



## TEXAS CTE *In Action*

A College and Career Planning Guide

# BOOK YOUR Trip to the Top

**YOUR GUIDE to CAREERS  
in TRANSPORTATION,  
DISTRIBUTION, AND  
LOGISTICS**

- Showcasing 25 Careers
- High School Personal Graduation Plans
- Inside College Admissions

# Dear Texas Student,

**Y**ou are probably tired of people asking, “What do you want to be when you grow up?” Some students know exactly what they want to do, but most haven’t got a clue. The idea of choosing a career is intimidating, and it feels like it’s far in the future. There’s little time in the commotion of classes, activities, sports, work, and fun to think about what career you want to pursue after graduation from high school or college.

It pays, though, to take the time to think about your future career. The truth is that you’ll save a lot of time and money if you have a direction in life, as opposed to just finishing high school and worrying about it later. It’s really a matter of dollars and sense. If you choose a career direction now, you can select classes and activities that will make you highly marketable—and highly paid—when you look for work. And it only makes sense to have an idea of what you want to do rather than just wandering aimlessly through school.

Nobody wants that. Not your parents. Not your teachers. Not your friends. They want you to be somebody.

They want you to use your talents, follow your interests, and pursue your ambitions to become great at what you love to do in life. That’s what you should want, too.

So the time is right to take charge of your life and think about the future. You need a plan of action for how to get from where you are today to where you want to be in a few years: starting out on a personally and professionally rewarding career.

**YOU’VE HEARD  
THAT ‘INFORMATION  
IS POWER.’ WELL,  
THIS GUIDE IS  
POWER. IT PUTS YOU  
IN CHARGE OF YOUR  
FUTURE.**

That’s what Texas CTE is all about. The guide you are holding is one of 16 guides to different career clusters. It is designed to help you make smarter decisions about your education and career options.

You’ve heard the phrase, “Information is power.” Well, this guide is power. It puts you squarely in charge of your future, from creating High School Personal Graduation Plans (see page 5) to choosing college or some other form of education or training after high school. Work with your parents, teachers, and counselors to make decisions, but remind everyone that it is your future at stake and that you are taking charge of it.

Get information. Get a plan. Get a clue about your career direction. It’s alright if that direction changes; choosing a direction now is better than having no direction at all. Just promise yourself that you’ll make smart choices about where to focus your time, energy, and passion.

We’re proud that you are taking steps to plan your career direction, and we pledge that your school, teachers, and counselors will do all they can to help you make wise choices on your plans for success. We wish you the best of luck on your journey.



# Move It

TEXAS IS ON THE MOVE. Every day, everywhere in the northern, southern, eastern, and western parts of the state, people and products travel hundreds of thousands of miles of roads, waterways, railroad tracks, and air routes—all because of those who work in Transportation, Distribution, & Logistics. These professionals are responsible for ensuring that everyone and everything gets to the right place on time at the lowest possible cost. They are experts at planning and project management, increasingly using technology such as Global Positioning System (GPS) satellites and Radio Frequency Identification (RFID) tags to track the location of shipments. If you are a mover and shaker, have a talent for organization, or yearn to see new places, then Transportation, Distribution, & Logistics could be the right career cluster for you.

THERE ARE OVER  
80,000 MILES OF  
STATE MAINTAINED  
HIGHWAYS IN  
TEXAS.

## HOT Career Areas

Texas has launched a strategic plan that targets state efforts on six industry clusters that economists say will be the engines of economic growth in Texas. As you plan your future, think about a career in one of these new and emerging sectors.

- Advanced Technologies & Manufacturing
  - Molecular technologist
  - Sensor/robotics engineer
- Aerospace & Defense
  - Aerospace engineer
  - Unmanned autonomous vehicle engineer
- Biotechnology & Life Sciences
  - Bioinformatics specialist
  - Biocontainment technician
- Information & Computer Technology
  - System integrator
  - Computer game developer
- Petroleum Refining & Chemical Products
  - Petrochemical engineer
  - Refinery process design engineer
- Energy
  - Wind/solar energy engineer
  - Geophysical (oil and gas) prospector

THE FIRST STEP toward success is making smart decisions about your education and career options.

# Plan for Success



When I was in high school," says Sheryl Kovach, human resources director for the environmental services division at Philips Services Corporation in Houston, "the only job that I even knew about was receptionist work. I didn't aspire to be a manager or entrepreneur because I really didn't know about those disciplines. I was just looking forward to graduating. That was it. I really didn't know what it was I wanted to do."

Sound familiar? You, too, may not have a clue about what to do with your life. Don't worry, though. Help is right here in your hands. This magazine is your guide to education and career choices that can shape your future. It's one of 16 career cluster guides published by Texas CTE ([www.txcte.org](http://www.txcte.org)). This edition is all about Transportation, Distribution, and Logistics. Let's start with some basic steps you should take to get organized, plan for the future, and start on the road to success.

### Assess Your Talents and Abilities

First, you need to figure out some things about yourself. This step can be as simple as writing down a list of your interests (like video games or rock climbing), your hopes and dreams (like helping others), your talents (like writing or math ability), and your weaknesses (if you're squeamish at the sight of blood, for example, you might not want to be a doctor).

Follow up on this informal exercise by taking some formal assessments to determine your interests and abilities. Common assessments include Texas Genuine ([www.texasgenuine.org](http://www.texasgenuine.org)) and

CareerTech ([www.careertech.org](http://www.careertech.org)).

Ask your principal or counselor about the career assessments available at your school.

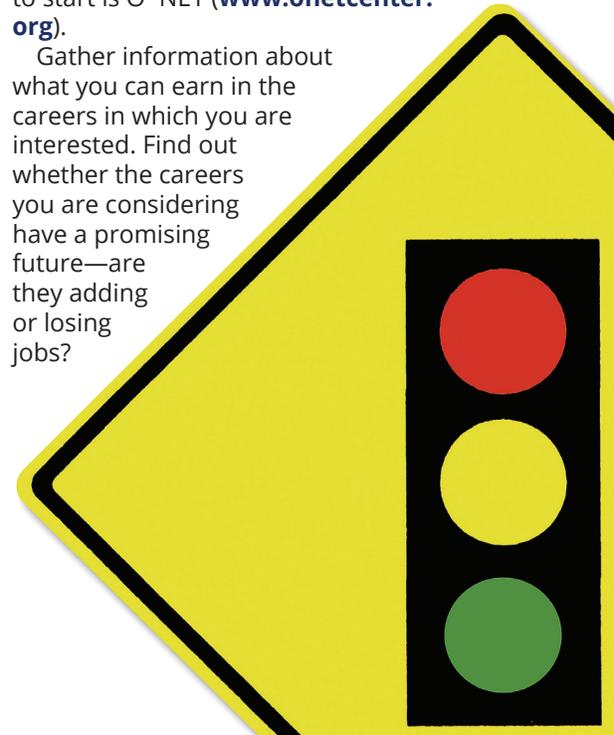
### Research Your Career Options

Once you've learned about yourself, learn more about your career options. There are thousands of occupations out there of which you may never have heard, and others that do not yet exist because the technologies have not been developed. Fortunately, there are plenty of resources (see inside back cover) for you, and they are as close as the nearest computer.

One of the most helpful is the Texas Career Check from the Texas Workforce Commission. It is a vast database of information about hundreds of professions. You can find Texas Career Check at [www.texascareercheck.com](http://www.texascareercheck.com). Another good place to start is O\*NET ([www.onetcenter.org](http://www.onetcenter.org)).

Gather information about what you can earn in the careers in which you are interested. Find out whether the careers you are considering have a promising future—are they adding or losing jobs?

TEXAS' RANKS  
**NO. 1 IN THE U.S.**  
 FOR BOTH GROSS  
 DOMESTIC PRODUCT AND  
 TOTAL EMPLOYMENT IN  
 THE AIR TRANSPORTATION  
 INDUSTRY.





Check out the education you'll need to enter those careers.

The chart on pages 10–11 presents data on 25 possible professions. Remember, though, that these are just a sampling of careers available in the cluster. Go to Texas Career Check, O\*NET, or another resource to investigate other careers.

### Create Your High School Graduation Plan

Once you have a better idea of your interests and abilities, you are ready to plan for high school and beyond. The High School Personal Graduation Plan, is your plan for preparing for the career of your choice.

First, you should choose a career cluster and an endorsement, not a particular occupational goal. In the eighth grade you might choose Transportation, Distribution, and Logistics leading to a Business and Industry Endorsement and then later become interested in a narrower field such as transportation operations or environmental management.

The program of study you choose—your plan—does not stop with graduation from high school. You could then pursue a two-year degree in aviation technology or a four-year degree as a safety engineer.

You should set up a High School Personal Graduation Plan that takes you through career preparation after high school, revising your blueprint as needed as you go along. If your career plans include college study, ask your counselor about tests required for admission to college, such as the PSAT, SAT, or ACT.

### Seek Out Special Programs

Many Texas schools offer innovative programs to prepare students for specific career areas. These include career and technical education (CTE) programs, academies, and magnet schools. Once you've decided on a career direction, ask your counselor about special programs in your area that may provide related experiences in your chosen career.

Samuel Odamah enrolled in the architecture program at the University of Texas at Arlington, having found his career calling at Dallas' Skyline Career Development Center, a high school with career programs in a number of different fields.

"Skyline is one of the few schools in the country that offers programs in architecture," Odamah says. "In some careers, Skyline students could even get professional certifications or licenses right in high school. It was a great place because you could find out whether you really wanted to enter a career."

Odamah says that the career cluster system at Skyline taught him the value of planning for his career and his life. "We learned about planning ahead," he says. "Those who plan things ahead of time don't have to catch up. It's just a matter of what a person wants out of life. Planning gives you a better platform for success."

