
Wisconsin Youth Apprenticeship

Architecture and Construction

PROGRAM GUIDE



Department of Workforce Development

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Architecture and Construction YOUTH APPRENTICESHIP PROGRAM GUIDE

Description

The Architecture and Construction career cluster comprises one of the largest industries in the United States. Careers ranging from architecture to welding are found within this particular cluster. According to the Department of Labor, the construction industry is the second largest employer in the U.S., second only to all government employees including the armed forces. Overall growth in construction trades within Wisconsin is predicted to climb to 17.9% through the year 2020. When the specific trades are evaluated for potential growth during that same time period, the need to support students learning to fill future employment gaps is very apparent. During this time period annual openings for Carpenters are expected to climb in demand by 46.7%. Heating, Ventilation, and Air Conditioning (HVAC) technician positions will see a 34.1% increase and Cement/Mason workers will increase in demand by 29.1% during that same time period. Earnings in this career cluster are higher than average and it offers more opportunities than most other industries for individuals who want to own or run their own business¹.

The Architecture and Construction career cluster is expected to be driven by changing demographic trends. As baby boomers retire, there will be a need for more healthcare facilities, long term care facilities, and retirement communities. Educational buildings at all levels are getting older while enrollments continue to increase, which will require districts and colleges to build new facilities or renovate old ones².

The Architecture and Construction career cluster involves careers in the designing, planning, management, building and maintaining the built environment. This Youth Apprenticeship occupational area focuses on two pathways within the Architecture and Construction industry: Construction and Design/Pre-Construction. People within the Construction pathway will choose between the skilled trades of Carpentry, Electrical, Masonry/Concrete, Mechanical/HVAC, and Plumbing/Sprinkler Fitting. People who work in the Design/Pre-Construction pathway turn a concept into a set of plans. Their plans guide other construction professionals as they continue the building process.³

The Youth Apprenticeship Program was approved by the Wisconsin State legislature in 1991 to provide a direct link between business, schools, and youth to meet the demands of technology, teamwork, communication, and leadership.

Wisconsin Youth Apprenticeship (YA) is a rigorous program that combines academic and related technical classroom instruction with mentored on the job learning for high school students. By training youth apprentices, employers play an active role in shaping the quality of their future workforce, improving the skill level of potential workers, and enhancing their

¹ Department of Labor, High Growth Industry Profile- Construction, www.doleta.gov, accessed January 2014.

² Department of Labor, Occupational Outlook Handbook, Published January 8, 2014.

³ States' Career Clusters, Architecture and Construction Brochure. www.careertech.org . Accessed 5-15-14.

competitive positioning in the marketplace. Employers, school districts, local consortiums, parents, and potential YA students are referred to the Youth Apprenticeship Program Operations Manual for general YA Program requirements.

Objective

The Wisconsin Architecture and Construction YA Program is designed to provide students with a working understanding of occupational and technical skills in one of the seven pathways within the Architecture and Construction industry. This program provides the framework for educators and industry to work together to produce work-ready, entry-level employees that will compete favorably in a global market, as well as, provide for post-secondary educational advancement while integrating work-based learning in the school and worksite.

The following features distinguish a YA Program from other similar youth work-based learning programs.

- Level Two Youth Apprenticeship is a two-year program for high school juniors and seniors with an interest in a particular field; i.e., architecture. One-year Youth Apprenticeship Programs are also available to pursue.
- Youth apprentices, parents, employers, YA program coordinators, and school districts enter into a written agreement approved by the Department of Workforce Development.
- Statewide skills are established by the industry, making the youth apprentice skill set more relevant to the state's employers.
- Youth apprentices are trained at the worksite by skilled mentors and are paid minimum wage or better for their work. Students average 10-15 hours/week, but may also work in the summer to complete their required hours.
- Youth apprentices receive a high school diploma and a Certificate of Occupational Proficiency from the Wisconsin Department of Workforce Development (DWD) at graduation.
- Youth apprentices may receive advanced standing credit and/or transcribed credit for the YA Program at a Wisconsin Technical College and/or at some four year colleges. See **Appendix F** for current details.
- Statewide skill standards focus on skills and knowledge needed by employers for entry level employment in the Architecture and Construction industry.

Students apply and are interviewed by Architecture and Construction employers for positions in the Architecture and Construction YA Program. The state approved skill standards and program guide for the Architecture and Construction YA Program are used in both the classroom instruction and worksite learning. If the local school district is unable to provide the related technical classroom instruction courses, they may contract with their local technical college or employer practitioners to do so.

