



MANUFACTURING

A collage of various manufacturing scenes, including workers operating machinery, welding, and handling materials, all overlaid with a red tint. The central text "CAREER SUCCESS GUIDE" is prominently displayed in white, bold, sans-serif font.

CAREER SUCCESS GUIDE

Great Career Ideas • Creating Your Plan • College Resources



Kay Ivey, Governor of Alabama

A MESSAGE FROM THE GOVERNOR

As I've said on many occasions, our people are Alabama's greatest strength, especially our young people, who hold the state's future in their hands. As the guardians of our state's future, students deserve every possible tool to help them—and Alabama—succeed in all areas.

To achieve this, we have created the Alabama SUCCESS Guides, which are designed to assist students in identifying resources regarding

careers, postsecondary education and financial literacy. Through our students, we are positioning our state for even greater accomplishments. They will be well-equipped for careers in Alabama's workforce which will allow them to compete—and excel—in our global economy.

This Alabama SUCCESS Guide is an excellent tool in helping our students of today become our leaders of tomorrow.

ATTENTION PARENTS!

This guide is part of a series created to help students in Alabama learn more about high-demand careers, salaries, the steps they need to take to reach their goals, and the resources that can help them get there.

The workforce has changed since you entered it. Many of the jobs that exist today were not even created when you graduated from high

school, and the pace of change is faster than ever! However, since work skills are transferable to many jobs, by helping your student connect with what they learn in the classroom to real jobs that interest them, they will graduate better equipped for life after high school.

Thank you for talking with your child about what careers interest them – and why. You can help them by

sharing your own work experiences with your child. Ask people in your community who work in jobs that interest your child to share about their careers or let your child visit their workplace. And last, but not least, go with your child to meet with their school counselor or career coach to get them moving in the right direction. Help them prepare for their future...today.



WHAT EMPLOYERS WANT

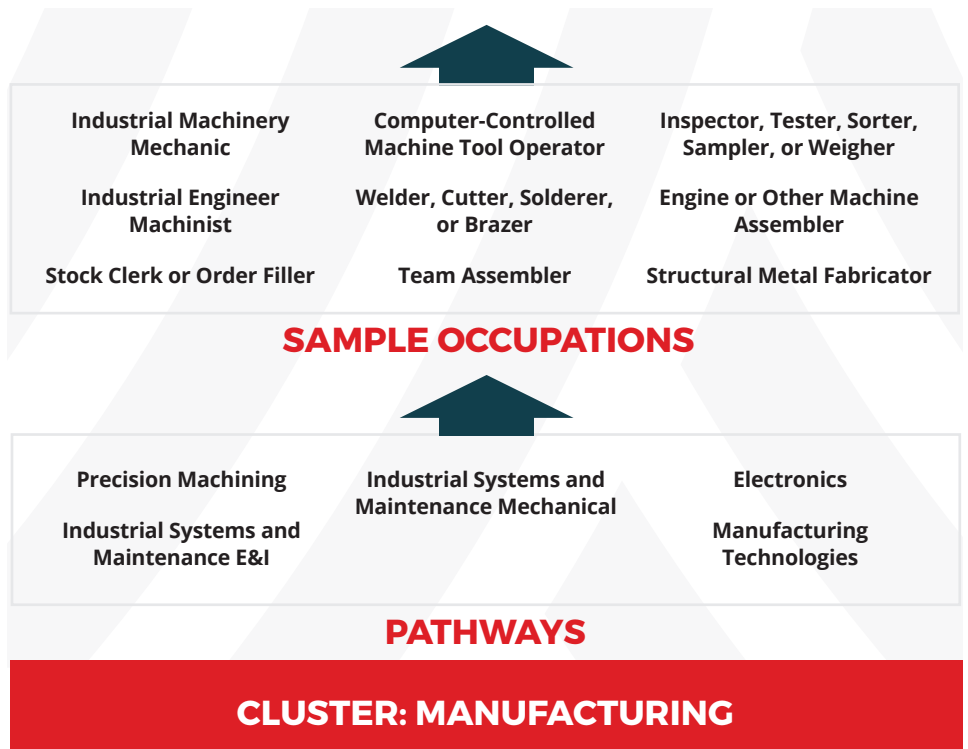
GEORGE CLARK
PRESIDENT
MANUFACTURE ALABAMA, MONTGOMERY

“ **IN MANUFACTURING, THERE HAS ALWAYS BEEN A NEED TO UNDERSTAND THE BASICS OF MATH AND SCIENCE.** Both subjects are so very important to manufacturing. But to really go after a career in manufacturing, you have to couple those math and science skills with problem solving. And not just problem solving, but problem solving in a group setting. No matter what you are producing, manufacturing is always a team effort. Also, a lot of manufacturing work today is computerized, and the need for students to develop a basic knowledge of computer and mechanical skills will only increase over time.