## Transportation, Distribution, & Logistics CTSOs

One of the best ways to acquire experience in your chosen career is by joining a career and technical student organization (CTSO). In Transportation, Distribution & Logistics, the most helpful CTSOs are:

- Business Professionals of America (BPA)  
[www.texasbpa.com](http://www.texasbpa.com)
- Future Business Leaders of America (FBLA)  
[www.fblatx.org](http://www.fblatx.org)
- SkillsUSA  
[www.skillsusatx.org](http://www.skillsusatx.org)
- Texas Technology Students Association (TSA)  
[www.texastsa.org](http://www.texastsa.org)

**17 OF THE 20**  
LARGEST AEROSPACE  
MANUFACTURERS IN THE  
WORLD HAVE MAJOR  
OPERATIONS IN TEXAS.

# WHAT ARE

# Career Clusters & Programs of Study

In Texas, High School Personal Graduation Plans will guide students' high school and college experiences (see next page). As part of this process, students focus their studies within a chosen career cluster and program of study that lead to an endorsement.

**A** career cluster is a group of occupations and broad industries that share certain features. The Transportation, Distribution, and Logistics cluster, for example, includes commercial pilot and logistician. Texas has adopted 16 Career Clusters (see back cover), the same ones designated and developed by the U.S. Department of Education.

As the graphic below shows, within each cluster are programs of study, which are more specific groupings of similar occupations. Think of a program of study as being like a college major. In Transportation, Distribution, and Logistics you might choose to focus on Energy, Power, and Transportation Systems in high school and college.

### Related Occupations

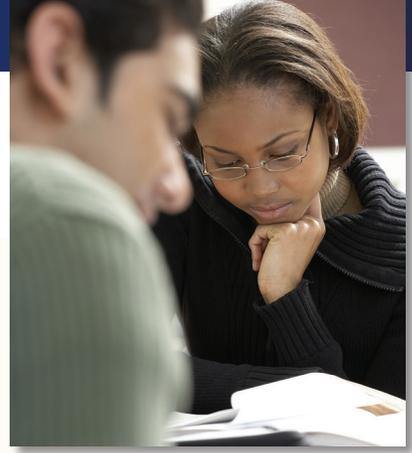
Each career pathway in a particular cluster includes a range of related occupations; Logistician falls under Logistics Planning and Management Services.

Choosing a career cluster and career pathway will help you acquire the knowledge and skills you'll need to enter your chosen career. It will allow you to follow a seamless course of study from high school into college or other postsecondary education or training. The electives you choose can complement your core academic classes to prepare you for the challenges of the real world of work

### Review Your High School Graduation Plan Each Year

Don't get locked into a cluster and program of study you don't like. You should reexamine your 4-year plan at least once a year and change programs or clusters if your interests have changed. Choosing a cluster and program of study, even if it changes later, means that you'll have a direction in life. The idea is to be aware of what's going on in your life and take control of your future. When you know where your education is going and why, your classes will become more meaningful. You'll make contact with students, teachers, and employers who share your interest in a particular career area. You'll have experiences that are fun and exciting. You'll be on your way to success in school, in a career, and in life.





# WHAT IS A High School Personal Graduation Plan ?

It's a smart idea to create a High School Graduation Plan, or 4-year plan, to guide your studies through high school and into college or other postsecondary education or training. Your 4-year plan represents your chance to take control of your education and career choices. Working with your parents/guardians and guidance counselor, you can pick the cluster on which you want to focus your studies as well as your career and

postsecondary education goals. Don't worry. You aren't locked into your choices. You should revisit your 4-year plan at least once a year to update it. You can change clusters, programs of study, and career and postsecondary goals as your interests and ambitions change. Having a plan—even if it changes—is smarter than having no idea of what you want to do and why you are attending school. Here's how to fill out your 4-year plan.

**CHOOSE** a career cluster on which to focus your high school and college or postsecondary studies. The idea is to offer you a seamless route to follow from high school, through college or other postsecondary education, and into a career. Not all Texas schools offer all clusters, so ask your guidance counselor which clusters are available at your school.

**LIST** basic information such as your name and school.

**PICK** a program of study within the cluster. There are seven programs within the Transportation, Distribution, & Logistics cluster (see page 12).

**CHOOSE** one or more occupations for which you would like to prepare. Use resources such as Texas Career Check ([www.texascareercheck.com](http://www.texascareercheck.com)) to research your options.

**PLAN** for what you want to do after high school. Your goal may be to attend a four-year university or two-year college, join the military, or enter an apprenticeship program. Your postsecondary goal should influence the classes you take in high school; for example, you will need certain course credits to qualify for admission to a college.

**SKETCH** out your schedule of classes for your high school years. You will spend time completing requirements for the Foundation High School Program including electives to earn your endorsement in Business & Industry (26 credits). Planning your 4-year plan will help you get the education and experience you need to start your postsecondary and career goals.

**PICK** extended learning activities that complement your classes (see page 14). Work on community service projects. Plan for paid and unpaid career learning experiences, such as job shadowing and internships. All these extracurricular activities can give you experience that will help you get into college or land a job.

### High School Personal Graduation Plan

Name: Taylor Jones, West High School  
 Endorsement: Business & Industry  
 Cluster: Transportation, Distribution, & Logistics  
 Program of Study: Logistics Planning & Management Services  
 Career Goal: Logistician  
 Postsecondary Goal: Logistics Technology Certificate, Bachelor's Degree in Business Management

Foundation High School Program Requirements (22 Credits)	Business and Industry Endorsement Requirements (26 Credits)
<ul style="list-style-type: none"> <li>English Language Arts (4 Credits)                             <ul style="list-style-type: none"> <li>• English I</li> <li>• English II</li> <li>• English III</li> <li>• Advanced English Course</li> </ul> </li> <li>Mathematics (3 Credits)                             <ul style="list-style-type: none"> <li>• Algebra I</li> <li>• Geometry</li> <li>• Advanced Mathematics Course</li> </ul> </li> <li>Science (3 Credits)                             <ul style="list-style-type: none"> <li>• Biology</li> <li>• IPC or Advanced Science Course</li> <li>• Advanced Science Course</li> </ul> </li> <li>Social Studies (3 Credits)                             <ul style="list-style-type: none"> <li>• U.S. History</li> <li>• U.S. Government (one-half credit)</li> <li>• Economics (one-half credit)</li> <li>• World Geography or World History</li> </ul> </li> <li>Physical Education (1 Credit)</li> <li>Languages Other Than English (2 Credits in same language)</li> <li>Fine Arts (1 Credit)</li> <li>Career Related Electives (5 Credits)</li> <li>Proficiency in Speech (Determined locally)</li> </ul>	<ul style="list-style-type: none"> <li>Math (1 Additional Credit)</li> <li>Science (1 Additional Credit)</li> <li>Career Related Electives (2 Additional Credits)</li> </ul> <div style="background-color: #e6f2ff; padding: 5px; margin-top: 5px;"><b>EXAMPLE CAREER RELATED ELECTIVES</b></div> <ul style="list-style-type: none"> <li>Principles of Transportation, Distribution and Logistics</li> <li>Energy, Power, and Transportation Systems</li> <li>Transportation Systems Management</li> <li>Logistics Planning and Management Systems</li> <li>Problems and Solutions</li> <li>Research &amp; Technical Writing</li> <li>Scientific Design &amp; Research</li> <li>Practicum in Transportation, Distribution, and Logistics</li> </ul> <div style="background-color: #e6f2ff; padding: 5px; margin-top: 5px;"><b>DISTINGUISHED LEVEL OF ACHIEVEMENT</b></div> <ul style="list-style-type: none"> <li>4 Credits in Mathematics (Must complete Algebra II)</li> <li>4 Credits in Science</li> <li>Requirements for at least the Business and Industry Endorsement</li> <li>Remaining requirements</li> </ul> <div style="background-color: #e6f2ff; padding: 5px; margin-top: 5px;"><b>PERFORMANCE ACKNOWLEDGEMENT</b></div> <ul style="list-style-type: none"> <li>Outstanding performance                             <ul style="list-style-type: none"> <li>• in a dual credit course</li> <li>• in bilingualism and biliteracy</li> <li>• on an AP test or IB exam</li> <li>• on the PSAT, the ACT-Plan, the SAT, or the ACT</li> </ul> </li> <li>Earning a nationally or internationally recognized business or industry certification</li> </ul>

Curricular Experiences: Business Professionals of America (BPA), Future Business Leaders of America (FBLA), SkillsUSA, Technology Student Association  
 Extracurricular Experiences: Student Government, UIL, Academic Competitions, Yearbook  
 Career Learning Experiences: Language Immersion Programs, Student Newspaper, Career Preparation—Paid and Unpaid, Internships, Job Shadowing  
 Service Learning Experiences: Campus Service Organizations, Community Service Volunteers, Habitat for Humanity, Peer Tutoring/Mentoring

A CAREER PORTFOLIO (see page 15) is a good way to organize information about your educational experiences, record results of career interest and abilities assessments, and hold examples of your best work.

# Make Your Career

# Take Off

In Transportation, Distribution, & Logistics careers, **THE SKY IS THE LIMIT.**

**T**wo of Southwest Airlines' senior managers know firsthand what it's like to see careers go places in the transportation industry. Jim Ruppel and Greg Wells both began their careers handling baggage at the airline and "both landed positions of increasing responsibility," says Southwest spokesman Chris Mainz. "Today Ruppel is vice president of customer relations and rapid rewards at our Dallas headquarters and Wells is senior vice president of operations."

