the safety precautions associated with building materials.		**I**					
describe the proper method of storing and handling building materials.		**I**					
state the uses of various types of engineered lumber.		**I**					
calculate the quantities of lumber and wood products using industry-standard methods.		**I**	**I**				

describe the fasteners, anchors, and adhesives used in construction work and explain their uses.		I					
HAND AND POWER TOOLS							
identify the hand tools commonly used by carpenters an describe their uses.		I					
use hand tools in a safe and appropriate manner.	R						
state the general safety rules for operating all power tools, regardless of type.	R						
state the general rules for properly maintaining all power tools, regardless of type.	R						
identify the portable power tools commonly used by carpenters and describe their uses.	R						
uses portable power tools in a safe and appropriate manner.	R						
READING PLANS AND ELEVATIONS							
describe the types of drawings usually included in a set of plans and list the information found on eaceh type			I				
identify the different types of lines used on construction drawings.			I				
identify the selected architectural symbols commonly used to represent materials on plans.			I				
identify selected electrical, mechanical, and plumbing symbols commonly used on plans.			I				
identify selected abbreviations commonly used on plans.			I				
read and interpret plans, elevations, schedules, sections, and details contained in basic construction drawings			I				
state the purpose of written specifications.			I				
identify and describe the parts of a specification.			I				
demonstrate or describe how to perform a quantity takeoff for materials.			I				

CNTR 130: Floors, Walls, and Ceiling Framing	*Curriculum Map*						
Program Outcomes	**demonstrate knowledge of safety involved with the building construction industry.**	**demonstrate knowledge of building materials and tools.**	**demonstrate knowledge of building plans and elevations.**	**communicate effectively in written, oral, and visual modes.**	**perform tasks of entry level building construction employment (floors, framing, windows, doors, and stairs).**	**demonstrate mathematical reasoning skills.**	**complete a resume and cover letter.**
Course SLO: Students will be able to							
FLOOR SYSTEMS							
identify the different types of framing systems.					I	R	
read and interpret drawings and specifications to determine floor system requirements.			R				
identify floor and sill framing and support members.		R					
name the methods used to fasten sills to the foundation.		R					
given specific floor load and span data, select the proper girder/beam size from a list of available girders/beams		R				R	
list and recognize different types of floor joists.		R	R				
given specific floor load and span data, select the proper joist size from a list of available joists.		R	R			R	
list and recognize different types of bridging.					I		
list and recognize different types of flooring materials.			R				
explain the purposes of subflooring and underlayment.				I			
match selected fasteners used in floor framing to their correct uses.			R				
estimate the amount of material needed to frame a floor assembly.			R			R	
demonstrate an ability to							
- lay out and construct a floor assembly							
- install bridging							

- install joists for a cantilever floor							
- install a subfloor using butt joist plywood/OSB panels		R			I		
- install a single floor system using tongue-and-groove plywood/OSB panels		R			I		
WALL AND CEILING FRAMING							
identify the components of a wall and ceiling layout.					I		
describe the procedure for laying out a wood frame wall, including plates, corner posts, door and window openings, partition Ts, bracing, and firestops					I		
describe the correct procedure for assembling and erecting an exterior wall.					I	R	
identify the common materials and methods used for installing sheathing on walls.		R			I		
lay out, assemble, erect, and brace exterior walls for a frame building.		R			I		
describe wall framing techniques used in masonry construction.					I		
explain the use of metal studs in wall framing.					I		
describe the correct procedure for laying out ceiling joists.		R		I	I		
cut and install ceiling joists on a wood frame building.		R			I		
estimate the materials required to frame walls and ceilings.		R				I	
INTRODUCTION TO CONCRETE,							
identify the properties of cement.					I		
describe the composition of concrete.					I		
perform volume estimates for concrete quantity requirements.					I	R	
identify types of concrete reinforcement materials and describe their uses.					I		
identify various types of footings and explain their uses.					I		

identify the parts of various types of forms.					I		
explain the safety procedures associated with the construction and use of concrete forms.					I		
erect, plumb, and brace a simple concrete form with reinforcement.					I		
FLOOR SYSTEMS							
lay out and construct a floor assembly.					I		
install bridging.					I		
install joists for a cantilever floor.					I		
install a subfloor using butt-joint plywood/OSB panels.		R			I		
install a single floor system using tongue-and-groove plywood/OSB panels.		R			I		
estimate the amount of material needed to frame a floor assembly.					I	R	
given specific floor load and span data, select the proper girder/beam and joist size from a list of available girders/beams/joists.		R			I		
WALL AND CEILING FRAMING							
lay out, assemble, erect, and brace exterior walls.					I	R	
cut and install ceiling joists on a wood frame building.					I		
estimate the materials required to frame walls and ceilings.					I	R	
INTRODUCTION TO CONCRETE, REINFORCING MATERIALS, AND FORMS							
perform volume estimates for concrete quantity requirements.					I	R	
construct a simple concrete form with reinforcement.					I		