Luckily, there are plenty of courses at Alabama community colleges that give students not just knowledge, but the practical experience that is so essential to mastering manufacturing. Just about everyone in Alabama is within driving distance of one of these opportunities. Our educational network affords students the best of opportunities. ”

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THINK AGAIN

Now is the time to take a fresh look at Manufacturing careers you may not have considered before.

MYTH: Manufacturing jobs are only for men.

FACTS: One of the first things you'll notice in a plant is the number of women in responsible positions. It really doesn't make a difference what field you go into. Whether in chemical, automotive, or some other manufacturing sector, more and more women are entering the workforce. Women are welding in shipyards, working as plant managers, operating control rooms, and managing the flow of steel and various chemicals throughout the plant.

REALITY CHECK

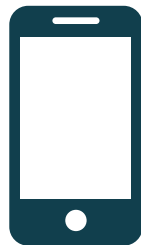
WHAT IT COSTS TO LIVE ON YOUR OWN IN ALABAMA
 Estimated 2017-2018 monthly expenses for a 22 year-old living in Birmingham.

NOTE: Keep in mind that your paycheck will be reduced by about 30 percent to cover taxes, retirement, and insurance. What's left is known as your "take-home pay." Subtract 30 percent from the salaries shown on pages 5 and 6 to get a more accurate take-home amount.

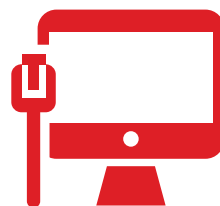
Groceries:
 \$350-\$400



Mobile Phone:
 \$55



Cable and Internet:
 \$80



Gasoline:
 \$100
 (1,000 miles @ \$3.00 per gallon, 30 mpg)



Rent and Utilities:
 \$700-\$850
 (1 Bedroom)



Car Payment:
 \$350-\$450
 (Used 2016)



Car Insurance:
 \$60-\$125
 (6-Month Policy)



Sources:
 RENT: rentbits.com/rb/t/rental-rates/birmingham-al
 CAR: carsdirect.com
 MOBILE PHONE: att.com, verizon.com
 GROCERIES: bestplaces.net
 CABLE AND INTERNET: birmingham.mybriighthouse.com
 CAR INSURANCE: progressive.com
 GAS: gasbuddy.com



INDUSTRIAL MACHINERY MECHANIC

Job Description: Repair, install, adjust, or maintain industrial production and processing machinery or refinery and pipeline distribution systems.

Education:

High school diploma or equivalent

Salary Range: \$35,380 – \$61,244



TEAM ASSEMBLER

Job Description: Work as part of a team having responsibility for assembling an entire product or component of a product. Team assemblers can perform all tasks conducted by the team in the assembly process and rotate through all or most of them rather than being assigned to a specific task on a permanent basis. May participate in making management decisions affecting the work. Includes team leaders who work as part of the team.

Education:

High school diploma or equivalent

Salary Range: \$22,091 – \$43,116



INDUSTRIAL ENGINEER

Job Description: Design, develop, test, and evaluate integrated systems for managing industrial production processes, including human work factors, quality control, inventory control, logistics and material flow, cost analysis, and production coordination.

Education: Bachelor's degree

Salary Range: \$62,432 – \$104,955



MACHINIST

Job Description: Set up and operate a variety of machine tools to produce precision parts and instruments. Includes precision instrument makers who fabricate, modify, or repair mechanical instruments. May also fabricate and modify parts to make or repair machine tools or maintain industrial machines, applying knowledge of mechanics, mathematics, metal properties, layout, and machining procedures.

Education:

High school diploma or equivalent

Salary Range: \$27,415 – \$48,284



COMPUTER-CONTROLLED MACHINE TOOL OPERATOR

Metal and Plastic

Job Description: Operate computer-controlled machines or robots to perform one or more machine functions on metal or plastic work pieces.

