Carpentry

Level IV Unit Outline

Career Connections Project Book 3 Residential & Commercial

Unit 1: Agenda Book Review/Classroom Rules

- Class discussion of student agenda book
- Review of classroom rules
- School safety protocols, district drills and emergency evacuations, behavior and meeting locations
- Review expectations and school policies for electronic devices

Unit 2: Safety, First Aid, Personal Protective Equipment and Shop Attire

- Identify, discuss, locate first aid and blood borne kits
- Identify, locate and demonstrate function and purpose of the Emergency Eye Station
- Identify, discuss, locate fire extinguisher
- Identify, distribute and discuss function and uses of protective eyewear, appropriate personal protective equipment (PPE) required in shop, and acceptable shop attire
- Identify, show location and discuss function and uses of the SDS (Safety Data Sheets) and how to interpret the information about paints and aerosols, content precautions, material labeling
- Equipment safety protocols
- Identify, demonstrate shop ventilation systems where applicable
- Identify locate and discuss function of shop flammable cabinet where applicable
- Discuss and demonstrate shop housekeeping of supplies, work stations and room maintenance
- Discuss and identify electrical safety considerations in the shop area
- Compile a safety section in the student shop notebook
- Identify, demonstrate air gauge function and operation where applicable
- Completion of online safety course and successful passing of safety test(s)

Unit 3: Carpentry & Construction II

- Learn advanced aspects of the Building Trades field
- Learn about light construction

Unit 4: Construction Materials II

- Learn advanced concepts about the process of lumber manufacturing
- Identify advanced differences between softwoods and hardwoods
- Use advanced knowledge to differentiate between the size, shapes and dimensions of lumber
- Discuss engineered lumber products
- Learn about fastening systems and their uses

Unit 5: Hand Tools II

- Learn advanced techniques using portable sawing and cutting tools
- Learn advanced techniques using boring and clamping tools
- Learn advanced techniques using smoothing tools
- Learn how to maintain portable jobsite tools and equipment
- Learn to specifically use portable jobsite tools, i.e., pneumatic floor nailer

Unit 6: Power Tools II

- Learn the advanced use of portable power saws
- Learn the advanced use of portable stationary power saws
- Learn the advanced use of portable power planes, routers, and sanders
- Learn to use pneumatic and powered-actuated tools
- Learn to use welding and metal-cutting equipment

Unit 7: Construction Equipment, Job Site Safety, Working Conditions, and OSHA 10 Certification

- Exercise advanced use of scaffolds, aerial lifts, and ladders in a safe working environment
- Utilize increased ability to use construction equipment in a safe working environment
- Use advanced judgment to maintain job site safety and working conditions
- Learn advanced use to utilize personal Fall Arrest equipment
- Proper use of scaffolds, aerial lifts, ladders, and safety
- OSHA 10 Certification
    - Intro to OSHA - 1 hour
    - OSHA Focus - 4 hours
        - Electrocution - 1 hour
        - Struck by - 45 minutes
        - Stuck in - 45 minutes
        - Falls - 1.5 hours
    - PPE - 30 minutes
    - Health Hazards in Construction- 30 minutes
    - Stairway/ Ladders - 1 hour
    - Tools - 1 hour
    - Material Handling - 30 minutes
    - Safety & Health Program - 30 minutes
    - Welding/Cutting - 30 minutes
    - Fire Protection/Prevention - 30 minutes

  Total hours 10 hours

Unit 8: Building Design and Print Reading II

- Learn advanced aspects of building designs, plans, and specifications
- Learn advanced use and how to read plot plans
- Learn advanced use and how to read foundation plans
- Learn advanced use and how to read floor plans
- Understand the concept of exterior elevations
- Advanced ability to understand section views
- Advanced understanding of details and framing plans
- Advanced understanding of door, window, and finish schedules
- Responsibility and Accountability in terms of building codes, zone, permits and inspections

Unit 9: Survey Instruments and Operations II

- Learn the advanced knowledge of the builders level, automatic level, water level, laser level, and transit levels
- Learn to establish elevations and grades
- Learn the advanced use as a jobsite leveling device
- Learn the advanced sit elevation layout, i.e., curbs, parking lot, and drainage

