

Section 4: Tools for the Student





TOOLS FOR THE STUDENT

The Architecture and Construction Career Cluster encompasses career in the design, construction, and maintenance and operations industries, the last two of which rely heavily on skilled crafts people in the construction trades: carpentry, plumbing, masonry, electrical, and HVAC work. These trades will account for the largest number of new jobs in the building industry by the year 2018, according to the U.S. Bureau of Labor Statistics (www.bls.gov). *A sample Plan of Study for the Architecture and Construction Cluster appears on page 36.*

EMPLOYMENT OUTLOOK

Population growth, deteriorating infrastructure, and aging buildings will generate employment growth in the construction industry. The number of wages and salary jobs in the construction industry is expected to grow by 19 percent through the year 2018, compared with the 11 percent projected for all industries combined. Specific areas of opportunity will be:

- Senior housing and healthcare residences
- Renovation and expansion of older homes
- Repair and remodel of existing homes
- Replacement of many industrial plants
- Medical treatment facilities
- Infrastructure maintenance and repairs (e.g., highway, bridge, and street construction)
- Power line and related construction

Job prospects are expected to be good, especially for experienced and skilled construction trades workers, because of

the need to replace the large number of workers anticipated to retire from these occupations over the next decade.

MISSOURI'S HOT JOBS — CONSTRUCTION

The information in table 4.1 (below) has been compiled from “Missouri’s Hot Jobs,” Missouri Economic Research and Information Center, 2010. These occupations (with the exception of First-line Supervisors) are all listed under Missouri’s “Top 25 Green Jobs” as well (MERIC, 2010).

Table 4.1. Missouri Construction Jobs Outlook

OCCUPATION	OPENINGS* OVER 10 YRS	ANNUAL WAGES ** IN MISSOURI		
		ENTRY	AVERAGE	EXPERIENCED
<i>On-the-job Training***</i>				
Carpenters	3,449	\$26,277	\$45,746	\$55,480
Construction Laborers	2,296	\$23,244	\$38,623	\$46,313
Electricians	3,047	\$32,405	\$53,111	\$63,434
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	1,309	\$26,115	\$40,878	\$48,259
Maintenance and Repair Workers	6,010	\$21,682	\$34,274	\$40,570
Plumbers, Pipefitters, and Steamfitters	1,950	\$32,639	\$54,237	\$65,037
<i>Bachelor's Degree (BA or BS)***</i>				
Construction Managers	772	\$46,054	\$82,583	\$100,847
<i>BA/BS or Work Experience in a Related Occupation***</i>				
First-Line Supervisors/Managers of Construction Trades and Extraction Workers	1,728	\$40,618	\$62,277	\$73,106

Notes:

* Occupational projections based on 2008 data and cover years 2008-2018. Occupations in this report are graded on a combination of average wage, percent growth, and total openings over the 10-year period of employment projections. The occupations shown represent a better-than-average outlook for the 10-year period.

** Wage data is from 2008.

*** Desired occupations may have specific education and/or licensing requirements.

DEVELOPING A PERSONAL PLAN OF STUDY

Use the sample Plan of Study shown on page 28 as a starting point for developing your own plan for preparing for a career in the construction trades. Work with your guidance counselor and program administrator to determine what academic as well as “real-world” experiences will best prepare you for the field. Consider the certification requirements as well as internship/job shadowing opportunities and involvement in Career and Technical Student Organizations (CTSOs).

CERTIFICATION REQUIREMENTS

To be eligible for available positions in the construction trades, students who complete this program will need at least an OSHA 10-hour certification (see pages 17 through 19) and likely a National Center for construction Education and Research (NCCER) certification. For HVAC work, certain Environmental Protection Agency (EPA) certifications may be required. Many programs utilize a math pretest for admission to the program.

INTERNSHIP/JOB SHADOWING OPPORTUNITIES

Internships and job shadowing opportunities allow students to further apply skills learned in a real-world setting. These opportunities are defined as:

- **Internships** — Supervised, hands-on activities for students outside of the school in a community business or other facility that enhance classroom learning and/or career planning; can be either paid or voluntary and typically last anywhere from a week to a semester.



- **Job Shadowing** — Seasoned experts allow students to observe everything that they do related to their job during the course of a day, providing a real-life opportunity for students to explore careers. Students, working with program teachers, should contact local contractors, remodelers, facilities managers, and maintenance/operations professionals about internship and job shadowing opportunities available. Ask these professionals to clarify if any of the following apply:
 - Application and submission requirements, including background checks, pre-employment screening tests, residency requirements, etc.
 - Uniforms or other specific dress/appearance requirements
 - Normal working hours/days of the week



Once involved in a job shadowing or internship opportunity, be sure to ask your sponsors questions such as :

1. How did you get your job?
2. What is your typical workday like?
3. What level of education is needed for this position? What academic and vocational skills?
4. What is the salary range and work schedule for this position?
5. What do you like most and least about your job?
6. What should a student do who is interested in working in this occupation to prepare for such a career/

CAREER AND TECHNICAL STUDENT ORGANIZATIONS

Involvement in Career and Technical Student Organizations (CTSOs) allows you to gain workplace skills in the areas of effective communication, creative thinking, and problem solving. You will gain personal management skills (e.g., self esteem, goal setting) and increase group effectiveness skills (e.g., interpersonal relationships, leadership, negotiating, and team-building). All this and have fun competing in state and national events.

