Electrical Fundamentals



Youth Apprenticeship

ELECTRICAL FUNDAMENTALS

Electrical Fundamentals youth apprentices gain skills related to the use of construction safety, drawings and blueprints, materials, tools, and electrical worksite procedures. Apprentices must adhere to industry safety and security standards.

Length of Apprenticeship: One or two years

OCCUPATIONAL COMPETENCIES

Year 1: Electrical Fundamentals youth apprentices must complete a **total of 15** Electrical Fundamentals Competencies and a **minimum of 1** Electrical Specialty Competency. Employers can substitute **1** competency with another occupationally appropriate skill. That skill should be added to the competency list for assessment. Year 1 competencies are completed with employer guidance. Youth apprentices must also complete the following during the first year:

Youth Apprentices must also complete the following during Year 1:

- First Aid Certification
- Occupational Safety Health Administration (OSHA) 10 or 30 Certification

Year 2: Electrical Fundamentals youth apprentices must complete the fifteen Electrical Fundamentals Competencies with minimal supervision and a minimum of 2 different Electrical Specialty Competency than the first year. A specialty competency may be repeated only if the type of construction (residential or commercial) differs from the first year. Employers can substitute **1** competency with another occupationally appropriate skill. That skill should be added to the competency list for assessment. Year 2 competencies are completed with minimal employer guidance.

Select construction type and circle the applicable year:

- Residential completed during Year: One and/or Two
- Commercial completed during Year: One and/or Two

Note where necessary, skills can be simulated.

Electrical Fundamentals Competencies	Electrical Specialty Competencies
 Follow safety procedures Read construction drawings and plans Interpret symbols and procedures Contribute to a job task plan Work as a member of a construction team Prepare work area for construction Select construction materials Use hand and light duty tools Use power tools and equipment Perform materials handling Install materials per job specifications Perform construction measurements Maintain a clean and safe work area Clean up job site Practice quality craftsmanship 	 16. Assist with cutting wire, cable, conduit, and raceway, cording and cutting chasses 17. Assist with pulling wires and attaching wires 18. Assist with connecting conductors to switches, receptacles or appliances 19. Assist with installation of switches, outlet boxes and fixture boxes 20. Assist with installation of feeders and circuits

APPRENTICESHIP BRIDGING OPPORTUNITIES

Some of the related instruction courses can bridge into the following registered apprenticeship:

- Electrical Construction
- Residential Wirer

POST-SECONDARY PATHWAY OPPORTUNITIES

There are several post-secondary pathway opportunities in this area. The following is a partial list.

- Construction Electrician
- Residential Electrician

Electrical Fundamentals



Youth Apprenticeship ON-THE-JOB LEARNING PERFORMANCE STANDARDS GUIDE (COMPLETED BY YA CONSORTIUM)

YOUTH APPRENTICE INFORMATION

Youth Apprentice Name	
YA Coordinator	YA Consortium
School District	High School Graduation Date

REQUIREMENTS

Level One Requirements

Youth apprentices must complete ALL the items listed below. Check completed areas.

- Year 1 Competency checklist
- Employability Skills checklist (in this OJL Guide) or the DPI Employability Skills Certificate
- Related instruction equal to 1 high school credit or at least 3 college credits
- Minimum of 450 work hours

Level Two Requirements

Youth apprentices must complete ALL the items listed below. Check completed areas.

- Year 2 Competency checklist
- Employability Skills checklist (in this OJL Guide) or the DPI Employability Skills Certificate
- Related instruction equal to 2 high school credits or at least 6 college credits
- Minimum of 900 work hours

WORK REQUIREMENT

All YA Construction Electrical Fundamentals student must be registered with the Wisconsin Department of Safety and Professional Services (DSPS). Instructions for application are available on the <u>DSPS</u> website.

HOURS

Record the hours the youth apprentice worked.

Total Hours Employed	Company Name	Telephone Number	

RELATED INSTRUCTION

YEAR 1: Indicate which related instruction courses the youth apprentice completed.

Dual Credit	Course Number and Title	Credits	Instruction Provider

YEAR 2: Indicate which related instruction courses the youth apprentice completed.

Dual Credit	Course Number and Title	Credits	Instruction Provider

SIGNATURES

The On-the-Job Learning Performance Standards Guide includes a list of competencies youth apprentices learn through mentoring and training at the worksite.

