

PROGRAM OF STUDY JUSTIFICATION

Architectural & Engineering Design

Architecture and Construction

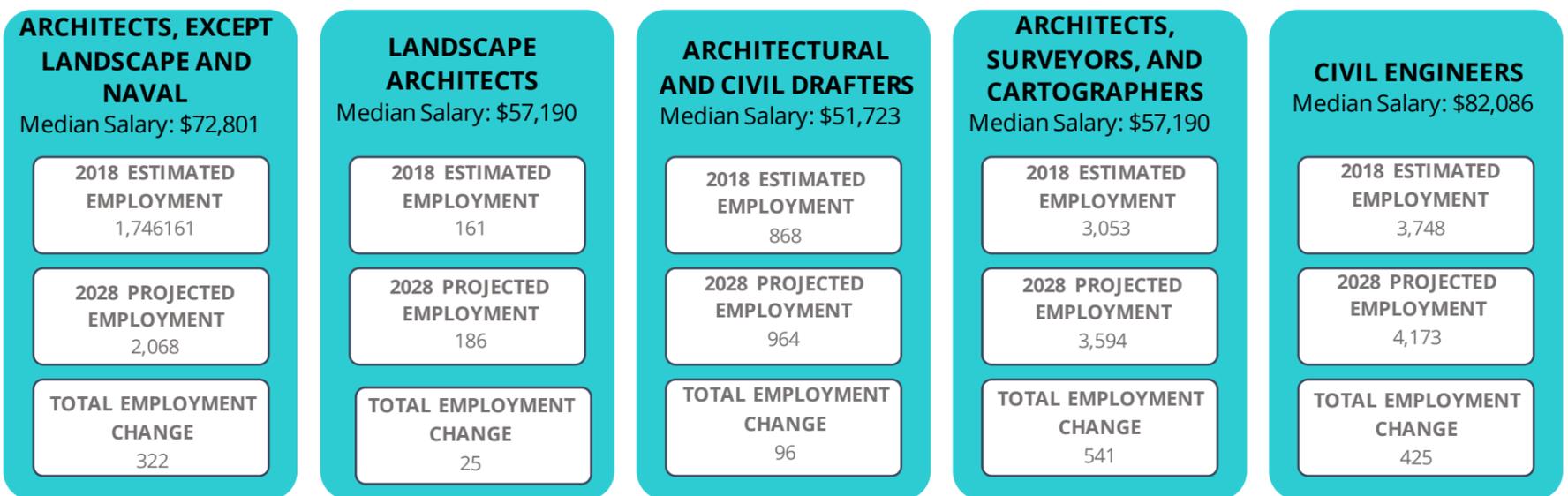
JOB OUTLOOK

Job demand in the architecture and engineering occupations is strong. Construction and manufacturing continue to boom in Tennessee. This boom is expected to continue as current companies expand and new companies come to the state. Both residential and commercial construction is expected to remain active. There are many opportunities for career advancement for architects, surveyors, drafters, and engineers. The continual growth of construction combined with the number of workers retiring ensures that architecture and engineering will remain a high demand occupation.



OCCUPATION PROFILE

Architecture and engineering is a wide-ranging field that includes designing buildings and outdoor projects, drafting architectural drawings, surveying, and engineering. Architects design buildings to meet the needs of their occupants. Landscape architects design attractive and functional outdoor spaces. Drafters fine tune drawings using updated design software to meet the users' needs. Civil engineers plan and oversee construction and maintenance of buildings and infrastructure, such as roads, railways, airports, bridges, harbors, dams, power plants, and water and sewage systems.



PROGRAM OF STUDY PROFILE

The Architectural & Engineering Design program of study prepares students for a variety of engineering and design professions, including architectural, civil, or mechanical design. Students will learn how to use architectural software. Students will develop problem-solving and critical-thinking skills by identifying the relationship between available resources and requirements of a project/problem to accomplish realistic planning.



