



# North Carolina Career Clusters Guide



# Letter

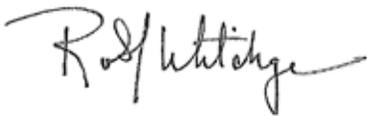
Dear Career Planner,

We are pleased to present the North Carolina Career Clusters Guide for students, parents, and career changers. This guide is a tool designed to target the career pathways needed to meet educational and employment goals.

To support these efforts, we want to ensure individuals have both timely and accurate information, thus promoting informed decisions about career paths. This guide, designed around career clusters and related pathways, portrays a common set of knowledge and skills required for career success in each path. This process enhances the traditional approach to career and technical education by providing a foundation that prepares individuals for a full range of occupations and career specialties. This method uses a blend of employability knowledge, technical, and academic skills.

The economy and workforce in North Carolina is changing. The North Carolina Department of Public Instruction and the North Carolina Community College System are committed to supporting the state's workforce system. This guide will assist all students in identifying the available career options by using individual interests, clearly defined pathways, and timely employment projections. Students using this guide will be able to make career decisions that meet the needs of North Carolina's current and emerging economy.

Sincerely,



Robert J. Witchger, Ed.D.  
Director of Career and Technical Education  
NC Community College System



Jo Anne Honeycutt  
Director of Career and Technical Education  
NC Department of Public Instruction

"In compliance with Federal Law, the North Carolina Community Colleges administer all state operated educational programs, employment activities and admissions, without discrimination because of race, religion, national or ethnic origin, color, age, military service, disability or gender except where exemption is appropriate and allowed by law.

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# How to Use This Guide for Career Planning

Are you planning for high school, college, the workforce, or a career change? You will find the North Carolina Career Clusters Guide a valuable resource as you make these important decisions. This guide is a tool for planning and preparing for a career. It provides you a structure for selecting careers based on linking what you know about yourself with information about occupations and typical training requirements.

The career planning process is the cycle you follow when seeking employment in occupations that match your interests. You can repeat this process as needed to help you find your place in the world of work. Follow these steps to learn about Career Clusters, their multiple pathways and to find career options that fit you best.

**#1 Know Yourself** The Interest Profiler on pages 6-7 gives you one option for finding career clusters and occupations that match your personal characteristics, strengths, and preferred activities. Results do not tell you which occupation or cluster you should choose, but they do provide information for determining the kinds of work you might want to explore.

**#2 Explore Career Clusters** Career Clusters help you sort through over 900 careers. Each cluster contains occupations that have similar knowledge and skills. Career Pathways within each cluster help identify useful training to prepare for work in specific jobs. Connect your Interest Profiler results with clusters and occupations on pages 12-13 to discover which ones most closely match your personality.

**#3 Know Your Options** Use your Step 2 information to choose one Career Cluster from the section starting on page 15. First, get the cluster's "big picture" and find online career resources. Then learn about the cluster, its pathways, and related occupations. Review the Selected Occupations table's job descriptions, employment growth and salary data, and interests. Find out about successful people who work in the cluster. Repeat this process with other clusters that interest you.

**#4 Experience Real Jobs** You may want to learn what it's really like to work in a specific occupation. Check out page 111 to find ways you can get experience in and gain a deeper understanding of occupations you might like.

# Discover Where Your Interests and Career Clusters Intersect

The Interest Profiler<sup>1</sup> is a self-assessment tool designed to help you identify what your interests are and translate these interests into occupations that match your abilities and personality. By answering questions that represent important Interest Areas, the results from the Interest Profiler will help you discover your strong work-related interests and match them to careers.

## Directions:

The Interest Profiler in the following pages has 60 questions about work activities that some people perform in their jobs. When you take the Interest Profiler, it is important for you to work from top to bottom down the columns of items. Read each question carefully and decide how you would feel about doing each type of work. Try not to think about whether you have enough education or training to do the work, or how much money you would make doing the work. Just think about whether you would like or dislike performing the work activity.

- If you think you would like the work activity, mark the “Like” box.
- If you think you would dislike the work activity, mark the “Dislike” box.
- If you are unsure whether you would like the work activity, mark the “Unsure” box.

## Other ways to explore your own characteristics:

Interests are only one part of who you are, so check out the box below to find other ways to explore your own characteristics and identify other qualities that connect with careers that you may choose.

### Interests

Career Key  
[careerkey.org](http://careerkey.org)

Campbell Interest & Skill Survey  
[careertestingreviews.com/ciss.htm](http://careertestingreviews.com/ciss.htm)

Self-Directed Search  
[self-directed-search.com](http://self-directed-search.com)

### Personality Type

Myers-Briggs Type Indicator  
[cpp.com/products/mbti/index.aspx](http://cpp.com/products/mbti/index.aspx)

### Abilities & Aptitudes

SAT  
[sat.collegeboard.org/about-tests](http://sat.collegeboard.org/about-tests)

ACT  
[act.org/products/k-12-act-test](http://act.org/products/k-12-act-test)

ASVAB  
[official-asvab.com](http://official-asvab.com)

WorkKeys®  
[act.org/products/workforce-act-national-career-readiness-certificate](http://act.org/products/workforce-act-national-career-readiness-certificate)



<sup>1</sup> The Interest Profiler is adapted from the O\*NET® Interest Profiler Short Form, a shorter web-based version of the O\*NET Interest Profiler. Both interest assessment instruments are part of the Career Exploration Tools owned by the U.S. Department of Labor, Employment Training Administration (DOL/ETA). The O\*NET Interest Profiler Short Form was developed to aid in career exploration settings where it is beneficial for interest assessments to be completed and discussed in a short amount of time (e.g., career counseling and consultation settings). For more information about the web-based O\*NET Interest Profiler Short Form, please check out [onetcenter.org/IPSF.html?p=3](http://onetcenter.org/IPSF.html?p=3) or visit MY NEXT MOVE [mynextmove.org/explore/ip](http://mynextmove.org/explore/ip) to take the web-based assessment. Information about the O\*NET Interest Profiler can also be found at [onetcenter.org/IP.html](http://onetcenter.org/IP.html). All O\*NET Assessment/Counseling Tools are copyrighted. O\*NET is a trademark of DOL/ETA.

# Interest Profiler

Dislike	Unsure	Like	Work Activity
			Build Kitchen Cabinet
			Lay brick or tile
			Develop a new medicine
			Study ways to reduce water pollution
			Write books or plays
			Play a musical instrument
			Teach an individual an exercise routine
			Help people with personal or emotional problems
			Buy and sell stocks and bonds
			Manage a retail store
			Develop a spreadsheet using computer software
			Proofread records or forms
			Repair household appliances
			Raise fish in a fish hatchery
			Conduct chemical experiments
			Study the movement of planets
			Compose or arrange music
			Draw pictures
			Give career guidance to people
			Perform rehabilitation therapy
			Operate a beauty salon or barber shop
			Manage a department within a large company
			Load computer software into a large computer network
			Operate a calculator
			Assemble electronic parts
			Drive a truck to deliver packages to offices and homes
			Examine blood samples using a microscope
			Investigate the cause of a fire
			Create special effects for movies
			Paint sets for plays

Record total number of likes for each color in boxes below:



Dislike	Unsure	Like	Work Activity
			Do volunteer work at a non-profit organization
			Teach children how to play sports
			Start your own business
			Negotiate business contracts
			Keep shipping and receiving records
			Calculate the wages of employees
			Test the quality of parts before shipment
			Repair and install locks
			Develop a way to better predict the weather
			Work in a biology lab
			Keep shipping and receiving records
			Calculate the wages of employees
			Test the quality of parts before shipment
			Repair and install locks
			Develop a way to better predict the weather
			Work in a biology lab
			Write scripts for movies or television shows
			Perform jazz or tap dance
			Teach sign language to people with hearing disabilities
			Help conduct a group therapy session
			Represent a client in a lawsuit
			Market a new line of clothing
			Inventory supplies using a hand-held computer
			Record rent payments
			Set up and operate machines to make products
			Put out forest fires
			Invent a replacement for sugar
			Do laboratory tests to identify diseases
			Sing in band
			Edit movies

Record total number of likes for each color in boxes below:

--	--	--	--	--	--

# Scoring Instructions

Work activity items are color coded to help you score and interpret results. There are six color bands of items to represent six Interest Areas. Items in the same color band represent a particular Interest Area. To reveal your Interest Areas, follow the instructions below:

Item Color	Interest Area
Green	Realistic
Pink	Investigative
Orange	Artistic
Purple	Social
Yellow	Enterprising
Blue	Conventional

**Step 1:** Count the number of “Likes” you marked for the questions in green color band on page 6, then record the number in the first green box at the bottom of page 6.

**Step 2:** Count the number of “Likes” you marked for the questions in green color band on page 7, then record the number in the second green box at the bottom of page 7.

**Step 3:** Add the numbers in the two green boxes on pages 6 and 7 and write the total in the below green box marked with R. This total equals your score for the Realistic Interest Area.

**Step 4:** Repeat steps 1, 2, and 3 for the pink, yellow, purple questions, orange, and blue questions.

R	I	A	S	E	C

## Primary Interest Area:

Which Interest Area has your highest score: R, I, A, S, E, or C? Enter the letter below.

Your Primary Interest Area: \_\_\_\_\_

## Secondary Interest Areas:

Which Interest Areas have your second and third highest score? Enter the letters below:

Your Secondary Interest Areas: \_\_\_\_\_ & \_\_\_\_\_

## What Your Primary Interest Area Means

What occupations are linked with your interests? You will want to explore occupations that are related to your Primary Interest Area. For example, a person with strong Realistic interests would probably be most satisfied with strong Realistic occupations (e.g., electrician, firefighter, surgeon). It is important to note that an individual’s interests may not be described by just one of the six interest categories. In fact, Holland suggests that most people will have interests in several of the areas, but that they will probably have one Interest Area that is stronger than the others. If you have two identical highest scores, you should consider both scores as it indicates that you have two Primary interests. If you are not certain about the occupations linked to your Primary Interest Area, you can use your Secondary Interest Areas to explore a different set of careers.

Read over the definitions of your Primary Interest Area in the following page to get a better understanding of your work-related interests.

The Interest Profiler<sup>2</sup> measures interests in each of the six Holland RIASEC types. This section provides definitions for each of the six types. Each definition includes examples of activities that individuals with that interest type like to perform, as well as examples of famous people whose field of work match the interest type.



## Realistic - The “Doers”

People with Realistic interests like work activities that include practical, hands-on problems and solutions. They enjoy dealing with plants, animals, and real-world materials like wood, tools, and machinery. They enjoy outside work. Often people with Realistic interests do not like occupations that mainly involve doing paperwork or working closely with others. Famous realists: NASCAR driver Danica Patrick, TV carpenter Norm Abram, wildlife expert Steve Irwin, and multi-talented athlete Jim Thorpe.



## Investigative - The “Thinkers”

People with Investigative interests like work activities that have to do with ideas and thinking more than with physical activity. They like to search for facts and figure out problems mentally rather than to persuade or lead people. Prominent investigators: astrophysicist Neil deGrasse Tyson, primatologist Jane Goodall, mathematician/computer scientist Grace Murray Hopper, and neuroscientist Ben Carson.



## Artistic - The “Creators”

People with Artistic interests like work activities that deal with the artistic side of things, such as forms, designs, and patterns. They like self-expression in their work. They prefer settings where work can be done without following a clear set of rules. Well-known artists: painter/sculptor Leonardo da Vinci, actor Halle Berry, writer J.K. Rowling, and singers Lady Gaga and Tony Bennett.

John Holland suggested that viewing the Interest Areas on a hexagon can help people understand how their interests overlap or how they may be distinctly different. Interests that are most similar touch each other on the hexagon (e.g. Social, Enterprising, and Conventional). On the other hand, interests across the hexagon from each other (e.g. Conventional and Artistic) are least likely to have similarities. Sometimes people’s combined interests are opposite from or not adjacent to each other. In this case, people sometimes choose to focus on the most different interest as a hobby or to find a unique work setting that merges their interests.



## Social - The “Helpers”

People with Social interests like work activities that assist others and promote learning and personal development. They prefer to communicate more than to work with objects, machines, or data. They like to teach, to give advice, to help, or otherwise be of service to people. Famous helpers: educator Booker T. Washington, mental health care reformer Dorothea Dix, TV psychologist Phil McGraw, and civil rights leader Martin Luther King, Jr.



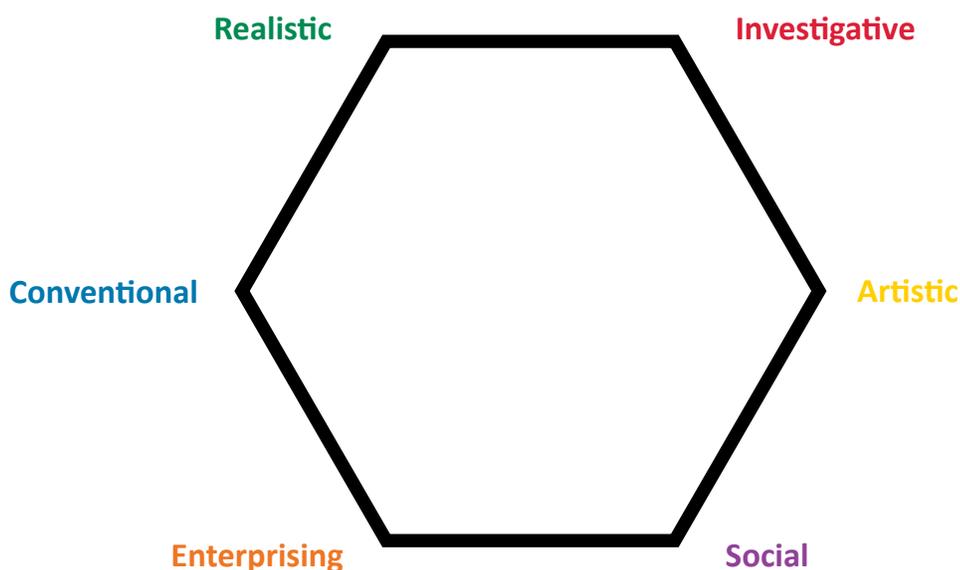
## Enterprising - The “Persuaders”

People with Enterprising interests like work activities that have to do with starting up and carrying out projects, especially business ventures. They like persuading and leading people and making decisions. They like taking risks for profit. These people prefer action rather than thought. Prominent persuaders: TV mogul Oprah Winfrey, business magnate Donald Trump, Senator Marco Rubio, and Facebook co-founder Mark Zuckerberg.