CNTR 140: Roof and Framing

	Curriculum Map						
Program Outcomes	**demonstrate knowledge of safety involved with the building construction industry.**	**demonstrate knowledge of building materials and tools.**	**demonstrate knowledge of building plans and elevations.**	**communicate effectively in written, oral, and visual modes.**	**perform tasks of entry level building construction employment (floors, framing, windows, doors, and stairs).**	**demonstrate mathematical reasoning skills.**	**complete a resume and cover letter.**
Course SLO: Students will be able to							
understand the terms associated with roof framing.			R	R		R	
identify the roof framing members used in gable and hip roofs.		R	R	R			
identify the methods used to calculate the length of a rafter.			R			R	
identify the various types of trusses used in roof framing.				R			
use a rafter framing square, speed square, and calculate in laying out a roof.				R		R	
identify various types of sheathing			R	R			
frame a gable roof with vent openings.	R				R		
frame a roof opening.	R				R		
erect a gable roof using trusses.	R				R		
estimate the materials used in framing and sheathing a roof.			R			R	

CNTR 150: Windows, Doors, and Stairs	*Curriculum Map*						
Program Outcomes	**demonstrate knowledge of safety involved with the building construction industry.**	**demonstrate knowledge of building materials and tools.**	**demonstrate knowledge of building plans and elevations.**	**communicate effectively in written, oral, and visual modes.**	**perform tasks of entry level building construction employment (floors, framing, windows, doors, and stairs).**	**demonstrate mathematical reasoning skills.**	**complete a resume and cover letter.**
Course SLO: Students will be able to							
WINDOWS AND EXTERIOR DOORS							
identify various types of fixed, sliding, and swinging windows.		**MA**					
identify the parts of a window installation.		**MA**					
state the requirements for a proper window installation.		**MA**		**MA**			
install a pre-hung window.					**MA**		
identify the common types of exterior doors and explain how they are constructed.		**MA**					
identify the parts of a door installation.		**MA**					
identify the types of thresholds used with exterior doors.							
install a pre-hung exterior door.	**MA**	**MA**			**MA**		
identify the various types of locksets used on a exterior doors and explain how they are installed.		**MA**					
install a lockset.				**MA**	**MA**		
BASIC STAIR LAYOUT							
identify the basic types of stairs.				**MA**			
identify the various parts of stairs.				**MA**			
identify the materials used in the construction of stairs.		**MA**					
interpret construction drawings of stairs.			**MA**				
calculate the total rise, number and size of risers, and number and size of treads required for a stairway.						**MA**	
lay out and cut stringers, risers, and treads.	**MA**						

build a small stair unit with a temporary handrail.	**MA**						

CNTR 160: Concrete Basics

	Curriculum Map						
Program Outcomes	**demonstrate knowledge of safety involved with the building construction industry.**	**demonstrate knowledge of building materials and tools.**	**demonstrate knowledge of building plans and elevations.**	**communicate effectively in written, oral, and visual modes.**	**perform tasks of entry level building construction employment (floors, framing, windows, doors, and stairs).**	**demonstrate mathematical reasoning skills.**	**complete a resume and cover letter.**
Course SLO: Students will be able to							
WINDOWS AND EXTERIOR DOORS							
identify various types of fixed, sliding, and swinging windows.		**MA**					
identify the parts of a window installation.		**MA**					
state the requirements for a proper window installation.		**MA**		**MA**			
install a pre-hung window.					**MA**		
identify the common types of exterior doors and explain how they are constructed.		**MA**					
identify the parts of a door installation.		**MA**					
identify the types of thresholds used with exterior doors.							
install a pre-hung exterior door.	**MA**	**MA**			**MA**		
identify the various types of locksets used on a exterior doors and explain how they are installed.		**MA**					
install a lockset.				**MA**	**MA**		
BASIC STAIR LAYOUT							
identify the basic types of stairs.				**MA**			
identify the various parts of stairs.				**MA**			
identify the materials used in the construction of stairs.		**MA**					
interpret construction drawings of stairs.			**MA**				
calculate the total rise, number and size of risers, and number and size of treads required for a stairway.						**MA**	
lay out and cut stringers, risers, and treads.	**MA**						

build a small stair unit with a temporary handrail.	**MA**						

CNTR 200: Blueprints and Codes

	Curriculum Map						
Program Outcomes	**demonstrate knowledge of safety involved with the building construction industry.**	**demonstrate knowledge of building materials and tools.**	**demonstrate knowledge of building plans and elevations.**	**communicate effectively in written, oral, and visual modes.**	**perform tasks of entry level building construction employment (floors, framing, windows, doors, and stairs).**	**demonstrate mathematical reasoning skills.**	**complete a resume and cover letter.**
Course SLO: Students will be able to							
Identify the elements commonly used in a set of house plans							
Demonstrate the use of scale in architectural plans							
Describe how CAD and CAM software are used in construction							
Describe the application of building codes and standards							
List the items required by building officials to obtain a building permit							

