

Course Title: Construction Site Preparation and Foundation

Unit 1:	Career Opportunities
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Content Standard(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> Identify career opportunities in the construction industry. Examples: draftsman, engineer, construction foreman, carpenter, concrete finisher, plumber, electrician
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Learning Objective(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> Utilize Career Cruising and or other career research programs to develop a research paper on selected careers associated with construction site preparation and foundation.
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Essential Question(s):	What is the importance of selecting a viable career?
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
I. Professionalism II. Salary III. Wage IV. Job description V. Career	Lecture/demonstration Interview Pretest/Posttest	Guest speaker PowerPoint/ Projector Textbooks Quizzes Handouts Videos Digital cameras

Unit Assessment:	Participation in class discussion, research paper and presentation.
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Unit/Course CTSO Activity:	FFA Agricultural Construction CDE
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**Unit/Course
Culminating
Product:**

Students will gain insight into the careers available in the construction industry.

Course/Program Credential(s): Credential Certificate Postsecondary Degree University Degree
 Other: Can lead to NCEER Credential

Course Title: Construction Site Preparation and Foundation

Unit 2:	Safety
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Content Standard(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 2. Demonstrate safety concepts required in the construction site preparation and foundation industry.
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Learning Objective(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 1. Explain the meaning of safety. 2. Identify high hazard areas. 3. Explain and demonstrate the use of appropriate personal protective equipment. 4. Demonstrate and explain general hand- and power-tool safety. 5. Recall general shop rules to be followed while in the shop. 6. Explain shop safety color-coding system. 7. Demonstrate knowledge of fire prevention and control methods. 8. Demonstrate knowledge of fall restraint systems.
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Essential Question(s):	What are the legal and social reasons for learning how to prevent accidents and how to respond to emergency situations?
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
I. Meaning/Importance of Shop Safety II. High Hazard Areas III. PPE IV. Hand and Power Tool Safety V. Shop Rules VI. Safety Colors VII. Fire Safety VIII Fall Restraint Systems	Lecture/demonstration Worksheets Laboratory/shop safety tour Hazard identification tour Safe tool operation demonstration Pretest/Posttest	Guest speaker PowerPoint/ Projector Textbooks Quizzes Web sites Handouts Hand and power tools Videos MSDS PPE Safety Posters

Unit Assessment:	Participation in class discussion, participation in shop hazard identification, and shop safety test (100% mastery)
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Unit/Course CTSO Activity:	Incorporate safety practices into student's SAE project.
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Unit/Course Culminating Product:	Students will master shop safety by identifying mock safety hazards in the shop and by passing the safety portion of the lesson with a 100 on the shop safety test.
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Course/Program Credential(s): <input checked="" type="checkbox"/> Credential <input type="checkbox"/> Certificate <input checked="" type="checkbox"/> Postsecondary Degree <input checked="" type="checkbox"/> University Degree <input type="checkbox"/> Other: Can lead to NCCER Credential

Course Title: Construction Site Preparation and Foundation

Unit 3: Planning Structures

<p align="center">Content Standard(s) and Depth of Knowledge Level(s):</p>	<p>Students will:</p> <ol style="list-style-type: none"> 3. Demonstrate the mechanical drawing process used in designing structures. <ul style="list-style-type: none"> • Identifying various mechanical drawing components Examples: symbols, dimension lines, extension lines, hidden lines, object lines, center line, lettering 4. Explain local building codes affecting the construction of buildings. 5. Calculate equipment and work space requirements for structures. 6. Identify factors in selecting building materials used in structures. Examples: cost, availability, suitability 7. Formulate a bill of materials for a specific structure. Examples: concrete, lumber, fasteners, roofing materials, hardware, electrical supplies, plumbing supplies
<p align="center">Learning Objective(s) and Depth of Knowledge Level(s):</p>	<p>Students will:</p> <ol style="list-style-type: none"> 1. Produce a scale drawing using drawing board, T- square, architect scale, paper and pencil. 2. Representation will utilize industry standards of architecture in the form of symbols, dimension lines, extension lines, hidden lines, object lines, center line, lettering and drawing layout. 4. Research local building codes as they affect building construction. 5. Identify work space and equipment needs for selected structures. 6. Identify factors to be considered in selection of material used in structures such as cost and availability. 7. Produce a bill of material for a selected structure.
<p align="center">Essential Question(s):</p>	<p>How do the rigors of structural planning interrelate with the needs of society and culture of the twenty first century?</p>

Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
<ol style="list-style-type: none"> I. Definition of architectural drafting terms II. Definition of construction components of a structure III. Math skills needed in calculation IV. Definition and components of bill of material 	<p>Lecture/demonstration Group brainstorming Architectural representation on drawing board Pretest/Posttest</p>	<p>Guest speaker PowerPoints/ Projectors On-line research Drawing board, T-square, architect scale, and miscellaneous drafting tools Textbooks Quizzes Handouts</p>

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Unit Assessment:	Architectural representation of selected structure with bill of material and specifications.
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Unit/Course CTSO Activity:	FFA Agricultural Construction CDE, Habitat for Humanity
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Unit/Course Culminating Product:	Students will develop a home plan.
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Course/Program Credential(s): Credential Certificate Postsecondary Degree University Degree
 Other: Can lead to NCCER Credential