## Conventional - The “Organizers”

Organizers follow procedures and maintain accurate written and numerical business records. They prefer working in structured settings where roles and tasks are clearly defined. Well-known organizers: businessman J.C. Penney, Supreme Court Justice Sandra Day O’Connor, and professional organizer Alejandra Costello.



<sup>2</sup> The O\*NET Interest Profiler is compatible with Holland’s (1985a) Theory of Vocational Personality. This is one of the most widely accepted approaches to vocational choice. Information for Interest Areas is extracted from the O\*NET Career Exploration Tools owned by the U.S. Department of Labor, Employment Training Administration (DOL/ETA). All O\*NET Assessment/Counseling Tools are copyrighted. O\*NET is a trademark of DOL/ETA.

# 16 Career Clusters and Their Career Pathways

Career clusters are groups of occupations that require a common knowledge base and the use of similar skills. Each cluster contains several smaller groups called career pathways that connect to educational programs, industries, and careers. While a career cluster paints a broad picture of a group of occupations, a pathway helps you focus on and develop a clear, more informed educational plan over time.

Career Cluster	Description	Career Pathway
 <p><b>Agriculture, Food, &amp; Natural Resources</b></p>	<p>Do you enjoy working with plants and animals? Interested in working to conserve natural resources or protect the environment? This cluster includes careers in the planning, production, processing, management, distribution, and marketing of agricultural products, including food, plants, animals, fabrics, wood, and crops.</p>	<ul style="list-style-type: none"> <li>• Agribusiness Systems</li> <li>• Animal Systems</li> <li>• Environmental Service Systems</li> <li>• Food Products and Processing Systems</li> <li>• Natural Resources Systems</li> <li>• Plant Systems</li> <li>• Power, Structural and Technical Systems</li> </ul>
 <p><b>Architecture &amp; Construction</b></p>	<p>Do you want to design, build, and maintain structures where people live, work, and play? This cluster includes careers in designing, planning, managing, building, and maintaining the built environment.</p>	<ul style="list-style-type: none"> <li>• Construction</li> <li>• Design/Pre-Construction</li> <li>• Maintenance/Operations</li> </ul>
 <p><b>Arts, A/V Technology &amp; Communications</b></p>	<p>Do you like to perform? Do you love to use your artistic creativity on the job? This cluster includes careers in designing, producing, exhibiting, performing, writing, and publishing multimedia content, including visual and performing arts and design, journalism, and entertainment services.</p>	<ul style="list-style-type: none"> <li>• Audio &amp; Video Technology and Film</li> <li>• Journalism and Broadcasting</li> <li>• Performing Arts</li> <li>• Printing Technology</li> <li>• Telecommunications</li> <li>• Visual Arts</li> </ul>
 <p><b>Business, Management &amp; Administration</b></p>	<p>Are you entrepreneurial? Do you like to plan and organize activities? This cluster includes careers in planning, organizing, directing, and evaluating business functions essential to effective business operations.</p>	<ul style="list-style-type: none"> <li>• Administrative and Information Support</li> <li>• Business Analysis</li> <li>• Business Financial Management and Accounting</li> <li>• Human Resources</li> <li>• Management</li> <li>• Marketing</li> </ul>
 <p><b>Education &amp; Training</b></p>	<p>Do you enjoy teaching others? Are you comfortable with public speaking? This cluster includes careers in planning, managing, and providing education and training services and related learning support services, including administration and library services.</p>	<ul style="list-style-type: none"> <li>• Administration and Administrative Support</li> <li>• Professional Support Services</li> <li>• Teaching/Training</li> </ul>
 <p><b>Finance</b></p>	<p>Do you like to work with numbers? Do you want to help people plan for their financial futures? This cluster includes careers in financial and investment planning, banking, insurance, and business financial management.</p>	<ul style="list-style-type: none"> <li>• Banking and Related Services</li> <li>• Business Financial Management</li> <li>• Financial and Investment Planning</li> <li>• Insurance Services</li> </ul>
 <p><b>Government &amp; Public Administration</b></p>	<p>Are you interested in government and politics? Do you like to help pass law? This cluster includes careers in planning, managing, and providing government services at the federal, state, and local levels; including legislative, administrative, and regulatory services.</p>	<ul style="list-style-type: none"> <li>• Governance</li> <li>• National Security</li> <li>• Planning</li> <li>• Public Management and Administration</li> <li>• Regulation</li> <li>• Revenue and Taxation</li> </ul>
 <p><b>Health Science</b></p>	<p>Do you enjoy helping people feel better? Would you like working in a hospital or other medical facility? This cluster includes careers in planning, managing, and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnological research and development.</p>	<ul style="list-style-type: none"> <li>• Biotechnology Research and Development</li> <li>• Diagnostic Services</li> <li>• Health Informatics</li> <li>• Support Services</li> <li>• Therapeutic Services</li> </ul>

Career Cluster	Description	Career Pathway
 <p><b>Hospitality &amp; Tourism</b></p>	Do you want to help other people enjoy their leisure time? Would you like to work in a hotel or in a restaurant? This cluster includes careers in the management, marketing, and operations of restaurants and other food services, lodging, attractions, recreation events, and travel related services.	<ul style="list-style-type: none"> <li>• Lodging</li> <li>• Recreation, Amusements and Attractions</li> <li>• Restaurants and Food/Beverage Services</li> <li>• Travel and Tourism</li> </ul>
 <p><b>Human Services</b></p>	Do you like to help people? Would you enjoy teaching people how to improve their lives? This cluster includes careers in educating and preparing individuals for employment in occupations that involve tending to families and to human needs.	<ul style="list-style-type: none"> <li>• Consumer Services</li> <li>• Counseling and Mental Health Services</li> <li>• Early Childhood Development and Services</li> <li>• Family and Community Services</li> <li>• Personal Care Services</li> </ul>
 <p><b>Information Technology</b></p>	Do you like technology? Do you enjoy working with computer hardware, software, multimedia, or network systems? This cluster includes careers related to the design, development, support, and management of hardware, software, Internet, multimedia, and systems integration services.	<ul style="list-style-type: none"> <li>• Information Support and Services</li> <li>• Interactive Media</li> <li>• Network Systems</li> <li>• Programming and Software Development</li> </ul>
 <p><b>Law, Public Safety, Corrections &amp; Security</b></p>	Do you like to help protect other people's safety? Do you want to help enforce the law? This cluster includes careers in planning, managing, and providing legal, public safety, corrections, protective services, and homeland security, including professional and technical support.	<ul style="list-style-type: none"> <li>• Correction Services</li> <li>• Emergency and Fire Management Services</li> <li>• Law Enforcement Services</li> <li>• Legal Services</li> <li>• Security and Protective Services</li> </ul>
 <p><b>Manufacturing</b></p>	Do you like to design and make things? Are you comfortable working with machines? This cluster includes careers in planning, managing, and performing the processing of materials into intermediate or final products and related professional and technical support activities, such as production planning and control, maintenance, and manufacturing/process engineering.	<ul style="list-style-type: none"> <li>• Maintenance, Installation and Repair</li> <li>• Manufacturing Production Process Development</li> <li>• Production</li> <li>• Quality Assurance</li> </ul>
 <p><b>Marketing, Sales &amp; Service</b></p>	Do you like to sell products or services? Are you friendly and outgoing? This cluster includes careers in planning, managing, and performing marketing activities to reach organizational objectives.	<ul style="list-style-type: none"> <li>• Buying and Merchandising</li> <li>• E-Marketing</li> <li>• Management and Entrepreneurship</li> <li>• Marketing Communications and Promotion</li> <li>• Marketing Information Management &amp; Research</li> <li>• Professional Sales and Marketing</li> </ul>
 <p><b>Science, Technology, Engineering &amp; Mathematics</b></p>	Do you like science or math? Do you enjoy solving problems? This cluster includes occupations and careers in planning, managing, and providing scientific research and professional and technical services (e.g., physical science, social science, engineering), including laboratory and testing services, and research and development services.	<ul style="list-style-type: none"> <li>• Engineering and Technology</li> <li>• Science and Mathematics</li> </ul>
 <p><b>Transportation, Distribution &amp; Logistics</b></p>	Would you like to fly planes, drive trucks, or pilot ships? Do you enjoy planning roads or power systems? This cluster includes careers in planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional and technical support services, such as transportation infrastructure planning and management, logistics services, mobile equipment and facility maintenance.	<ul style="list-style-type: none"> <li>• Facility and Mobile Equipment Maintenance</li> <li>• Health, Safety and Environmental Management</li> <li>• Logistics, Planning and Management Services</li> <li>• Sales and Service</li> <li>• Transportation Operations</li> <li>• Transportation Systems/Infrastructure Planning, Management and Regulation</li> <li>• Warehousing and Distribution Center Operations</li> <li>• Health, Safety and Environmental Management</li> <li>• Logistics Planning and Management Services</li> </ul>

# Introduction to Career Cluster Matrix

Now that you've finished the interest assessment, circle the interest descriptions located on pages 8-9. Then look at the occupations listed under your types and mark any that appeal to you. Broaden your options by looking across the page at other occupations in the career clusters containing the jobs you've marked. Remember: The occupations in this matrix give you only a few examples. If you want to find additional careers, explore the career clusters information that follows.

	Realistic	Investigative	Artistic
<b>Agriculture, Food &amp; Natural Resources</b>	<ul style="list-style-type: none"> <li>Pest Control Workers</li> <li>Logging Equipment Operators</li> <li>Hazardous Materials Removal Workers</li> </ul>	<ul style="list-style-type: none"> <li>Zoologists &amp; Wildlife Biologists</li> <li>Animal Scientists</li> <li>Environmental Scientists &amp; Specialists</li> </ul>	<ul style="list-style-type: none"> <li>Floral Designers</li> <li>Park Naturalists</li> </ul>
<b>Architecture &amp; Construction</b>	<ul style="list-style-type: none"> <li>Construction Laborers</li> <li>Roofers</li> <li>Sheet Metal Workers</li> </ul>	<ul style="list-style-type: none"> <li>Operations Research Analysts</li> <li>Civil Engineers</li> </ul>	<ul style="list-style-type: none"> <li>Interior Designers</li> <li>Architects</li> </ul>
<b>Arts, A/V Technology &amp; Communications</b>	<ul style="list-style-type: none"> <li>Telecommunications Line Installers</li> <li>Motion Picture Camera Operators</li> <li>Fine Artists</li> </ul>	<ul style="list-style-type: none"> <li>Telecommunications Equipment Repairers</li> <li>Film &amp; Video Editors</li> </ul>	<ul style="list-style-type: none"> <li>Art Directors</li> <li>Multimedia Artists &amp; Animators</li> <li>Photographers</li> </ul>
<b>Business, Management &amp; Administration</b>	<ul style="list-style-type: none"> <li>Couriers &amp; Messengers</li> <li>Library Assistants, Clerical</li> <li>Office Machine Operators</li> </ul>	<ul style="list-style-type: none"> <li>Survey Researchers</li> <li>Market Research Analysts</li> <li>Statisticians</li> </ul>	<ul style="list-style-type: none"> <li>Advertising &amp; Promotions Managers</li> <li>Public Relations Specialists</li> </ul>
<b>Education &amp; Training</b>	<ul style="list-style-type: none"> <li>Vocational Education Teachers</li> <li>Multimedia Collections Specialists</li> </ul>	<ul style="list-style-type: none"> <li>School Psychologists</li> <li>Health Specialties Teachers</li> </ul>	<ul style="list-style-type: none"> <li>Interpreters &amp; Translators</li> <li>Preschool Teachers, Except Special Education</li> </ul>
<b>Finance</b>	<ul style="list-style-type: none"> <li>Auto Insurance Appraisers</li> <li>Title Examiners</li> </ul>	<ul style="list-style-type: none"> <li>Fraud Examiners</li> <li>Risk Management Specialists</li> </ul>	<ul style="list-style-type: none"> <li>Content Editors</li> </ul>
<b>Government &amp; Public Administration</b>	<ul style="list-style-type: none"> <li>Coroners</li> <li>Surveying Technicians</li> </ul>	<ul style="list-style-type: none"> <li>Climate Change Analysts</li> <li>Economists</li> </ul>	<ul style="list-style-type: none"> <li>Political Scientists</li> <li>Communications Professors</li> </ul>
<b>Health Science</b>	<ul style="list-style-type: none"> <li>Radiologic Technologists</li> <li>Home Health Aides</li> <li>Surgical Technologists</li> </ul>	<ul style="list-style-type: none"> <li>Pediatricians, General</li> <li>Podiatrists</li> <li>Pharmacists</li> </ul>	<ul style="list-style-type: none"> <li>Recreational Therapists</li> <li>Psychiatrists</li> <li>Speech-Language Pathologists</li> </ul>
<b>Hospitality &amp; Tourism</b>	<ul style="list-style-type: none"> <li>Dishwashers</li> <li>Bakers</li> <li>Maids &amp; Housekeeping Cleaners</li> </ul>	<ul style="list-style-type: none"> <li>Blenders/Cooks</li> <li>Brewers</li> <li>Cheese Makers</li> </ul>	<ul style="list-style-type: none"> <li>Cooks</li> <li>Set and Exhibit Designers</li> <li>Recreation Workers</li> </ul>
<b>Human Services</b>	<ul style="list-style-type: none"> <li>Personal Care Aides</li> <li>Seamstresses</li> <li>Shampooers</li> </ul>	<ul style="list-style-type: none"> <li>Healthcare Social Workers</li> <li>Marriage &amp; Family Therapists</li> </ul>	<ul style="list-style-type: none"> <li>Cosmetologists</li> <li>Childcare Workers</li> <li>Tailors</li> </ul>
<b>Information Technology</b>	<ul style="list-style-type: none"> <li>Telecommunications Engineering Specialists</li> <li>Software Quality Assurance Engineers</li> </ul>	<ul style="list-style-type: none"> <li>Computer Hardware Engineers</li> <li>Data Warehousing Specialists</li> <li>Information Security Analysts</li> </ul>	<ul style="list-style-type: none"> <li>Video Game Designers</li> <li>Graphic Designers</li> </ul>
<b>Law, Public Safety, Corrections &amp; Security</b>	<ul style="list-style-type: none"> <li>Parking Enforcement Workers</li> <li>Bailiffs</li> <li>Lifeguards &amp; Ski Patrol Workers</li> </ul>	<ul style="list-style-type: none"> <li>Forensic Science Technicians</li> <li>Security Management Specialists</li> </ul>	<ul style="list-style-type: none"> <li>Psychology Professors</li> <li>Forensic Artists*</li> </ul>
<b>Manufacturing</b>	<ul style="list-style-type: none"> <li>Aircraft Structure &amp; Systems Assemblers</li> <li>Computer-Controlled Machine Tool Operators</li> <li>Engine &amp; Other Machine Assemblers</li> </ul>	<ul style="list-style-type: none"> <li>Power Distributors &amp; Dispatchers</li> <li>Medical Equipment Repairers</li> <li>Tool &amp; Die Makers</li> </ul>	<ul style="list-style-type: none"> <li>Stone Cutters &amp; Carvers</li> <li>Glass Blowers</li> <li>Potters</li> </ul>
<b>Marketing, Sales &amp; Service</b>	<ul style="list-style-type: none"> <li>Real Estate Appraisers</li> <li>Demonstrators &amp; Product Promoters</li> </ul>	<ul style="list-style-type: none"> <li>Search Marketing Strategists</li> <li>Sales Engineers</li> </ul>	<ul style="list-style-type: none"> <li>Models</li> <li>Merchandise Displayers</li> <li>Green Marketers</li> </ul>
<b>Science, Technology, Engineering &amp; Mathematics</b>	<ul style="list-style-type: none"> <li>Mechanical Engineers</li> <li>Chemical Engineers</li> <li>Electrical Engineers</li> </ul>	<ul style="list-style-type: none"> <li>Microbiologists</li> <li>Materials Scientists</li> <li>Chemists</li> </ul>	<ul style="list-style-type: none"> <li>Mathematicians</li> <li>Marine Architects</li> <li>Architectural Drafters</li> </ul>
<b>Transportation, Distribution &amp; Logistics</b>	<ul style="list-style-type: none"> <li>Automotive Body Repairers</li> <li>Motorcycle Mechanics</li> <li>Automotive Glass Installers</li> </ul>	<ul style="list-style-type: none"> <li>Traffic Technicians</li> <li>Avionics Technicians</li> <li>Motorboat Mechanics</li> </ul>	<ul style="list-style-type: none"> <li>Automotive Artists</li> <li>Automotive Color &amp; Trim Designers</li> </ul>