Instructions for the Worksite Employers/Mentors and School-Based or YA coordinators: This document should be reviewed with the employer/mentor, school-based or YA coordinator on a regular basis with the youth apprentice to record progress and plan future steps to ensure completion of the required competencies. Mentors, school-based/YA coordinator, and the apprentice sign below.

Employer/Mentor Signature	Employer/Mentor Signature
Employer/Mentor	Employer/Mentor
Business/Company	Business/Company
Date Signed	Date Signed
School-Based and/or YA Coordinator Signature	School-Based and/or YA Coordinator Signature
School-Based and/or YA Coordinator	School-Based and/or YA Coordinator
School District or Organization	School District or Organization
Date Signed	Date Signed
Youth Apprentice Signature	Youth Apprentice Signature
Youth Apprentice	Youth Apprentice
School District / High School	School District / High School
Date Signed	Date Signed

EMPLOYABILITY SKILLS (TO BE COMPLETED BY YA EMPLOYER/MENTOR)

Youth apprentices must demonstrate key employability skills.

The DWD YA program employability skills requirement may be attained and demonstrated through two processes. (See options listed below.) Employability skills must be completed for every year a student is in the program. The DPI Employability Skills Certificate may be counted as meeting one of those two years, provided the certificate is earned in the same year the student is enrolled in youth apprenticeship or they can complete the YA Employability Skills in the OJL. The Employability Skills Certificate must be obtained through the DPI.

 If a student has successfully completed a Wisconsin Department of Public Instruction (DPI) State-Certified Cooperative Education, <u>Co-Op Employability Skill certification</u> then they have met the YA Employability Skills requirement for that year. A copy of the student's DPI Co-Op Employability Skill Certificate must be maintained on file with their YA regional consortium.

Earned Wisconsin Employability Skills Certificate (checked if applicable) or,

2. Completed and rated "Employability Skills" through this YA OJL guide as described below.

3	<i>Exceeds Expectations:</i> Exceeds entry-level criteria; requires minimal supervision; consistently displays this behavior
2	<i>Meets Expectations:</i> Meets entry-level criteria; requires some supervision; often displays this behavior
1	<i>Working to Meet Expectations:</i> Needs improvement; requires much assistance and supervision; rarely displays this behavior

The following skills are required of all youth apprentices.

Employability Skills		Rating		
Competency and Rating Criteria		Minimum Rating of 2 for EACH Check Rating		
	1	2	3	
1. Develops positive work relationships with others.		Year 1 Ratir	ng	
Examples of qualities and habits that the employee might exhibit				
include		Year 2 Ratir	ng	
 Interacts with others with respect and in a non-judgmental manner 				
 Responds to others in an appropriate and non-offensive manner Helps co-workers and peers accomplish tasks or goals Applies problem-solving strategies to improve relations with others When managing others, shows traits such as compassion, listening, coaching, team development, and appreciation 				

	Employability Skills		Rating	
2.	Communicates effectively with others		Year 1 Ratin	g
	Examples of qualities and habits that the employee might exhibit			
	include	,	Year 2 Ratin	g
	 Adjusts the communication approach for the target audience, 			
	purpose, and situation to maximize impact			
	Organizes messages/information in a logical and helpful manner Speake clearly and written logikly			
	Speaks clearly and writes legibly			
	Models behaviors to show active listening			
	Applies what was read to actual practice			
	Asks appropriate questions for clarity			
3.	Collaborates with others	•	Year 1 Ratin	g
	Examples of qualities and habits that the employee might exhibit			
	include		Year 2 Ratin	<u> </u>
	Works effectively in teams with people of diverse backgrounds			'5 □
	regardless of sex, race, ethnicity, nationality, sexuality, religion,			
	political views, and abilities			
	Shares responsibility for collaborative work and decision making			
	Uses the problem-solving process to work through differences of			
	opinion in a constructive manner to achieve a reasonable			
	compromise			
	 Avoids contributing to an unproductive group conflict 			
	Shares information and carries out responsibilities in a timely			
	manner			
4	Maintaina agus agus undar araganna		Veer 1 Detir	-
4.	Maintains composure under pressure		Year 1 Ratin	lg
	Examples of qualities and habits that the employee might exhibit include			
	 Uses critical thinking to determine the best options or outcomes 		Year 2 Ratin	g
	when faced with a challenging situation			
	Carries out assigned duties while under pressure			
	• Acts in a respectful, professional, and non-offensive manner			
	while under pressure			
	• Applies stress management techniques to cope under pressure			
5.	Demonstrates integrity		Year 1 Ratin	g
	Examples of qualities and habits that the employee might exhibit			
	include	•	Year 2 Ratin	g
	 Carries out responsibilities in an ethical, legal and confidential manner 			
1	 Responds to situations in a timely manner 			
1	 Takes personal responsibility to correct problems 			
1	 Models behaviors that demonstrate self-discipline, reliability, 			
1	and dependability			
1				
1				

