Course of Study Information Page

Course Title: Introduction to Construction	Technology (#0526)	
Rationale: This is an introduction into the world of construction where the student will		
learn the basics of construction from the setting of a foundation to the interior and		
exterior finishes.		
Course Description: This course is designed to provide the student with vocational		
experiences associated with construction technology in the areas of light building		
construction. This course will be integrated v	with the academic core with students	
learning math and communication skills through	ugh an activity-oriented approach. Based	
on their experiences in the course, students	will learn to make informed occupational	
and educational choices. Students will devel	lop skills, knowledge, and attitudes that	
enable them to obtain employment in the career of their choice. The correct and safe		
use of tools, machines, materials and proces	ses will be stressed at all times.	
Length of Course:	1 Year	
Grade Level:	10 – 12 [and adults in ROP]	
Credit:		
Number of units: 5 units per semester		
☐Meets graduation requirements		
Request for UC "a-f" requirements		
☐College Prep		
⊠Elective		
⊠Vocational		
Prerequisites:	Engineering Design 1	
	or Wood 1	
	or teacher permission	
Department(s):	Trades and Industries	
District Sites:	EDHS, ORHS, PHS, UMHS	
Board of Trustees Adoption Date:	January 15, 2008	
Textbook(s)/Instructional Materials:		
Date Adopted by the Board of Trustees:		

El Dorado Union High School District

Introduction to Construction Technology #526

Table of Contents

Unit 1: Orientation

Unit 2: Safety

Unit 3: Print Reading, Measuring and Codes

Unit 4: Site Planning and Preparation

Unit 5: Foundations

Unit 6: Floor Framing

Unit 7: Wall Framing

Unit 8: Roof Framing

Unit 9: Utilities

Unit 10: Windows and Exterior Door Instillation

Unit 11: Siding and Exterior Trim

Unit 12: Insulation & Weather Proofing

Unit 13: Roofing

Unit 14: Interior Finishing

Unit 15: Construction Management

Unit 16: Careers in Construction

Introduction to Construction Technology #526

Unit 1: Orientation

Goals: A) Students will understand the goals and objectives of the course.

B) Students will learn how to properly use the tools of the trade.

C) Students will learn how to present their projects in the community.

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Understand the short and long term goals of the course and the steps necessary to achieve their goals.	 Lecture Explanation of grading policies and assessments Syllabus
2. Understand the tools of the trade, past, present, and future.	 Demonstration of proper use of equipment and class materials Lecture Small group demonstrations Individual assessment
3. Understand the rules for class management, time manage, an equipment management	LectureDemonstrationReviewing schedules

Content Standards: Building Trades and Construction Industry Sector

- (1.2) Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.
- (1.d) Formulate explanations by using logic and evidence.
- 10.2 Maintain and troubleshoot equipment used in the construction industry.
- A4.1 Understand the proper and safe use of stationary power tools used in the milling process, such as shapers, sanders, joiners, table saws, and band saws.
- A4.2 Understand the proper and safe use of stationary power tools used in the assembly process, such as pneumatic table clamps, case clamps, case frame fasteners, and hardware fasteners.
- A4.3 Understand the proper and safe use of stationary power tools used in the finishing process, such as glue applicators, laminate applicators, and lacquer and paint applicators.
- A4.4 Know the basic care, maintenance, and lock-out procedures for stationary power tools.
- A5.1 Know how to read, understand, design, and construct cabinets accurately from cabinetmaking fabrication and installation plans and specifications.
- A5.2 Understand how to estimate a bill of materials from drawings and specifications for constructing cabinets.
- A5.3 Understand how to create a job schedule in a cabinetmaking project.

A5.4 Solve common cabinetmaking problems by using construction codes and cabinet building standards stated in the Manual of Millwork.

A5.5 Understand record keeping procedures in all phases of cabinetmaking (e.g., time accounting, cost of goods). A7.1 Design and create cabinet and wood products. A7.2 Develop a production plan, including the layout, bill of materials, and cost analysis, for the production of cabinets or wood products.