STUDENT ENROLLMENT ANALYSIS

	Architectural & Engineering Design I	Architectural & Engineering Design II	Architectural & Engineering Design III	Engineering Practicum
2017-18	2,387	1,261	1,148	277
2018-19	2,295	1,093	862	214
2019-20	1,785	948	717	241

CAREER PATHWAY



PROGRAM OF STUDY COMPREHENSIVE OUTLOOK

The comprehensive outlook is comprised of a 3-year vision of all support services, resources and program development aligned with this program of study.

RECOMMENDATIONS + OPPORTUNITIES

Standards

During the comprehensive review for this program of study, feedback from industry, postsecondary, and teachers **did not indicate** a need to revise current course standards.

New Courses

During the comprehensive review for this program of study, feedback from industry, postsecondary, and teachers **did not indicate** a need to add or retire courses at this time.

CTSO Connections

This program of study is aligned with SkillsUSA. SkillsUSA's mission statement includes personal, workplace, and technical framework skills. Content buckets that incorporate these skills are included in all of the program of study courses.

- SkillsUSA leadership opportunities align with leadership skills needed by architects and draftsmen. Content is reflected in Architectural & Engineering Design III standard #20 and Engineering Practicum standard #10.
- SkillsUSA competitive events that align with the Architectural & Engineering Design POS include: Career Pathways Showcase, Community Service, Job Interview, Principles of Technology, and Architectural Drafting.

WBL Activities

This program of study is aligned with the WBL Framework by offering the following experiences to students.

- Career Exploration is included in Architectural & Engineering Design I standards 7 & 8 and in Architectural & Engineering Design II standard 3.
- Career Preparation is included in all courses.
- Career Training is included in all courses, especially the Engineering Practicum course.

Recommended Trainings

The annual Institute for CTE Educators will provide teachers extensive professional development opportunities. Teachers will have opportunities to explore instructional and resource best practices, network, and grow their individual professional focus on preparing students to meet the demands of the postsecondary pathway of their choosing. TDOE provided professional development opportunities may vary based on identified teacher needs.

Externship Opportunities

This program of study will be enhanced through teacher participation in externship opportunities. Opportunities will be coordinated between local employers and individual programs. The department will provide guidance whenever possible to increase and improve externship opportunities.