### Take on the Challenge

Careers in Transportation, Distribution, & Logistics offer plenty of opportunities to advance, just as Ruppel and Wells have. That's true even for job seekers without college degrees—if

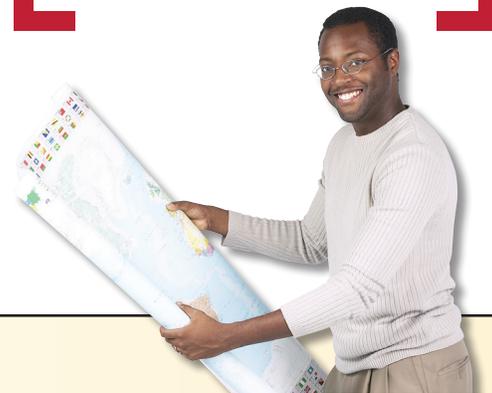
they are willing to set goals, take on challenges, and get the training they need.

"The sky is the limit," says Lynne Cagle, a curriculum specialist at the University of North Texas in Denton. According to Texas' Labor Market Information, the number of jobs available in Texas in this field will grow by 17.5 percent through 2022.

### By Land, Sea, and Air

This cluster helps ensure that products and people travel safely from point A to point B and arrive on time. The cluster also includes people who maintain and support the equipment and transportation systems, keeping everything in motion in the air and on the land or sea.

THE TEXAS  
DEPARTMENT OF  
TRANSPORTATION  
SUMMER EMPLOYMENT  
PROGRAM GIVES STUDENTS  
TRAINING IN MAINTENANCE,  
ENGINEERING,  
AND TECHNICAL POSITIONS.



## Q U I Z

Is Transportation, Distribution, & Logistics the right cluster for you? Take this quiz to find out. Answer "yes" or "no" to the following questions.

- |                              |  |   |  |  |   |   |  |   |  |
|------------------------------|--|---|--|--|---|---|--|---|--|
| 1.<br>Do you like to travel? | 2.<br>Do you enjoy solving word problems or brain teasers? | 3.<br>Do you organize events at school or church? | 4.<br>Are you good at operating tools and machinery? | 5.<br>Do you pay attention to details? | 6.<br>Do you think it would be cool to drive trucks or fly planes for a living? | 7.<br>Have you ever worked part-time delivering newspapers? | 8.<br>Do you do well in your English, math, and science classes? | 9.<br>When on a trip, are you the one who reads the maps? | 10.<br>Do you have a perfectly clean driving record? |
|------------------------------|--|---|--|--|---|---|--|---|--|

If you answered "yes" to five or more of the above questions, Transportation, Distribution, & Logistics may be the right cluster for you. To get a more specific and scientific measurement of your attitudes and abilities, ask your guidance counselor or teacher about taking a career assessment test or interest inventory.

## 10 Fast-Growing Careers

Occupation	Growth Rate (2012-2022)	Avg. Annual Openings (2012-2022)
Industrial Machinery Mechanics	41%	2,145
Logisticians	40%	585
Cargo & Freight Agents	33%	350
Marine Engineers & Naval Architects	32%	90
Transportation Inspectors	29%	165
Flight Attendants	25%	335
Commercial Pilots	24%	300
Airline Pilots, Copilots, & Flight Engineers	23%	250
Heavy & Tractor-Trailer Truck Drivers	23%	6,290
Air Traffic Controllers	22%	150

This is a projection of 10 fast-growing careers in Transportation, Distribution, & Logistics in Texas from the year 2012 to 2022 and the number of average annual openings in each occupation. Note that whereas the percentage of growth in jobs may be high, the actual number of jobs created may be low.  
Source: Texas Workforce Commission.

Opportunities abound no matter where you choose to work. With a certification from the U.S. Coast Guard and a high school diploma, for example, you can start out as a deckhand on a boat or ship and work your way to seaman, able seaman, mate, master, and even captain.

### On-the-Job Training

"You receive training on the job," says Bill Mallini, Galveston Island ferry operations manager. Crews on boats operated by the Texas Department of Transportation assist with the safe loading, unloading, and transport of vehicles and their passengers between Galveston Island and Port Bolivar on the Texas mainland.

"Someone who is assertive can move up. It's possible to work your way from the bottom to the top," says Mallini, who adds that the same goes for those working below decks in the vessel's engine room, where responsibilities can include repairing or overhauling machinery, reading electrical diagrams or mechanical drawings, and performing welding or carpentry.

A beginning-level marine oiler who keeps ship and boat engines oiled and greased, Mallini says, can advance to become a marine engineer in charge of installation and maintenance of maritime engines.

### High-Flying Salaries

Perhaps you prefer soaring to sailing. Job candidates with college degrees or military experience can earn some of the highest-paying salaries in the Transportation, Distribution, & Logistics cluster by entering aviation.

Airline pilots, co-pilots, and flight engineers earn from \$55,330 to \$150,500 annually. Airlines usually require that pilots, in addition to college degrees or military service, have at least 250 hours of flying experience on particular aircraft

and a Federal Aviation Administration (FAA) airline transport pilot certificate.

On the ground, air traffic controllers, who help ensure the safe operation of commercial and private aircraft by coordinating their movement, are almost exclusively hired by the FAA. Many air traffic controllers are now retiring, which opens positions at airport towers and control centers around the country. They earn from \$ 75,270 to as much as \$147,192 annually, and a college degree is preferred, but not required, according to the National Air Traffic Controllers Association.

### Keep the Goods Moving

Opportunities are also expanding at home and abroad for those assisting with the flow of goods from around the world, says Laurie Denham, executive director of the American Society of Transportation and Logistics.

With increased U.S. imports clogging rails, roads, and ports, those with responsibility for the distribution of goods have increasingly critical jobs, Denham says. "And because of the increased global work, there are lots of international opportunities," she says.

Jobs in this area are often at warehouses or distribution centers. At these facilities, forklift operators unload pallets of cargo from trucks. Warehouse workers retrieve items from storage to fill orders. At the executive level, logistics managers are responsible for the warehousing, transportation, inventory management, and customer service for a manufacturer, retailer, or other company.

TEXAS HAS APPROXIMATELY  
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OF MAINLINE RAILROAD TRACK, THE MOST OF ANY STATE IN THE U.S.

## 10 Top-Paying Careers

Occupation	Average Wage	Entry-Level Wage	Experienced Wage
Airline Pilot, Co-pilot, and Flight Engineer	\$73.64	\$44.74	\$88.10
Air Traffic Controller	\$59.24	\$36.19	\$70.77
Marine Engineer & Naval Architect	\$52.11	\$38.22	\$59.05
Aerospace Engineer	\$50.85	\$33.91	\$59.32
Mechanical Engineer	\$46.95	\$29.04	\$55.90
Transportation, Storage & Distribution Manager	\$46.30	\$26.77	\$56.07
Commercial Pilot	\$42.66	\$25.55	\$51.22
Captain, Mate & Pilot of Water Vessels	\$41.83	\$23.78	\$50.85
Logisticians	\$40.15	\$26.18	\$47.14
Ship Engineer	\$35.19	\$19.93	\$42.83

This is a chart of hourly wages for 10 of the top-paying careers in the Transportation, Distribution, & Logistics cluster in Texas. Note how entry-level wages are often much lower than pay for the average worker and experienced workers in each profession.  
Source: Texas Workforce Commission.

## What Employers Want

### WILLINGNESS TO LEARN

Cliff Lynch, a board member of the American Society of Transportation and Logistics and a logistics consultant in Memphis, Tennessee, says high school graduates can gain employment in any number of jobs in warehousing and distribution, including warehouse worker, customer service representative, and forklift operator.

"They need a willingness to work and a willingness to learn," Lynch says. "The employer can train students for these jobs. They don't expect a person coming out of high school to know how to do them."

### EDUCATION

Lynch adds, however, that having a college degree will boost your chance of landing an executive position. Job seekers who have an undergraduate or a graduate degree with a major in logistics, and who have about 10 years of work experience in that field, are qualified to become a vice president of logistics for a manufacturer or retailer, says Lynch.

Postsecondary education is also a requirement for candidates applying for automobile technician jobs at a car dealer's service center. Stephen Finstad, service manager for Five Star Ford in North Richland Hills, says he prefers applicants who have obtained an associate's degree at a community college that combines a Ford-specific repair program with academic courses such as math and psychology. Finstad adds that successful job candidates must be willing to produce high-quality work, have good attendance, and be punctual. They also need good social and communication skills.

### COMMUNICATION SKILLS

Interpersonal communication skills are critical for job candidates at Southwest Airlines in Dallas, too, says Chris Mainz, a spokesperson for the airline.

"We'll do group interviews and see how that person interacts with other people," he says. "Are they listening to others? Can they play off of what other people say?"

### SAFETY

Safety is of utmost importance in this cluster, and employers for many jobs require candidates to have a flawless personal history. "One of the big things is employees need to be drug free," Lynch says. "With the potential for accidents, people need to be aware and alert."



# Life on the GO

## If you like MOTION AND CHANGE, you might love a career in Transportation, Distribution, & Logistics.

Jobs in Transportation, Distribution, & Logistics involve action and movement across large distances through every kind of terrain and environment. This is a field that requires people to adjust to a variety of responsibilities and working conditions. Workers routinely get up early each morning and by mid-afternoon are thousands of miles away.

### Odd Hours

That's part of the excitement of careers in the cluster, but because the movement of goods and people happens around the clock, irregular work schedules are common for those employed in the field.

"It's shift work," says Andrew LeBovidge, an air traffic controller based in Houston. "Day shifts are usually from 6 a.m. to 2 or 3 p.m. For the most part employees work a couple of night shifts from 3 p.m. to 11 p.m. Those at control facilities that operate 24/7 work midnight shifts, too."

Airline pilots must also work irregular hours. "The day-to-day schedule for a pilot is usually 16 to 17 days of work a month," says Kevin Wood of Collinsville, a first officer for American Airlines. "Pilots show up one hour before their trip and will be gone for three or four days." Wood

adds the FAA allows pilots on domestic flights to fly only eight hours a day, but because of their other duties, such as readying the aircraft and taking care of paperwork, they may work as many as 14 hours a day.

