



**Florida Department of Education Student Performance
STANDARDS ALIGNMENT & SUGGESTED PACING GUIDE**

Building Construction Technologies 1



**iCEV Architecture, Construction, Transportation &
Manufacturing Site**

Scope & Sequence	Lesson Title	CTE Standards and Benchmarks	Days of Teaching
1	Personal & Occupational Health & Safety	01.01; 01.02; 01.03; 01.04; 01.05; 01.06	11
2	Emerging Technologies in Construction	02.01	8
3	The Construction Industry	02.02; 02.03; 02.04; 02.05; 02.06; 02.07; 02.08; 02.09; 02.10; 02.11; 02.12; 02.13	7
4	Hand Tool ID & Terminology I	03.01; 03.03; 03.05	6
5	Installation: Foundation & Subflooring	03.01; 03.05; 04.01; 04.02; 08.01; 08.02; 08.03; 08.04; 08.05; 08.06; 08.07; 08.08; 08.09; 08.10 (a - e)	11
6	Installation: Framing	03.01; 03.02; 03.05; 04.01; 04.02; 09.01; 09.02; 09.03; 09.04; 09.05; 09.07; 09.08; 09.09; 09.10; 10.01; 10.02; 10.03; 10.04; 10.05; 10.06; 10.07; 10.09; 10.10	8
7	Installation: Roofing	03.01; 03.05; 04.02; 10.07; 10.08	9
8	Portable Wood Power Tools - I: Safety, Operation & ID	03.02; 03.05; 04.01; 04.02	2
9	Portable Wood Power Tools - II: Safety, Operation & ID	03.02; 03.04; 04.01; 04.02	2
10	Installation: Plumbing Equipment & Fixtures	03.02; 03.05	5
11	Hand Tool ID & Terminology II	03.05	6
12	Large Wood Power Tools - I: Safety, Operation & ID	04.01; 04.02	3
13	Large Wood Power Tools - II: Safety, Operation & ID	04.01; 04.02	2
14	Large Metal Power Tools: Safety & Operation	04.01; 04.02	6
15	Mathematics in Construction	05.01; 05.02; 05.03; 05.06; 05.07; 05.08; 05.09; 05.10	7
16	Measurements in Construction	05.04; 05.05	10
17	Concrete: Construction Forms & Curing	06.01; 06.02; 06.03; 06.04; 06.05	2
18	Concrete: Tool ID & Finishing	06.05	2
19	Introduction to Construction Drawings	07.01; 07.02; 07.03; 07.04	10
20	Building Construction: Basic Masonry	09.06	2

Florida Department of Education Student Performance Standards
Building Construction Technologies 1

Course Number 8720310

Course Credit 1

Course Description The purpose of this course is to develop the competencies essential to the building construction industry. These competencies include skills and knowledge related to safety practices, the proper use of hand and power tools, plan reading, basic rough carpentry and framing.

CTE Standards and Benchmarks		Lesson Title	Location
01.0 Demonstrate the importance of health, safety and environmental management systems in organizations and their importance to organizational performance and regulatory compliance--The			
01.01	Understand the role and the purpose of the Occupational Safety and Health Administration (OSHA) rules and regulations.	Personal & Occupational Health & Safety	Slides 5 - 18; Project - OSHA
01.02	Identify and locate Safety Data Sheets (formerly called Material Safety Data Sheets (MSDS)) and follow the procedures as necessary.	Personal & Occupational Health & Safety	Slides 19 - 22; Activity - MSDS vs. SDS; Activity - Safety Data Sheet Information
01.03	Describe "Right-to-Know" Law as recorded in (29 CFR-1910.1200)	Personal & Occupational Health & Safety	Student Handout - "Right-to-Know"
01.04	Identify and use safety equipment and personal protective equipment (PPE).	Personal & Occupational Health & Safety	Slides 80 - 96; Activity - Personal Protective Equipment
01.05	Describe personal and jobsite safety rules and regulations that maintain safe and healthy work environments.	Personal & Occupational Health & Safety	Slides 33 - 78; Activity - Hazard Solutions; Activity - Hazard Solutions Teacher Instruction Sheet
01.06	Explain emergency procedures to follow in response to workplace accidents.	Personal & Occupational Health & Safety	Slides 98 - 113; Project - Public Service Announcement
02.0 Investigate the construction industry and explore related occupations--The student will be able to:			
02.01	Describe the development of construction technology, its impact on the built environment and the impact of growth on the construction industry.	Emerging Technologies in Construction	Entire lesson; Activity - Invent to Solve
02.02	Describe the benefits of the construction industry on health and safety, communication, transportation and the economy.	The Construction Industry	Slides 7 - 11; Activity - Construction Discussion
02.03	Demonstrate an understanding of the relationship between construction and the environment.	The Construction Industry	Slides 13 - 18
02.04	Describe the role of trade unions in the construction industry.	The Construction Industry	Slides 47 - 52
02.05	Research apprenticeship opportunities.	The Construction Industry	Slides 53 - 57
02.06	Identify the different classifications of construction projects.	The Construction Industry	Slides 21 - 22
02.07	Define the roles and responsibilities of the general contractor, specialty contractor, construction management and design build firms.	The Construction Industry	Slides 23 - 30
02.08	Research construction trade occupations and the roles and responsibilities of each craft.	The Construction Industry	Slides 23 - 28; Slides 41 - 46; Project - My Construction Career