Social	Enterprising	Conventional
<ul style="list-style-type: none"> <li>Agricultural Sciences Professors</li> <li>Veterinary Assistants</li> </ul>	<ul style="list-style-type: none"> <li>Nature Science Manager</li> <li>Farm Product Buyers and Purchasing Agents</li> </ul>	<ul style="list-style-type: none"> <li>Environmental Engineering Technicians</li> <li>Farm Equipment Mechanics</li> <li>Food Scientist and Technologists</li> </ul>
<ul style="list-style-type: none"> <li>Architecture Professors</li> <li>Engineering Professors</li> </ul>	<ul style="list-style-type: none"> <li>Construction Managers</li> <li>Cost Estimators</li> </ul>	<ul style="list-style-type: none"> <li>Civil Drafters</li> <li>Drywall Installers</li> </ul>
<ul style="list-style-type: none"> <li>Broadcast News Analysts</li> <li>Choreographers</li> <li>Disc Jockeys</li> </ul>	<ul style="list-style-type: none"> <li>Agents &amp; Business Managers of Artists, Performers, &amp; Athletes</li> <li>Craft Artists</li> <li>Commercial &amp; Industrial Designers</li> </ul>	<ul style="list-style-type: none"> <li>Broadcast Technicians</li> <li>Technical Writers</li> </ul>
<ul style="list-style-type: none"> <li>Training &amp; Development Specialists</li> <li>Human Resources Specialists</li> </ul>	<ul style="list-style-type: none"> <li>Industrial Production Managers</li> <li>Sales Managers</li> <li>Advertising Sales Agents</li> </ul>	<ul style="list-style-type: none"> <li>Auditors</li> <li>Budget Analysts</li> <li>Tax Preparers</li> </ul>
<ul style="list-style-type: none"> <li>Special Education Teachers</li> <li>Fitness Trainers &amp; Aerobics Instructors</li> <li>Dietitians &amp; Nutritionists</li> </ul>	<ul style="list-style-type: none"> <li>Education Administrators, Preschool &amp; Childcare Center/Program</li> <li>Coaches &amp; Scouts</li> <li>Secondary School Teachers</li> </ul>	<ul style="list-style-type: none"> <li>Librarians</li> <li>Teacher Assistants</li> <li>Education Administrators</li> </ul>
<ul style="list-style-type: none"> <li>Insurance Sales Agents</li> <li>Loan Counselors</li> </ul>	<ul style="list-style-type: none"> <li>Real Estate Sales Agents</li> <li>Personal Financial Advisors</li> </ul>	<ul style="list-style-type: none"> <li>Bill &amp; Account Collectors</li> <li>Loan Officers</li> <li>Tellers</li> </ul>
<ul style="list-style-type: none"> <li>Emergency Management Directors</li> <li>Eligibility Interviewers</li> </ul>	<ul style="list-style-type: none"> <li>Equal Opportunity Representatives &amp; Officers</li> <li>Social &amp; Community Service Managers</li> <li>Storage &amp; Distribution Managers</li> </ul>	<ul style="list-style-type: none"> <li>City &amp; Regional Planning Aides</li> <li>Mapping Technicians</li> <li>Assessors</li> </ul>
<ul style="list-style-type: none"> <li>Occupational Therapy Aides</li> <li>Psychiatric Aides</li> <li>Nursing Assistants</li> </ul>	<ul style="list-style-type: none"> <li>Opticians, Dispensing</li> <li>Psychiatric Technicians</li> <li>Medical and Health Services Managers</li> </ul>	<ul style="list-style-type: none"> <li>Health Information Technicians</li> <li>Pharmacy Technicians</li> <li>Medical Transcriptionists</li> </ul>
<ul style="list-style-type: none"> <li>Tour Guides &amp; Escorts</li> <li>Waiters &amp; Waitresses</li> <li>Concierges</li> </ul>	<ul style="list-style-type: none"> <li>Restaurant Hosts &amp; Hostesses</li> <li>Umpires &amp; Referees</li> <li>Bartenders</li> </ul>	<ul style="list-style-type: none"> <li>Hotel Desk Clerks</li> <li>Food Preparation Workers</li> <li>Fast Food Cooks</li> </ul>
<ul style="list-style-type: none"> <li>Clergy</li> <li>Rehabilitation Counselors</li> </ul>	<ul style="list-style-type: none"> <li>Skincare Specialists</li> <li>Manicurists &amp; Pedicurists</li> </ul>	<ul style="list-style-type: none"> <li>Barbers</li> <li>Religious Activity Directors</li> </ul>
<ul style="list-style-type: none"> <li>Informatics Nurse Specialists</li> <li>Computer Science Professors</li> </ul>	<ul style="list-style-type: none"> <li>Computer Network Support Specialists</li> <li>Database Architects</li> </ul>	<ul style="list-style-type: none"> <li>Computer Network Architects</li> <li>Network &amp; Computer Systems Administrators</li> </ul>
<ul style="list-style-type: none"> <li>Sheriffs &amp; Deputy Sheriffs</li> <li>Animal Control Workers</li> <li>Law Professors</li> </ul>	<ul style="list-style-type: none"> <li>Lawyers</li> <li>Private Detectives &amp; Investigators</li> </ul>	<ul style="list-style-type: none"> <li>Paralegals &amp; Legal Assistants</li> <li>Security Guards</li> </ul>
<ul style="list-style-type: none"> <li>Farm &amp; Home Management Advisors</li> <li>Medical Appliance Technicians</li> </ul>	<ul style="list-style-type: none"> <li>Team Assemblers</li> <li>Production Managers</li> <li>Supervisors of Mechanics, Installers, &amp; Repairers</li> </ul>	<ul style="list-style-type: none"> <li>Purchasing Agents</li> <li>Fiberglass Fabricators</li> <li>Machinists</li> </ul>
<ul style="list-style-type: none"> <li>Customer Service Representatives</li> <li>Meeting, Convention &amp; Event Planners</li> <li>Travel Guides</li> </ul>	<ul style="list-style-type: none"> <li>Real Estate Brokers</li> <li>Wholesale &amp; Retail Buyers</li> </ul>	<ul style="list-style-type: none"> <li>Stock Clerks</li> <li>Online Merchants</li> </ul>
<ul style="list-style-type: none"> <li>Epidemiologists</li> <li>Sociologists</li> </ul>	<ul style="list-style-type: none"> <li>Industrial Engineers</li> <li>Materials Engineers</li> <li>Industrial Ecologists</li> </ul>	<ul style="list-style-type: none"> <li>Quality Control Analysts</li> <li>Logistics Engineers</li> <li>Biostatisticians</li> </ul>
<ul style="list-style-type: none"> <li>Bus Drivers</li> <li>Flight Attendants</li> <li>Ambulance Drivers and Attendants</li> </ul>	<ul style="list-style-type: none"> <li>Aircraft Cargo Handling Supervisors</li> <li>Supervisors of Laborers</li> <li>Taxi Drivers &amp; Chauffeurs</li> </ul>	<ul style="list-style-type: none"> <li>Air Traffic Controllers</li> <li>Light Truck or Delivery Services Drivers</li> </ul>

## The 16 Career Clusters

Once you have an idea of the types of jobs available, you're ready to explore the you career cluster of interest in the Career Clusters section. Go to the appropriate cluster that best matches your work-related interests. The cluster pages have many more occupations listed than the charts from previous pages. These pages will tell you more about the cluster, its **pathways**, and **related jobs**. Additionally, you can:

- View **job descriptions**, **employment data**, and **wages** for selected occupations;
- Read a **personal career story** from someone working in the cluster; and
- Find additional online career resources including O\*NET Online which provides detailed information about each occupation in the cluster.

<p><b>Agriculture, Food &amp; Natural Resources</b></p>  <p>pg 15-20</p>	<p><b>Architecture &amp; Construction</b></p>  <p>pg 21-26</p>	<p><b>Arts, A/V Technology &amp; Communications</b></p>  <p>pg 27-32</p>	<p><b>Business, Management &amp; Administration</b></p>  <p>pg 33-38</p>
<p><b>Education &amp; Training</b></p>  <p>pg 39-44</p>	<p><b>Finance</b></p>  <p>pg 45-50</p>	<p><b>Government &amp; Public Administration</b></p>  <p>pg 51-56</p>	<p><b>Health Science</b></p>  <p>pg 57-62</p>
<p><b>Hospitality &amp; Tourism</b></p>  <p>pg 63-68</p>	<p><b>Human Services</b></p>  <p>pg 69-74</p>	<p><b>Information Technology</b></p>  <p>pg 75-80</p>	<p><b>Law, Public Safety, Corrections &amp; Security</b></p>  <p>pg 81-86</p>
<p><b>Manufacturing</b></p>  <p>pg 87-92</p>	<p><b>Marketing, Sales &amp; Service</b></p>  <p>pg 93-98</p>	<p><b>Science, Technology, Engineering &amp; Mathematics</b></p>  <p>pg 99-104</p>	<p><b>Transportation, Distribution &amp; Logistics</b></p>  <p>pg 105-110</p>



## Agriculture, Food & Natural Resources

Think about life without Agriculture, Food and Natural Resources. Where would we get our food? Who would create and maintain the parks that help us relax and enjoy nature? Where would we get help for sick pets? This industry has a huge impact on our daily lives, and — like other industries — technology has brought about changes in the way it operates.

Large farms increasingly use precision agriculture's sensing technology, such as drones, to monitor soil conditions; GPS systems to help steer machinery more precisely; and computer-based maps to prescribe amounts of fertilizer, seed, and chemicals for specific areas. Bioscientists have developed genetically modified organisms (GMOs) that increase crop yield and resistance to pests and disease.

Organic farming, which seeks to avoid chemicals, continues to show economic growth. While responsible for only a little more than 4 percent of total U.S. food sales, sales of organic foods are more than 2.5 times greater now than they were 10 years ago.<sup>1</sup>

The Agriculture, Food and Natural Resources cluster contains occupations that require all levels of training. Landscaping and groundskeeping workers and nonfarm animal caretaker positions are among the fastest growing occupations that require the least training in this cluster. Jobs that usually require associate and bachelor's degrees such as veterinary technologists and technicians, environmental engineers, and cartographers and photogrammetrists are also projected to increase. Employers who often hire workers in this cluster include farmers, federal, state and local governments, pest control businesses, and landscaping companies.