Course Title: Construction Site Preparation and Foundation

Unit 4:	Structure Location
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Content Standard(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 8. Identify positive characteristics of a building site. Examples: proper drainage, location, orientation 9. Explain the importance of conducting property surveys for structures, including the location of property and setback lines.
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Learning Objective(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 1. Evaluate the building site to determine drainage, soil type, subterranean soil composition, and orientation. 2. Conduct a physical survey of the property with the consideration of all applicable codes and regulations. 3. Utilize GPS equipment and techniques in survey.
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Essential Question(s):	What criteria should be used to determine a suitable location for a selected structure?
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
<ol style="list-style-type: none"> I. Core sample II. Soil types III. Load compaction IV. Percolation V. GPS VI. Property description VII. Survey 	<p>Lecture/demonstration Interview Tour construction site during the site prep and soil evaluation period Hands on activity (core sampling, GPS location of property lines, corners and structure location Pretest/Posttest</p>	<p>Guest speaker PowerPoint/ Projector Textbooks GPS, transit level, long tape Excavation equipment Quizzes Handouts Videos Digital cameras</p>

Unit Assessment:	Evaluation of participation in hands on activities listed above.
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**Unit/Course
CTSO Activity:**

FFA Agricultural Construction CDE, Habitat for Humanity

**Unit/Course
Culminating
Product:**

Students will tour a construction site and identify positive characteristics.

Course/Program Credential(s): Credential Certificate Postsecondary Degree University Degree
 Other: Can lead to NCCER Credential

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Unit 5:	Structure Layout
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Content Standard(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <p>10. Demonstrate building layout procedures for a specific structure. Examples: staking, squaring, constructing batter boards, leveling</p>
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Learning Objective(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <p>1. Layout a selected structure using GPS, transit, long tape and string to square layout and construct batter boards.</p>
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Essential Question(s):	What is the prescribed process by which a structure is laid out?
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
I. Applied geometry II. GPS techniques III. Measuring skills IV. Leveling terms	Lecture/demonstration Interview Tour construction site during the site prep and soil evaluation period Hands on activity (GPS location of property lines, corners and structure location) Pretest/Posttest	Guest speaker PowerPoints/ Projectors Textbooks GPS, transit level, long tape Excavation equipment Quizzes Handouts Videos Digital cameras

Unit Assessment:	Evaluation of participation in hands on activities listed above.
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**Unit/Course
CTSO Activity:**

FFA Agricultural Construction CDE, Habitat for Humanity

**Unit/Course
Culminating
Product:**

Students will lay out a small four room building.

Course/Program Credential(s): Credential Certificate Postsecondary Degree University Degree
 Other: Can lead to NCCER Credential

Course Title: Construction Site Preparation and Foundation

Unit 6:	Foundation
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Content Standard(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 11. Explain how to lay out and construct pier, edge, and footing forms. 12. Describe the use of concrete reinforcements in structures.
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Learning Objective(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 1. Demonstrate how to lay out and construct pier, edge and footing forms. 2. Explain the use of concrete reinforcements in structures.
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Essential Question(s):	What is the prescribed process by which pier, edge, and footing forms are laid out?
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
<ol style="list-style-type: none"> I. Applied geometry II. GPS techniques III. Measuring skills IV. Leveling terms 	<p>Lecture/demonstration Interview Tour construction site during the site prep and soil evaluation period Hands on activity (GPS location of property lines, corners and structure location) Pretest/Posttest</p>	<p>Guest speaker PowerPoints/ Projectors Textbooks GPS, transit level, long tape Excavation equipment Quizzes Handouts Videos Digital cameras</p>

Unit Assessment:	Evaluation of participation in hands on activities listed above.
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**Unit/Course
CTSO Activity:**

FFA Agricultural Construction CDE, Habitat for Humanity

**Unit/Course
Culminating
Product:**

Students will dig a small footer and prepare for concrete. Students will lay out a pier form for concrete.

Course/Program Credential(s): Credential Certificate Postsecondary Degree University Degree
 Other: Can lead to NCCER Credential

Course Title: Construction Site Preparation and Foundation

Unit 7:	Concrete and Masonry
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Content Standard(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <p>13. Demonstrate the use of concrete and masonry tools in construction.</p> <p>14. Demonstrate the process of mixing concrete.</p> <ul style="list-style-type: none"> • Estimating the amount of concrete needed for a project • Applying various finishing techniques used with concrete <p>15. Demonstrate the process of laying block.</p> <ul style="list-style-type: none"> • Estimating the number of concrete blocks needed for a project
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Learning Objective(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 1. Use concrete and masonry tools in construction project. 2. Mix concrete and estimate concrete needed for a project. 3. Lay concrete block to construct corner tier, column, wall with openings.
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Essential Question(s):	What is the prescribed process for the construction of a concrete block wall with openings and corners built on a self placed concrete slab?
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
I. Lay out skills II. Measuring skills III. Leveling terms IV. Masonry tool manipulation V. Admixtures VI. Math skills	Lecture/demonstration Interview Tour construction site during the foundation wall construction period Hands on activity constructing concrete wall with openings and corners on self placed concrete slab. Pretest/Posttest	Guest speaker PowerPoints/ Projectors Textbooks Sand, gravel, cement, mortar mix Mixing equipment Masonry tools Quizzes Handouts Videos Digital cameras

Unit Assessment:	Evaluation of participation in hands on activities listed above.
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Unit/Course CTSO Activity:	FFA Agricultural Construction CDE, Habitat for Humanity
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Unit/Course Culminating Product:	Students will calculate, mix, pour, and finish concrete. Students will estimate the number of blocks needed for a project and demonstrate how to lay them.
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Course/Program Credential(s): <input checked="" type="checkbox"/> Credential <input type="checkbox"/> Certificate <input checked="" type="checkbox"/> Postsecondary Degree <input checked="" type="checkbox"/> University Degree <input type="checkbox"/> Other: Can lead to NCCER Credential