Employability Skills	Rating
6. Performs quality work	Year 1 Rating
Examples of qualities and habits that the employee might exhibit	
include	Year 2 Rating
Carries out written and verbal directions accurately	
Completes work efficiently and effectively	
 Performs calculations accurately Conserves resources, supplies, and materials to minimize costs 	
and environmental impact	
Uses equipment, technology, and work strategies to improve	
workflow	
Applies problem-solving strategies to improve productivity	
Adheres to worksite regulations and practices	
Maintains an organized work area	
7. Provides quality goods or services (internal and external)	Year 1 Rating
Examples of qualities and habits that the employee might exhibit	
include	Year 2 Rating
 Shows support for the organizational goals and principles by our personal actions 	
 own personal actions Displays a respectful and professional image to customers 	
 Displays a respectful and professional image to customers Displays an enthusiastic attitude and desire to take care of 	
customer needs	
 Seeks out ways to increase customer satisfaction 	
 Produces goods to workplace specifications 	
8. Shows initiative and self-direction	Year 1 Rating
Examples of qualities and habits that the employee might exhibit	
include	Year 2 Rating
 Prioritizes and carries out responsibilities without being told Responds with enthusiasm and flexibility to handle tasks that 	
 Responds with enthusiasm and flexibility to handle tasks that need immediate attention 	
Reflects on any unsatisfactory outcome as an opportunity to	
learn	
 Improves personal performance by doing something different or differently 	
 Analyzes how own actions impact the overall organization 	
 Supports own action with sound reasoning and principles 	
 Balances personal activities to minimize interference with work responsibilities 	

Employability Skills	Rating
9. Adapts to change	Year 1 Rating
Examples of qualities and habits that the employee might exhibit	
include	Year 2 Rating
 Shows flexibility and willingness to learn new skills for various job roles 	
 Uses problem-solving and critical-thinking skills to cope with 	
changing circumstances	
Modifies own work behavior based on feedback, unsatisfactory	
outcomes, efficiency, and effectivenessDisplays a "can do" attitude	
Displays a "can do" attitude	
10. Demonstrates safety and security regulations and practices	Year 1 Rating
Examples of qualities and habits that the employee might exhibit	
 <i>include</i> Follows personal safety requirements 	Year 2 Rating
 Maintains a safe work environment 	
Demonstrates professional role in an emergency	
Follows security procedures	
Maintains confidentiality	
11. Applies job-related technology, information, and media Examples of qualities and habits that the employee might exhibit	Year 1 Rating
include	
Applies technology effectively in the workplace	Year 2 Rating
Assesses and evaluates information on the job	
Assesses training manuals, website, and other media related to	
the job	
12. Fulfills training or certification requirements for employment	Year 1 Rating
Examples of this requirement may include	
Participation in required career-related training and/or	Year 2 Rating
educational programs	
 Passing certification tests to qualify for licensure and/or certification 	
Participation in company training or orientation	
13. Sets personal goals for improvement	Year 1 Rating
Examples of this requirement may include	
 Setting goals that are specific and measurable Setting work-related goals that align with the organization's 	Year 2 Rating
mission	
Identifying strategies to reach goals	
Reflecting on goal progress to regularly evaluate and modify	
goals	

OCCUPATIONAL COMPETENCIES

(TO BE COMPLETED BY YA EMPLOYER/MENTOR)

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Youth Apprentices must also complete the following during Year 1:

- First Aid Certification
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Year 2: Electrical Fundamentals youth apprentices must complete the fifteen Electrical Fundamentals Competencies with minimal supervision and a minimum of 2 different Electrical Specialty Competency than the first year. A specialty competency may be repeated only if the type of construction (residential or commercial) differs from the first year. Employers can substitute **1** competency with another occupationally appropriate skill. That skill should be added to the competency list for assessment. Year 2 competencies are completed with minimal employer guidance.