### CAREER RESEARCH

- **United States Department of Agriculture National Institute of Food and Agriculture**  
[csrees.usda.gov/](http://csrees.usda.gov/)
- **National Sustainable Agriculture Information Service/ Appropriate Technology Transfer for Rural Areas (ATTRA)**  
[attra.ncat.org/](http://attra.ncat.org/)
- **Start2Farm:**  
[start2farm.gov/new-to-farming](http://start2farm.gov/new-to-farming)
- **Future Farmers of America (FFA):**  
[ffa.org/Pages/default.aspx](http://ffa.org/Pages/default.aspx)
- **Institute of Food Technologists:**  
[ift.org/](http://ift.org/)
- **Soil Science Society of America:**  
[soils.org/students/](http://soils.org/students/)
- **Nature Jobs**  
[nature.com/naturejobs/science/](http://nature.com/naturejobs/science/)
- **Conservation Job Board**  
[conservationjobboard.com/](http://conservationjobboard.com/)

Find more Agriculture, Food & Natural Resources occupations at:  
[onetonline.org/find/career?c=1&g=Go](http://onetonline.org/find/career?c=1&g=Go)

<sup>1</sup> "Organic Market Overview." USDA Economic Research Service. U.S. Department of Agriculture, 7 Apr. 2014. <[www.ers.usda.gov/topics/natural-resources-environment/organic-agriculture/organic-market-overview.aspx](http://www.ers.usda.gov/topics/natural-resources-environment/organic-agriculture/organic-market-overview.aspx)>.

# Core Skills

- Operation and Control
- Repairing
- Equipment Maintenance
- Troubleshooting
- Equipment Selection
- Science
- Operation Monitoring
- Quality Control Analysis
- Management of Material
- Management of Personnel



## Natural Resources Systems Pathway

Occupation

- **Architecture & Engineering**  
Mechanical Engineering Technicians; Other Engineering Technicians; Cartographers & Photogrammetrists
- **Construction & Extraction**  
First-Line Supervisors of Construction Trades & Extraction Workers; Earth Drillers, Except Oil & Gas
- **Education, Training & Library**  
Biological Science Teachers, Postsecondary; Recreation & Fitness Studies Teachers, Postsecondary
- **Farming, Fishing & Forestry**  
Logging Equipment Operators; First-Line Supervisors of Farming, Fishing & Forestry Workers
- **Life, Physical & Social Science Management**  
Environmental Scientists & Specialists; Environmental Science & Protection Technicians; Zoologists & Wildlife Biologists; Forest & Conservation Technicians; Conservation Scientists; Foresters
- **Management**  
Natural Sciences Managers
- **Personal Care & Service**  
Recreation Workers
- **Transportation & Material Moving**  
Industrial Truck & Tractor Operators; Refuse & Recyclable Material Collectors; Excavating & Loading Machine & Dragline Operators; Conveyor Operators & Tenders Captains, Mates & Pilots of Water Vessels; Tank Car, Truck & Ship Loaders



## Food Product & Processing Systems Pathway

Occupation

- **Building & Grounds Cleaning & Maintenance**  
Pest Control Workers
- **Computer & Mathematical**  
Computer User Support Specialists
- **Farming, Fishing & Forestry**  
First-Line Supervisors of Farming, Fishing, & Forestry Workers; Graders & Sorters of Agricultural Products; Agricultural Inspectors
- **Life, Physical & Social Science**  
Chemical Technicians; Agricultural & Food Science Technicians; Food Scientists & Technologists
- **Office & Administrative Support**  
First-Line Supervisors of Office & Administrative Support Workers
- **Production**  
Slaughterers & Meat Packers; Meat, Poultry & Fish Cutters & Trimmers; Butchers & Meat Cutters; Food Batchmakers; Food & Tobacco Roasting, Baking & Drying Machine Operators & Tenders; Food Cooking Machine Operators & Tenders

## Environmental Service Systems Pathway

Occupation

- **Architecture & Engineering**  
Environmental Engineers; Environmental Engineering Technicians
- **Building & Grounds Cleaning & Maintenance**  
Pest Control Workers
- **Construction & Extraction**  
Hazardous Materials Removal Workers
- **Healthcare Practitioners & Technicians**  
Occupational Health & Safety Specialists; Occupational Health & Safety Technicians
- **Life, Physical & Social Science**  
Environmental Science & Protection Technicians
- **Production**  
Water & Wastewater Treatment Plant & Systems Operators
- **Transportation & Material Moving**  
Refuse & Recyclable Material Collectors

## Animal Systems Pathway

Occupation

- **Farming, Fishing & Forestry**  
First-Line Supervisors of Farming, Fishing & Forestry Workers
- **Healthcare Practitioners & Technicians**  
Veterinary Technologists & Technicians; Veterinarians
- **Healthcare Support**  
Veterinary Assistants & Laboratory Animal Caretakers
- **Life, Physical & Social Science**  
Agricultural & Food Science Technicians; Zoologists & Wildlife Biologists
- **Personal Care & Service**  
Animal Trainers
- **Sales & Sales Related**  
First-Line Supervisors of Retail Sales Workers

## Plant Systems Pathway

Occupation

- **Arts, Design, Entertainment, Sports & Media**  
Floral Designers
- **Building & Grounds Cleaning & Maintenance**  
Landscaping & Groundskeeping Workers; First-Line Supervisors of Landscaping, Lawn Service & Groundskeeping Workers; Tree Trimmers & Pruners; Pesticide Handlers, Sprayers & Applicators
- **Farming, Fishing & Forestry**  
First-Line Supervisors of Farming, Fishing & Forestry Workers
- **Installation, Maintenance & Repair**  
Farm Equipment Mechanics & Service Technicians
- **Life, Physical & Social Science**  
Agricultural & Food Science Technicians; Soil & Plant Scientists; Biochemists & Biophysicists; Food Scientists & Technologists; Foresters; Economists
- **Sales & Sales Related**  
Retail Salespersons; First-Line Supervisors of Retail Sales Workers

## Agribusiness Systems Pathway

Occupation

- **Arts, Design, Entertainment, Sports & Media**  
Graphic Designers, Audio & Video Equipment Technicians
- **Life, Physical & Social Science**  
Food Scientists & Technologists
- **Sales & Sales Related**  
Sales Reps, Wholesale & Manufacturing, Technical & Scientific Products

## Power, Structural & Technical Systems Pathway

Occupation

- **Installation, Maintenance & Repair**  
Aircraft Mechanics & Service Technicians; Mobile Heavy Equipment Mechanics; Farm Equipment Mechanics & Service Technicians
- **Sales & Sales Related**  
Parts Salesperson

# Selected Careers<sup>1</sup>

Occupation	Career Pathway	Job Description
Agricultural and Food Science Technicians	<ul style="list-style-type: none"> <li>Animal Systems</li> <li>Food Products Processing Systems</li> <li>Plant Systems</li> </ul>	Assist agricultural and food scientists by doing work like measuring and analyzing the quality of food and agricultural products. Specific duties depend on the field of research. Work ranges from hands-on labor with record-keeping duties to laboratory testing with significant amounts of office work.
Biological Science Teachers, Postsecondary	<ul style="list-style-type: none"> <li>Natural Resources Systems</li> </ul>	Teach postsecondary biological sciences courses. May also perform biological research and report findings.
Environmental Compliance Inspectors	<ul style="list-style-type: none"> <li>Environmental Service Systems</li> </ul>	Investigate and evaluate situations to ensure that everyone follows environmental laws and regulations for licenses and permits.
Environmental Science and Protection Technicians	<ul style="list-style-type: none"> <li>Environmental Service Systems</li> <li>Natural Resources Systems</li> </ul>	Monitor the environment and investigate sources of pollution. Perform laboratory and field tests under the direction of an environmental scientist or other specialist. May collect samples of gases, soil, water, and other materials for testing.
Environmental Scientists and Specialists	<ul style="list-style-type: none"> <li>Natural Resources Systems</li> </ul>	Conduct research or perform investigation to identify, abate, or eliminate sources of environmental pollutants. Use scientific knowledge to collect, synthesize, study, report, and recommend environmental actions.
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	<ul style="list-style-type: none"> <li>Plant Systems</li> </ul>	Supervise landscaping or groundskeeping workers. Review contracts to determine service, equipment, and staffing needs. Give customers information about how landscaping work will be done and what it will cost.
Food Scientists and Technologists	<ul style="list-style-type: none"> <li>Agribusiness Systems</li> </ul>	Research ways to make food safe, tasty, and healthy. Use sciences such as chemistry, microbiology, and engineering to study best ways to process foods and to understand why foods deteriorate. Analyze food to measure vitamins, fat, sugar, and protein. Discover new food sources.
Mobile Heavy Equipment Mechanics	<ul style="list-style-type: none"> <li>Power, Structural and Technical Systems</li> </ul>	Adjust, repair, or overhaul mobile equipment such as cranes, bulldozers, graders, and conveyors. Inspect and maintain vehicles and machinery.
Veterinary Technologists and Technicians	<ul style="list-style-type: none"> <li>Animal Systems</li> </ul>	Help diagnose and treat animal diseases by performing medical tests in a laboratory under a veterinarian's supervision. Prepare vaccines and tissue samples and take blood samples. Clean and sterilize instruments and maintain equipment and machines. May assist veterinarian during surgery.
Zoologists and Wildlife Biologists	<ul style="list-style-type: none"> <li>Animal Systems</li> <li>Natural Resources Systems</li> </ul>	Research animal and wildlife behaviors, diseases, genetics, and life processes. May collect and analyze biological data to assess and predict environmental impacts of land and water use.

**Source:** Information about occupation, career pathway, job description, and interest is from the O\*NET OnLine ([ononline.org](https://ononline.org/)); data for annual opening, growth, and wage is prepared by the Labor & Economic Analysis Division of North Carolina Department of Commerce.

- Notes:**
- The table lists a sampling of occupations that represent careers in each pathway. For a full list of occupations by career pathway within this cluster, check out O\*NET OnLine at [ononline.org/find/career?c=1&g=Go](https://ononline.org/find/career?c=1&g=Go)
  - Total average annual opening includes the total number of jobs available due to growth and replacement needs per year. The number of openings by occupation is based on North Carolina's 2012-2022 Occupational Projections.



Total Avg. Annual Opening <sup>2</sup>	NC Annualized Growth Rate <sup>3</sup>	NC Entry Annual Wage	NC Median Annual Wage	Minimum Education <sup>4</sup>	Interest <sup>5</sup>
38	0.8%	\$27,710	\$35,760	Associate degree	R, I and C
62	1.7%	\$46,140	\$64,200	Doctoral or professional degree	S and I
150	1.2%	\$38,400	\$57,420	Bachelor's degree	C, I and R
82	2.4%	\$25,960	\$36,340	Bachelor's degree	I, R and C
216	2.0%	\$40,760	\$53,120	Bachelor's degree	I, R and C
224	1.6%	\$28,870	\$40,790	High school diploma plus work experience	E, R and C
16	0.5%	\$34,700	\$48,780	Bachelor's degree	I, R and C
146	1.7%	\$30,940	\$40,850	High school diploma plus work experience	R and C
143	3.1%	\$20,920	\$27,710	Associate degree	R and I
27	1.6%	\$36,810	\$49,270	Bachelor's degree	I and R

3. Annualized growth rate is the year-over-year growth rate over multiple years. Note that this growth rate is not obtained by averaging the year-to-year percentage changes. The annualized growth rate is useful for comparing growth rates for various time periods and for different series over the same time period; for example, comparing 5-year to 10-year growth or comparing growth in health care sector to education sector.

4. Minimum education requirements for occupations are determined by the U.S. Bureau of Labor Statistics ([bls.gov/emp/ep\\_education\\_training\\_system.htm](https://www.bls.gov/emp/ep_education_training_system.htm)). Actual market conditions may require additional education and/or training.

5. There are six interest types: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Discover your work-related interests on pages 5-8 to find out which types you are most like and the careers that fit you best.

# Career Story



## Lauren Hill

Agricultural Science Student

***This CCCC graduate in Applied Science in Sustainable Agriculture wants to continue to develop the ability to generate sound agricultural research and learn the latest, most sustainable techniques in the field.***

Lauren Hill had her hands in the dirt a lot while earning her Associate in Applied Science in Sustainable Agriculture at Central Carolina Community College (CCCC). Hill is continuing her education in the rich academic soil of Cornell University in Ithaca, N.Y.

“I am really grateful for the opportunity and excited to join that community,” Hill said. “As an agricultural science major at Cornell, I want to continue to develop my ability to generate sound agricultural research and learn the latest, most sustainable techniques in the field.”

The training she received at CCCC and her hard work made it possible for her to be admitted to Cornell. Based on her work at Central Carolina, she will enter Cornell as a junior. At CCCC, Hill maintained a high grade point average, making the President’s List. She also received the college’s Academic Excellence Award in Sustainable Agriculture.

Hill was raised in New Jersey, where she loved to garden. Prior to coming to North Carolina in 2011, she spent three years working as an intern for several community supported agriculture (CSA) farms in the Delaware Valley. Her interest in agriculture brought her to North Carolina because of its long growing season. Living in Chapel Hill, she met some CCCC sustainable agriculture students. Hill liked what she heard about the program at the Chatham County Campus, in Pittsboro, and enrolled.

“My enthusiasm to plant a garden returned after I developed an interest in ecology and an understanding of our collective human impact on the environment,” she said. “Attending CCCC’s sustainable agriculture program was the next step toward joining those interests. The college offers courses that helped me develop a foundation in farm management practices that are sustainable and conserve resources.”

It was at CCCC that Hill learned Cornell is the trusted resource for and a leader in sustainable agricultural research. She wanted the best training, so she applied there with the goal of a Bachelor of Science in Agricultural Science with a concentration in sustainability.

“I have really enjoyed my time at CCCC,” she said. “The sustainable agriculture instructors are extremely knowledgeable and well-connected to the farming community. They go above and beyond in their effort to connect students to valuable resources and regional experts.”



## Architecture & Construction

New York's recently completed Freedom Tower took 10 years to build. Who designed and constructed it? You're probably not surprised to learn that architects, civil engineers, construction laborers, cement masons, concrete finishers, and structural iron and steel workers participated in its development. You've also likely thought about the elevator installers and repairers who installed 73 elevators, or about the HVAC mechanics and installers, plumbers, and electricians who created a healthy environment inside the tallest building in the Western Hemisphere.