Education:

High school diploma or equivalent

Salary Range: \$26,120 – \$41,490



WELDER, CUTTER, SOLDERER, OR BRAZER

Job Description: Use hand-welding, flame-cutting, hand soldering, or brazing equipment to weld or join metal components or to fill holes, indentations, or seams of fabricated metal products.

Education:

High school diploma or equivalent

Salary Range: \$27,062 – \$44,120



INSPECTOR, TESTER, SORTER, SAMPLER, OR WEIGHER

Job Description: Inspect, test, sort, sample, or weigh nonagricultural raw materials or processed, machined, fabricated, or assembled parts or products for defects, wear, and deviations from specifications. May use precision measuring instruments and complex test equipment.

Education:
High school diploma or equivalent
Salary Range: \$ 20,185 – \$39,719



LABORER OR FREIGHT, STOCK, AND MATERIAL MOVER, HAND

Job Description: Manually move freight, stock, or other materials or perform other general labor. Includes all manual laborers not elsewhere classified.

Education:
No formal education requirement
Salary Range: \$17,868 – \$29,065



STOCK CLERK OR ORDER FILLER

Job Description: Receive, store, and issue sales floor merchandise, materials, equipment, and other items from stockroom, warehouse, or storage yard to fill shelves, racks, tables, or customers' orders. May mark prices on merchandise and set up sales displays.

Education:
No formal education requirement
Salary Range: \$17,688 – \$28,662



MULTIPLE MACHINE TOOL SETTER, OPERATOR, OR TENDER
Metal and Plastic

Job Description: Set up, operate, or tend more than one type of cutting or forming machine tool or robot.

Education:
High school diploma or equivalent
Salary Range: \$23,158 – \$38,434



PRODUCTION, PLANNING, OR EXPEDITING CLERK

Job Description: Coordinate and expedite the flow of work and materials within or between departments of an establishment according to production schedule. Duties include reviewing and distributing production, work, and shipment schedules; conferring with department supervisors to determine progress of work and completion dates; and compiling reports on progress of work, inventory levels, costs, and production problems.

Education:
High school diploma or equivalent
Salary Range: \$31,564 – \$58,682



ENGINE OR OTHER MACHINE ASSEMBLER

Job Description: Construct, assemble, or rebuild machines, such as engines, turbines, and similar equipment used in such industries as construction, extraction, textiles, and paper manufacturing.

Education:
High school diploma or equivalent
Salary Range: \$27,042 – \$45,042

MICHAEL W. HESTER REGULATORY MANAGER/SENIOR ENGINEER

CHEROKEE NITROGEN

Graduate of Cherokee High School
Cherokee, AL

In my role, I interpret highly technical industry and government regulations and ensure the company or business complies with these requirements. The position also applies advanced engineering concepts to ensure operations are safe, economical, efficient, and profitable.

From an early age, I grew up in a very small Alabama farming community, lived close to a very small town, and attended a very small school. Having rules and attending to detail equated to successful lives and livelihoods.

As a result, all through my growing up years I actually enjoyed following the rules and paying attention to detail. As I entered college, engineering was always my chosen profession, which demanded absolute attention to detail and required one to always follow the rules of science and nature. My first degree opened doors of opportunity to get my first job. Then as I progressed through masters and doctoral programs while still employed

“Always pursue your dreams.”

full time, additional opportunities continued to open up. I've spent my entire career spanning over thirty years in regulatory and engineering fields. Oftentimes the hours are long, but well worth the sacrifices. I still live in a small rural Alabama community with a small school. Because of my chosen career, however, my extended home now includes some of the most fascinating largest and smallest cities around the world from London, England to Heidelberg, Germany. Always pursue your dreams.

JOHN BARTON MATERIALS MANAGER

CLAYTON SUPPLY

Graduate of Lynn High School
Lynn, AL

I do the buying of day-to-day materials for this facility and manage the inventory levels of these materials. The challenge is making sure that you don't run out of materials you need to keep in stock. If you don't keep it under control, no one else can do their job.

I came from a family of hard working people that had some success, but no one had ever been any further than high school. I was determined to go further. I had people tell me

“I proved that education along with a good work ethic and determination pays off.”

that I would never go any further which made me even more determined to prove them wrong. I worked hard and tried to surround myself with the right people to place myself in a position to be successful. I took vocational classes in high school, went to NWSCC for two

years studying Business Administration, and then later took classes from Dale Carnegie School of Business. In the long run I proved that education along with a good work ethic and determination pays off. My attention to detail, problem solving skills, ability to work well with others, and absolute determination to get the job done are what has served me well in my career so far.