CNTR 210: Carpentry Plumbing and HVAC	*Curriculum Map*						
Program Outcomes	**demonstrate knowledge of safety involved with the building construction industry.**	**demonstrate knowledge of building materials and tools.**	**demonstrate knowledge of building plans and elevations.**	**communicate effectively in written, oral, and visual modes.**	**perform tasks of entry level building construction employment (floors, framing, windows, doors, and stairs).**	**demonstrate mathematical reasoning skills.**	**complete a resume and cover letter.**
Course SLO: Students will be able to							
List necessary plumbing tools and their uses in plumbing work							
Identify the components and their functions in central air-conditioning systems							

CNTR 220: Carpentry Electrical

	Curriculum Map						
Program Outcomes	**demonstrate knowledge of safety involved with the building construction industry.**	**demonstrate knowledge of building materials and tools.**	**demonstrate knowledge of building plans and elevations.**	**communicate effectively in written, oral, and visual modes.**	**perform tasks of entry level building construction employment (floors, framing, windows, doors, and stairs).**	**demonstrate mathematical reasoning skills.**	**complete a resume and cover letter.**
Course SLO: Students will be able to							
Sketch a simple electrical plan							
Summarize the process of installing an electrical service in a residential building							
Identify the electrical system components required for a given circuit							
Demonstrate proper grounding of a circuit							
Examine receptacles, switches and fixtures to identify problems							

CNTR 230: Exterior Finishing

	Curriculum Map						
Program Outcomes	**demonstrate knowledge of safety involved with the building construction industry.**	**demonstrate knowledge of building materials and tools.**	**demonstrate knowledge of building plans and elevations.**	**communicate effectively in written, oral, and visual modes.**	**perform tasks of entry level building construction employment (floors, framing, windows, doors, and stairs).**	**demonstrate mathematical reasoning skills.**	**complete a resume and cover letter.**
Course SLO: Students will be able to							
Describe and demonstrate the various methods used in applying wood siding							
Describe and demonstrate the proper application of fiber cement siding							
Describe and demonstrate the installation of vinyl siding and accessories							
Discuss the functions of exterior insulation and finishing systems (EIFS) and how they are applied							
Demonstrate the use of tools and materials used when finishing a veneer wall							

CNTR 240: Drywall & Insulation

	Curriculum Map						
Program Outcomes	**demonstrate knowledge of safety involved with the building construction industry.**	**demonstrate knowledge of building materials and tools.**	**demonstrate knowledge of building plans and elevations.**	**communicate effectively in written, oral, and visual modes.**	**perform tasks of entry level building construction employment (floors, framing, windows, doors, and stairs).**	**demonstrate mathematical reasoning skills.**	**complete a resume and cover letter.**
Course SLO: Students will be able to							
Recognize various types, thickness, and styles of gypsum wallboard							
Demonstrate gypsum wallboard cutting, fastening, and finishing techniques							
Describe the properties which make a material a good thermal insulator							
Describe the types of insulation							
Identify where the vapor control layer of insulation belongs							
Give examples of areas that need special attention when air sealing a home							
Calculate quantities for thermal insulation in home.							
List the methods used of construction to increase sound and noise control.							

CNTR 250: Interior Finishing

	Curriculum Map						
Program Outcomes	**demonstrate knowledge of safety involved with the building construction industry.**	**demonstrate knowledge of building materials and tools.**	**demonstrate knowledge of building plans and elevations.**	**communicate effectively in written, oral, and visual modes.**	**perform tasks of entry level building construction employment (floors, framing, windows, doors, and stairs).**	**demonstrate mathematical reasoning skills.**	**complete a resume and cover letter.**
Course SLO: Students will be able to							
Describe and demonstrate the installation of tile flooring, laminate flooring, and prefinished flooring							
Demonstrate how to paint and finish wood trim finishing							
Demonstrate the final setup of plumbing, cabinetry, & mechanical systems							
Identify the differences between the water supply system and the drainage, waste, and venting systems							