Additional Resources

PROGRAM OF STUDY JUSTIFICATION

Interior Design

Architecture and Construction

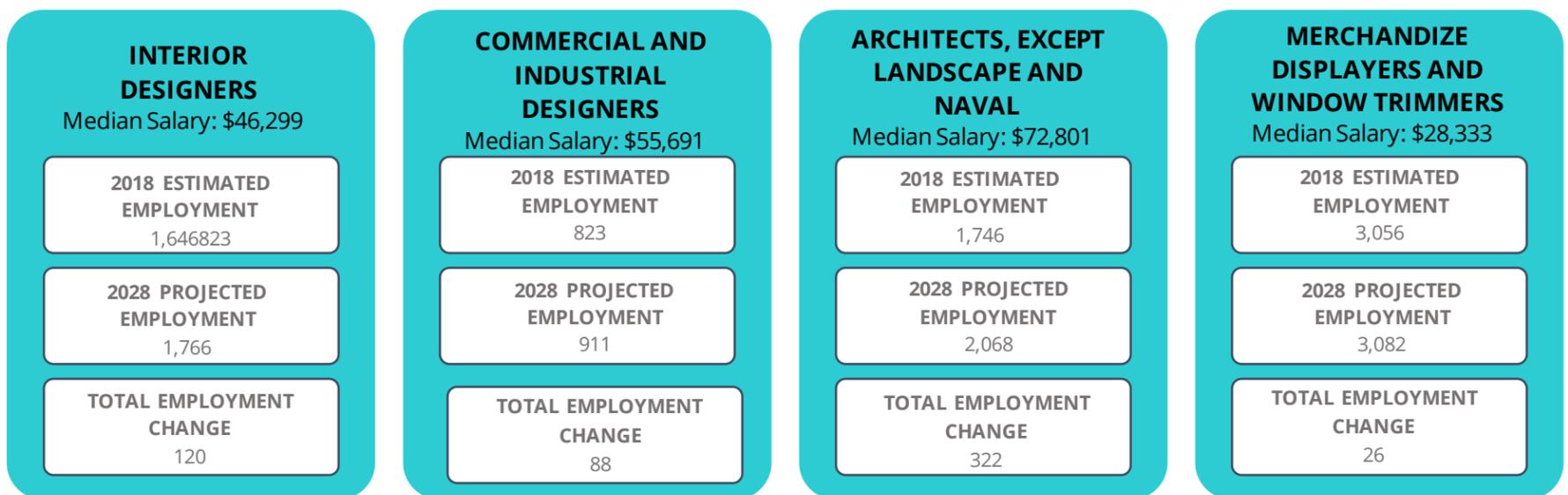
JOB OUTLOOK

Job demand for interior designers is good. Construction continues to boom in Tennessee. There are many opportunities for interior designers to find work in residential, commercial, and industrial settings. This growth is expected to continue as current companies expand and new companies come to the state. Commercial construction requires extensive interior design work for each building. Residential construction and upgrades also call for interior design work.



OCCUPATION PROFILE

Interior design is a focused field that involves determining the best way to design the inside of a building. Interior designers bring to life an artistic vision for work and living spaces. Responsibilities can include researching and deciding on materials and products, interpreting customer needs into plans, defining project requirements, designing aspects of a building, and setting project costs. Industrial designers focus on the needs of a commercial or manufacturing facility. Merchandise displayers arrange sales products in an inviting manner.



PROGRAM OF STUDY PROFILE

The Interior Design program of study prepares students to become residential or commercial interior designers. Courses cover concepts and skills such as elements and principles of design, sketching techniques for perspective floor plans, computer-aided drafting, board presentation techniques using textiles samples and three-dimensional sketches, and product applications.



STUDENT ENROLLMENT ANALYSIS

	Foundations of Interior Design	Residential Interior Design	Commercial Interior Design	Advanced Interior Design
2017-18	637	77	43	11
2018-19	525	132	24	1
2019-20	607	149	52	11

CAREER PATHWAY



PROGRAM OF STUDY COMPREHENSIVE OUTLOOK

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RECOMMENDATIONS + OPPORTUNITIES

Standards

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New Courses

During the comprehensive review for this program of study, feedback from industry, postsecondary, and teachers **did not indicate** a need to add or retire courses at this time.

CTSO Connections

This program of study is aligned with Family, Career, and Community Leaders of America (FCCLA). FCCLA's mission statement includes developing skills for life through practical knowledge and career preparation. Content buckets that incorporate these skills are included in all of the program of study courses.

- FCCLA leadership opportunities align with leadership skills needed by Interior Designers. Content is reflected in Advanced Interior Design standard 10.
- FCCLA Competitive and Skill Demonstration events that align with the Interior Design POS include: Character Development, Creative and Critical Thinking, Interpersonal Communications, Practical Knowledge, Career Preparation, and Interior Design Challenge.

WBL Activities

This program of study is aligned with the WBL Framework by offering the following experiences to students.

- Career Exploration is included in Foundations of Interior Design standards 7 & 8.
- Career Preparation is included in all courses.
- Career Training is included in all courses, especially the Advanced Interior Design course.

Recommended Trainings

The annual Institute for CTE Educators will provide teachers extensive professional development opportunities. Teachers will have opportunities to explore instructional and resource best practices, network, and grow their individual professional focus on preparing students to meet the demands of the postsecondary pathway of their choosing. TDOE provided professional development opportunities may vary based on identified teacher needs.