CTE Standards and Benchmarks		Lesson Title	Location
02.09	Research construction management occupations and the roles and responsibilities of each.	The Construction Industry	Slides 29; Slides 41 - 46; Project - My Construction Career
02.10	Identify design and engineering occupations and the roles and responsibilities of each.	The Construction Industry	Slides 30, Slides 41 - 46; Project - My Construction Career
02.11	Explain the relationship between construction and the economy.	The Construction Industry	Slides 10 - 12
02.12	Describe the process of applying for building permits and variances.	The Construction Industry	Slides 34 - 39
02.13	Demonstrate an understanding of zoning requirements.	The Construction Industry	Slides 31 - 33

CTE Standards and Benchmarks		Lesson Title	Location
03.0 Select and use basic hand tools--The student will be able to:			
03.01	Identify, select and use appropriate hammers used in the construction industry.	Hand Tool ID & Terminology I	Segment 2. Screwdrivers, Hammers, Pliers, Punches & Chisels; Project - Tool Presentation
		Installation: Foundation & Subflooring	Segment 3. Tools & Materials; Activity - Tool & Material ID; Activity - Tool & Material ID Answer Key
		Installation: Framing	Segment 3. Tools & Materials; Activity - Tool & Material ID; Activity - Tool & Material ID Answer Key
		Installation: Roofing	Segment 2. Tools & Materials; Activity - Tool & Material ID; Activity - Tool & Material ID Answer Key
03.02	Identify, use and select saws to cut material.	Portable Wood Power Tools - I: Safety, Operation & ID	Segment 2. Jigsaws; Segment 3. Circular Saws; Activity - Tool Set-Up
		Portable Wood Power Tools - II: Safety, Operation & ID	Segment 4. Reciprocating Saws
		Installation: Foundation & Subflooring	Segment 3. Tools & Materials; Activity - Tool & Material ID; Activity - Tool & Material ID Answer Key
		Installation: Framing	Segment 3. Tools & Materials; Activity - Tool & Material ID; Activity - Tool & Material ID Answer Key
		Installation: Plumbing Equipment & Fixtures	Segment 2. Tools & Materials; Activity - Tool & Material ID; Activity - Tool & Material ID Answer Key
03.03	Identify and use various common screwdriver types.	Hand Tool ID & Terminology I	Segment 2. Screwdrivers, Hammers, Pliers, Punches & Chisels; Project - Tool Presentation
03.04	Identify and use various types of drill bits.	Portable Wood Power Tools - II: Safety, Operation & ID	Segment 3. Drills