Introduction to Construction Technology #526

Unit 2: Safety

Goal: Students will understand how use of woodworking

equipment in such a way to insure their and others safety.

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
Understand how to care for the equipment	 Lecture on safety and proper maintenance and use of equipment Demonstration Reading Chapter 3 pages 21 - 42 Student activities and practice
2. Understand different techniques and uses of equipment – tools of the trade, past, present, and future	 Lecture Demonstration Reading Chapter 3 Student activities and practice
3. Understand the importance of safety procedures to prevent injury	 Lecture Demonstrating Guided practice assessment
4. Pass a safety test on each piece of equipment and machine	 Pass safety test with a score of 100%

Content Standards: Building Trades and Construction Industry Sector

- (1.2) Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.
- (1.d) Formulate explanations by using logic and evidence.
- 10.2 Maintain and troubleshoot equipment used in the construction industry.
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Introduction to Construction Technology #526

Unit 3: Print Reading, Measuring and Codes

Goals: A) Student will check their measuring skills as they learn how to read

construction drawings

B) Student will learn about the building codes and the permit process

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
Check their ability to read a scale	DemonstrationQuiz
2. Learn how to read the alphabet of lines, Symbols and notes that make up construction drawings	 Demonstration Read plans and answer both oral and written questions about the plans
3. Be introduced to the code and permit process the governs the building industry	 Demonstration Visit the County Building Department Review a "Code Checker" and compare a plan to the checker

Content Standards: Building Trades and Construction Industry Sector

Content Standards: D4.1 Interpret and use residential construction blueprints and specifications.D4.2 Understand how to estimate materials from blueprints and specifications.D4.3 Understand the sequencing of events for specific construction projects. Residential and Commercial Construction Pathway and electrical, by using the official codes adopted by the state and local building standards commission. D4.5 Understand industry conventions for the creation and maintenance of construction logs. D4.6 Understand customer service/relations as applied to project management and wholesale and retail sales.

Introduction to Construction Technology #526

Unit 4: Site Planning and preparation*

Goal: A) Understand how the builder prepares the building site to layout the

foundation and infrastructure

OBJECTIVES	SUGGESTED ACTIVITIES
The student will:	
Learn how to clear the building site, layout locations of the building and utilities	 Demonstration Clear vegetation and debris State building corners Chalk the location of utility lines Set Utility pole

Content Standards: Building Trades and Construction Industry Sector.0 Students understand the safe and appropriate use of hand tools common to the residential land commercial construction industry:D2.1 Use the common hand tools of the trade, such as hammers, torches, pliers, wire cutters, pipe cutters, saws, chisels (wood and concrete), and wrenches, safely and properly. D2.2 Maintain and care for hand tools used in residential and commercial construction. D3.0 Students understand the safe and appropriate use of portable power tools that are common to the residential construction industry and are appropriate to the individual student's level:

D3.1 Use portable power tools, such as circular saws, table saws, saber saws, drills, planers, and sanders, safely and properly.D3.2 Use portable pneumatic tools, such as rough framing nail guns, interior finishing and brad nail guns, hammers, impact wrenches, drills, and compressors, safely and appropriately.D3.3 Maintain and care for portable power tools and portable pneumatic tools.

Introduction to Construction Technology #526

Unit 5: Foundations

Goal: A) Each student will have the opportunity to estimate, Form and finish both

a foundation wall system and a slab on grade

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Learn how to set Batter Boards, dig footings, set necessary forms insuring that the foundation is level, plumb and square, install reinforcing steel	 Demonstration Read chapter 7 page 143 – 145 Set Batter Boards, dig footings, set necessary forms Install and tie off reinforcing steel
2. Learn how to estimate materials	Demonstration
necessary for the job	 Develop an estimate sheet of needed materials
3. Learn the jobs that are necessary to	Demonstration
pour concrete	Pour and finish concrete
4. Learn how to form and pour a slab on	Demonstration
grade	Pour and finish concrete