CTSOs related to the construction industry are:

- **Technical Student Association (TSA)** — Chartered in 1978, this national, non-profit organization serves middle and high school students with a strong interest in technology. TSA fosters personal growth, leadership, and opportunities in technology, innovation, design, and engineering. Members apply and integrate science, technology, engineering and

mathematics (STEM) concepts through co-curricular activities, competitive events, and related programs. For more information, visit: <http://www.tsaweb.org>.

- **SkillsUSA** (for career and technical education students) — Missouri SkillsUSA is an applied method of instruction for preparing America's high-performance workers in public career and technical programs by involving students in leadership, teamwork, citizenship, and character development. SkillsUSA is a national nonprofit organization serving teachers and high school and college students preparing for careers in trade, technical, and skilled service occupations. More than 285,000 students and instructors join SkillsUSA each year. SkillsUSA Missouri (a state association of SkillsUSA, Inc.) is an applied method of learning where students practice skills and build self-confidence while helping their school and communities. For information on membership eligibility requirements, visit http://dese.mo.gov/divcareered/skillsusa_membership_eligibility.htm.

Becoming involved in CTSOs offers many ways to augment your personal plan of study, including getting local business community leaders to:

- Share information about job markets and qualities/skills employers most value
- Judge CTSO contests, giving you an opportunity to demonstrate your talents to key employers
- Provide professional development educational materials
- Promote leadership and build teamwork skills





Name _____
 Learner ID _____
 School/College/University _____

SAMPLE

Architecture and Construction

Career Cluster Plan of Study for ► Learners ► Parents ► Counselors ► Teachers/Faculty

This Career Cluster Plan of Study (based on the Architecture and Construction Career Cluster) can serve as a guide, along with other career planning materials, as learners continue on a career path. Courses listed within this plan are only recommended coursework and should be individualized to meet each learner's educational and career goals. *This Plan of Study, used for learners at an educational institution, should be customized with course titles and appropriate high school graduation requirements as well as college entrance requirements.

EDUCATION LEVELS	GRADE	English/ Language Arts	Math	Science	Social Studies/ Sciences	Other Required Courses Other Electives Recommended Electives Learner Activities	*Career and Technical Courses and/ or Degree Major Courses for Architecture and Construction	SAMPLE Occupations Relating to This Career Cluster	
Interest Inventory Administered and Plan of Study Initiated for all Learners									
SECONDARY	9	English/ Language Arts I	Algebra I	Earth or Life or Physical Science	State History Civics or World History	All plans of study should meet local and state high school graduation requirements and college entrance requirements. Certain local student organization activities such as SkillsUSA are also important including public speaking, record keeping and work-based experiences.	Introduction to the Built Environment	<ul style="list-style-type: none"> ► Architect ► Carpenter ► Civil Engineer ► Construction Foreman/Manager ► Contractor ► Demolition Engineer ► Drafter ► Drywall Installer ► Electrician ► Electronic Systems Technician ► Equipment/Material Manager ► General Contractor/Builder ► Heating, Ventilation, Air Conditioning and Refrigeration Mechanic ► Interior Designer ► Painter ► Paperhanger ► Plumber ► Project Estimator ► Project Inspector ► Roofer ► Safety Director ► Sheet Metal Worker ► Tile and Marble Setter 	
	10	English/ Language Arts II	Geometry	Biology	U.S. History		The Language of Architecture and Construction Introduction Technology Applications		
	11	English/ Language Arts III Technical Writing	Algebra II	Physics	Economics Psychology		Safety, Health and the Workplace Environment		
	College Placement Assessments-Academic/Career Advancement Provided								
	12	English/ Language Arts IV	Dependent on chosen pathway	Chemistry		Continue courses pertinent to the pathway selected.			
Articulation/Dual Credit Transcribed-Postsecondary courses may be taken toward the secondary level for articulation/dual credit purposes.									
POSTSECONDARY	Year 13	English Composition English Literature	Dependent on chosen pathway	Physics	American Govt. or History, plus Psychology/ Interpersonal Skills	All plans of study need to meet learner's career goals with regard to required degrees, licenses, certifications or journey worker status. Certain local student organization activities may also be important to include.	Continue courses pertinent to the pathway selected.		
	Year 14	Speech/ Oral Communication	Dependent on chosen pathway	Environmental Science	Sociology Business Law				
	Year 15	Continue courses in the area of specialization.							
	Year 16								

*See course descriptions on page 2.

SAMPLE



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