CTE Standards and Benchmarks		Lesson Title	Location
03.05	Select and use various types of non-adjustable wrenches, adjustable wrenches and plumbing tools, chisels and punches, pliers, ripping bars and nail pullers, woodworking files, spirit levels, socket wrench sets, hand or block sanders, carpenters' squares, clamps and shovels.	Hand Tool ID & Terminology I	Segment 2. Screwdrivers, Hammers, Pliers, Punches & Chisels; Project - Tool Presentation
		Hand Tool ID & Terminology II	Segment 2. Wrenches, Sockets Ratchets; Project - Tool Presentation
		Portable Wood Power Tools - I: Safety, Operation & ID	Segment 4. Sanders; Activity - Tool Set-Up
		Installation: Plumbing Equipment & Fixtures	Segment 2. Tools & Materials; Activity - Tool & Material ID; Activity - Tool & Material ID Answer Key
		Installation: Foundation & Subflooring	Segment 3. Tools & Materials; Activity - Tool & Material ID; Activity - Tool & Material ID Answer Key
		Installation: Framing	Segment 3. Tools & Materials; Activity - Tool & Material ID; Activity - Tool & Material ID Answer Key
		Installation: Roofing	Segment 2. Tools & Materials; Activity - Tool & Material ID; Activity - Tool & Material ID Answer Key
04.0 Select and use power tools and describe their proper operation--The student will be able to:			
04.01	Identify power tools including sanders, drills, circular saws, jig saws, reciprocating saws, radial-arm saws, table saws, band saws miter saws, drill presses, grinders, electric routers and pneumatic nailers.	Large Wood Power Tools - I: Safety, Operation & ID	Entire lesson; Activity - Band Saw Puzzle; Project - Large Wood Power Tool Use
		Large Wood Power Tools - II: Safety, Operation & ID	Segment 4. Drill Press; Project - Using the Tools
		Portable Wood Power Tools - I: Safety, Operation & ID	Entire lesson; Activity - Tool Set-Up
		Portable Wood Power Tools - II: Safety, Operation & ID	Entire lesson; Activity - Drill Bits; Project - Design and Build
		Large Metal Power Tools: Safety & Operation	Segment 6. Grinder; Activity - Using The Tools
		Installation: Foundation & Subflooring	Segment 3. Tools & Materials; Activity - Tool & Material ID; Activity - Tool & Material ID Answer Key
		Installation: Framing	Segment 3. Tools & Materials; Activity - Tool & Material ID; Activity - Tool & Material ID Answer Key

CTE Standards and Benchmarks		Lesson Title	Location
04.02	Describe the proper operation of power tools and equipment.	Large Wood Power Tools - I: Safety, Operation & ID	Entire lesson; Activity - Band Saw Puzzle; Project - Large Wood Power Tool Use
		Large Wood Power Tools - II: Safety, Operation & ID	Segment 4. Drill Press; Project - Using the Tools
		Portable Wood Power Tools - I: Safety, Operation & ID	Entire lesson; Activity - Tool Set-Up
		Portable Wood Power Tools - II: Safety, Operation & ID	Entire lesson; Activity - Drill Bits; Project - Design and Build
		Large Metal Power Tools: Safety & Operation	Segment 6. Grinder; Activity - Using The Tools
		Installation Series	Each lesson describes the tools and how to use them through demonstration
05.0 Demonstrate mathematics knowledge and skills relevant to the construction industry--The student will be able to:			
05.01	Solve job-related problems by adding, subtracting, multiplying and dividing numbers, using fractions, decimals and whole numbers.	Mathematics in Construction	Entire lesson; Activity - Applied Math; Activity - Applied Math Answer
05.02	Change numbers to percentages.	Mathematics in Construction	Slides 46 - 54
05.03	Demonstrate knowledge of arithmetic operations.	Mathematics in Construction	Slides 10 - 11; Activity - Basic Math; Activity - Basic Math Answer Key
05.04	Read a ruler and a tape measure.	Measurements in Construction	Slide 36 - 39
05.05	Compute feet, inches and yards.	Measurements in Construction	Slide 16; Student Handout - Unit Conversion; Activity - Conversion; Activity - Conversion Answer Key
05.06	Change hours and minutes to decimals, fractions and mixed numbers.	Mathematics in Construction	Student Handout - Calculating Time
05.07	Analyze and apply data and measurements to solve problems and interpret documents.	Mathematics in Construction	Entire lesson; Activity - Applied Math; Activity - Applied Math Answer
05.08	Determine ratios and proportions.	Mathematics in Construction	Slides 56 - 59; Activity - Proportions; Activity - Proportions Answer Key
05.09	Convert decimals to fractions and fractions to decimals.	Mathematics in Construction	Slides 46 - 54; Activity - Fractions & Decimals; Activity - Fractions & Decimals Answer Key
05.10	Solve problems for volume, weight, area, circumference and perimeter measurements for rectangles, squares and cylinders.	Mathematics in Construction	Slides 62 - 75
06.0 Demonstrate carpentry skills--The student will be able to:			
06.01	Construct various types of concrete forms.	Concrete: Construction Forms & Curing	Segment 2 Concrete Forms; Segment 3 Constructing a Form
06.02	Describe in-beds used in concrete formwork.	Concrete: Construction Forms & Curing	Student Handout - Concrete Embeds