### Continuing Education

Lifelong learning is a part of most careers in Transportation, Distribution & Logistics. If an automotive technician works at a dealership, for example, he or she must take manufacturer-specific training leading to certification. Other organizations, such as the National Institute for Automotive Service Excellence, also offer advanced training and certifications.

"There's always the need for continuing education," says Mark Larkin, owner of An Honest Mechanic in Austin. "It is necessary because technology for cars is advancing so fast it's unbelievable."

Technology is used everywhere in the cluster. Automotive technicians, for example, use laptop computers or handheld devices to diagnose problems through modules that evaluate operations such as fuel flow or air conditioning.

Pilots, too, rely heavily on technology, says Wood. "Pilots do more monitoring than actual flying. Ninety percent or more of the time, the autopilot is flying the plane."

TEXAS IS HOME TO THE  
**LARGEST**  
 AIR TRANSPORTATION  
 WORK FORCE IN THE  
 NATION.

### Thinking on Your Feet

Processing information quickly is necessary while following procedures for jobs such as safely running a ferry. "There are times when you need to react quickly and be good at making the best decision," says Captain John Shaw, who operates one of the ferries for the Texas Department of Transportation that connect Galveston Island and Port Bolivar on the Texas mainland.

He relies on radar and sight to maneuver vessels through all kinds of weather while avoiding craft as small as a row boat or as large as a 50,000-ton ship.

Good communication and teamwork skills are also essential. "You're on the radio talking with other vessels, and you have to be able to communicate with the passengers and crew," Shaw says.

### Physical Fitness

This cluster often involves physical tasks. As an automotive technician, for instance, you have to be in physical condition. You might work in a shop with minimal heating and no air conditioning. "You're lifting tires and bending over fenders," Larkin says. "You might be lying on the floorboard working under the dash with your feet sticking out the door and a flashlight strapped to your head or a drop light burning your ear."

### Make the Right Choices

Although some jobs may not be especially physically demanding, people directly responsible for safely transporting people must have personal records that are flawless.

"You've got to be careful how you live

your life," says Wood, who adds that American Airlines thoroughly checked his background before hiring him.

The U.S. Coast Guard checks for drug use and criminal records. "You have to make the right choices," Shaw says.

If you keep your record clean, a career in this cluster can lead to personal fulfillment. "There is a degree of excitement and it's challenging," says LeBovidge of a career in air traffic control.

"When you're involved in the sequencing of 27 airplanes all coming in from various points and lining them up to arrive at a single runway, you can feel like you accomplished your task safely and efficiently."

## 5 Cool Careers

CHECK OUT THESE EXCITING CAREERS IN TRANSPORTATION, DISTRIBUTION, & LOGISTICS.



1.

### IMPORT/EXPORT SUPERVISOR

Want a fast-paced job working overseas in exotic ports of entry? Employment abroad is possible as an import/export supervisor with foreign freight delivery companies such as DHL. A supervisor's work includes coordinating and managing customs clearance for products, calculating duties and tariffs, and ensuring compliance with U.S. and foreign import/export regulations. Knowledge of foreign languages and cultures is definitely a plus in this career.

2.

### CHAUFFEUR

Transport the rich and famous to their destinations in luxury limousines. You'll need to meet stringent requirements; larger cities license chauffeurs and expect them to have flawless driving records. Chauffeurs must perform their duties with professionalism and style. "Appearance is everything in this business," says Jerry Ponesmith of Marriton Global Limousine Service in Austin. "If you're not neat, don't bother applying."

3.

### FREIGHT/CARGO INSPECTOR

The attacks of September 11, 2001, put freight and cargo inspectors on the front lines of our national defenses against terrorism. As the 9/11 Commission Report notes, "Millions of containers are imported annually through the country's more than 300 sea and river ports served by more than 3,700 cargo and passenger terminals." Freight inspectors bear responsibility for screening imports. Inspectors must follow security procedures, ensure the proper storage of dangerous cargo, and check the licenses and safety equipment required for particular cargos.

4.

### AEROSPACE ENGINEER

Want to be a rocket scientist? A lion's share of the government's aerospace research and development is done right here in Texas. Working in large teams of highly skilled specialists, aerospace engineers design and develop the vehicles and systems necessary to propel men and mechanical payloads into space. It takes a lot of work to acquire the academic credentials needed to do this cutting-edge work, but the payoffs in compensation and career satisfaction are great.

5.

### TRAFFIC TECHNICIAN

Traffic doesn't flow automatically through streets and highway interchanges. Skilled professionals design and modify the flow of traffic. A traffic technician studies how traffic signals, roadway lighting, and roadside development aid or hinder the flow of traffic. Traffic technicians work as consultants to developers or for local governments. Wayne Gisler, manager of traffic management and operations for the Harris County Engineering Division says the job offers the opportunity to "give back to your community."

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# Transportation, Distribution, &

Listed below are 25 careers you might consider in the Transportation, Distribution, & Logistics cluster. They are available to you at different education levels. Turn to the "Online Info" on the inside back cover to research more. Here's an explanation of the kind of information presented in each column.

● **SOC:** Stands for Standard Occupational Code, which organizations like the U.S. Department of Labor use to categorize career information. Sometimes you can find data on a career faster by searching for its SOC.

● **GROWTH:** This is the projected annual growth in Texas for the career between 2012 and 2022. Fast-growing occupations may offer greater career opportunities for young adults.

● **OPENINGS:** This is the projected number of job openings for the career in Texas each year. Even though a career may be fast growing, there may not be a lot of positions available. Careers with more openings will give an entry-level worker a better chance of getting a job and greater job security.

● **WAGES:** This is the amount the average person in the career earns in Texas per year. Naturally, entry-level wages are lower than the average, and those for workers with years of experience are generally higher.

SOC	Occupation	Growth	Openings	Wages	Education
53-2011	Airline Pilot, Co-pilot, and Flight Engineer	23%	250	\$141,399	Bachelor's degree
17-3021	Aerospace Engineering and Operations Technician	9%	20	\$56,789	Associate's degree
53-2012	Commercial Pilot	24%	300	\$92,147	Postsecondary award
49-3011	Aircraft Mechanic and Service Technician	17%	565	\$56,214	Postsecondary award
49-3031	Bus and Truck Mechanics and Diesel Engine Specialist	21%	945	\$41,970	Postsecondary award
49-3023	Automotive Service Technician and Mechanic	18%	2,220	\$38,248	Postsecondary award
11-9131	Postmaster and Mail Superintendent	-3%	20	\$67,354	Work experience in a related occupation
53-5021	Captain, Mate, and Pilot of Water Vessels	22%	165	\$87,003	Work experience in a related occupation
53-1031	First-Line Supervisor of Transportation Machine and Vehicle Operators	21%	830	\$56,673	Work experience in a related occupation
39-6031	Flight Attendant	25%	335	\$48,046	Long-term on-the-job training
49-3022	Automotive Glass Installer and Repairer	18%	35	\$31,385	Long-term on-the-job training
49-3043	Rail Car Repairer	17%	80	\$44,820	Long-term on-the-job training
49-3092	Recreational Vehicle Service Technician	21%	45	\$35,638	Long-term on-the-job training
53-6051	Transportation Inspector	29%	165	\$61,744	Moderate-term on-the-job training
43-5011	Cargo and Freight Agent	33%	350	\$35,743	Moderate-term on-the-job training
43-5032	Dispatcher, except Police, Fire, and Ambulance	22%	855	\$37,666	Moderate-term on-the-job training
53-3032	Heavy & Tractor-Trailer Truck Driver	23%	6,290	\$40,569	Moderate-term on-the-job training
53-7121	Tank, Car, and Ship Loader	22%	115	\$42,285	Moderate-term on-the-job training
49-3053	Outdoor Power Equipment and Misc. Small Engine Mechanic	19%	85	\$33,938	Moderate-term on-the-job training
53-3041	Taxi Driver and Chauffeur	22%	535	\$22,771	Short-term on-the-job training
53-6041	Traffic Technician	16%	35	\$38,668	Short-term on-the-job training
43-5052	Postal Service Mail Carrier	-7%	730	\$50,912	Short-term on-the-job training
53-3022	Bus Driver, School	11%	975	\$24,619	Short-term on-the-job training
53-7081	Refuse and Recyclable Material Collector	15%	250	\$28,040	Short-term on-the-job training
53-5011	Sailor and Marine Oiler	21%	150	\$42,496	Short-term on-the-job training

Source: Texas Workforce Commission (TWC)

Note: This chart is a sampling of careers in the cluster, not recommendations from TWC or any other agency or organization. Always do thorough research and consult with your parents/guardians before making a career choice.

# & Logistics

These are not all the career options in the cluster—they are just a sampling showing the variety of occupations and all career options in the cluster of your choice and decide on the ones that best fit your talents and ambitions.

**EDUCATION:** This is the minimum preferred level of educational attainment for people working in the career in the United States. This can range from short-term on-the-job training to a doctoral degree taking several years of college.

**EDUCATION LEVELS:** The color bars show the mix of education levels attained by people actually working in the profession in Texas (see bars at right). If a bar features mostly one color, that means that level of education is likely the one you'll need to reach to work in the profession. Look at airline pilot, co-pilot, and flight engineer, for example, and you'll see that virtually everyone in the field has a college degree or better. If the three colors in the bar are roughly equal in size, that means that there are opportunities in the profession for people of all education levels. For example, about 25 percent of the people working as flight attendants have a high school diploma, while 38 percent have some college, and 37 percent have four-year degrees or better.