Content Standards: Building Trades and Construction Industry Sector D4.0 Students understand project management procedures and processes as they occur in a construction project:D4.1 Interpret and use residential construction blueprints and specifications. D4.2 Understand how to estimate materials from blueprints and specifications.D4.3 Understand the sequencing of events for specific construction projects. Residential and Commercial Construction Pathway D4.4 Solve common residential construction problems, such as framing, plumbing, and electrical, by using the official codes adopted by the state and local building standards commission.D4.5 Understand industry conventions for the creation and maintenance of constructionlogs.D4.6 Understand customer service/relations as applied to project management and wholesale and retail sales.

Introduction to Construction Technology #526

Unit 6: Floor Framing

Goal: A) The student will understand the system of floor framing, how to estimate

material and how to construct the floor framing system

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Understand how to Estimate and order materials for Posts, Rim Joists, Floor Joists, Blocking, Sub Floor, Nails and or screws and construction adhesive	 Demonstration Develop an estimate sheet of needed materials Order necessary materials
Be able to cut and install all wood members as per drawing of project	 Demonstration Cut materials and construct floor framing system

Content Standards: Building Trades and Construction Industry Sector D1.0 Students understand and apply measurement systems in the planning and layout process used in the residential construction industry: D1.1 Identify design solutions for residential construction problems. D1.2 Calculate required materials for residential construction applications. D1.3 Convert scaled blueprint drawing measurements to full dimensions for a given construction project. D1.4 Apply conventional construction measurement processes accurately (geometric and trigonometric functions). D1.5 Know the use of conventional construction formulas to determine production requirements.

Introduction to Construction Technology #526

Unit 7: Wall Framing

Goals: A) Student will be able to read drawings and estimate necessary materials

to frame the walls of a construction project

B) The student will be able to build the necessary components of frame

walls

OBJECTIVES	SUGGESTED ACTIVITIES
The student will:	
Be able to Estimate and order all	Demonstration
framing material for walls	 Develop an estimate sheet of needed materials
	Order necessary materials
2. Be able to develop a story pole and	Demonstration
layout the top and bottom plate	 Develop a story pole and layout the top and bottom plate
3. Be able to cut trimmers, headers and	Demonstration
cripple studs. Construct Channels and	 Cut materials and construct floor
corners construct door and window sub	framing system
frame parts	

Content Standards: Building Trades and Construction Industry Sector D1.0 Students understand and apply measurement systems in the planning and layout process used in the residential construction industry: D1.1 Identify design solutions for residential construction problems. D1.2 Calculate required materials for residential construction applications. D1.3 Convert scaled blueprint drawing measurements to full dimensions for a given construction project. D1.4 Apply conventional construction measurement processes accurately (geometric and trigonometric functions). D1.5 Know the use of conventional construction formulas to determine production requirements.

Introduction to Construction Technology #526

Unit 8: Roof Framing

Goals: A) The student will be able to read the construction drawings and be able

to estimate the necessary materials to construct a conventionally framed

oof

B) The student will be able to frame a conventionally framed roof

C) The student will be able to install roof trusses

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
Be able to use span/spacing charts to determine proper rafter sizes and spacing and be able to order trusses	 Demonstration Develop an estimate sheet of needed materials Order necessary materials Visit truss plant
Be able to layout typical Rafter, Valley and Hip rafters	 Demonstration Cut typical Rafters, Hips and Valley rafters
3. Be able to install Trusses on a typical gable roof	DemonstrationInstall trusses on a gable roof

Introduction to Construction Technology #526

Unit 9: Utilities

Goal: Students will learn about the different Utility systems used in the

construction process

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Learn about Electrical, Plumbing and Air exchange systems	DemonstrationRead chapters 26 & 27
All exchange systems	Work sheets
2. Learn how to install Electrical outlets,	Demonstration
Lighting circuits (single and 3-way)	 Construct mock up board with outlets
	and lighting circuits
3. Learn how to install waist water lines	 Demonstration
	Cut and install ASB pipe
4. Learn how to install supply water	Demonstration
lines	 Cut and install Copper pipe
	 Learn about supply manifold system
	Install a water heater
5. Learn about A/C, solar and warm air	 Demonstration
heating systems.	Read Chapter 28