Externship Opportunities

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Additional Resources

PROGRAM OF STUDY JUSTIFICATION

Mechanical, Electrical, & Plumbing (MEP) Systems

Architecture and Construction

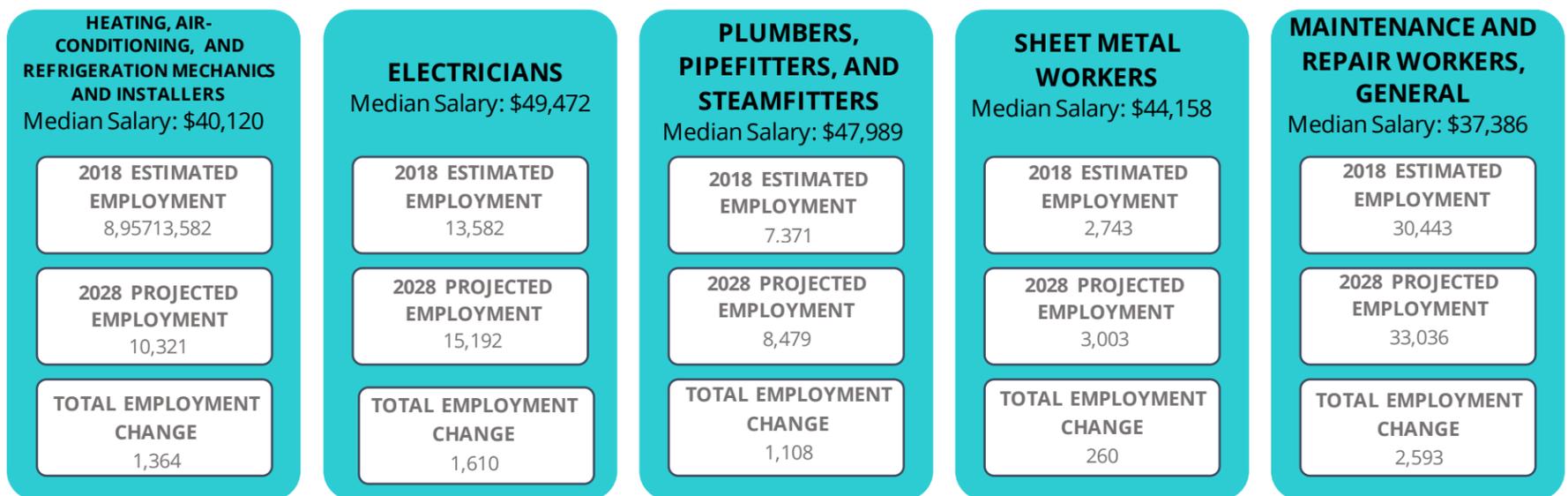
JOB OUTLOOK

Job demand in the mechanical, electrical, and plumbing trades is strong. Construction and manufacturing continue to boom in Tennessee. This boom is expected to continue as current companies expand and new companies come to the state. Both residential and commercial construction is expected to remain active. There are many opportunities for career advancement for electricians, HVAC technicians, and plumbers. The continual growth of construction combined with the number of workers retiring ensures that these will remain high demand occupations.



OCCUPATION PROFILE

Electricians, plumbers and heating, ventilation and air-conditioning (HVAC) technicians perform a wide variety of construction, installation, and service tasks. Electricians install, maintain, and repair electrical power, communications, lighting, and control systems. Plumbers install, maintain, and repair pipes, valves, fittings, drainage systems, and fixtures. HVAC technicians install, maintain, and repair ventilation and air-conditioning systems and equipment. All of this work can occur in either commercial or residential buildings.



PROGRAM OF STUDY PROFILE

The Mechanical, Electrical, & Plumbing Systems program of study prepares students to install, service, and maintain building equipment. Courses are arranged in sequence to provide students the opportunity to understand the principles behind mechanical, electrical, and plumbing systems before advancing to a specific course for the trade of their choice.



STUDENT ENROLLMENT ANALYSIS

	Fundamentals of Construction	MEP Systems	HVAC	Electrical Systems
2017-18	5,052	407	143	318
2018-19	5,247	538	124	312
2019-20	5,419	599	171	364

CAREER PATHWAY



PROGRAM OF STUDY COMPREHENSIVE OUTLOOK

The comprehensive outlook is comprised of a 3-year vision of all support services, resources and program development aligned with this program of study.

RECOMMENDATIONS + OPPORTUNITIES

Standards

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New Courses

During the comprehensive review for this program of study, feedback from industry, postsecondary, and teachers **did not indicate** a need to add or retire courses at this time.