Unit 10: Foundation and Outdoor Slab Construction II

- Learn advanced concepts about the different types of foundations used in construction
- Utilize the different forming methods and materials needed for concrete
- Learn advanced concepts about stairway construction and outdoor slab construction
- Advanced learning to reinforce concrete
- Understand the importance of foundation moisture control, insect protection, backfill, waterproofing, and drainage

Unit 11: Floor, Wall, and Ceiling Frame Construction II

- Learn the basic aspects of floor, wall, and ceiling framing
- Learn aspects of metal framing
- Learn aspects of live and dead load as related to construction

Unit 12: Roof Frame Construction II

- Learn advanced principles of installing roof coverings
- Learn advanced principles of installing flashing
- Learn advanced principles of waterproofing
- Learn aspects of hip roofs

- Learn aspects of intersecting roofs
- Learn the principles of roof truss construction

Unit 13: Energy Conservation: Insulation and Construction Methods II

- Learn advanced concepts about temperature control, condensation, and ventilation in buildings
- Learn advanced aspects related to solar "green" energy in construction
- Explain "green", renewable construction and LEED standards
- Use of fenestration in energy efficient buildings, i.e., argon, glazing, tinting, etc.

Unit 14: Exterior Finish II

- Learn advanced techniques of exterior door and window installation
- Learn advanced techniques for exterior wall finishes, composites, and natural materials
- Learn techniques for brick concrete and stone veneers
- Learn and use Exterior Finishes Insulating Systems (EFIS)
- Learn techniques utilizing fypon installations and cornice work
- Use of architectural trims

Unit 15: Interior Finish II

- Learn advanced techniques of cabinet and countertop installations
- Learn advanced techniques of interior trim
- Learn floor finishes techniques
- Learn specialty moldings

Unit 16: Stairway Construction II

- Learn about advanced interior and exterior stairway construction
- Learn advanced techniques about handrails and handrail hardware
- Learn to use open and closed stringers
- Learn advanced stair construction with platforms
- Learn advanced calculations for laying out stairway stringer
- Learn composite stairway construction methods

Unit 17: Post-and-Beam Construction II

- Advanced learning on spans and weight transfer of post and beam construction
- Advanced Learning on spans and weight transfer of heavy timber construction
- Learn fine finishes of post and beam construction
- Learn fine finishes of heavy timber construction
- Learn span charts of timber construction

Unit 18: Heavy Concrete Construction II

- Learn advanced concrete placement for heavy construction
- Learn advanced concrete finishes for heavy construction
- Advanced Understanding of Slump tests
- Heavy construction form work
- Expansion and contraction in heavy concrete construction work
- Specialty tools used in heavy concrete construction work

Carpentry

New Jersey Student Learning Standards

NJ Learning Standards: CTE.9.3

CONTENT AREA:	*STANDARD 9.3 CAREER AND TECHNICAL EDUCATION*
ARCHITECTURE & CONSTRUCTION CAREER CLUSTER®	
Number	**Standard statement**
By the end of Grade 12, Career and Technical Education Program completers will be able to:	
CAREER CLUSTER®:	***ARCHITECTURE & CONSTRUCTION (AC)***
9.3.12.AC.1	**Use vocabulary, symbols and formulas common to architecture and construction.**
9.3.12.AC.2	**Use architecture and construction skills to create and manage a project.**
9.3.12.AC.3	**Comply with regulations and applicable codes to establish and manage a legal and safe workplace.**
9.3.12.AC.4	**Evaluate the nature and scope of the Architecture & Construction Career Cluster and the role of architecture and construction in society and the economy.**
9.3.12.AC.5	**Describe the roles, responsibilities, and relationships found in the architecture and construction trades and professions, including labor/management relationships.**
9.3.12.AC.6	**Read, interpret and use technical drawings, documents and specifications to plan a project.**
9.3.12.AC.7	**Describe career opportunities and means to achieve those opportunities in each of the Architecture & Construction Career Pathways.**