Content Standards: Building Trades and Construction Industry Sector C4.4 Solve common mechanical construction problems by using Uniform Building Codes and Air Conditioning and Refrigeration Institute Standards. C5.2 Use appropriate safety procedures and practices in various work environment settings pertaining to mechanical construction (e.g., plumbing, electrical, HVAC). C6.0 Students understand the variety of building phases, systems, and techniques used in mechanical construction: C6.1 Develop building plans and schedules by using processes common to mechanicalconstruction. C6.2 Understand processes and materials appropriate to architectural design and mechanical construction (e.g., structural, electrical, mechanical, and finish phases). C6.3 Understand the phases of mechanical construction, such as rough and finish, electrical, sheet metal ducting, and HVAC installation. D4.4 Solve common residential construction problems, such as framing, plumbing, and electrical, by using the official codes adopted by the state and local building standards commission. D4.4 Solve common residential construction problems, such as framing, plumbing, and electrical, by using the official codes adopted by the state and local building standards commission. D5.0 Students understand the value and necessity of practicing occupational safety in the construction industry facility and job site:

D5.1 Understand the safe use of electrical connection methods and electrical wiring procedures.D5.2 Know the safety procedures and practices in various work environment settings pertaining to residential and commercial construction. D6.0 Students understand the variety of building phases, systems, and techniques used in residential and commercial construction: D6.1 Develop building plans and schedules by using processes common to residential and commercial construction. D6.2 Understand the processes and materials (e.g., structural, electrical, mechanical, finish) appropriate to the architectural design and residential construction.

Introduction to Construction Technology #526

Unit 10: Windows and Exterior Door installation

Goal: Students will learn about the selection of and instillation of windows and

exterior doors

OBJECTIVES	SUGGESTED ACTIVITIES
The student will:	
1. Be able to select and order windows	Demonstration
and doors for a construction project	 Visit home center or lumber yard and order windows and doors
2. Be able to install both windows and	Demonstration
doors	 Install windows and doors on a construction project

Introduction to Construction Technology #526

Unit 11: Siding and Exterior trim

Goal: Students will learn about exterior finishes and how they are installed

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
Estimate the amount of material needed for project house	 Demonstration Visit home center or lumber yard to see the types of siding used in this area Develop an estimate sheet of the materials needed for the exterior siding and trim
2. Study types and methods of installing composite, wood and masonry types of siding.	 Demonstration Install siding and trim on a construction project Read Chapter 13

Introduction to Construction Technology #526

Unit 12: Insulation & Weather Proofing

- Using recyclable materials*

Goal: Students will learn about Insulation and Weather proofing

OBJECTIVES	SUGGESTED ACTIVITIES
The student will: 1. Estimate the total amounts to insulation needed for floor, walls and Ceiling of the project house.	 Demonstration Develop an estimate sheet of insulation needs on the construction
2. Study insulation materials to find the best suited for project house that is also environmentally friendly.	 project Demonstration Read chapter 14 Visit a Home Center or Lumber Yard to find out about the types of insulation used in this area and which are made of recyclable material
3. Will learn how to install insulation	 Demonstration Install insulation in walls , floor, ceiling and around any other openings in the house envelope

Content Standards: *Building Trades and Construction Industry Sector* D7.0 Students understand the impact of financial, technical, environmental, and labor trends on the past and future of the construction industry:

D7.1 Understand significant historical trends in the construction industry. D7.2 Develop financial plans for construction projects.D7.3 Understand the environmental regulations that influence residential and commercial design.

