

Construction and Building Technology Competencies

1. **ORIENTATION AND SAFETY PRACTICES**
 - a. Understands course requirements and assessments
 - b. Understands general practices and procedures
 - c. Demonstrates safety practices and requirements

2. **MATERIALS, TOOLS AND EQUIPMENT**
 - a. Demonstrates knowledge of products
 - b. Demonstrates proper use of hand tools
 - c. Demonstrates proper use of power tools
 - d. Demonstrates knowledge of miscellaneous equipment and accessories
 - e. Demonstrates safe use and proper maintenance of tools and equipment
 - f. Demonstrates knowledge of ordering and purchasing tools and supplies

3. **PROJECT PLANNING AND DESIGN**
 - a. Demonstrates knowledge of measuring techniques
 - b. Understands how to use layout techniques
 - c. Demonstrate knowledge of plans
 - d. Understands how to calculate quantity if materials and costs

4. **CONSTRUCTION DESIGN**
 - a. Understands concepts of construction design
 - b. Understands structural specifications
 - c. Understands government regulations

5. **BLUEPRINTS AND ESTIMATIONS**
 - a. Understands terminology
 - b. Understands specifications
 - c. Understands plans
 - d. Understands bid requirements and process

6. **FOUNDATIONS**
 - a. Demonstrates site preparation
 - b. Demonstrates types of foundations
 - c. Demonstrates layout, footing and forms
 - d. Demonstrates reinforcement
 - e. Demonstrates safety and proper use of materials, tools and equipment

7. **FRAMING**
 - a. Demonstrates layout, components and assembly
 - b. Demonstrates safety and proper use of materials, tools and equipment

8. **ROOFING**
 - a. Demonstrates knowledge of type of roofing
 - b. Demonstrates knowledge of flashing

- c. Demonstrates knowledge of safety and proper use of materials, tools and equipment

9. EXTERIOR SIDING AND TRIM

- a. Demonstrates knowledge of types of exterior siding and trim
- b. Demonstrates knowledge of proper procedure for installation of exterior siding and trim
- c. Demonstrates knowledge of safety and proper use of materials, tools and equipment

10. WINDOWS, DOORS AND SKYLIGHTS

- a. Demonstrates knowledge of types and installation of window, doors and skylights
- b. Demonstrates knowledge of safety and proper use of materials, tools and equipment

11. PLUMBING

- a. Understands concepts for plumbing systems
- b. Understands ground preparation for installation of plumbing components
- c. Understands safety and proper use of materials, tools and equipment

12. HEATING AND AIR CONDITIONING

- a. Understands types of heating and air conditioning systems
- b. Understands installation of heating and air conditioning components
- c. Understands safety and proper use of materials, tools and equipment

13. ELECTRICAL WIRING

- a. Understands types of electrical wiring
- b. Understands fixtures, layout and installation of electrical wiring
- c. Understands safety and proper use of materials, tools and equipment

14. INSULATION

- a. Demonstrates knowledge of types of insulation
- b. Demonstrates knowledge of fixtures, layout and installation of insulation
- c. Demonstrates knowledge of safety and proper use of materials, tools and equipment

15. INTERIOR WALLS AND CEILINGS

- a. Demonstrates knowledge of types of interior walls and ceilings
- b. Demonstrates knowledge of fixtures, layout and installation of interior walls and ceilings
- c. Demonstrates knowledge of safety and proper use of materials, tools and equipment

16. FLOOR COVERINGS

- a. Understands types of floor coverings
- b. Understands fixtures, layout and installation of floor coverings

- c. Understands safety and proper use of materials, tools and equipment

17. CABINETRY AND FINISH WORK

- a. Understands terminology
- b. Understands adhesives (Joinery and gluing)
- c. Understands types and grades of cabinetry and finish work
- d. Understands laminate, wood and other finishes
- e. Understands cutting and finishing of material
- f. Understands costs, hardware, layout and installation of cabinetry and finish work
- g. Understands safety and proper use of materials, tools and equipment

18. PHOTOVOLTAIC DESIGN AND INSTALLATION

- a. Demonstrates knowledge of design and installation
- b. Understands concepts and terminology
- c. Understands energy conservation and house preparation, including doors, windows, weather stripping, lighting, etc.
- d. Demonstrates knowledge of photovoltaic components and their performance
- e. Demonstrates hands-on installation of panels
- f. Demonstrates how to use special equipment for installation
- g. Demonstrates knowledge of connecting to the utility grid
- h. Demonstrates how to maintain photovoltaic panels
- i. Demonstrates troubleshooting
- j. Understands safety and proper use of materials, tools and equipment

19. ESSENTIAL EMPLOYABILITY SKILLS/CAREER PREPARATION STANDARDS

- a. Demonstrates personal skill development (positive attitude, honesty, self-confidence and time management)
- b. Demonstrates effective interpersonal skills (group dynamics, conflict resolution and negotiations)
- c. Demonstrates academic skills, critical thinking and problem-solving in the workplace
- d. Demonstrates effective communication
- e. Demonstrates occupational safety issues and observe all safety rules
- f. Demonstrates career awareness and knowledge of pathways
- g. Demonstrates ability to adapt to changing technology
- h. Demonstrates ability to prepare for employment (resume, job application, job interview and portfolio development)