The skill standards are competency based. Competencies are performance-based outcome statements of occupational related skills defined by representatives of Architecture and Construction worksites throughout Wisconsin and aligned with national skill standards. The competencies in this program are aligned with curriculum objectives from the Project Lead the Way (<http://www.pltw.org/>) and STEM Academy (<http://www.stem101.org/index.asp>) high school architectural and civil engineering programs, as well as, the National States' Career Cluster Skill Standards in Architecture and Construction, <http://www.careertech.org>. Competencies are also

aligned with the Wisconsin State Standards in Technology and Engineering and the National Center for Construction Education and Research. The competencies will be taught at the worksite in combination with supportive, related technical classroom instruction. While the skill competencies are established statewide, program implementation and oversight occurs through local consortium committees to assure local needs are met.

Target Population

This Youth Apprenticeship occupational area focuses on having YA students acquire basic skills pertinent to understanding and working within the Construction and Design/Pre-Construction pathways. Within the Design/Pre-Construction pathway, students will work with drafting and architectural technical documents in the first year along with the core employability, safety skills and certifications in OSHA and First Aid. Students will acquire basic concepts needed to read, edit, and create architectural drawings. The second year allows Architecture and Construction students to develop further skills in architectural planning and in specific residential and/or commercial design pieces.

YA students enrolled through the construction pathway will choose one pathway within the skilled trade areas for a one year level one program and two pathways for a level two or two year program. The pathways they will choose from within the skilled trades include: Carpentry, Electrical, Masonry/Concrete, Mechanical/HVAC, and Plumbing/Sprinkler Fitting. Students will also complete the core employability, safety and certifications in OSHA and First Aid.

All students successfully meeting current high school graduation requirements and with a good attendance record for that year are encouraged to apply for the Architecture and Construction Youth Apprenticeship (YA) Program. The student must apply to the program in the year previous to program entry and be on track toward fulfilling high school graduation requirements in their school district. SEE **Appendix G** for students entering or continuing the Architecture and Construction YA Program in 2014.

All Youth Apprentices must complete the industry-wide foundational skill competencies consisting of competencies in core employability skills and safety. The students will also complete the certifications under the program which include OSHA 10 and First Aid. The Required Skill competencies must be completed concurrently with the specific technical skills. Once a student successfully completes the Online 10-Hour Construction Industry course, the student receives a wallet card from OSHA Training Institute (OTI). The wallet card demonstrates that the student has the fundamental safety knowledge needed in the workplace. Young workers will develop a safety mindset and acquire marketable skills for a competitive edge.

Potential youth apprentices will be required to complete a minimum of 450 work hours with 180 hours (2 semesters) of related technical classroom instruction for a Level One (1-year) Architecture and Construction YA Program or a minimum of 900 work hours with 360 hours (4 semesters) of related technical classroom instruction for a Level Two (2-year) Architecture and Construction YA program.

Architecture and Construction YA students are required to earn OSHA and First Aid certification and perform all of the Core and Safety skills. **Level One (one year)** YA students also are required to complete a one year experience within a skilled trade area or the basic unit within the Design pathway. **Level Two (two year)** YA students are required to complete all of the requirements for a level one student in addition to another unit within one of the pathways.

Students may complete the same unit within the Construction Pathway to further hone their skills.

Architecture and Construction Units

Construction Pathway

- Carpentry
- Electrical
- Masonry/Concrete
- Mechanical/Heating, Ventilation, and Air Conditioning (HVAC)
- Plumbing/Sprinkler Fitting

Design/Pre-Construction Pathway

- Architectural Drafting Unit- REQUIRED FIRST
- Architectural Planning Unit

Architecture and Construction Program Responsibilities

The following responsibilities are outlined for individuals involved in the Architecture and Construction YA Program.

Students –

1. Maintain academic skills and attendance at the high school to remain on track for high school graduation.
2. Participate in progress reviews as scheduled.
3. Exhibit maturity and responsibility to meet requirements of employment as designated by the employer.

Parents or Guardians -

4. Ensure that adequate transportation is available to and from the worksite.
5. Participate in student progress reviews as scheduled.

School District -

6. Recruit students and coordinate student enrollment in the program with the consortiums and/or employers.
7. Integrate the YA Program related technical classroom instruction and worksite training into the student's overall education program with high school graduation credit issued for each semester successfully completed.
8. Participate in student progress reviews as scheduled.

YA Program Coordinators -

9. Apply and maintain approval from the DWD to operate a YA Program.
10. Ensure a minimum of 450 hours of worksite instruction/experience plus a minimum of 180 hours of related technical classroom instruction for each one year YA program.
11. Establish and meet regularly with an advisory committee that will identify when and where tasks will be taught during the Architecture and Construction YA Program.

12. Develop and maintain a yearly commitment with participating high schools, technical colleges, and local businesses to accommodate the number of students involved in the Architecture and Construction YA Program.
13. Establish and maintain a YA student grievance procedure.
14. Provide employer mentor training.