**JOB DESCRIPTION:** These are brief descriptions of each career from O\*NET Online (<http://online.onetcenter.org>).

High School	Some College	College or Better
Percentage of people in the occupation who have at most high school diplomas	Percentage of people in the occupation who have some college	Percentage of people in the profession who have a four-year college degree or better

Education Levels	Job Description
	Pilot and navigate the flight of multi-engine aircraft in regularly scheduled service for the transport of passengers and cargo. Requires federal air transport rating and certification in specific aircraft type used.
	Operate, install, calibrate, and maintain integrated computer/communications systems consoles; simulators; and other data acquisition, test, and measurement instruments and equipment to launch, track, position, and evaluate air and space vehicles. May record and interpret test data.
	Pilot and navigate the flight of small fixed-wing or rotary-wing aircraft, primarily for the transport of cargo and passengers. Requires commercial rating.
	Diagnose, adjust, repair, or overhaul aircraft engines and assemblies, such as hydraulic and pneumatic systems.
	Diagnose, adjust, repair, or overhaul trucks, buses, and all types of diesel engines. Includes mechanics working primarily with automobile diesel engines.
	Diagnose, adjust, repair, or overhaul automotive vehicles.
	Direct and coordinate operational, administrative, management, and support services of a U.S. post office, or coordinate activities of workers engaged in postal and related work in an assigned post office.
	Command or supervise operations of ships and water vessels, such as tugboats and ferryboats, that travel into and out of harbors, estuaries, straits, and sounds and on rivers, lakes, bays, and oceans. Required to hold license issued by U.S. Coast Guard.
	Directly supervise and coordinate activities of transportation and material-moving machine and vehicle operators and helpers.
	Provide personal services to ensure the safety and comfort of airline passengers during flight. Greet passengers, verify tickets, explain use of safety equipment, and serve food or beverages.
	Replace or repair broken windshields and window glass in motor vehicles.
	Diagnose, adjust, repair, or overhaul railroad rolling stock, mine cars, or mass transit railcars.
	Diagnose, inspect, adjust, repair, or overhaul recreational vehicles, including travel trailers. May specialize in maintaining gas, electrical, hydraulic, plumbing, or chassis/towing systems or repairing generators, appliances, and interior components.
	Inspect and monitor transportation equipment, vehicles or systems to ensure compliance with regulations and safety standards.
	Expedite and route movement of incoming and outgoing cargo and freight shipments in airline, train, and trucking terminals, and shipping docks. Take orders from customers and arrange pickup of freight and cargo for delivery to loading platform. Prepare and examine bills of lading to determine shipping charges and tariffs.
	Schedule and dispatch workers, work crews, equipment, or service vehicles for conveyance of materials, freight, or passengers, or for normal installation, service, or emergency repairs rendered outside the place of business.
	Drive a tractor-trailer combination or a truck with a capacity of at least 26,000 gross vehicle weight, to transport and deliver goods, livestock, or materials in liquid, loose, or packaged form. May be required to unload truck. May require use of automated routing equipment. Requires commercial driver's license.
	Load and unload chemicals and bulk solids, such as coal, sand, and grain, into or from tank cars, trucks, or ships using material moving equipment.
	Diagnose, adjust, repair, or overhaul small engines used to power lawn mowers, chain saws, and related equipment.
	Drive automobiles, vans, or limousines to transport passengers. May occasionally carry cargo.
	Conduct field studies to determine traffic volume, speed, effectiveness of signals, adequacy of lighting, and other factors influencing traffic conditions, under direction of traffic engineer.
	Sort mail for delivery. Deliver mail on established route by vehicle or on foot.
	Transport students or special clients, such as the elderly or persons with disabilities. Ensure adherence to safety rules. May assist passengers in boarding or exiting.
	Collect and dump refuse or recyclable materials from containers into truck. May drive truck.
	Stand watch to look for obstructions in path of vessel, measure water depth, turn wheel on bridge, or use emergency equipment as directed by captain, mate, or pilot. Break out, rig, overhaul, and store cargo-handling gear, stationary rigging, and running gear.



PROGRAM

PROFILES

HERE ARE the programs of study available within the Transportation, Distribution, & Logistics cluster in Texas high schools.\* The State has created descriptions of each of these programs of study. These documents detail high school classes you might take, extended learning opportunities, and postsecondary programs.

#### FACILITY & MOBILE EQUIPMENT MAINTENANCE

Workers in this field keep machinery running. They also look for ways to operate machinery safely for less money.

#### HEALTH, SAFETY & ENVIRONMENTAL MANAGEMENT

Workers in this field look for ways to prevent accidents in the workplace. They inspect buildings and machines for hazards and safety violations.

#### LOGISTICS PLANNING & MANAGEMENT SERVICES

In this field, workers make sure products arrive when and where they should at the lowest possible cost.

#### SALES AND SERVICE

Workers in this field develop pricing strategies, balance company objectives, and manage customer satisfaction. They identify, develop, and evaluate sales strategies.

#### TRANSPORTATION OPERATIONS

Workers in this field operate the trains, airplanes, trucks, buses, and other vehicles that deliver people and goods to their destinations.

#### TRANSPORTATION SYSTEMS/ INFRASTRUCTURE PLANNING, MANAGEMENT & REGULATION

Workers in this field plan and enforce regulations to make travel safer and more efficient by air, rail, and on streets and highways.

#### WAREHOUSING & DISTRIBUTION CENTER OPERATIONS

In this field, employees work in terminals and warehouses to make sure items from all over the world are delivered to the right place and on time.

\* Not all schools offer all programs of study or clusters. Ask your counselor which programs are available at your school.

# Start Your Engines

You can REV UP YOUR FUTURE in transportation while still in high school.

**E**d Gilfus is a multiple-championship-winning auto racer and the co-owner of Applied Racing Technology in Austin. The son of a dairy farmer who had no knowledge of auto racing, Gilfus dreamed of a different life and found a way to fulfill his dreams. "Success," he says, "is the intersection of hard work and opportunity."

Gilfus discovered his opportunity in the form of a job-training program offered jointly by the Texas Employment Commission and Odessa College. In that program, he learned what he needed to become an automotive technician and worked his way from there into the world of auto racing. Gilfus waited until after high school to pursue his dreams, but you can start right now.

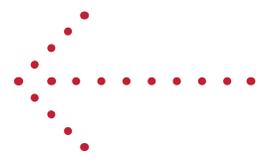
Gilfus says the keys that can start your career engine can be picked up in academic high school classes such as English I and Algebra I. "If you want to pursue a career in a transportation or engineering field," he says, "you must be good in math and read well. Technical reading comprehension is very important."

#### Build the Foundation

Garry Engelbrecht, an automotive instructor at Waco High School, agrees. "Math, science, physics—these are the foundations on which this field is built."

"It's also important to have good computer skills," says Tony Molla, vice president for communications with the National Institute for Automotive Service Excellence (ASE) in Leesburg, Virginia. "In the automotive world, cars have become very complex. They're basically rolling computers."

"All students in Transportation, Distribution, & Logistics should take courses that teach problem solving as a primary approach to learning," concludes Lynne Cagle, a curriculum specialist at the University of North Texas in Denton. "Students in this cluster should have a strong mathematics and science foundation."



THE TEXAS  
**SUMMER TRANSPORTATION INSTITUTE**  
 AT TEXAS A&M UNIVERSITY PROVIDES EDUCATIONAL  
 PROGRAMS THAT ENCOURAGE DIVERSE HIGH SCHOOL  
 STUDENTS TO EXPLORE TRANSPORTATION CAREERS.

**Class Choices**

Career electives give a student the chance to explore careers in Transportation, Distribution, & Logistics. The Transportation Systems/ Infrastructure Planning, Management, and Regulation program of study includes such electives as Introduction to Transportation Careers and International Business.

More technical programs of study, such as Facility and Mobile Equipment Maintenance, feature classes such as Aircraft Mechanics and Diesel Mechanics. "In addition to the many career-specific electives offered by school districts," Cagle says, "students should also consider courses in communications, electronics, and world geography."

**Early College Credit**

Some students in Texas have the opportunity to pursue a

college degree in a Transportation, Distribution, & Logistics occupation by earning college credit while still in high school. Anita Steele, coordinator of cooperative education programs for Texas State Technical College (TSTC) in Waco, is an expert in creating programs that make this possible.

"I work to form 'articulation agreements' between TSTC and secondary schools, where a student can come to TSTC and earn credit for classes they have taken in high school," Steele says.

"It saves money in the long run because students are in school a shorter amount of time."

For example, in agreements between TSTC and local high schools, Steele says, the automotive classes that students take earn college credit toward an associate's degree or certificate of completion at TSTC.

**Local Articulated/Advanced Technical Credit (ATC)**

Similarly, partnerships in the locally articulated/ATC credit program let students start their collegiate course of study in high school and finish it at a community college. Students taking locally articulated/ATC credit courses have a high school graduation plan that includes a sequence of two or more career and technical education (CTE) courses for three or more college and technical education (CTE) credits. At least one of these CTE courses must be eligible for college credit through articulation or dual credit.

That means, if a student's plan is to earn a two-year associate's degree in automotive technologies in college, he or she could get a head start on that major by taking Auto Tech I, II, and III in high school as part of the locally articulated/ATC credit program.

**SPOTLIGHT**

**MAKING A NAME FOR ITSELF**  
 The Paris High Auto Tech Program Wins National Recognition

Paris High School in Paris, Texas, boasts an award-winning Automotive Technologies program.

Paris High School Auto Tech competitors have been SkillsUSA Texas state champions in the Auto Service and Power Equipment competitive events, as well as in Diesel Equipment. Former Paris seniors Bradley Bolton and Aaron Clay received the honor of being named the Ford/AAA Student Auto Skills national champions. This competition tests students' written knowledge and hands-on skills in auto repair.

Asked the secret to his program's success, Paris High School's Automotive Technologies instructor Michael Schmidt replied, "There's no secret. We just worked really hard."

The Paris Auto Tech program has approximately 50 students. Most students spend about two hours a day in class, but, as contest time nears, the most dedicated return to the school at 6 p.m. and often stay as late as 11 p.m.