Select construction type and circle the applicable year:

- Residential completed during Year: One and/or Two
- Commercial completed during Year: One and/or Two

Note where necessary, skills can be simulated.

Rating Scale

- 3: Exceeds entry level criteria | Requires minimal supervision | Consistently displays this behavior
- 2: Meets entry level criteria | Requires some supervision | Often displays this behavior
- 1: Needs improvement | Requires much assistance and supervision | Rarely displays this behavior

If any competencies are rated "1" on the final performance review checklist that is submitted to WI DWD it is considered a failed checklist.

ELECTRICAL FUNDAMENTALS – ALL REQUIRED (TO BE COMPLETED BY YA EMPLOYER/MENTOR)

- Assess Year 1 competencies completed with supervision
- Assess Year 2 competencies with minimal supervision

	Occupational Competencies		Rating	
		Minimur	n Rating of	2 for EACH
	Competency and Rating Criteria		Check Rati	ng
		1	2	3
1.	Follow safety procedures		Year 1 Rati	ng
	 select and use appropriate clothing and personal 			
	protective equipment (PPE)		Year 2 Rati	ng
	 comply with job site safety and security rules and 			
	regulations			
	 maintain a clean and organized work environment 			
	 identify and report unsafe job conditions 			
	 report injuries and damage to property 			
2.	Read construction drawings and plans		Year 1 Rati	ng
	 relate drawing to job task 			
	 interpret elements and symbols 		Year 2 Rati	ng
	 locate worksite features on a construction plan 			
	• convert scales measurements to full measurements			
	 translate specifications to work requirements 			
3.	Interpret symbols and procedures		Year 1 Rati	ng
	 explain the role of drawings and specifications 			
	 identify drawings and symbols used on a construction 		Year 2 Rati	ng
	drawing			
	apply information from drawings in construction activities			
	 interpret specifications appearing on construction 			
	drawings			
	 interpret and convert measurements in terms of actual 			
	dimensions			
	 explain specifications in terms of work requirements 			
4.	Contribute to a job task plan		Year 1 Rati	ng
	 setup and prepare tools and equipment for safe operation 			
	 determine the scope of work 		Year 2 Rati	ng
	 respect contractual relationships 			
	 apply scheduling practices 			
5.	Work as a member of a construction team		Year 1 Rati	200
5.				
	 offer and request assistance follow company policies and procedures 			
	 Ionow company policies and procedures learn from other team members 		Year 2 Rati	ng
	learn from other team members			
6.	Prepare work area for construction		Year 1 Rati	ng
	remove debris			\square
	clean up sites		Year 2 Rati	
	 dispose of waste and hazardous materials 			
1				
1				
1				

Occupational Competencies	Rating		
7. Select construction materials	Year 1 Rating		
 consider usefulness and portability 			
consider minimizing cost	Year 2 Rating		
consider performance goals			
8. Use hand and light duty tools	Year 1 Rating		
 wear appropriate personal protective equipment (PPE) 			
 select the correct tool for the job 	Year 2 Rating		
inspect tool			
operate the tool safely			
 perform routine maintenance on hand tools 			
store tool			
9. Use power tools and equipment	Year 1 Rating		
 wear appropriate personal protective equipment (PPE) 			
 select the correct tool for the job 	Year 2 Rating		
inspect tool			
operate the tool safely			
 perform routine maintenance on power tools 			
store tool			
10. Perform materials handling	Year 1 Rating		
 identify materials necessary to complete the task 			
conserve resources and materials	Year 2 Rating		
 retrieve equipment and materials needed 			
• load and unload materials, tools, equipment, and supplies			
lift, position, and secure materials during installation			
11. Install materials per job specifications	Year 1 Rating		
 retrieve equipment and materials needed 			
 unload materials, tools, equipment, and supplies 	Year 2 Rating		
• lift, position, and secure materials during installation			
12. Perform construction measurements	Year 1 Rating		
select measuring tool			
read measurement accurately	Year 2 Rating		
scale proportions			
convert units of measurement			
 estimate resources, materials, and supplies needed for a surface 			
project			
record measurements			
13. Maintain a clean and safe work area	Year 1 Rating		
clean and maintain materials and tools			
 clean, organize, and put way items in the work area 	Year 2 Rating		
 store materials and tools after use 			
follow facility procedures for clean-up and shut down			