CTSO Connections

This program of study is aligned with SkillsUSA. SkillsUSA's mission statement includes personal, workplace, and technical framework skills. Content buckets that incorporate these skills are included in all of the program of study courses.

- SkillsUSA leadership opportunities align with leadership skills needed by Electricians, Plumbers and HVAC Technicians. Content is reflected in Fundamentals of Construction standard 27 and Construction Practicum standard 14.
- SkillsUSA competitive events that align with the Mechanical, Electrical, & Plumbing (MEP) Systems POS include: Career Pathways Showcase, Community Service, Job Interview, Building Maintenance, Electrical Construction Wiring, HVAC/R, Plumbing, and Sheet Metal.

WBL Activities

This program of study is aligned with the WBL Framework by offering the following experiences to students.

- Career Exploration is included in Fundamentals of Construction standards 8 & 9 and MEP Systems standards 5-7.
- Career Preparation is included in all courses.
- Career Training is included in all courses, especially the Construction Practicum course.

Recommended Trainings

The annual Institute for CTE Educators will provide teachers extensive professional development opportunities. Teachers will have opportunities to explore instructional and resource best practices, network, and grow their individual professional focus on preparing students to meet the demands of the postsecondary pathway of their choosing. TDOE provided professional development opportunities may vary based on identified teacher needs.

Externship Opportunities

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Additional Resources

PROGRAM OF STUDY JUSTIFICATION

Residential & Commercial Construction

Architecture and Construction

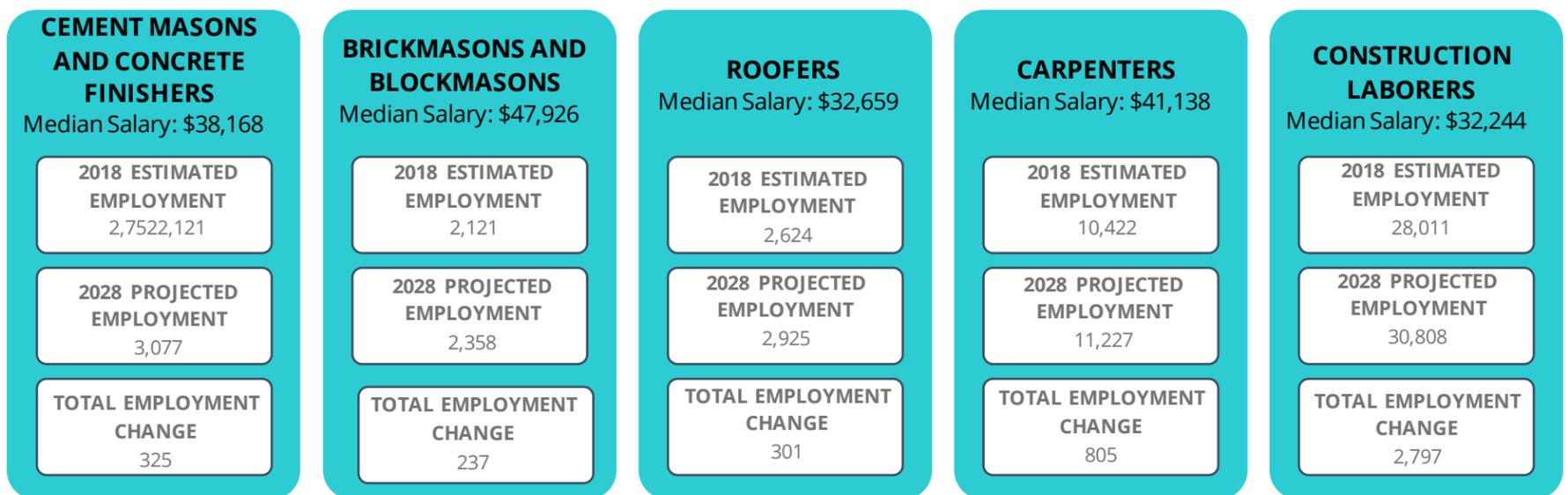
JOB OUTLOOK

Job demand in the construction occupations is strong. Construction and manufacturing continue to boom in Tennessee. This boom is expected to continue as current companies expand and new companies come to the state. Both residential and commercial construction is expected to remain active. There are many opportunities for career advancement for workers in the construction industry. The continual growth of construction combined with the number of workers retiring ensures that construction will remain a high demand occupation.