Think a bit more deeply and you'll realize that cost estimators and operations research analysts used their mathematic and analytic skills to help make decisions about the nearly \$4 billion spent to construct the building. People in management positions coordinated the work of specialty trade contractors to ensure they provided quality work in a timely manner.

While North Carolina may not build a skyscraper the size of the Freedom Tower any time soon, the state's construction industry is expected to grow and show increases in the occupations mentioned above. These occupations require educational backgrounds that range from high school diplomas to graduate degrees. Workers may find employment with plumbing, heating and air-conditioning contractors; landscaping businesses; electrical contractors; federal, state, and local government; and commercial building companies.

### **CAREER RESEARCH**

- **The American Institute of Architects:**  
[aia.org/](http://aia.org/)
- **Technology Student Association:**  
[tsaweb.org/](http://tsaweb.org/)
- **American Society of Civil Engineers:**  
[asce.org/students/](http://asce.org/students/)
- **The National Center for Construction Education and Research:**  
[nccer.org/](http://nccer.org/)
- **Department of Labor/Employment and Training Administration/Registered Apprenticeship:**  
[doleta.gov/oa/](http://doleta.gov/oa/)
- **SkillsUSA:**  
[skillsusa.org/](http://skillsusa.org/)
- **Green Jobs:**  
[thegreenjobbank.com/](http://thegreenjobbank.com/)
- **Construction Jobs:**  
[constructionjobs.com/](http://constructionjobs.com/)

Find more Architecture & Construction occupations at:  
[onetonline.org/find/career?c=2&g=Go](http://onetonline.org/find/career?c=2&g=Go)



# Core Skills

- Repairing
- Equipment Maintenance
- Installation
- Equipment Selection
- Operation & Control
- Troubleshooting
- Quality Control Analysis
- Technology Design
- Management of Material Resources



## Design/Pre-Construction Pathway

Occupation

- **Architecture & Engineering**  
Civil Engineers; Civil Engineering Technicians; Architects, Except Landscape & Naval; Surveying & Mapping Technicians; Architectural & Civil Drafters; Other Engineers; Mechanical Drafters; Surveyors; Other Engineering Technicians; Electrical & Electronics Drafters; Cartographers & Photogrammerists; Landscape Architects
- **Arts, Design, Entertainment, Sports & Media**  
Interior Designers
- **Computer & Mathematical**  
Software Developers, Systems Software; Operations Research Analysts
- **Education, Training & Library**  
Engineering Teachers, Postsecondary
- **Management**  
Architectural & Engineering Managers



## Construction Pathway

Occupation

- **Architecture & Engineering**  
Other Engineering Technicians
- **Business & Financial Operations**  
Cost Estimators
- **Construction & Extraction**  
First-Line Supervisors of Construction Trades & Extraction Workers; Carpenters; Construction Laborers; Electricians; Plumbers, Pipefitters & Steamfitters; Operating Engineers & Other Construction Equipment Operators; Helpers – Electricians; Cement Masons & Concrete Finishers; Highway Maintenance Workers; Roofers; Sheet Metal Workers; Brickmasons & Blockmasons; Construction & Building Inspectors; Other Construction & Related Workers; Helpers – Pipelayers, Plumbers, Pipefitters & Steamfitters; Drywall & Ceiling Tile Installers; Pipelayers; Helpers – Brickmasons, Blockmasons, Stonemasons & Tile & Marble Setters; Paving, Surfacing & Tamping Equipment Operators; Helpers – Carpenters; Structural Iron & Steel Workers; Insulation Workers, Floor, Ceiling, & Wall; Other Helpers, Construction Trades; Glaziers; Hazardous Materials Removal Workers; Fence Erectors; Insulation Workers, Mechanical; Septic Tank Servicers & Sewer Pipe Cleaners; Floor Sanders & Finishers; Tile & Marble Setters; Helpers – Roofers; Earth Drillers; Elevator Installers & Repairers; Carpet Installers; Floor Layers; Terrazzo Workers & Finishers; Reinforcing Iron & Rebar Workers
- **Education, Training & Library**  
Postsecondary Sociology Teachers
- **Installation, Maintenance & Repair**  
Maintenance & Repair Workers, General; Heating, Air Conditioning & Refrigeration Mechanics & Installers; Helpers – Installation, Maintenance & Repair Workers; Electrical Power–Line Installers & Repairers; Security & Fire Alarm System Installers; Electrical & Electronics Repairers; Powerhouse, Substation & Relay Riggers
- **Life, Physical & Social Science**  
Sociologists; Other Social Scientists & Related Workers
- **Management**  
Construction Managers
- **Production**  
Woodworking Machine Setters, Operators & Tenders, Except Sawing; Welding, Soldering & Brazing Machine Setters, Operators & Tenders; Structural Metal Fabricators & Fitters; Electromechanical Equipment Assemblers; Stationary Engineers & Boiler Operators
- **Transportation & Material Moving**  
Excavating & Loading Machine & Dragline Operators; Crane & Tower Operators; Conveyor Operators & Tenders; Commercial Pilots; Railroad Conductors & Yardmasters

## Maintenance/Operations Pathway

Occupation

- **Building & Grounds Cleaning & Maintenance**  
Landscaping & Groundskeeping Workers
- **Construction & Extraction**  
Highway Maintenance Workers; Other Construction & Related Workers
- **Installation, Maintenance & Repair**  
Heating, Air Conditioning & Refrigeration Mechanics & Installers; Security & Fire Alarm Systems Installers; Home Appliance Repairers; Control & Valve Installers & Repairers; Mechanical Door Repairs
- **Production**  
Stationary Engineers & Boiler Operators





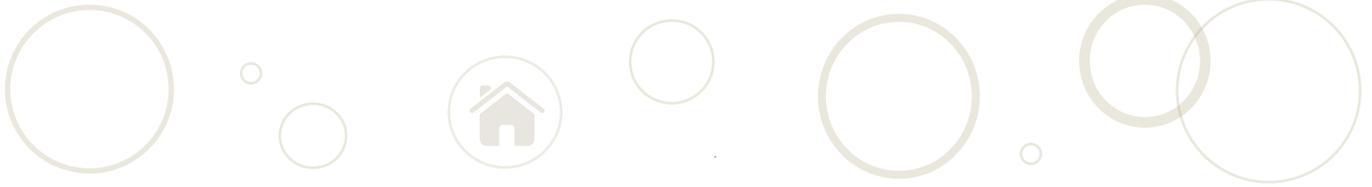
# Selected Careers<sup>1</sup>

Occupation	Career Pathway	Job Description
Architects, Except Landscape and Naval	<ul style="list-style-type: none"> <li>Design/Pre-Construction</li> </ul>	Plan and design private homes, office buildings, theaters, factories, and other structures.
Architectural and Engineering Managers	<ul style="list-style-type: none"> <li>Design/Pre-Construction</li> </ul>	Plan, direct, and coordinate activities in architecture and engineering businesses. May also oversee research and development in these fields.
Architectural Drafters	<ul style="list-style-type: none"> <li>Design/Pre-Construction</li> </ul>	Use software to convert architects' designs into technical drawings and plans. Prepare detailed drawings and maps of structures like buildings, highways, and bridges. Use knowledge of building materials, engineering practices, and mathematics to complete drawings.
Civil Engineering Technicians	<ul style="list-style-type: none"> <li>Design/Pre-Construction</li> </ul>	Help civil engineers plan and design the construction of highways, bridges, utilities, and other major infrastructure projects. May also assist with commercial, residential, and land development.
Construction Carpenters	<ul style="list-style-type: none"> <li>Construction</li> </ul>	Build, install, and repair wooden structures like joists, rafters, stairways, hardwood floors, and window and door frames. May also install cabinets, siding, drywall, and insulation.
Construction Managers	<ul style="list-style-type: none"> <li>Construction</li> </ul>	Plan, direct, or coordinate construction and maintenance of buildings, facilities, and systems. Oversee project organization, scheduling, budgeting, and implementation. Includes managers in specialized construction fields like carpentry or plumbing.
Electricians	<ul style="list-style-type: none"> <li>Construction</li> </ul>	Install, maintain, and repair electrical wiring, equipment, and fixtures. Make sure that work meets relevant codes. May install or service street lights, intercom systems, or electrical control systems.
Geothermal Technicians	<ul style="list-style-type: none"> <li>Maintenance/Operations</li> </ul>	Install, test, and maintain residential and commercial geothermal heat pumps. May monitor and control operating activities at geothermal power generation facilities and perform maintenance and repairs.
Plumbers, Pipefitters, and Steamfitters	<ul style="list-style-type: none"> <li>Construction</li> </ul>	Assemble, install, and repair pipelines or systems that carry liquids or gases. May install heating and cooling equipment and mechanical control systems. Includes sprinkler fitters.
Security and Fire Alarm Systems Installers	<ul style="list-style-type: none"> <li>Maintenance/Operations</li> </ul>	Install, program, maintain, or repair security or fire alarm wiring and equipment. Ensure that work complies with relevant codes.

**Source:** Information about occupation, career pathway, job description, and interest is from the O\*NET OnLine ([ononline.org/](https://ononline.org/)); data for annual opening, growth, and wage is prepared by the Labor & Economic Analysis Division of North Carolina Department of Commerce.

**Notes:**

- The table lists a sampling of occupations that represent careers in each pathway. For a full list of occupations by career pathway within this cluster, check out O\*NET OnLine at [ononline.org/find/career?c=1&g=Go](https://ononline.org/find/career?c=1&g=Go)
- Total average annual opening includes the total number of jobs available due to growth and replacement needs per year. The number of openings by occupation is based on North Carolina's 2012-2022 Occupational Projections.



Total Avg. Annual Opening <sup>2</sup>	NC Annualized Growth Rate <sup>3</sup>	NC Entry Annual Wage	NC Median Annual Wage	Minimum Education <sup>4</sup>	Interest <sup>5</sup>
138	2.4%	\$49,200	\$72,890	Bachelor's degree	A and I
138	0.5%	\$86,080	\$112,970	Bachelor's degree	E, R and I
48	0.7%	\$35,490	\$46,320	Associate degree	A, R and I
93	0.4%	\$33,030	\$44,570	Associate degree	R, C and I
987	2.9%	\$24,190	\$32,420	High school diploma plus moderate-term, on-the-job training	R, C and I
552	2.1%	\$62,040	\$84,230	Bachelor's degree	E, R and C
671	2.5%	\$30,020	\$38,160	High school diploma plus work experience	R, I and C
96	1.1%	\$25,060	\$42,390	High school diploma plus work experience	R and C
418	2.8%	\$29,720	\$39,370	High school diploma plus work experience	R and C
81	1.7%	\$27,930	\$37,810	High school diploma plus work experience	R and C

- Annualized growth rate is the year-over-year growth rate over multiple years. Note that this growth rate is not obtained by averaging the year-to-year percentage changes. The annualized growth rate is useful for comparing growth rates for various time periods and for different series over the same time period; for example, comparing 5-year to 10-year growth or comparing growth in health care sector to education sector.
- Minimum education requirements for occupations are determined by the U.S. Bureau of Labor Statistics ([bls.gov/emp/ep\\_education\\_training\\_system.htm](https://www.bls.gov/emp/ep_education_training_system.htm)). Actual market conditions may require additional education and/or training.
- There are six interest types: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Discover your work-related interests on pages 5-8 to find out which types you are most like and the careers that fit you best.

## Career Story



**Stacie Johnson Cole**  
HVAC Service Technician

***Breaking the Glass Ceiling...and Heating Up the HVAC World***

Stacie Johnson Cole just broke the glass ceiling in the new Universal Advanced Manufacturing Center at McDowell Technical Community College, and she is unfazed by the whole ordeal. In fact, she is moving on to complete her next challenge in the spring, as if nothing has happened.

When she completed coursework for her diploma in Air Conditioning, Heating and Refrigeration Technology in December, Stacie became the first female student in the college's history to complete such a degree. By and large, the field she is entering is, and always has been, a male-dominated profession. But that didn't stop Stacie from registering for classes in the program in August 2013, and that didn't stop her from completing the degree with a 3.8 GPA (grade point average), which is higher than almost every man in the class.

Every man except her husband, that is. Ironically, Adam Cole registered for the program at the same time his wife did and also completed his degree in December with the exact same GPA as his wife.

And if that friendly little rivalry weren't enough, they are both continuing to get degrees in Industrial Systems Technology on a part-time basis during the next several semesters. They hope to complete the new program in the Fall of 2016.

It's not as if there is any serious competition between the two, Stacie had her own reasons for wanting to enter the ACHR field. She has previously worked as a Certified Nursing Assistant II in nursing homes and home health agencies, but she says, "...it was something I didn't want to have to do for the rest of my life. This (ACHR) looked a whole lot more promising and open as a field. When I looked at the statistics, the projected growth in jobs in the next decade was very high."

Her research and hunch were right. Before the semester ended in December, the 32-year-old mother of four had already been offered two jobs and chose to accept a job with Morris Heating and Air. Over time, she hopes to become a full-fledged Service Technician. That may take her a year or so, but she is content to work and wait. Stacie's children and parents are justifiably proud of her and glad she didn't bust her head on that infamous glass ceiling. "My kids think it is wonderful and exciting, especially because they know it can mean a better life for them, in general, and that they can have better things. And my parents, Sandy and Tony Johnson, are extremely proud — we hear it from them all the time!"

She is grateful for her family's support, but she is equally thankful for all of the help and support her instructors have given her. "Tony Smith and Tim Earle have been so helpful and informative. They are very knowledgeable in the field and helped each of us learn to the best of our abilities. They showed us what we can expect to see in the field, and I'm thankful for that."



## Arts, A/V Technology & Communications

Cultural and leisure activities help us balance our work and personal lives. In Arts, Audio Visual Technology and Communications, a great variety of people work to give us movies, paintings, music downloads, books, and museums. Actors, artists, musicians, writers, and archivists obviously make their living in jobs that are part of this cluster. Less evident are the employees who work in the background at occupations like set designers, agents and business managers, audio and video equipment technicians, print binding and finishing workers, and historians.