MARK BUSH GENERAL MANAGER & BUSINESS TEAM LEADER

SSAB ALABAMA, INC.

Graduate of Atherton High School
Louisville, KY

As the Plant Manager and Business Team Leader, I am responsible for all aspects of safely operating and maintaining SSAB's steel plant in Axis, AL. I am also responsible for weighing commercial opportunities to make sure we are maximizing profitability, developing a capital strategy, supporting corporate initiatives and goals. I am also responsible for divisional P&L reporting.

Graduating from high school, I had no idea what I wanted to do next, but since the norm was to enroll in a traditional four-year

university, that is what I did. I quickly realized that this was not suited for me. I withdrew from school and went on to work for the next five years, ultimately realizing that I would not reach my goals without some skills training. I enrolled in a two-year program graduating at the top of my class with an Associate Degree in

“I withdrew from school... ultimately realizing that I would not reach my goals without some skills training.”

Electrical Engineering. After graduation I was hired as a shift maintenance team member at a new steel mill being built in Ghent, KY. I worked as a shift maintenance team member for 2 years before being promoted to Electrical Maintenance Manager. In 1999, I joined SSAB (formerly IPSCO) as the Caster Project Engineer for a new steel mill being built in Axis, Alabama. In 2013, after serving in other management roles, I was promoted to my current role of General Manager and Business Team Leader for SSAB Americas steel mill located in Axis, Alabama.



FRANKY GRIGGS

GENERAL MANAGER

NUCOR CORPORATION

Graduate of Hartsville High School
Hartsville, SC

I am responsible for all aspects of a stand-alone manufacturing facility with about 250 teammates.

As a young child, I grew up on a small family farm. At a very young age I started working in the fields and quickly decided that my profession would not be farming. Throughout my school years, I had no expectation of what profession I would like to pursue. On the farm I learned how to fix things, which led my interest more toward an engineering field. When I was hired at Nucor, it was not for my mental acumen; it was purely for my

labor. I was hired into an entry-level position and was hand stacking steel on my first day. I decided that if I wanted to expedite the promotion process for myself, I needed to transfer to other facilities and take on more responsibility/roles. Several years later I was asked, "If you could be anything you wanted to be in Nucor, what would it be?"

"What is most rewarding to me in this position is the role I get to play in mentoring and coaching new teammates..."

This question changed my life. My answer resulted in guidance and mentorship to work on my personal and professional growth and development. Because of this, I am now part of the executive team of a Fortune 150 manufacturing industry. What is most rewarding for me in this position is the role I get to play in mentoring and coaching new teammates that will run this company after I am gone. It is also very rewarding for me to be a part of a manufacturing process that produces a tangible product, one of the few elements of original wealth which provides the seed money for all of the rest of our economy.

HALEY WILLIAMS

WELDING CONTRACTOR

SELF-EMPLOYED

Graduate of Oakman High School
Oakman, AL

I am a self-employed welding contractor.

I never knew what I wanted to be, but I did know that I loved working on a job site and with my hands. From the time I was young, I would build things with Legos and parts from my dad's shop. It wasn't until high school that I realized I enjoyed welding and working in the maintenance industry. This is what led to my career choices and where I would go to college. I attended Bevill State on a full scholarship, and after completing the welding program,

I was offered a job to be assistant welding instructor for the college. The only reason I attended college is because of the scholarship, but it worked out well for me. After working there for a year, I went back to work as a contractor for whoever needed work, and the welding instructor job at WCCT became open. After much debate, I applied and was

"Being self-employed, you must be self-motivated and good with managing your money."

awarded that job. I taught welding there for nearly 13 years. I decided that I missed working in the field and have now gone back to welding as a self-employed contractor. Even though it is hard work, sometimes including night shift and weekends, I still enjoy welding every day. Being self-employed, you must be self-motivated and good with managing your money. You must also be able to communicate with others and be flexible on when and where you are willing to work.

JERRY PETERS

CASTING DEPARTMENT MANAGER

SSAB STEEL

Graduate of Madison High School
Mansfield, OH

I oversee thirty-six employees in all areas of the Casting Department: safety, housekeeping, production, maintenance, and cost.