Occupational Competencies	Rating		
14. Clean up job site	Year 1 Rating		
 clean and maintain materials and tools 			
 store materials and tools after use 	Year 2 Rating		
 follow facility procedures for clean-up and shut down 			
15. Practice quality craftsmanship	Year 1 Rating		
 inspect and test work to determine quality 			
 monitor throughout for safety and quality 	Year 2 Rating		
 identify impact of building codes on quality of work 			
verify work meets job expectation			
Competency Substitute (if you replaced a competency above,	Year 1 Rating		
note the competency and rating)			
	Year 2 Rating		
Comments:			

ELECTRICAL SPECIALTY SKILLS (TO BE COMPLETED BY YA EMPLOYER/MENTOR)

Year 1: Select 1

Year 2: Select 1 different specialty skills or type of construction (residential vs.

commercial) identified by employer

Occupational Competencies		Rating	
Competency and Rating Criteria		Minimum Rating of 2 for EACH Check Rating	
	1	2	3
16. Assist with cutting wire, cable, conduit, and raceway, cording	Year 1 Rating		
and cutting chasses			
 select the proper raceway of cable for the conditions 	Year 2 Rating		g
 select the proper raceway size, depending on the conductors to be installed 			
 size outlet(s), pull, and junction boxes 			
17. Assist with pulling wires and attaching wires	Year 1 Rating		
assist with writing			
 connect wires to circuit breakers, transformers, and/or 	Year 2 Rating		
other components			
18. Assist with connecting conductors to switches, receptacles or	Year 1 Rating		
appliances			
 assist connecting two- and three-way switches 	Year 2 Rating		
assist connecting normal and ground fault receptacles			
 assist connecting appliance reciprocals 			

Occupational Competencies		Rating	
19. Assist with installation of switches, outlet boxes and fixture	Year 1 Rating		
boxes			
 identify and install the various types of electrical boxes 	Year 2 Rating		
 install electrical components according to duplex and 			
Ground Fault circuit Interrupter (GFCI) receptacles, boxes,			
covers, lamps, wire, solderless connectors, and conduit			
accurately			
 use color coding for electrical installations 			
20. Assist with installation of feeders and circuits	Year 1 Rating		
 select the correct feeder size, type, and overcurrent 			
protection for the application	١	/ear 2 Ratin	g
 layout electrical systems using materials and devices 			
labeled and listed for project(s)			
 rough-in and secure cables or conduits for branch circuits 			
 connect circuits to circuit breaker panels 			
 compute the appropriate load calculations and power 			
requirements for the job			
 follow all grounding and bonding requirements 			
Competency Substitute (if you replaced a competency above,	Year 1 Rating		
note the competency and rating)			
	Year 2 Rating		
Comments:			



Post-Program Completion Survey

Youth Apprenticeship

YA POST-PROGRAM COMPLETION SURVEY: EMPLOYER FEEDBACK

Employers complete the following information. YA Coordinators will enter this into the Post-Program Completion Survey.

YA Employer Post-Program Completion Questions			
Will you offer or have you offered the Youth Apprentice a continuing position with your company?	☐ Yes ☐ No		
If continuing position offered to youth apprentice, did they accept?	Yes		
If yes, please answer the questions below:			
Was the offer for full time or part time work?	Full-time Part-time		
Title of the position offered:			
What is the wage of the continuing employment offer?			
If applicable, will the youth apprentice advance to a Registered Apprenticeship?			

YA POST-PROGRAM COMPLETION SURVEY - COMPLETED BY YA CONSORTIUM

The <u>Post-Program Completion Survey</u> form is to be provided to each student completing the Youth Apprenticeship program to capture information on the student's plans after leaving the program. This **form should be completed by the Youth Apprenticeship Coordinator** to capture information from all high school seniors and their employers after successful completion of the Youth Apprenticeship Program.

The form should be completed during the final meeting between the student, mentor, and Youth Apprenticeship Coordinator, when the final checklist or On-the-Job Learning (OJL) Guide is filled out and signed. Information captured on this form must be entered online using the Youth Apprenticeship Online Data Application (YODA) System.

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DWD is an equal opportunity employer and service provider. If you have a disability and need assistance with this information, please dial 7-1-1 for Wisconsin Relay Service. Please contact the Division of Employment and Training at 888-258-9966 and press 6 to request information in an alternate format, including translated to another language.