CTE Standards and Benchmarks		Lesson Title	Location
06.03	Identify appropriate form stripping and handling techniques.	Concrete: Construction Forms & Curing	Segment 2 Concrete Forms; Segment 3 Constructing a Form 0:41-1:15
06.04	Lay out and install framing members for a structure.	Concrete: Construction Forms & Curing	Segment 2 Concrete Forms; Segment 3 Constructing a Form
06.05	Dry in a structure.	Concrete: Construction Forms & Curing	Segment 4 Hardened Concrete Qualities 3:55-5:24; Segment 6 Water Tightness and Wear Resistance 0:00-0:53; Segment 7 Concrete Problems and Prevention
		Concrete: Tool ID & Finishing	Segment 6 Ready Mix Concrete 3:42-5:23
07.0 Read and interpret construction drawings--The student will be able to:			
07.01	Identify basic construction drawing terms, components and symbols.	Introduction to Construction Drawings	Slides 5 - 54; Activity - Drawing Identification; Activity - Symbol Recognition; Student Handout - Construction Drawing Symbols
07.02	Locate sections, elevations and details to their location on the plan view.	Introduction to Construction Drawings	Slides 17 - 22; Activity - Drawing Identification; Project - Creating a Blueprint
07.03	Use drawing dimensions to lay out a construction project,	Introduction to Construction Drawings	Slides 87-109; Project-CAD; Project-Creating A Blueprint
07.04	Read architectural scales.	Introduction to Construction Drawings	Slides 63 - 64; Student Handout - Reading Archititctural Scales
08.0 Frame floor systems based on drawing and specification requirements--The student will be able to:			
08.01	Identify floor and sill framing and support members.	Installation: Foundation and Subflooring	Segment 4 Model Demonstration; Segment 5 Foundation Preparation
08.02	Name the methods used to fasten sills to the foundation.	Installation: Foundation and Subflooring	Segment 6 Installation: Headers and Joists 3:21-3:43
08.03	Understand how girder/beam and joist sizes are selected.	Installation: Foundation and Subflooring	Segment 4 Model Demonstration 0:08-1:18; Activity-Using Span Tables
08.04	Identify different types of floor joists.	Installation: Foundation and Subflooring	Segment 4 Model Demonstration_Header and Joist Construction Model 1:56-3:34; Segment 4 Model Demonstration_Cantilever Floor Construction Model 8:11-9:52; Project-Cantilever Floor
08.05	Identify different types of bridging.	Installation: Foundation and Subflooring	Segment 4 Model Demonstration_Completed Floor Model 4:12-4:59; Activity-Bridging

CTE Standards and Benchmarks		Lesson Title	Location
08.06	Identify different types of flooring materials.	Installation: Foundation and Subflooring	Segment 5 Foundation Preparation; Project-Flooring Brochure
08.07	Explain the purposes of subflooring and underlayment.	Installation: Foundation and Subflooring	Segment 4 Model Demonstration_Subfloor Decking Construction Model 5:00-6:44; Activity-Discuss Subflooring and Underlayment
08.08	Match selected fasteners used in floor framing to their correct uses.	Installation: Foundation and Subflooring	Segment 3 Tools and Materials 1:25-2:09
08.09	Estimate the amount of material needed to frame a floor assembly.	Installation: Foundation and Subflooring	Segment 2 Lumber Basics_Materials Estimation 7:12-9:20; Segment 4 Model Demonstration_Subfloor Decking Construction Model 6:44-8:10; Activity-Estimating Flooring Materials
08.10	Demonstrate the ability to:		
	a. Lay out and construct a floor assembly	Installation: Foundation and Subflooring	Segment 6 Installation: Headers and Joists; Activity-Installing Foundation and Subflooring
	b. Install bridging (wood cross bridging, solid wood bridging and steel cross bridging).	Installation: Foundation and Subflooring	Segment 7 Installation: Bridging and Sub-Flooring 0:07-1:44
	c. Install joists for a cantilever floor.	Installation: Foundation and Subflooring	Segment 4 Model Demonstration_Cantilever Floor Construction Model 8:11-9:52; Project-Cantilever Floor
	d. Install a subfloor using butt-joint plywood/OSB panels and structural particle board.	Installation: Foundation and Subflooring	Segment 4 Model Demonstration_Subfloor Decking Construction Model 5:00-6:44
	e. Install a single floor system using tongue-and-groove plywood/OSB panels.	Installation: Foundation and Subflooring	Segment 7 Installation: Bridging and Sub-Flooring 1:45-3:38
09.0 Frame walls and ceilings based on drawing and specification requirements--The student will be able to:			
09.01	Identify the components of a wall and ceiling layout.	Installation: Framing	Segment 3 Framing: Tools and Materials 3:06-3:48, 4:00-4:20; Segment 5 Framing Member Buildup; Segment 7 Installation: Ceiling Framing 0:07-1:41; Activity-Framing and Roofing Identification
09.02	Lay out a wood frame wall, including plates, corner posts, door and window openings, partition Ts, bracing and the use of fire stops where applicable.	Installation: Framing	Segment 6 Installation: Wall Framing 0:08-5:12; Project-Installing Framing