I was not really sure what I wanted to do with my life and working career. During my last two years of high school I thought I wanted to be a builder, so I attended a vocational carpentry class and worked part time with a home builder. After graduation, the builder moved away so I decided to join the military. After four years in the military, I came back home. My father and grandfather were both in the steel industry, and there were openings at

the plant, so I applied. After starting out at the bottom, I had the opportunity to work in different areas of the steel mill, see the process from start to finish, and discover what area I enjoyed working in the most. I have worked the electric arc furnace floor, pouring ingots, rolling mill, and many other positions. Pouring ingots captured my attention the most of all positions I worked. I poured steel into ingots for thirteen years and then through a casting machine just like the one I manage today. In my position, I have direct contact with all the employees in my department. I have had the opportunity to travel to several steel plants throughout the US

and in other countries. This is a great field to work in if you are safety minded, hands on, plan ahead, and are a people person that is willing to give a hard day's work for a good wage and benefits. You can advance in this industry if you are willing to work hard, pay attention to detail, strive to learn each day, and always keep moving ahead.

"You can advance in this industry if you are willing to work hard..."



MAKE A PLAN

SIT DOWN WITH YOUR PARENTS AND COUNSELOR AND CREATE A PLAN

Map out an Alabama Education Plan (sample below) based on your interests, strengths, and possible career goals. Your plan outlines the courses and electives you'll take in high school, plus related co-curricular organization and career preparation experiences. Your school counselor or career coach will work with you to determine the learning experiences needed for you to complete your plan, such as using distance learning or earning college credit from your local community college. Below is a sample Alabama Education Plan for you to use as a guide.

SAMPLE EDUCATION PLAN FOR THIS CAREER CLUSTER

GRADE 9	GRADE 10	GRADE 11	GRADE 12
FRESHMAN YEAR	SOPHOMORE YEAR	JUNIOR YEAR	SENIOR YEAR
English 9 Algebra I Physical Science World History *Career Preparedness *LIFE PE **Elective	English 10 Geometry Biology United States History 10 *Health/Elective **Elective **Elective	English 11 Algebra II Chemistry United States History 11 **Elective **Elective **Elective	English 12 Math Elective Physics US Government/Economics **Elective **Elective **Elective

*Other Required Courses

**Career & Technical Education and/or Foreign Language and/or Arts Education (3 Credits)

MANUFACTURING CLUSTER COURSES

Architecture,
Construction, and
Manufacturing

NCCER Industrial
Maintenance -
Mechanical 3

NCCER Industrial
Maintenance - E & I 1

NCCER Industrial
Maintenance - E & I 2

NCCER Industrial
Maintenance - E & I 3

NCCER Industrial
Maintenance - Mechanical 1

NCCER Industrial

Maintenance - Mechanical 2

Safety and Health Regulations

Senior Career Pathway Project
- Manufacturing

CO-CURRICULAR

SkillsUSA

WORK-BASED LEARNING

Job Shadowing
Career Day/Fair

Internship
Field Trips

Work Experience
Guest Speakers

GETTING READY

MAPPING OUT YOUR PROGRAM

GRADE 8

- Research your career options based on your interests, talents, and goals.
- Create an Alabama Education Plan (see page 9).

GRADE 9 FRESHMAN YEAR

- Choose a career cluster.
- Do your best work in all your classes. Course selection and grades really do count when you are applying to colleges and training programs.
- Keep a folder or portfolio of your activities, awards, accomplishments, and work experience, and add to it during your high school career.

GRADE 10 SOPHOMORE YEAR

- Continue building the strongest possible academic record.
- Consider taking the ACT if you plan to apply to a two-year college or university in the future.
- Consider taking the PSAT (Preliminary SAT/National Merit Scholarship Test) if you plan to apply to a two-year college or university in the future.
- Use the information in your portfolio to create a resumé.
- Apply for summer jobs, internships, or volunteer activities related to your career cluster.

GRADE 11 JUNIOR YEAR

- Take the PSAT/NMSQT.
- Use resources available at your school (books, online tools, college fairs, etc.) to research postsecondary education options related to your career goals.
- Register to take either the ACT or the SAT I and SAT II Subject Tests. (There are testing dates every month from January through June). Registration deadlines are approximately four weeks before each testing date.
- Apply for summer jobs, internships, and volunteer activities related to your career goals.
- Use studentaid.ed.gov to determine your financial aid eligibility.