Introduction to Construction Technology #526

Unit 13: Roofing

Goal: Students will learn about roofing materials, how to estimate for and install

them

OBJECTIVES	SUGGESTED ACTIVITIES
The student will:	
1. Learn how to Estimate the amount of	Demonstration
material required to roof Project house	Read chapter 11
2. Learn about different types of roofing	Demonstration
materials and how they are installed	 Visit Home Center or Lumber Yard to
	see the different types of roofing
	materials
3. Install Comp Singles, flashing and trim	Demonstration
on project house	Install roofing material on project
	house

Introduction to Construction Technology #526

Unit 14: Interior Finishes

Goal:

OBJECTIVES	SUGGESTED ACTIVITIES
The student will:	
Estimate amount of drywall needed	Demonstration
for project house	 Develop an estimate sheet for the
	amount of materials needed to drywall
	the project house
2. Install drywall and corner bead.	 Demonstration
	 Cut and install drywall and corner
	bead
3. Learn about and apply "drywall mud",	Demonstration
sand, seal and paint to drywall	 Tape, texture and prepare interior walls
	for finish coats
4. Learn about and install doorjambs,	Demonstration
casings, base boards and crown	 Estimate, order and install jambs, base
	boards and crown moldings

Introduction to Construction Technology #526

Unit 15: Construction Management

Controlling material and Labor costs*

Project management *

Goals: A) Students will learn about the control and scheduling of people,

materials and equipment.

B) Students will learn about Workman's comp and other necessary job

related insurances

OBJECTIVES	SUGGESTED ACTIVITIES
The student will:	
1. Learn how to develop a flow chart for	Demonstration
material, equipment and workers for	 Develop necessary construction flow
Project House	Charts
2. Learn about workman's comp	 Guest speaker – Workman's comp and
insurance and other worker welfare	insurance related to construction
programs	

Content Standards: **Building Trades and Construction Industry Sector** B5.1 Understand the importance of scaffold and ladder safety.

B5.2 Know the rules and responsibilities of the various governmental safety agencies and their impact on engineering and heavy construction B5.3 Understand the importance of worksite safety as it pertains to hazardous waste disposal and procedures for containment of toxic and hazardous materials.B5.4 Understand the importance of safety and safe work practices (e.g., fire safety, protective clothing) in the welding phases of engineering and heavy construction and the safe operation of heavy equipment (e.g., earth movers, D4.0 Students understand project management procedures and processes as they occur in a construction project:D4.1 Interpret and use residential construction blueprints and specifications.D4.2 Understand how to estimate materials from blueprints and specifications.D4.3 Understand the sequencing of events for specific construction projects. Residential and Commercial Construction Pathway D4.4 Solve common residential construction problems, such as framing, plumbing, and electrical, by using the official codes adopted by the state and local building standards commission. D4.5 Understand industry conventions for the creation and maintenance of construction

logs.D4.6 Understand customer service/relations as applied to project management and wholesale and retail sales.

Introduction to Construction Technology #526

Unit 16: Careers in Construction

Using the SCANS report to prepare for a career in construction

Goal: Help students to be prepared to meet the challenges of locating and

keeping employment

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
Update their resume to reflect new skills learned	 Edit Resume and Portfolio
2. Ask for a letter of recommendation from employer, civic or religious leader that knows your abilities.	Ask for and receive a letter of recommendationFill out a student data form
3. Learn how to fill out a job application completely	 Fill out a job application on line and on Paper
4. Learn how to write a cover letter to send with a resume.	 Write a Cover letter to send with a resume

Content Standards: Building Trades and Construction Industry Sector A9.0 Students understand career preparation and how it applies across all standards for students planning to enter and advance successfully in the cabinetmaking and wood products industry: A9.1 Understand the careers that are available in cabinetmaking and wood products manufacturing and related occupations (e.g., custom crafts, furniture making, marketing).A9.2 Understand the need for professional growth across all aspects of the industry, including financial, leadership, and advancement elements.

• Areas where building "Green" can be incorporated

Homework: Majority of written and Project work will be completed in class

Lab Fee: Student pays for materials taken home

Grading Policy: 5% Written assignments

15% Project plans

10% Quizzes, participation and written assignments

60% Lab assignments

10% Final Exam