OCCUPATION PROFILE

Residential and commercial construction covers a wide variety of trades. Cement masons place and finish concrete in sidewalks, columns, beams, and other surfaces. Brick masons build walls, walkways, fences, roads, and other structures using bricks and other materials. Roofers build new roofs, inspect roofs for damages, repair roofs, and transport the materials needed in roofing. Construction laborers perform physical tasks such as cleaning, removing debris, loading and unloading materials, and digging ditches.



PROGRAM OF STUDY PROFILE

The Residential & Commercial Construction program of study prepares students for various construction disciplines. Courses provide students with the opportunity to understand building systems. Students will be able to interpret construction drawings, demonstrate the construction crafts including carpentry, masonry, electricity, plumbing and HVAC, and safely use and maintain appropriate tools.



STUDENT ENROLLMENT ANALYSIS

	Fundamentals of Construction	Residential & Commercial Construction I	Residential & Commercial Construction II	Construction Practicum
2017-18	5,052	1,565	1,285	119
2018-19	5,247	1,618	1,232	206
2019-20	5,419	1,573	1,135	295

CAREER PATHWAY



PROGRAM OF STUDY COMPREHENSIVE OUTLOOK

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RECOMMENDATIONS + OPPORTUNITIES

Standards

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New Courses

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CTSO Connections

This program of study is aligned with SkillsUSA. SkillsUSA's mission statement includes personal, workplace, and technical framework skills. Content buckets that incorporate these skills are included in all of the program of study courses.

- SkillsUSA leadership opportunities align with leadership skills needed by Construction Trades Technicians. Content is reflected in Fundamentals of Construction standard 27 and Construction Practicum standard 14.
- SkillsUSA competitive events that align with the Residential & Commercial Construction POS include: Career Pathways Showcase, Community Service, Job Interview, Building Maintenance, Carpentry, and Masonry.

WBL Activities

This program of study is aligned with the WBL Framework by offering the following experiences to students.

- Career Exploration is included in Fundamentals of Construction standards 8 & 9 and Residential & Commercial Construction I standards 5 & 6.
- Career Preparation is included in all courses.
- Career Training is included in all courses, especially the Construction Practicum course.

Recommended Trainings

The annual Institute for CTE Educators will provide teachers extensive professional development opportunities. Teachers will have opportunities to explore instructional and resource best practices, network, and grow their individual professional focus on preparing students to meet the demands of the postsecondary pathway of their choosing. TDOE provided professional development opportunities may vary based on identified teacher needs.