As in many clusters, technology has required workers to learn new skills. Lighting and sound systems are quite different than they were even a decade ago, providing new multi-media options for staging performances and exhibits. Publishers use technologies to create e-books that are far different from those used for print versions.

Most occupations in the Arts, A/V Technology and Communications cluster are expected to show average or less growth in the next decade, but several careers do show strong growth. Among them are technical writers, telecommunications line installers and repairers, interior designers, and audio and video equipment technicians. Approximately two-thirds of the careers in this industry require postsecondary education, particularly a bachelor's degree. Industries that often have employment for this cluster's workers include wired telecommunication companies, newspaper publishers (print and electronic), commercial printing companies, television stations, and electrical contractors.

### CAREER RESEARCH

- **Actors' Equity Association:**  
[actorsequity.org/home.asp](http://actorsequity.org/home.asp)
- **The Society of Professional Audio Recording Services:**  
[spars.com/](http://spars.com/)
- **Technology Student Association:**  
[tsaweb.org/](http://tsaweb.org/)
- **The Association for Women in Sports Media:**  
[awsmonline.org/](http://awsmonline.org/)
- **The National Scholastic Press Association:**  
[studentpress.journ.umn.edu/nsipa/](http://studentpress.journ.umn.edu/nsipa/)
- **Art Jobs:**  
[artjob.org/](http://artjob.org/)
- **AV Job Listing:**  
[avjoblistings.com/](http://avjoblistings.com/)

Find more Arts, Audio/Video Technology & Communications occupations at:  
[onetonline.org/find/career?c=3&g=Go](http://onetonline.org/find/career?c=3&g=Go)



# Core Skills

- Equipment Selection
- Technology Design
- Time Management
- Installation
- Operations Analysis
- Active Learning
- Reading Comprehension
- Coordination
- Persuasion
- Active Listening



## Audio & Video Technology & Film Pathway

Occupation

- **Arts, Design, Entertainment, Sports & Media**  
Graphic Designers; Photographers; Multimedia Artists & Animators; Audio & Video Equipment Technicians; Commercial & Industrial Designers; Other Media & Communication Workers; Broadcast Technicians; Craft Artists; Fine Artists, Including Painters, Sculptors & Illustrators
- **Computer & Mathematical**  
Computer Programmers
- **Education, Training & Library**  
Art, Drama & Music Teachers, Postsecondary; Curators
- **Management**  
Technical Directors/Managers

## Journalism & Broadcasting Pathway

Occup.

- **Arts, Design, Entertainment, Sports & Media**  
Photographers; Writers & Authors; Editors; Producers & Directors; Audio & Video Equipment Technicians; Technical Writers; Radio & Television Announcers; Other Media & Communication Workers; Broadcast Technicians
- **Education, Training & Library**  
Other Postsecondary Teachers; English Language & Literature Teachers, Postsecondary; Communications Teachers, Postsecondary



## Performing Arts Pathway

Occupation

- **Arts, Design, Entertainment, Sports & Media**  
Writers & Authors; Musicians & Singers; Producers & Directors; Other Entertainers & Performers, Sports & Related Workers; Craft Artists; Fine Artists, including Painters, Sculptors & Illustrators
- **Education, Training & Library**  
Art, Drama & Music Teachers, Postsecondary
- **Management**  
Agents & Business Managers
- **Transportation & Material Moving**  
Manual Laborers & Freight, Stock & Material Movers

## Printing Technology Pathway

Occupation

- **Arts, Design, Entertainment, Sports & Media**  
Multimedia Artists & Animators; Craft Artists; Fine Artists, Including Painters, Sculptors & Illustrators
- **Education, Training & Library**  
Art, Drama & Music Teachers, Postsecondary
- **Production**  
Printing Press Operators; Print Binding & Finishing Workers

## Telecommunications Pathway

Occup.

- **Arts, Design, Entertainment, Sports & Media**  
Other Media & Communication Workers; Broadcast Technicians
- **Installation, Maintenance & Repair**  
Telecommunications Equipment Installers & Repairers, Except Line Installers; Computer, Automated Teller & Office Machine Repairers; Telecommunications Line Installers & Repairers

## Visual Arts Pathway

Occupation

- **Arts, Design, Entertainment, Sports & Media**  
Graphic Designers; Photographers; Multimedia Artists & Animators; Audio & Video Equipment Technicians; Interior Designers; Art Directors; Commercial & Industrial Designers; Craft Artists; Fine Artists, Including Painters, Sculptors & Illustrators
- **Education, Training & Library**  
Art, Drama & Music Teachers, Postsecondary
- **Production**  
Photographic Process Workers & Processing Machine Operators; Painting, Coating & Decorating Workers



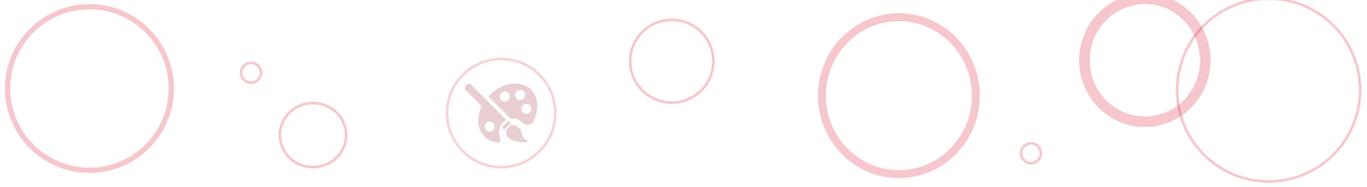
# Selected Careers<sup>1</sup>

Occupation	Career Pathway	Job Description
Audio and Video Equipment Technicians	<ul style="list-style-type: none"> <li>Audio &amp; Video Technology and Film</li> <li>Journalism and Broadcasting</li> <li>Visual Arts</li> </ul>	Set up and operate audio and video equipment for concerts, sports events, meetings and conventions, presentations, and news conferences. Equipment includes microphones, sound speakers, video screens, projectors, video monitors, recording equipment, connecting wires and cables, sound and mixing boards, and related electronic equipment. May also set up and operate spotlights and custom lighting systems.
Computer, Automated Teller, and Office Machine Repairers	<ul style="list-style-type: none"> <li>Telecommunications</li> </ul>	Repair, maintain, or install computers, word processing systems, automated teller machines, and electronic office machines, such as duplicating and fax machines.
Directors— Stage, Motion Pictures, Television, and Radio	<ul style="list-style-type: none"> <li>Journalism and Broadcasting</li> <li>Performing Arts</li> </ul>	Interpret script, conduct rehearsals, and direct activities of cast and technical crew for stage, motion pictures, television, or radio programs.
Editors	<ul style="list-style-type: none"> <li>Journalism and Broadcasting</li> </ul>	Plan, coordinate, or edit content of material for publication. May review proposals and drafts for possible publication. Includes technical editors.
Graphic Designers	<ul style="list-style-type: none"> <li>Audio and Video Technology and Film</li> <li>Visual Arts</li> </ul>	Design or create graphics to meet specific commercial or promotional needs, such as packaging, displays, or logos. May use a variety of mediums to achieve artistic or decorative effects.
Multimedia Artists and Animators	<ul style="list-style-type: none"> <li>Audio and Video Technology and Film</li> <li>Printing Technology</li> <li>Visual Arts</li> </ul>	Create special effects, animation, or other visual images using film, video, computers or other electronic tools and media. Make products like computer games, movies, music videos, and commercials.
Photographers	<ul style="list-style-type: none"> <li>Audio and Video Technology and Film</li> <li>Journalism and Broadcasting</li> <li>Visual Arts</li> </ul>	Photograph people, landscapes, merchandise, or other subjects, using digital or film cameras and equipment. May develop negatives or use computer software to produce finished images and prints. Includes scientific photographers, aerial photographers, and photojournalists.
Technical Writers	<ul style="list-style-type: none"> <li>Audio and Video Technology and Film</li> <li>Journalism and Broadcasting</li> <li>Visual Arts</li> </ul>	Write technical materials like equipment manuals, appendices, or operating and maintenance instructions. Communicate complex information so that it is easily understood. May assist in layout work.
Telecommunications Line Installers and Repairers	<ul style="list-style-type: none"> <li>Telecommunications</li> </ul>	Install, set up, and modify switching, distribution, routing, and dialing equipment. Service or repair telephone, cable television, Internet, and other communications equipment.
Writers and Authors	<ul style="list-style-type: none"> <li>Performing Arts</li> </ul>	Develop written content for advertisements, books, magazines, movie and television scripts, songs, and online publications.

**Source:** Information about occupation, career pathway, job description, and interest is from the O\*NET OnLine ([ononline.org/](https://ononline.org/)); data for annual opening, growth, and wage is prepared by the Labor & Economic Analysis Division of North Carolina Department of Commerce.

**Notes:**

- The table lists a sampling of occupations that represent careers in each pathway. For a full list of occupations by career pathway within this cluster, check out O\*NET OnLine at [ononline.org/find/career?c=1&g=Go](https://ononline.org/find/career?c=1&g=Go)
- Total average annual opening includes the total number of jobs available due to growth and replacement needs per year. The number of openings by occupation is based on North Carolina's 2012-2022 Occupational Projections.



Total Avg. Annual Opening <sup>2</sup>	NC Annualized Growth Rate <sup>3</sup>	NC Entry Annual Wage	NC Median Annual Wage	Minimum Education <sup>4</sup>	Interest <sup>5</sup>
61	1.6%	\$22,570	\$32,250	Postsecondary nondegree award	R, I and C
130	0.4%	\$26,590	\$37,890	Some college, no degree	R, C and I
81	0.6%	\$31,770	\$51,240	Bachelor's degree	E and A
59	0.1%	\$31,910	\$47,000	Bachelor's degree	A, E and C
257	0.8%	\$27,790	\$40,680	Bachelor's degree	A, R and E
84	1.1%	\$34,520	\$56,620	Bachelor's degree	A and I
95	1.1%	\$17,640	\$25,150	High school diploma plus long-term, on-the-job training	A and R
80	2.3%	\$41,690	\$67,270	Bachelor's degree	A, I and C
113	1.9%	\$27,190	\$37,850	High school diploma plus long-term, on-the-job training	R and E
87	1.1%	\$26,260	\$44,560	Bachelor's degree	E and A

3. Annualized growth rate is the year-over-year growth rate over multiple years. Note that this growth rate is not obtained by averaging the year-to-year percentage changes. The annualized growth rate is useful for comparing growth rates for various time periods and for different series over the same time period; for example, comparing 5-year to 10-year growth or comparing growth in health care sector to education sector.

4. Minimum education requirements for occupations are determined by the U.S. Bureau of Labor Statistics ([bls.gov/emp/ep\\_education\\_training\\_system.htm](https://www.bls.gov/emp/ep_education_training_system.htm)). Actual market conditions may require additional education and/or training.

5. There are six interest types: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Discover your work-related interests on pages 5-8 to find out which types you are most like and the careers that fit you best.

## Career Story



### Justin Dorsey

Instructional Technologist

***“Forsyth Tech’s two-year broadcast degree program throws you right into the work — so you learn more than you expect to.”***

When Justin Dorsey was in high school, he wanted to be an actor. His mother didn’t share his enthusiasm for this career path and told him he needed to find a more realistic dream. So he decided to pursue a radio career where he could use his natural “radio voice” and engaging personality to “act” through a microphone.

Following high school graduation, Justin entered Forsyth Technical Community College’s transfer program with plans to transfer to a four-year college and complete a broadcasting degree.

The semester before he was scheduled to graduate from Forsyth Tech, he found out about the college’s new broadcasting program and transferred his major to Broadcasting and Production Technology.

“Forsyth Tech’s two-year broadcast degree program throws you right into the work — you learn more than you expect to,” he says. “The instructors are good. They’re very realistic, and they help make job connections for you.”

When Justin graduated from Forsyth Tech in May 2014, he went to work for Clear Channel Radio station 99.5 FM as an on-air personality. But, Forsyth Tech lured him back in fall 2014 as an Instructional Technologist, helping college instructors build courses online.

“I’m really enjoying this new job,” Justin says. “I’m working alongside my former broadcast instructors who give me leads about voice-over jobs, which I do on the side. I’m recording videos and doing voice-over work for the college now, too. I’m even getting into voice-over work at the national level through my Forsyth Tech connections.”



## Business, Management & Administration

In North Carolina, we are likely to see new job growth in the Business, Management and Administration career cluster in the next decade. Since almost any workplace benefits from strong leadership and organizational support, business and management occupations exist in all industries. Many of us value the peace of mind that comes from knowing that we have other options if we lose our current jobs. More than most clusters, business administration includes careers that move relatively easily from one industry or location to another. Recently, the U.S. Bureau of Labor Statistics listed a dozen careers that offer this kind of flexibility. The list included occupations from business management:

- Customer service representatives
- Secretaries and administrative assistants, except legal, medical, and executive
- General and operations managers
- General office clerks
- Accountants and auditors
- Management analysts
- Financial managers
- Human resources specialists
- Sales managers

Work environments match the functions of specific businesses. While desk jobs with 8-to-5 schedules are typical, business and management workers in industries like transportation and construction may have variable schedules and need to travel to jobsites or work in the outdoors. Educational backgrounds for these jobs range from high school through bachelor's degrees. Places offering employment include — but are not limited to — corporate and regional management offices, local governments, temporary service agencies, banks, and public colleges.