GRADE 12 SENIOR YEAR

- In the fall, apply to postsecondary programs and retake any standardized college admissions tests if you would like to improve your score.
- Beginning in October, complete college financial aid forms. Deadlines and required data differ from school to school, so read the instructions carefully.
- In the spring, choose your postsecondary program on the basis of where you have been accepted, costs, etc.
- Continue doing your best work. All schools require a final transcript before making your acceptance official.

COLLEGE PREP: GETTING ACCEPTED

The college admissions process can be stressful and a bit scary, especially if you are the first in your family to apply. Give yourself the best shot at getting into a college program that matches your goals by following these five steps:

1. MAKE THE GRADE

Your grade point average really does count, so do your best work on every assignment, pay attention in class, and participate in group discussions.

2. MAKE A LIST

Before you can apply to college, you have to figure out what you would like to study and what matters most to you (like college location, size, or religious affiliation). Use the college guides in your local library, school library, school counselor's or career coach's office to start making a list of colleges that interest you. Use online tools like collegeboard.org and accs.cc to learn more about each school and take virtual campus tours.

3. GET INVOLVED

Build teamwork and leadership skills by joining career technical student organizations, clubs, and teams at your school, volunteering for service projects, and participating in church or community activities.

4. PLAN FOR TEST

Most colleges want scores from the ACT, SAT, or SAT II tests. See what tests the schools on your list require, sign up to take them in time to include the scores on your application, and then practice the free SAT sample questions at collegeboard.org or sample ACT tests at actstudent.org.

5. BE NEAT AND COMPLETE

Before you send in a college application, double-check your spelling, make sure nothing is missing, and save a copy just in case you have to submit it again.

PAYING YOUR WAY: FINANCIAL AID

Every Alabama student can afford to go to college. It just takes a little planning. Put your college dreams within financial reach by taking these five steps:

1. CONSIDER A COMMUNITY COLLEGE

Alabama's public and private two-year colleges offer an affordable way to earn an associate's degree or complete enough credits to transfer into a four-year school as a junior. Learn more at accs.cc.

2. WEIGH YOUR OPTIONS

Attending one of Alabama's four-year public or private schools cuts travel costs and other living expenses, as compared to attending schools out of state. In addition, public schools offer reduced in-state tuition, and, if there's a college nearby, you can save even more by living at home.

3. RISE TO THE TOP

Apply to a couple of schools at which your grades and accomplishments put you near the top of the typical applicant pool.

4. DO A LITTLE DIGGING

More than one million local, national, and college-specific scholarships are available each year. Ask your school counselor or career coach for help finding printed scholarship resource guides. To find and apply for scholarships online, sign up for the free college scholarship search source achievealabama.org.

5. APPLY FOR AID

Fill out the Free Application for Federal Student Aid (FAFSA) beginning on October 1 of your Senior year. FAFSA forms and instruction booklets are available at your school counselor's office and online at studentaid.ed.gov. Some schools also require the CSS/Financial Aid Profile form (profileonline.collegeboard.org), and others have their own financial aid forms. Carefully read each college's application to know what forms you need to submit and when.

	AGRICULTURE, FOOD & NATURAL RESOURCES
	ARCHITECTURE & CONSTRUCTION
	ARTS, A/V TECHNOLOGY & COMMUNICATIONS
	BUSINESS MANAGEMENT & ADMINISTRATION
	EDUCATION & TRAINING
	FINANCE
	GOVERNMENT & PUBLIC ADMINISTRATION
	HEALTH SCIENCE
	HOSPITALITY & TOURISM
	HUMAN SERVICES
	INFORMATION TECHNOLOGY
	LAW, PUBLIC SAFETY, CORRECTIONS & SECURITY
	MANUFACTURING
	MARKETING
	STEM
	TRANSPORTATION, DISTRIBUTION & LOGISTICS

CLUSTER PATHWAYS

Industrial Systems and Maintenance E&I

Industrial Systems and Maintenance Mechanical

Precision Machining

Electronics

Manufacturing Technologies

POST SECONDARY LEARNING

COMMUNITY COLLEGE

4-YEAR COLLEGE/UNIVERSITY

WORK-BASED LEARNING

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