Externship Opportunities

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Additional Resources

PROGRAM OF STUDY JUSTIFICATION

Structural Systems

Architecture and Construction

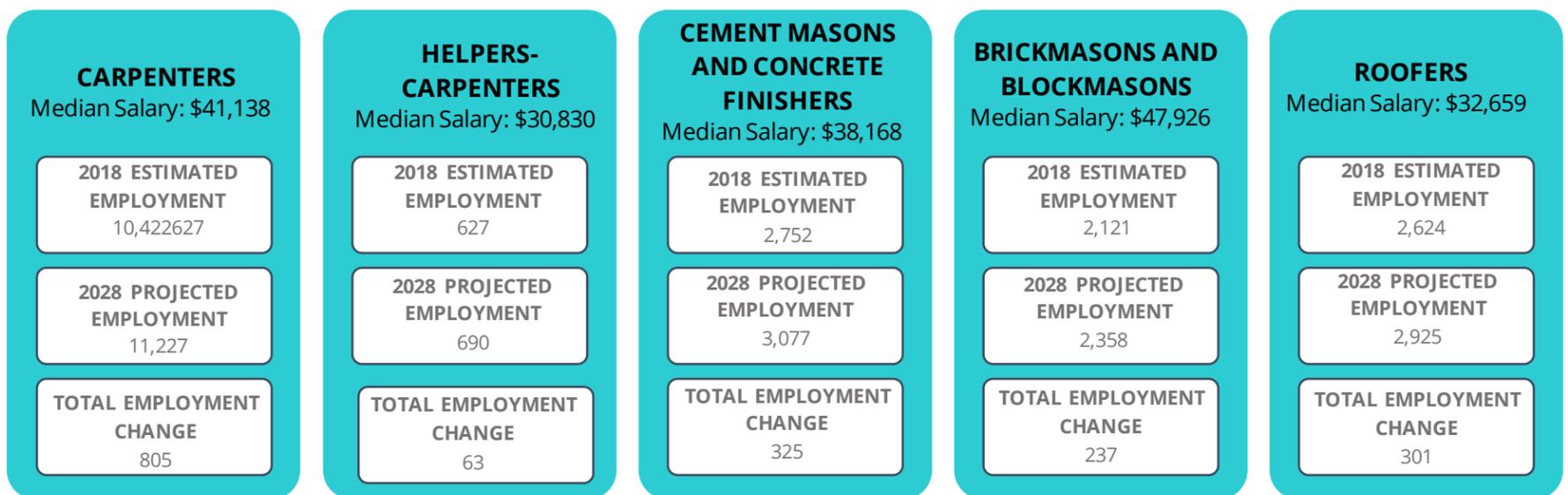
JOB OUTLOOK

Job demand for carpenters is strong. Construction and manufacturing continue to boom in Tennessee. This boom is expected to continue as current companies expand and new companies come to the state. Both residential and commercial construction is expected to remain active. There are many opportunities for career advancement for carpenters. The continual growth of construction combined with the number of workers retiring ensures that carpentry will remain a high demand occupation.



OCCUPATION PROFILE

Carpenters are the backbone of the construction industry. Carpenters build walls, floors, roofs, and doorframes. They follow blueprints and building plans to meet the needs of their customers. Carpenters install structures and fixtures such as stairs, windows, cabinets, and molding. They measure, cut, and shape wood, plastic, and other materials. All of the work can occur in residential or commercial buildings.



PROGRAM OF STUDY PROFILE

The Structural Systems program of study prepares students for residential and commercial carpentry. Courses cover wood, metal, and concrete building materials, fasteners, hand and power tools, fabrication based on construction plans, framing of platform and post-and-beam structures, stairs, structural loads, installation and trim of windows and doors, installation and repair of gypsum wallboard, exterior finish work, cabinet installation, and thermal and moisture protection.



STUDENT ENROLLMENT ANALYSIS

	Fundamentals of Construction	Structural Systems I	Structural Systems II	Construction Practicum
2017-18	5,052	1,391	980	119
2018-19	5,247	1,301	913	206
2019-20	5,419	1,309	978	295

CAREER PATHWAY



PROGRAM OF STUDY COMPRENSHIVE OUTLOOK

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RECOMMENDATIONS + OPPORTUNITIES

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New Courses

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CTSO Connections

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- SkillsUSA leadership opportunities align with leadership skills needed by Carpenters. Content is reflected in Fundamentals of Construction standard 27 and Construction Practicum standard 14.
- SkillsUSA competitive events that align with the Structural Systems POS include: Career Pathways Showcase, Community Service, Job Interview, Building Maintenance, Carpentry, and Cabinetmaking.

WBL Activities

This program of study is aligned with the WBL Framework by offering the following experiences to students.

- Career Exploration is included in Fundamentals of Construction standards 8 & 9 and Structural Systems I standards 4 & 5.
- Career Preparation is included in all courses.
- Career Training is included in all courses, especially the Construction Practicum course.

Recommended Trainings

The annual Institute for CTE Educators will provide teachers extensive professional development opportunities. Teachers will have opportunities to explore instructional and resource best practices, network, and grow their individual professional focus on preparing students to meet the demands of the postsecondary pathway of their choosing. TDOE provided professional development opportunities may vary based on identified teacher needs.

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