### CAREER RESEARCH

- **Business Professionals of America:**  
[bpa.org/](http://bpa.org/)
- **Future Business Leaders of America/Phi Beta Lambda:**  
[fbla-pbl.org/](http://fbla-pbl.org/)
- **Professionals In Human Resources Association™:**  
[pihra.org/](http://pihra.org/)
- **Project Management Institute®:**  
[pmi.org/](http://pmi.org/)
- **DECA:**  
[deca.org/](http://deca.org/)
- **Administration Jobs:**  
[administrationjobs.com/data-entry-jobs/](http://administrationjobs.com/data-entry-jobs/)

Find more Business, Management & Administration occupations at:  
[onetonline.org/find/career?c=4&g=Go](http://onetonline.org/find/career?c=4&g=Go)



# Core Skills

- Management of Financial Resources
- Mathematics
- Writing
- Programming
- Reading Comprehension
- Negotiation
- Persuasion
- Speaking
- Operations Analysis
- System Analysis



## Business Analysis Pathway

Occupation

- **Business & Financial Operations**  
Management Analysis; Budget Analysis
- **Computer & Mathematical**  
Computer Programmers; Other Computer Occupations; Database Administrators; Operations Research Analysts
- **Education, Training & Library**  
Engineering Teachers, Postsecondary
- **Management**  
Computer & Information Systems Managers; Natural Sciences Managers



## Administrative & Information Support Pathway

Occupation

- **Arts, Design, Entertainment, Sports & Media**  
Public Relations Specialists
- **Office & Administrative Support**  
Customer Service Reps; Secretaries & Administrative Assistants, Except Legal, Medical & Executive; Office Clerks, General; Stock Clerks & Order Fillers; First-Line Supervisors of Office & Administrative Support Workers; Receptionists & Information Clerks; Executive Secretaries & Executive Administrative Assistants; Shipping, Receiving & Traffic Clerks; Medical Secretaries; Postal Service Mail Carriers; Interviewers, Except Eligibility & Loan; Insurance Claims & Policy Processing Clerks; Human Resources Assistants, Except Payroll & Timekeeping; Order Clerks; Other Office & Administrative Support Workers; Mail Clerks & Mail Machine Operators, Except Postal Service; New Account Clerks; Postal Service Mail Sorters, Processors & Processing Machine Operators; Weighers, Measurers, Checkers & Samplers, Recordkeeping; File Clerks; Library Assistants, Clerical; Legal Secretaries; Couriers & Messengers; Procurement Clerks; Cargo & Freight Agents; Postal Service Clerks

## Business Financial Management & Accounting Pathway

Occupation

- **Business & Financial Operations**  
Accountants & Auditors; Financial Analysts; Credit Analysts; Tax Preparers; Tax Examiners & Collectors & Revenue Agents; Budget Analysts; Financial Examiners
- **Computer & Mathematical**  
Statisticians
- **Education, Training & Library**  
Business Teachers, Postsecondary; Mathematical Science Teachers, Postsecondary
- **Management**  
Other Managers; Financial Managers; Chief Executives; Natural Sciences Managers
- **Office & Administrative Support**  
Bookkeeping, Accounting & Auditing Clerks; Billing & Posting Clerks; Payroll & Timekeeping Clerks; Brokerage Clerks; Statistical Assistants

## Human Resources Pathway

Occupation

- **Business & Financial Operations**  
Human Resources Specialists; Training & Development Specialists; Compensation, Benefits & Job Analysis Specialists; Labor Relations Specialists
- **Education, Training & Library**  
Business Teachers, Postsecondary
- **Management**  
Human Resources Managers; Training & Development Managers; Compensation & Benefits Managers
- **Office & Administrative Support**  
Human Resources Assistants, Except Payroll & Timekeeping

## Management Pathway

Occupation

- **Arts, Designs, Entertainment, Sports & Media**  
Public Relations Specialists
- **Business & Financial Operations**  
Management Analysts; Market Research Analysts & Marketing Specialists; Cost Estimators; Logisticians
- **Computer & Mathematical**  
Operations Research Analysts
- **Education, Training & Library**  
Business Teachers, Postsecondary; Communications Teachers, Postsecondary; Economics Teachers, Postsecondary
- **Installation, Maintenance & Repair**  
First-Line Supervisors of Mechanics, Installers & Repairers
- **Life, Physical & Social Science**  
Survey Researchers; Economists
- **Management**  
General & Operations Managers; Other Managers; Construction Managers; Computer & Information Systems Managers; Medical & Health Services Managers; Sales Managers; Industrial Production Managers; Administrative Services Managers; Chief Executives; Social & Community Service Managers; Transportation, Storage & Distribution Managers; Purchasing Managers; Public Relations & Fundraising Managers; Advertising & Promotions Managers
- **Office & Administrative Support**  
First-Line Supervisors of Office & Administrative Support Workers
- **Production**  
First-Line Supervisors of Production & Operating Workers

## Marketing Pathway

Occupation

- **Arts, Design, Entertainment, Sports & Media**  
Writers & Authors; Editors; Technical Writers; Art Directors
- **Education, Training & Library**  
Business Teachers, Postsecondary; Communications Teachers, Postsecondary
- **Management**  
Sales Managers; Marketing Managers; Advertising Sales Agents
- **Sales & Sales Related**  
Sales Reps, Wholesale & Manufacturing, Technical & Scientific Products; Advertising Sales Agents
- **Transportation & Material Moving**  
Driver/Sales Workers

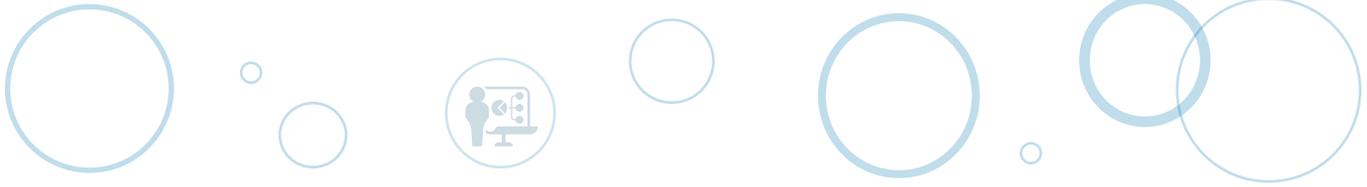


# Selected Careers<sup>1</sup>

Occupation	Career Pathway	Job Description
Bookkeeping, Accounting and Auditing Clerks	<ul style="list-style-type: none"> <li>Business Financial Management and Accounting</li> </ul>	Produce and update financial records by computing, classifying, and recording numerical data. May also check the accuracy of figures, calculations, and postings recorded by other workers.
Cost Estimators	<ul style="list-style-type: none"> <li>Management</li> </ul>	Prepare cost estimates for product manufacturing, construction projects, or services. Help management bid on or determine price of product or service. May specialize by particular service performed or type of product manufactured.
General and Operations Managers	<ul style="list-style-type: none"> <li>Management</li> </ul>	Plan, direct, or coordinate the way organizations operate. Set policies, manage daily operations, and plan the use of materials and human resources. Responsibilities vary depending on setting within an organization. Examples of settings include offices like personnel, purchasing, or administrative services.
Human Resources Managers	<ul style="list-style-type: none"> <li>Human Resources</li> </ul>	Plan, direct, and coordinate the administrative functions of an organization. Oversee the recruiting, interviewing, and hiring of new staff; consult with top executives on strategic planning; and serve as a link between an organization's management and its employees.
Human Resources Specialists	<ul style="list-style-type: none"> <li>Human Resources</li> </ul>	Perform human resource activities like screening, recruiting, interviewing, and placing workers.
Insurance Claims and Policy Processing Clerks	<ul style="list-style-type: none"> <li>Administrative and Information Support</li> </ul>	Process new insurance policies, modifications to existing policies, and claims forms. Obtain information from policyholders to verify the accuracy and completeness of information on claims forms, applications and related documents, and company records.
Management Analysts	<ul style="list-style-type: none"> <li>Business Analysis Management</li> </ul>	Study an organization to recommend ways to improve its efficiency. Advise managers about how to reduce costs and increase revenue. Prepare procedures manuals for improving efficiency and effectiveness. Includes program analysts and management consultants.
Public Relations Specialists	<ul style="list-style-type: none"> <li>Administrative and Information Support Management</li> </ul>	Promote or create a favorable public image for individuals, groups, or organizations. May write or select material for release to various communications media.
Secretaries and Administrative Assistants, Except Legal, Medical and Executive	<ul style="list-style-type: none"> <li>Administrative and Information Support</li> </ul>	Perform routine clerical and administrative duties. Responsibilities include drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, and providing information to callers.
Training and Development Specialists	<ul style="list-style-type: none"> <li>Human Resources</li> </ul>	Design and lead training programs to improve employees' skills and knowledge. May analyze training needs.

**Source:** Information about occupation, career pathway, job description, and interest is from the O\*NET OnLine ([ononline.org/](https://ononline.org/)); data for annual opening, growth, and wage is prepared by the Labor & Economic Analysis Division of North Carolina Department of Commerce.

- Notes:**
- The table lists a sampling of occupations that represent careers in each pathway. For a full list of occupations by career pathway within this cluster, check out O\*NET OnLine at [ononline.org/find/career?c=1&g=Go](https://ononline.org/find/career?c=1&g=Go)
  - Total average annual opening includes the total number of jobs available due to growth and replacement needs per year. The number of openings by occupation is based on North Carolina's 2012-2022 Occupational Projections.



Total Avg. Annual Opening <sup>2</sup>	NC Annualized Growth Rate <sup>3</sup>	NC Entry Annual Wage	NC Median Annual Wage	Minimum Education <sup>4</sup>	Interest <sup>5</sup>
1,157	1.3%	\$24,440	\$34,010	High school diploma plus moderate on-the-job training	C and E
381	3.1%	\$36,780	\$53,880	Bachelor's degree	C and E
1,827	1.4%	\$61,990	\$105,170	Bachelor's degree	E, C and S
136	1.8%	\$71,420	\$104,530	Bachelor's degree	E, S and C
316	0.7%	\$36,850	\$52,730	Bachelor's degree	E, C and S
223	1.9%	\$28,690	\$36,230	High school diploma plus moderate on-the-job training	C and E
534	2.2%	\$49,140	\$76,910	Bachelor's degree	I, E and C
159	1.5%	\$36,280	\$50,690	Bachelor's degree	E, A and S
2,087	1.6%	\$23,490	\$31,570	High school diploma plus short-term on-the-job training	C and E
237	1.8%	\$37,960	\$56,660	Bachelor's degree	S, A and C

- Annualized growth rate is the year-over-year growth rate over multiple years. Note that this growth rate is not obtained by averaging the year-to-year percentage changes. The annualized growth rate is useful for comparing growth rates for various time periods and for different series over the same time period; for example, comparing 5-year to 10-year growth or comparing growth in health care sector to education sector.
- Minimum education requirements for occupations are determined by the U.S. Bureau of Labor Statistics ([bls.gov/emp/ep\\_education\\_training\\_system.htm](https://www.bls.gov/emp/ep_education_training_system.htm)). Actual market conditions may require additional education and/or training.
- There are six interest types: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Discover your work-related interests on pages 5-8 to find out which types you are most like and the careers that fit you best.

# Career Story



## Ashley Hogan

Human Resources Manager

*“Anyone can go back to school, no matter who you are. Whether you think you are incapable, or you cannot afford it, anyone can afford success. You just have to be creative.”*

Ashley Hogan was a 2008 graduate of West Montgomery High School in Mount Gilead, N.C. In a short six years after graduation she married, moved to another state, divorced, moved back to Montgomery County, was hospitalized for a life-threatening condition, earned a college degree, and became a Human Resources Manager overseeing 21 Waffle House restaurants. Her roller-coaster life bore a strong resemblance to an action movie trailer.

After her divorce, Ashley moved back home in 2011 and began working as a waitress for Waffle House restaurant. During this time she developed an illness that put her in a cardiac intensive care unit. While she was recovering, Ashley had a lot of time to think. She said she realized it was time to put her life back together.

In the fall semester of 2012, she enrolled in the Business Administration program at Montgomery Community College. She continued to work as a waitress at Waffle House and also held down a second job while she took most of her classes online.

“I remember not being able to afford the Microsoft Office software, so the library at the college was kind enough to reserve me a laptop each week so I could take my Microsoft Office classes on that computer,” said Ashley. “They really went out of their way to help me.”

Not long after she graduated, Ashley’s manager offered her a position as a Human Resources Manager for Waffle House. “Because of my degree and my hard work, I am now a mentor to the employees at each store that I’m in charge of,” Ashley said. “I now have 21 stores that I hire for.”

Ashley said the support she received from friends and family, and most of all from her instructor, helped her succeed. “Anytime I needed help or needed a question answered, Mr. Collins’ door was always open. He was my counselor, my mentor, and my teacher. He helped me get to where I am today.”

Ashley’s resilience helped her through the many challenges in her young life, and she encourages others to face their challenges the same way. “You can go to school, get a job, and become whatever you want to be with a little encouragement.”



## Education & Training

Lifelong learning is a phrase we hear often. Finishing high school and other necessary training is the first step toward getting a job, and keeping our jobs often requires that we continue to update our skills. To meet these ongoing training needs, education options have broadened to include online training. Technology like electronic textbooks, notebooks, and smart boards support classroom innovations while also requiring educators to upgrade their technology skills and teaching techniques.

Most occupations in the Education and Training cluster require at least a bachelor's degree, with many postsecondary teaching professionals holding a doctoral or professional degree. Occupations with the most new jobs over the next 10 years are likely to include elementary, preschool, and middle school teachers. College-level health specialties teachers occupy the top position for highest estimated percentage increase in jobs.

Schedules for education workers vary by work setting. Preschool through high school employees work directly with students for approximately eight hours and often devote additional time, at home, to grading papers and planning lessons. Before- and after-school workers' schedules revolve around times when students aren't in class, and coaches may work directly with students for hours beyond the usual class schedule. Industries that tend to offer many jobs for workers in this cluster include public and private schools, colleges and universities, as well as day care centers.