CTE Standards and Benchmarks		Lesson Title	Location
09.03	Describe the correct procedure for assembling and erecting an exterior wall.	Installation: Framing	Segment 6 Installation: Wall Framing 0:08-3:18; Activity-List of Procedures
09.04	Identify the common materials and methods used for installing sheathing on walls.	Installation: Framing	Segment 3 Framing: Tools and Materials 3:49-3:59; Segment 6 Installation: Wall Framing 5:13-7:27; Activity-Sheathing
09.05	Lay out, assemble, erect and brace exterior walls for a frame building.	Installation: Framing	Segment 6 Installation: Wall Framing 0:08-3:18; Project-Installing Framing
09.06	Describe wall framing techniques used in masonry construction.	Building Construction Basic Masonry	Segment 2 Bricks, Blocks and Reinforcement; Segment 3 Mortar Mixing and Brick Wall Construction; Segment 4 Block Wall Construction
09.07	Explain the use of metal studs in wall framing.	Installation: Framing	Student Handout - Metal Studs
09.08	Demonstrate correct procedure for laying out ceiling joists.	Installation: Framing	Segment 7 Installation: Ceiling Framing 0:07-5:25; Project-Installing Framing
09.09	Cut and install ceiling joists on a wood frame building.	Installation: Framing	Segment 7 Installation: Ceiling Framing 2:18-11:20; Project-Installing Framing
09.10	Estimate the materials required to frame walls and ceilings.	Installation: Framing	Segment 4 Estimating Materials 0:07-2:24; Activity-Estimating Framing Materials
10.0 Frame a roof based on drawing and specification requirements--The student will be able to:			
10.01	Define the terms associated with roof framing.	Installation: Framing	Segment 8a Installation: Roof Framing Part 1; Activity-Roof Framing
10.02	Identify the roof framing members used in gable and hip roofs.	Installation: Framing	Segment 8a Installation: Roof Framing Part 1. Model Demonstration of Hip Roof is discussed from 0:08-2:11, model demonstration of Gable Roof is discussed from 2:12-3:38 and an overview of roof types is discussed from 3:29-5:00.
10.03	Calculate the length of a rafter using various methods.	Installation: Framing	Segment 8a Installation: Roof Framing Part 1_Roof Layout 5:01-6:49; Segment 8b Installation: Roof Framing Part 2 0:08-23:48; Activity-Roof Layout
10.04	Identify the various types of trusses used in roof framing.	Installation: Framing	Project-Trusses

CTE Standards and Benchmarks		Lesson Title	Location
10.05	Use a rafter framing square, speed square and calculator in laying out a roof.	Installation: Framing	Segment 8b Installation: Roof Framing Part 2 0:08-23:48
10.06	Identify various types of sheathing used in roof construction.	Installation: Framing	Segment 9 Installation: Decking
10.07	Frame a gable roof with vent openings.	Installation: Framing	Segment 8. Part 1 of Roof Framing 2:12 - 5:28; Student Handout - Gable Roof with Vent Openings; Activity - Estimating Roof Framing Materials; Activity - Roof Framing Terminology; Activity - Roof Framing Terminology Answer Key; Activity - Gable Roof Layout Using Rafters; Activity - Gable Roof Layout Using Rafters Answer Key; Project - Framing a Gable Roof Using Rafters; Project - Framing a Gable Roof Using Rafters Teacher Instruction Sheet
10.08	Frame a roof opening.	Installation: Roofing	Segment 7 Penetrations
10.09	Erect a gable roof using trusses.	Installation: Framing	Student Handout - Gable Roof Using Trusses; Activity - Roof Framing Terminology; Project - Trusses; Activity - Estimating Materials for Gable Roof Construction with Trusses; Activity - Estimating Materials for Gable Roof Construction with Trusses Answer Key
10.10	Estimate the materials used in framing and sheathing a roof.	Installation: Framing	Segment 4 Estimating Materials 2:25-3:20; Activity - Estimating Framing Materials; Activity - Estimating Framing Materials Answer Key; Activity-Estimating Roof Framing Materials; Activity-Estimating Roof Framing Materials Answer Key