Scholarships awarded by the Ford/AAA competition made the effort worthwhile for the two national champions. "Both got full scholarships," says Schmidt. "That's why I try to motivate and encourage my students."

Paris Auto Tech also helps all interested students prepare for certification testing. "We work toward ASE [National Institute for Automotive Service Excellence] certification," says Schmidt. ASE certifications require at least two years of employment experience, so, although



students rarely complete the certification in high school, they are fully prepared for certification once they have met the work experience requirements.

Schmidt believes that careers in automotive service can benefit a student, whether a student wins competitions or not. "It's really a field that pays off," he says. "There are so many opportunities with auto tech. A student can be a mechanic, a service tech, a teacher, and a lot more."

To get more information on SkillsUSA Competitions, go to: [www.skillsusa.org/competitions/skillsusa-championships-contest-descriptions/](http://www.skillsusa.org/competitions/skillsusa-championships-contest-descriptions/).





# Out of this World

TO START a career in Transportation, Distribution, & Logistics, move learning to the world of work.

**D**o you want to explore travel into outer space? Got some cargo you'd like shipped to the International Space Station? Need help with a science experiment on weightlessness?

All these activities are possible as part of "extended learning"—experiences that take education beyond the walls of the classroom and school. These opportunities are offered by the Texas Space Grant Consortium (TSGC), an education and research partnership of 46 universities, industrial organizations, nonprofit organizations, and government agencies funded by the National Aeronautics and Space Administration (NASA).

TSGC works with NASA to encourage public interest in space. "Although unique opportunities may change,

based on NASA's goals and objectives," says Margaret Baguio, education and outreach coordinator for TSGC, "we have, in the past, sponsored high school student experiments on the space shuttle and the International Space Station."

### Military Options

Because every branch of the military depends heavily on its Transportation, Distribution, & Logistics experts, high school military organizations such as the Junior Reserve Officers' Training Corps (JROTC) or the Civil Air Patrol (CAP) program are particularly good ways to get experience in this cluster. In the Naval JROTC, for example, students learn about ship construction and maritime navigation, and in the CAP Cadet Program, students explore the principles of aviation and aerospace flight.

### Summer Experience

Some excellent extended learning experiences take place when school is

out. The Texas Summer Transportation Institute, for example, offers students the opportunity for summertime learning with experienced industry professionals.

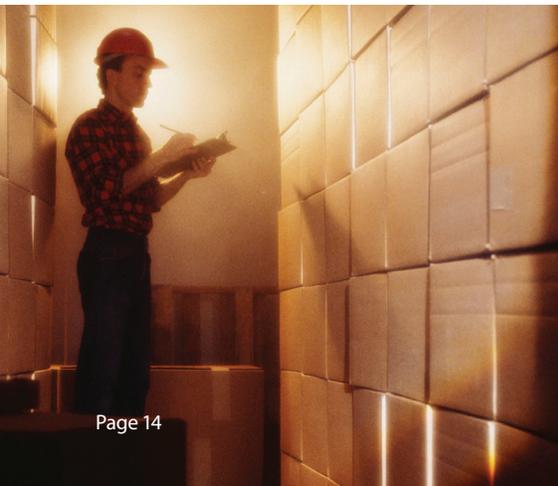
"The purpose," says Debbie Jasek, associate research specialist for the Texas Transportation Institute, "is to expose students to careers in transportation, as well as explore and enhance science, technology, and leadership skills that are needed for these careers."

The most rewarding thing about the program, adds Jasek, is "getting to meet and talk to practicing professionals in the workplace and find out what they really do." Past institutes have featured experts from Southwest Airlines, Dallas Area Rapid Transit (DART), the Coast Guard, and other organizations.

Another valuable summer program is available through Automotive Youth Educational Systems (AYES). "The AYES program provides internships at local dealerships during the summer between the junior and senior year of high school," says Donna McKethan, director of career and technical education at the Waco Independent School District. "That internship usually continues into the senior school year."

Interns receive \$3,000 scholarships for tools and competitive salaries. Bonuses for getting an "A" or "B" in

**ONE OF THE  
BUSIEST**  
GLOBAL PORTS IS LOCATED  
ON THE TEXAS COAST.



TEXAS HAS MORE PUBLIC ROADS  
THAN ANY OTHER STATE IN THE  
NATION, WITH 313,210 MILES.

academics are also paid by dealers. “The benefit,” McKethan continues, “is that students get to experience the real world of automotive technology. It either confirms their career choice or changes their mind.”

#### Make Your Own Break

Finally, remember you don’t have to rely on formal programs to learn outside the classroom.

Ed Gilfus, co-owner of Applied Racing Technology in Austin and a former champion

automobile racer, suggests that students “find those who race and volunteer to work on their crew. Most racers can always use more help.”

To find racetracks near you, check out the Sports Car Club of America ([www.scca.org](http://www.scca.org)) and the National Auto Sport Association ([www.nasaproracing.com](http://www.nasaproracing.com)) for closed-course racing information and LoneStar Speedzone ([www.lonestarspeedzone.com](http://www.lonestarspeedzone.com)) for stock car racing.

## SPOTLIGHT

### SELLING TRANSPORTATION

#### DECA Lets Students Practice Marketing Skills

Transportation is a service that customers buy, and many professionals in the transportation industry are involved in selling that service to tourists, travelers, and shippers. Students interested in marketing transportation services pursue the cluster’s Sales and Service programs of study in high school and beyond.

Many students interested in selling transportation services participate in DECA, a national association of marketing students designed to help them practice the skills they need to succeed. DECA sponsors annual competitions at the local, state, and national levels that test students’ skills in marketing.

“These young people are limited only by their imagination,” says Marcella Norwood, associate professor in the department of human development and consumer sciences at the University of Houston and former president of the board of directors for International DECA, Inc.

“For example,” Norwood says, “they decide what type of competitive event they want to participate in: some events are role-playing and others also include a written ‘manual.’ If it involves a charity, the students decide which charity to benefit, complete the project, write it up, and submit the manual for judging at the local, district, and state level.”

“Students may move on to the international

level to compete against teams from all 50 states, as well as Puerto Rico, Guam, the Virgin Islands, Canada, and Germany.”

Local DECA chapters organize projects and field trips that can give students firsthand experience in travel and tourism. The highlight of Rachael Gavri’s DECA experience was a five-day research trip to Universal Studios in Orlando, Florida. As part of a group from Clements High School in Sugar Land, Gavri met with marketers from the studio and shared ideas with the professionals.

“It was a lot of fun!” says Gavri. “We came up with ways that the theme park could better market itself. It was cool, because I never knew what happened behind the scenes and the ways they market the theme parks.”

In addition to projects organized in high schools and interesting field trips, DECA and its business partners award hundreds of thousands of dollars in scholarships to member students each year. To learn more, visit [www.texasdeca.org](http://www.texasdeca.org).



## CREATE a Career PORTFOLIO

One valuable tool that can help you get ready for college and beyond is a career portfolio—a collection of items that document your achievements both in and out of school, assembled in one convenient package.

A career portfolio is not simply a resume, although it can certainly include one. So what should go in a career portfolio? A variety of things, depending on your own personal experiences. It could include transcripts and grades; writing samples; letters of recommendation from teachers, mentors, or employers; awards you’ve received; and items that document other activities, such as internships and job shadowing experiences.

“You need to be specific—dates, how many years, any awards, what they meant, and who you received them from,” says Grace Brauchle, who helps students put their portfolios together as the career center coordinator for Lehman High School in Kyle.

Brauchle says portfolios come in handy when students apply for jobs or admission to college. “First impressions are a very big thing,” she says, “and you want to be the one whose papers get passed around the office. You want to be the one where the admissions counselors say, ‘Wow, look at this one!’”



# Give Your Career Wings

Make your future  
**TAKE FLIGHT**  
after high school.

One of every seven jobs in Texas is a transportation-related job," reports Debbie Jasek, associate research specialist for the Texas Transportation Institute in College Station.

If you want to land a job in Transportation, Distribution, & Logistics, though, you will need to continue your career preparation after high school graduation. Employment is available for education levels ranging from on-the-job training to master's degrees in business, often in the same company.

Look at American Airlines, for example. Michael Parker, a workforce strategy consultant and college recruitment specialist with the airline, says, "We offer employment in airport operations and customer service, as well as professional jobs that include a large variety of fields such as finance,

accounting, purchasing, sales, and marketing. The requirements and training for each position differ."

### On-the-Job Training

Some careers in this cluster require on-the-job experience. For example, at American Airlines, says Parker, "If a student is interested in pursuing a career right out of high school, I'd suggest that they look at some of our airport jobs, such as reservations or ramp services."

Dottie Mattingly, a college recruiting and staffing manager at American Airlines, says they train high school graduates in customer service (reservations and airport agents), flight service (flight attendants),

and fleet service (ground services). "All candidates hired for entry-level positions must have specific training for their jobs," says Mattingly.

### Technical Schools

In other areas of Transportation, Distribution, & Logistics, such as automotive service, there are established programs for postsecondary training. "Many automotive technicians begin by working in repair shops part-time as helpers," says Tony Molla, vice president of communications for the National Institute for Automotive Service Excellence (ASE) in Leesburg, Virginia. "But most technicians start out by attending a technical training program in high school, then move on to an advanced training course at a junior college. There are also training schools exclusively for training future auto technicians."

Texas State Technical College (TSTC) in Waco offers a variety of options in automotive service training, including one-and two-year certificates of completion and two-year associate's degrees in automotive repair, says Norris Martin, TSTC's automotive technology department chair.

In addition to the general automotive repair program, TSTC features the Toyota Technical Education Network

THE SOUTHWEST REGION UNIVERSITY  
TRANSPORTATION CENTER HOSTS  
**THREE SUMMER INSTITUTES**  
FOR TEXAS HIGH SCHOOL STUDENTS  
INTERESTED IN EXPLORING TRANSPORTATION  
CAREERS.