Related Technical Classroom Instruction Faculty -

15. Qualify in the specialty areas being taught in the YA Program.

Employers and Worksite Mentors -

16. SEE **Appendix B** – Architecture and Construction YA Implementation Guide for Employers.
17. Participate in a mentor training session and provide on the job training of the Youth Apprentices.

Department of Workforce Development -

18. Monitor national and state regulatory agencies, such as OSHA, for changes and impact on the Architecture and Construction Youth Apprenticeship Program.

Program Guide Organization

The competencies in this program are aligned with curriculum objectives from the Project Lead the Way (<http://www.pltw.org/>) and STEM Academy (<http://www.stem101.org/index.asp>) high school architectural and civil engineering programs, as well as, the National States' Career Cluster Skill Standards in Architecture and Construction, <http://www.careertech.org>. Competencies are also aligned with the Wisconsin State Standards in Technology and Engineering and the National Center for Construction Education and Research.

The Architecture and Construction YA Program also requires that Related Technical Classroom Instruction is provided to support attainment of the knowledge necessary to master the competencies. While recommendations for specific Related Technical Classroom Instruction are detailed separately in **Appendix C**, instructional requirements will vary depending on local consortium and advisory group decisions. It is strongly advised that local consortiums work with their advisory groups to determine appropriate Related Technical Classroom Instruction based on their local needs and resources.

The Youth Apprenticeship Program curriculum is written and organized according to the Worldwide Instructional Design System (WIDS) format and includes the Architecture and Construction YA Skill Standards Checklist and Course Outcome Summary (COS) for the program. Overall progress is documented on the Skill Standards Checklist which lists skill level achievement for each competency achieved. The COS outlines each skill competency with its corresponding performance standards and learning objectives. The Performance Standards describe the tasks and behaviors, as applicable, that employers should look for in order to evaluate the competency. The Learning Objectives outline the recommended content to be covered in the related technical classroom instruction. SEE **Appendix D** - Wisconsin Instructional Design System (WIDS) Format and Youth Apprenticeship Program Guide Terms and **Appendix E** - Use and Distribution of the Curriculum for further details.

Evaluation

The student must successfully complete the related technical classroom instruction and demonstrate the minimum skill level required on the Architecture and Construction YA Skill Standards Checklist for each competency according to the applicable curriculum. Worksite mentors and/or instructors use this checklist to evaluate the learner on each of the required skills. It is the responsibility of the mentor(s) to rate the students skill level on all tasks performed at the worksite.

Architecture and Construction YA Program Completion

Upon successful completion of high school and the Level Two (2 year) Architecture and Construction YA Program requirements, the youth apprentice will receive a high school diploma and the applicable Certification of Occupational Proficiency from the Department of Workforce Development indicating "Architecture and Construction Youth Apprenticeship." Youth Apprentices who successfully complete a Level One (1 year) Architecture and Construction YA Program and who are on track for graduation will be eligible for a Level One Certificate from the Department of Workforce Development. Furthermore, the YA students may:

1. Continue to work in the Architecture and Construction industry.
2. Apply to a registered apprenticeship.
3. Pursue a degree or diploma from a Wisconsin Technical College with advanced standing and/or transcribed credit.
4. Apply for admission to a four-year University of Wisconsin school with high school academic elective credit for admission.
5. Go into military service.

SEE **Appendix F** for current agreements for post-secondary credit at Wisconsin Technical Colleges and University of Wisconsin colleges.

Appendices

Appendix A - Work Contracts, Child Labor Laws, Liability and Insurance

Appendix B - Architecture and Construction YA Implementation Guide for Employers

- Benefits to the Employer
- Role of the Employer
- Role of the Mentor
- Checklist for Program Participation
- Checklist for Program Operation
- Frequently Asked Questions
- Work Contracts, Child Labor Laws, Liability and Insurance (insert Appendix A)

Appendix C - Recommended Related Technical Classroom Instruction

Appendix D - Wisconsin Instructional Design System (WIDS) Format and Youth Apprenticeship
Program Guide Terms

Appendix E - Use and Distribution of the Curriculum

Appendix F - Post Secondary Credits

Appendix G - Grandfather Clause – Program Transition Guidelines

Appendix H - Architecture and Construction Skill Standards Checklist

Appendix I - Architecture and Construction YA Course Outcome Summary: Overview and
Table of Contents (COS)

Appendix J - Architecture and Construction Required Skills Curriculum and Certifications
(Units 1, 2 and 3)

Appendix K - Carpentry (Unit 4)

Appendix L - Electrical (Unit 5)

Appendix M - Masonry/Concrete (Unit 6)

Appendix N - Mechanical/Heating, Ventilation, and Air Conditioning (HVAC) (Unit 7)

Appendix O - Plumbing/Sprinkler Fitting (Unit 8)

Appendix P - Architectural Drafting Unit (Unit 9)

Appendix Q - Architectural Planning Unit (Unit 10)