THE TEXAS STATE  
HIGHWAY SYSTEM  
UTILIZES MORE THAN  
**1 MILLION**  
SIGNS AND MARKERS.

(T-TEN) program. “The Toyota T-TEN program offers training specific to those manufacturers,” Martin says. “This gives students the option of training on leading import or domestic car lines.”

Jasek says two-year community colleges and technical schools also offer valuable training in other transportation careers. “A good technical school is a great asset for students looking to work in the Transportation, Distribution, & Logistics industry,” she says. “There will be a continuing, and, in most instances, growing need for truck drivers, mechanics, draftsmen, and surveyors.”

Apprenticeships are another technical training option. An apprenticeship combines on-the-job training with paid practical experience and can be a key route to certain specialties. The U.S. Department of Labor, for example, lists heavy truck driver as one of its top 25 apprenticeship occupations. Other interesting apprenticeship programs in the cluster include aircraft inspector, air transport pilot, electronic systems technician, and environmental analyst. (For more information on apprenticeships, check out [www.twc.state.tx.us/programs/apprenticeship-program-overview](http://www.twc.state.tx.us/programs/apprenticeship-program-overview)).

### The Military

In addition to hiring high school and college graduates, American Airlines recruits from the military. “Many of our pilots come with a combination of college and military flight training,” says American Airline’s Parker. “The military provides excellent training in a number of areas—such as mechanics and supply logistics—which are often applicable to transportation industries.”

Jasek, who served in the U.S. Army, agrees: “The military is a great starting place for a young person who wants to enter the transportation industry or any other career, for that matter. It is especially good if you are not sure about what you want to do. The military teaches leadership, teamwork, decision

making, critical thinking, and many of the other skills that are necessary in the corporate world.”

One way to pay for college or additional training is through military service. Chief Petty Officer David E. Porco of the U.S. Coast Guard says the Coast Guard’s “active-duty programs are designed for high school graduates and offer a federally funded college plan that can qualify recruits to receive four years of college or vocational technical training. To learn more about other Coast Guard programs, visit [www.gocoastguard.com](http://www.gocoastguard.com).

### College

With more than 175 colleges, community colleges, and universities, Texas has a wealth of college programs for Transportation, Distribution, & Logistics. Some schools, such as the Hallmark Institute of Aeronautics in San Antonio and the College of Automotive Management in Dallas, even specialize in specific transportation fields. Texas A&M University in College Station also has excellent programs in aerospace engineering, marine engineering, and industrial distribution.

Students who are preparing for college, says Parker, should be aware that “airlines seek students who have majored in sales/marketing, finance/accounting, engineering, or aviation.”

For those interested in aviation, three- and four-year college scholarships are available through the U.S. Air Force’s Reserve Officers’ Training Corps (AFROTC) program. (Visit [www.afrotc.com/scholarships](http://www.afrotc.com/scholarships) for more information.) In return for a four-year commitment to service in the Air Force, AFROTC cadets receive officer training and college educations at more than 170 campuses across the United States, including 10 in Texas.

If students are interested in military pilot training, they should know that the commitment to Air Force service is longer—10 years of service after training. Navigators commit to six years of service after their Air Force training.



## Get the CREDIT You Deserve

Dual credit in Texas is a great way to earn college credits toward a postsecondary degree while you’re still in high school. Dual credit programs center on “articulation agreements,” contracts between the student, his or her high school, and postsecondary institutions the student would like to attend. While most students take basic core courses such as English, history, math, science, and social science, coursework may include areas in Career and Technical Education.

Dual credit courses cover the same material as the equivalent college course, allowing the student to receive credit toward the college degree. It’s like a bank account. The credit is banked for you at the college, and you withdraw it when you enroll.

Ask your counselor about advanced placement, dual credit, or articulated courses and other opportunities to earn college credit.

ACCEPTED!

## SIX THINGS Texas students should know about getting into college

Applying to college is a lot like looking for a job or trying out for a team. You choose something that interests you, and then try your best to convince whoever is in charge that you have what it takes to be part of their organization. But whereas there might be only a few spots open on your high school's varsity football squad, there are thousands of places available in hundreds of colleges each year. Whether you are the first in your family to apply to college or both of your parents have advanced degrees, going through the admissions process can be stressful. Fortunately, there are plenty of free resources available for Texas college-bound students. The best is College for All Texans ([www.collegeforalltexans.com](http://www.collegeforalltexans.com)), which features a list of all the state's colleges and universities, a checklist for selecting a school, and a link to the online Texas Common Application. To help you get started on your own college search process, here are six steps you should take.



# Inside College Admissions

### 1. Make School Your Job

The first thing college admissions officers look for on your application is your grade point average. It's simple—you have to make the grades in high school to earn your spot in a college. The easiest way to do that is to think of school as your job, starting in your first year. If you show up late for work, slack off, and talk back to the manager, you'll get fired faster than you can say, "Do you want fries with that?" But if you always arrive on time, work really hard, and try to learn from management, then pretty soon you'll probably get a raise or a promotion.

What works on the job works in the classroom, too. Take challenging courses. Turn in all your work on time. Pay attention in class. Contribute to discussions. Ask for help when you don't understand something. By treating school as a career, you'll have a better shot at earning the grades and teacher recommendations that you need to move to the next level.

### 2. Get Involved in Activities

Colleges don't accept students to fill seats. They look for students who will add to the entire college community by playing on sports teams, performing on stage, volunteering for service projects, and so on. Look at the clubs and teams available at your school and sign up for the ones that interest you. In addition to showing school spirit, being part of an organization is a great way to build teamwork and leadership skills—two traits that can really help your college application stand out from the pack.



### 3. Build a Resume Portfolio

What if you had to take a final exam on the last three years of a subject and didn't have any notes to study? Well, that's exactly what it's like trying to complete a college application if you haven't kept an ongoing file of all your activities, honors, and employment.

Start your first year and build a career portfolio (see page 15). It's also smart to create a computer file called "college resume" and add to it each time you participate in a service project, win an award, get a new job, and so on. Use technology to create a resume format or ask your parents or guidance counselor for help. When you sit down to complete your college applications, review your career portfolio and call up the resume—all the information you need will be right at your fingertips.

### 4. Prep for Tests

Most colleges use scores from the SAT, SAT II, or ACT tests in making their admissions decisions. Check which tests the schools you're interested in require and sign up to take them in time to include the scores in your application. College for All Texans ([www.collegeforalltexans.com](http://www.collegeforalltexans.com)) also has a free ACT, SAT, and GRE prep course.

Spend time preparing for the tests before you walk into the room with your No. 2 pencils and calculator. Go through sample SAT questions at [www.collegeboard.org](http://www.collegeboard.org) or ACT tests at [www.actstudent.org](http://www.actstudent.org). There are also dozens of test-prep books you can buy, some including software that tracks your progress as you go through sample exams.

Remember: If you don't do well on a test the first time, you usually can take it again and try to improve your score.



### 5. Make a List of Colleges

Do you want to stay in Texas for college or see another part of the country? Would you be more comfortable at a big university or a small college?

Think about what you would like to study and what matters most to you (like location, size, or religious affiliation), and then start developing a list of colleges that fit your criteria.

Use online tools like [www.collegeforalltexans.com](http://www.collegeforalltexans.com) or [www.collegeboard.org](http://www.collegeboard.org) to learn more about each school and take online campus tours. Buy or borrow from the library some of the many college guides available. If possible, schedule visits to the schools you are interested in, or, through the school's admissions office, arrange an interview with a recent grad who lives in your area so you can ask questions about courses, faculty, or anything else.

By the fall of your senior year, narrow the list down to the top five or six choices. While some online applications are free, it can cost up to \$70 per school to apply, so be realistic about how much you can spend on applications.

### 6. Submit Polished Applications

Once you send in an application to a college there's no taking it back, so make sure you get it right the first time. Double-check your spelling. If you use the same essay for multiple schools, remember to change the name of the school to fit each application. Make sure you have any required standardized test results (ACT, SAT, SAT II) sent to each school.

Be neat and complete, and meet every deadline. Make copies of each application before you hit the send button or pop it in the mail. If you don't receive an email or postcard confirming that your application was received, contact the college to make sure it arrived. Items can get lost or misdirected, especially when thousands of students are sending in applications at the same time. By having copies, you can easily submit again.

**EVEN IF** you get accepted to college, you'll never be able to pay the bill, right? Wrong! There's financial aid available if you know where to look.

College isn't cheap. With tuition and room and board at private schools often topping \$40,000, and even in-state, public schools costing several thousand dollars a year, you may wonder why you should even apply.

Well, don't worry. Every Texas student can afford to go to college.

"Access and affordability of higher education can be intimidating to students and parents; however, there are numerous resources available to walk you through the process and into an exciting future," says Heather V. Crowson, vice president for enrollment management at Sam Houston State University.

The secret to getting the aid you need to go to school is in filling out the necessary forms, getting good grades, and applying to schools that offer generous financial aid packages. (A financial aid package consists of need- or merit-based scholarships and grants plus work-study jobs and low-interest student loans.)

Here's a quick overview of steps you can take to get the financial aid you need to continue your studies after high school. For more information about the aid available at a specific college or university, go to the school's website and click on the "Admissions and Financial Aid" link. Many schools provide an online form you and your parents can fill out that will give you the estimated financial aid package you might receive if accepted to that school.

**Apply:** You definitely won't get any financial aid if you don't apply. To figure out how much grant money (which you don't pay back) and loans (which you do pay back) you'll need to afford school, colleges use a formula that factors in your parents' income and investments, your income, the number of kids in the family who will be in college at the same time, and other financial information. Families of all income levels may receive aid, so fill out the forms.



# Financial Aid BASICS



All schools require the Free Application for Federal Student Aid (FAFSA), which determines eligibility for federal aid, such as work-study, Pell grants, and the Stafford loan program; and for college grants and, sometimes, merit scholarships. Complete the application as soon as possible at the beginning of October your junior year. FAFSA forms and instruction booklets are available in your guidance counselor's office, or you can complete the form online at [www.fafsa.ed.gov](http://www.fafsa.ed.gov).

Most private schools also require applicants to complete a school financial aid application and, in some cases, the CSS/Financial Aid Profile form (<https://student.collegeboard.org/css-financial-aid-profile>) which is used to award nonfederal student aid funds. Carefully read each college's application to determine financial aid deadlines and what forms you will need to submit.

**Study In-state:** Whether you choose a public or a private school, staying in-state for college will cut your costs considerably. Plus, since Texas covers 267,339 square miles, you can "go away" to college without ever leaving the state.

To help ensure that qualified Texas high school graduates with financial need can go to college, the State Legislature established the TEXAS (Towards Excellence, Access, and Success) Grant Program. Grants can be used to study at any public college or university in the state and are equal to the student's tuition and required fees. In 2012-2013, approximately 33,100 students received TEXAS Grants. To apply, fill out the FAFSA.

Another way to score some serious state aid is to get good grades in high school. Texas students who are in the top 10 percent of their graduating class are eligible for automatic admission to any public university in the state. With that automatic admission comes the opportunity to apply for merit scholarships and special programs available at each school.

**Take Two at a Community College:** The first two years of many college programs are filled with core courses that could easily be taken at a local community college for a lot less money. If you fill out all the forms, do the math, and still can't afford a four-year school, enroll in a community college for the first two years, then transfer to a four-year school.

By living at home, working part-time, and getting required courses out of the way, you could save tens of thousands of dollars in tuition and room and board, and be able to afford to attend the college of your choice for junior and senior years. For a complete list of the state's community colleges, go to the Texas Association of Community Colleges website at [www.tacc.org](http://www.tacc.org).

**Target Your Search:** Applying to a couple of colleges where your grades and talents put you near the top of the typical talent pool makes it more likely you'll qualify for merit aid and other special school scholarships and grants. Do a little research on college websites to find schools where your standardized test scores and grade point average rank you in the top 25 percent or so of the most recently accepted first-year class. Colleges want to attract the best and brightest students available, and often will offer attractive scholarship/grant/loan packages to convince those students to come to their school.

There are also more than 1 million local, national, and college-specific scholarships available each year. The trick is to find and apply for scholarships that best fit your strengths and talents. FastWeb ([www.fastweb.com](http://www.fastweb.com)) is a free college scholarship search source. Register online and you will start receiving email notices about scholarships, internships, and other opportunities that fit the profile information you submit.



LOOK IT UP! Here are key words and phrases used in this guide that you may not already know.



# What does that mean?

**Articulation agreements:** formal agreements between or among educational organizations (high schools, community colleges, and universities) that align courses and majors in a way that allows students to transition from one institution to another without loss of course credit or time.

**Associate's degree:** a two-year degree awarded by a community or technical college.

**Bachelor's degree:** a four-year degree awarded by a university.

**Career and technical student organizations (CTSOs):** curricular organizations for students that offer activities and competitions related to particular careers.

**Career cluster:** a way of organizing curricula, instruction, and assessment around specific occupational groups (for example, Information Technology or Health Science) that offers students core academics, coursework related to specific occupations, and extended learning experiences.

**Career guidance:** structured developmental experiences presented systematically from kindergarten through 12th grade that help students analyze and evaluate abilities, skills, and interests.

**Career portfolio:** a collection of student work indicating progress made in subjects, activities, or programs. In career cluster systems, portfolios are often used to assess student performance in extended learning experiences.

**Doctoral degree:** a degree awarded by universities for study beyond a master's degree. Also referred to as a Ph.D. or professional degree.

**Dual credit:** credit given in both high school and college for college-level courses taken while in high school.

**Extended learning experiences:** participation in career and technical student organizations, extracurricular activities, job shadowing, internships, or service learning.

**Financial aid:** scholarships, grants, loans, and work-study funds awarded to students to pay for college expenses.

**Internship:** an extended learning experience in which students work temporarily at entry-level jobs in careers that interest them.

**Job shadowing:** an extended learning experience in which students observe professionals in particular careers as they go through a day on the job.

**Master's degree:** a degree awarded by universities for study beyond a bachelor's degree.

**Postsecondary education:** education beyond high school. Middle school and high school are referred to as secondary education, so postsecondary means after high school.

**Program of study:** a way of organizing the curricula and educational activities within a career cluster related to a student's specific academic and career goal.

**Service learning:** an extended learning experience in which students do volunteer work related to their career goals.

**Targeted industry clusters:** six industry clusters that have been identified by Texas as high-demand, high-growth sectors paying high wages. As they are developed by the State, these may be hot areas in which to build a rewarding career.

**Program of Study:** an education plan suggesting the high school courses a student should take to prepare successfully for graduation and transition into postsecondary education. The vision for Texas CTE is that eighth graders, in consultation with their parents/guardians, counselors, and teachers, will select a program of study and create a plan. Plans are to be reviewed and revised at least once each school year.





# Online Info

Explore these Internet resources for more about your education and career options.

### America's Career InfoNet [www.acinet.org/acinet](http://www.acinet.org/acinet)

This is the place to search for occupational information, industry information, and state-specific labor market information.

### College for All Texans [www.collegeforalltexans.com](http://www.collegeforalltexans.com)

Here is everything a Texan needs to know about preparing for, applying for, and paying for college or technical school. And it's all in one up-to-date, easy-to-navigate mega-site almost as big as the state itself. Remember: \$4 billion is available every year to help Texans attend college.

### Employability Skills Framework <http://cte.ed.gov/employabilityskills/>

Employability skills are general skills that are necessary for success in the labor market at all employment levels in all sectors. The Employability Skills Framework is a one-stop resource for information and tools to inform the instruction and assessment of employability skills.

### My Next Move [www.mynextmove.org/](http://www.mynextmove.org/)

This is a career planning resource for students, parents, career changers, and career advisors.

### O\*NET (Occupational Information Network) [www.onetonline.org](http://www.onetonline.org)

Also available in schools and libraries, O\*NET provides full information on occupations, including compensation, employment prospects, and skill matching for students. Information on compensation is available on a state-by-state basis.

### U.S. Department of Labor Occupational Outlook Handbook [www.bls.gov/home.htm](http://www.bls.gov/home.htm)

This nationally recognized resource offers information on job responsibilities, earnings, working conditions, and job prospects for the future.

## Take a Reality Check

The Texas Workforce Commission has created an online resource called Reality Check to help you understand how much money you'll need to live on your own after high school or college and how you can earn it. There are three ways to explore careers, expenses, and earnings. For the first option, which is called "Get a Reality Check," you choose an area you'd like to live in, such as Austin. You then go through a series of screens with real-world costs for items such as housing, clothing, transportation, health care, and personal expenses. The site automatically adds up your estimated monthly expenses, then uses salary information for Texas to show you careers that will make you that much money. The second option, called "Future Salary," starts with the wages you expect to earn, what education you plan to pursue, and the career cluster that interests you. Then it generates a list of careers in which you can make that amount of money. The third option, "Occupation Direct," begins with your occupational choice and the area where you want to live, then shows how your estimated expenses subtract from the salary for your chosen job. The site, which is at [www.careerwise.mnscu.edu/careers/realitycheck.html](http://www.careerwise.mnscu.edu/careers/realitycheck.html), is a great way to play "what if" when it comes to mixing your job, earnings, and expense options.



The results of Reality Check show you how expenses add up quickly when you are living on your own.

# Texas CTE Career Clusters



**Agriculture,  
Food &  
Natural  
Resources**

Processing, production, distribution, and development of agricultural commodities and natural resources



**Architecture &  
Construction**

Designing, managing, building, and maintaining the built environment



**Arts, A/V  
Technology &  
Communications**

Creating, exhibiting, performing, and publishing multimedia content



**Business  
Management &  
Administration**

Organizing, directing, and evaluating functions essential to productive business operations



**Education &  
Training**

Providing education and training services, and related learning support services



**Finance**

Financial and investment planning, banking, insurance, and business financial management



**Government  
& Public  
Administration**

Executing governmental functions at the local, state, and federal levels



**Health Science**

Providing diagnostic and therapeutic services, health informatics, support services, and biotechnology research



**Hospitality  
& Tourism**

Managing restaurants and other food services, lodging, attractions, recreation events, and travel-related services



**Human  
Services**

Providing for families and serving human needs



**Information  
Technology**

Designing, supporting, and managing hardware, software, multimedia, and systems integration



**Law,  
Public Safety,  
Corrections  
& Security**

Providing legal, public safety, protective, and homeland security services



**Manufacturing**

Processing materials into intermediate or final products



**Marketing**

Performing marketing activities to reach organizational objectives



**Science,  
Technology,  
Engineering &  
Mathematics**

Performing scientific research and professional and technical services



**Transportation,  
Distribution  
& Logistics**

Managing movement of people, materials, and goods by road, pipeline, air, rail, and water

## About Texas CTE

You may have seen the name Texas CTE on the cover of this magazine. What exactly is that?

Texas CTE is the name of Texas' college and career education initiative. The idea behind it is simple: Planning for the future so that students achieve lifelong success. As Texas CTE grows, you'll see how subjects such as English, math, science, and social studies are relevant to your personal goals and ambitions. You'll get the chance to begin a plan that gets you where you want to go in life. You'll have the opportunity to take courses and engage in extended learning experiences that give you marketable skills. Best of all, you'll be in control of your future. Read all 16 editions of Texas CTE in Action (available through your counselor) to explore Texas' career clusters and start on the road to success.