### CAREER RESEARCH

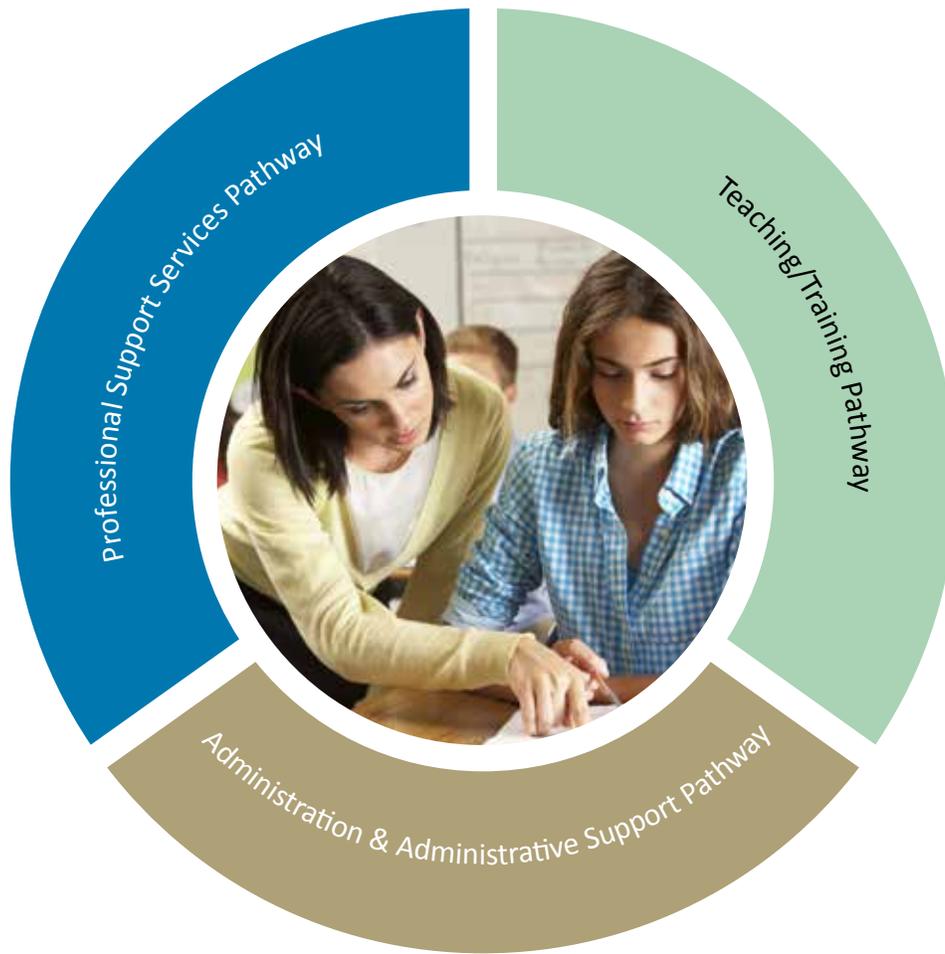
- **National Coordinating Council for Career and Technical Student Organizations:**  
[ctsos.org/](https://ctsos.org/)
- **Future Educators Association:**  
[futureeducators.org/](https://futureeducators.org/)
- **TEACH:**  
[teach.org/](https://teach.org/)
- **Teaching jobs:**  
[teachers-teachers.com](https://teachers-teachers.com)
- **k-12 jobs:**  
[k-12-jobs.com](https://k-12-jobs.com)
- **National Association of Special Education Teachers:**  
[naset.org](https://naset.org)
- **School Spring:**  
[schoolspring.com](https://schoolspring.com)
- **National Science Teachers Association:**  
[nsta.org](https://nsta.org)
- **NC Department of Public Instruction:**  
[dpi.stat.nc.us](https://dpi.stat.nc.us)

Find more Education & Training occupations at:  
[onetonline.org/find/career?c=5&g=Go](https://onetonline.org/find/career?c=5&g=Go)



# Core Skills

- Instructing
- Learning Strategies
- Writing
- Active Learning
- Speaking
- Reading Comprehension
- Systems Evaluation
- Service Orientation
- Management of Personnel Resources
- Monitoring



## Professional Support Services Pathway

Occupation

- Community & Social Service  
Educational, Guidance, School & Vocational Counselors
- Education, Training & Library  
Librarians; Other Postsecondary Teachers; Library Technicians
- Life, Physical & Social Science  
Clinical, Counseling, & School Psychologists
- Office & Administrative Support  
Library Assistants, Clerical



## Teaching/Training

Occupation

### • Arts, Design, Entertainment, Sports & Media

Coaches & Scouts; Writers & Authors; Athletes & Sports Competitors

### • Education, Training & Library

Elementary School Teachers, Except Special Education; Teacher Assistants; Secondary School Teachers, Postsecondary; Secondary School Teachers, Except Special & Career/Technical Education; Middle School Teachers, Except Special & Career/Technical Education; Preschool Teachers, Except Special Education; Health Specialties Teachers, Postsecondary; Special Education Teachers, Kindergarten & Elementary School; Other Teachers & Instructors; Vocational Education Teachers, Postsecondary; Self-Enrichment Education Teachers; Career/Technical Education Teachers, Secondary School; Adult Basic & Secondary Education & Literacy Teachers & Instructors; Librarians; Kindergarten Teachers, Except Special Education; Special Education Teachers, Secondary School; Instructional Coordinators; Other Postsecondary Teachers; English Language & Literature Teachers, Postsecondary; Special Education Teachers, Middle School; Business Teachers, Postsecondary; Nursing Instructors & Teachers, Postsecondary; Education Teachers, Postsecondary; Biological Science Teachers, Postsecondary; Mathematical Science Teachers, Postsecondary; Criminal Justice & Law Enforcement Teachers, Postsecondary; Computer Science Teachers, Postsecondary; Foreign Language

& Literature Teachers, Postsecondary; History Teachers, Postsecondary; Career/Technical Education Teachers, Middle School; Recreation & Fitness Studies Teachers, Postsecondary; Philosophy & Religion Teachers, Postsecondary; Chemistry Teachers, Postsecondary; Engineering Teachers, Postsecondary; Communications Teachers, Postsecondary; Sociology Teachers, Postsecondary; Political Science Teachers, Postsecondary; Special Education Teachers, Preschool; Curators; Law Teachers, Postsecondary; Physics Teachers, Postsecondary; Economics Teachers, Postsecondary; Social Work Teachers, Postsecondary

### • Healthcare Practitioners & Technicians

Dietitians & Nutritionists

### • Installation, Maintenance & Repair

Home Appliance Repairers

### • Personal Care & Service

Recreation Workers; Fitness Trainers & Aerobics Instructors

## Administration & Administrative Support Pathway

Occupation

### • Arts, Design, Entertainment, Sports & Media

Coaches & Scouts

### • Education, Training & Library

Instructional Coordinators; Recreation & Fitness Studies Teachers, Postsecondary

### • Management

Education Administrators, Elementary & Secondary School; Education Administrators, Postsecondary; Education Administrators, Preschool & Childcare Center/Program; Other Education Administrators

### • Personal Care & Service

Fitness Trainers & Aerobics Instructors



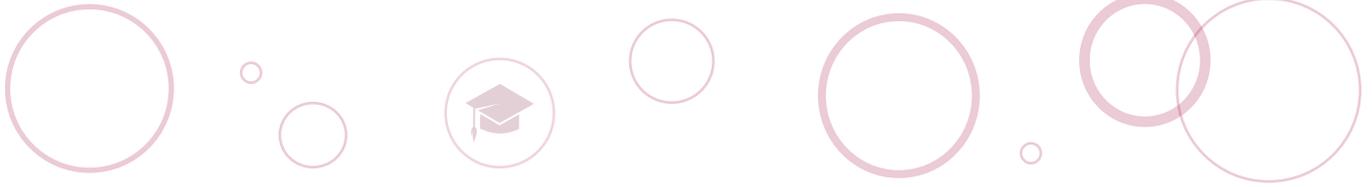
# Selected Careers<sup>1</sup>

Occupation	Career Pathway	Job Description
Adult Basic and Secondary Education and Literacy Teachers and Instructors	<ul style="list-style-type: none"> <li>Teaching/Training</li> </ul>	Teach basic reading, math, writing, GED preparation, or English as a Second Language. Teaching may take place in a traditional school or in other settings.
Career/Technical Education Teachers, Secondary School	<ul style="list-style-type: none"> <li>Teaching/Training</li> </ul>	Teach high school students technical and vocational subjects like auto repair, healthcare, and culinary arts. Teach skills and knowledge needed for entering an occupation.
Education Administrators, Preschool and Childcare Center/Program	<ul style="list-style-type: none"> <li>Administration and Administrative Support</li> </ul>	Plan programs, direct staff, or coordinate preschool children's activities at childcare centers or programs.
Educational, Guidance, School, and Vocational Counselors	<ul style="list-style-type: none"> <li>Professional Support Services</li> </ul>	Counsel individuals and provide group educational and career counseling services. Help people develop social, academic, and career skills.
Fitness Trainers and Aerobics Instructors	<ul style="list-style-type: none"> <li>Teaching/Training</li> </ul>	Instruct or coach groups or individuals in activities like cardiovascular exercise, strength training, and stretching. Demonstrate techniques and form. Observe participants and explain ways to improve their skills.
Library Technicians	<ul style="list-style-type: none"> <li>Professional Support Services</li> </ul>	Assist librarians in a wide variety of ways. Help patrons, organize library materials and information, and perform clerical and administrative tasks. Includes bookmobile drivers who help provide services in mobile libraries.
Middle School Teachers, Except Special and Career/Technical Education	<ul style="list-style-type: none"> <li>Teaching/Training</li> </ul>	Teach students in one or more subjects at the middle, intermediate, or junior high level. Prepare students for more difficult high school courses.
Nursing Instructors and Teachers, Postsecondary	<ul style="list-style-type: none"> <li>Teaching/Training</li> </ul>	Demonstrate and teach patient care to nursing students in classroom and clinical units. May also perform research and report findings.
Special Education Teachers, Kindergarten and Elementary School	<ul style="list-style-type: none"> <li>Teaching/Training</li> </ul>	Teach school subjects to kindergarten and elementary students who have a wide range of learning, mental, emotional, or physical disabilities. Adapt general education lessons to meet students' needs.
Vocational Education Teachers, Postsecondary	<ul style="list-style-type: none"> <li>Teaching/Training</li> </ul>	Teach vocational or occupational subjects at the postsecondary level to students who have graduated or left high school. Includes correspondence school, industrial, and commercial instructors; and adult education teachers and instructors who prepare persons to operate industrial machinery and equipment and transportation and communications equipment.

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Total Avg. Annual Opening <sup>2</sup>	NC Annualized Growth Rate <sup>3</sup>	NC Entry Annual Wage	NC Median Annual Wage	Minimum Education <sup>4</sup>	Interest <sup>5</sup>
129	1.0%	\$32,630	\$45,070	Bachelor's degree	S, A and E
176	0.9%	\$38,150	\$46,540	Bachelor's degree	S
101	2.2%	\$30,150	\$37,820	Bachelor's degree	S, E and C
217	1.4%	\$34,500	\$45,690	Master's degree	S
147	1.0%	\$17,690	\$27,190	High school diploma plus short-term, on-the-job training	S, R and E
189	0.9%	\$23,780	\$30,750	Postsecondary nondegree award	C, S and E
654	1.5%	\$33,760	\$40,890	Bachelor's degree	S and A
98	3.1%	\$48,680	\$59,740	Master's degree	S and I
210	0.9%	\$34,050	\$42,770	Bachelor's degree	S and A
180	1.4%	\$34,440	\$47,610	Bachelor's degree	S and R

- Annualized growth rate is the year-over-year growth rate over multiple years. Note that this growth rate is not obtained by averaging the year-to-year percentage changes. The annualized growth rate is useful for comparing growth rates for various time periods and for different series over the same time period; for example, comparing 5-year to 10-year growth or comparing growth in health care sector to education sector.
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## Career Stories



**Angela Santos**  
Child Care Facility Owner

After dropping out of high school to raise her daughter, Angela earned her adult high school diploma in 2005. In 2008, she received her NC Early Childhood credential and started a small day care out of her home.

Angela started working toward her Early Childhood degree at South Piedmont Community College in Spring 2012. She began as a part-time student taking three courses each semester, but quickly increased her course load to four or five classes each semester. Angela graduated with a 4.0 GPA in Early Childhood Education. She managed to open her own licensed child care facility, My Little Scholars, which today provides day care to 26 children and employs five. Angela is a member of the Union County Family Child Care Association and Phi Theta Kappa Honor Society. She is also a Notary Public and earned four Early Childhood Education certificates.

**Crystal Greene**  
Preschool Director



Crystal attended college many years ago, aspiring to enter the nursing field, but she put her education aside to work as a wife and mother.

About nine years ago, Crystal started teaching at Image Christian Preschool, where her child attended. Her interest in early development and teaching methods grew, and in 2011 she enrolled at South Piedmont Community College in the Early Childhood Education program, graduating with a 4.0 GPA.

Last June, Crystal was promoted to Director at Image Christian Preschool. She serves the community by providing quality education to about 60 young children. She also runs a successful summer program and manages a staff of eight teachers. Crystal volunteers at her church as youth leader and Sunday School teacher. In addition, she and her husband are foster parents.



## Finance

Money is an essential element in each of our lives. We entrust our financial well-being to people who safeguard bank accounts, provide loans, insure cars and homes, and help us make wise investments. Their math skills must be strong, and they must be precise, paying close attention to detail and keeping accurate records. Workers also need good communication skills in order to respond to questions and clearly explain information. They must be service-oriented and sometimes work with people who are under stress about their finances.

Finance jobs exist in settings that range from banks to tax return centers to private offices. Most large organizations like hospitals have finance employees. While financial specialists usually have an 8-to-5 schedule, some workers' schedules must accommodate their clients' after-work hours. Tax preparers have intense work times from the beginning of January until April 15.

In North Carolina, the majority of finance occupations require a high school education or a bachelor's degree. The finance industry shows one of the highest rates of new jobs in the state, and occupations in the securities, commodities and other financial investments sector should have some of the state's highest average weekly wages. Likely places to find jobs include banks, corporate management offices, insurance agencies, insurance underwriting companies, and office of Certified Public Accountants.

### CAREER RESEARCH

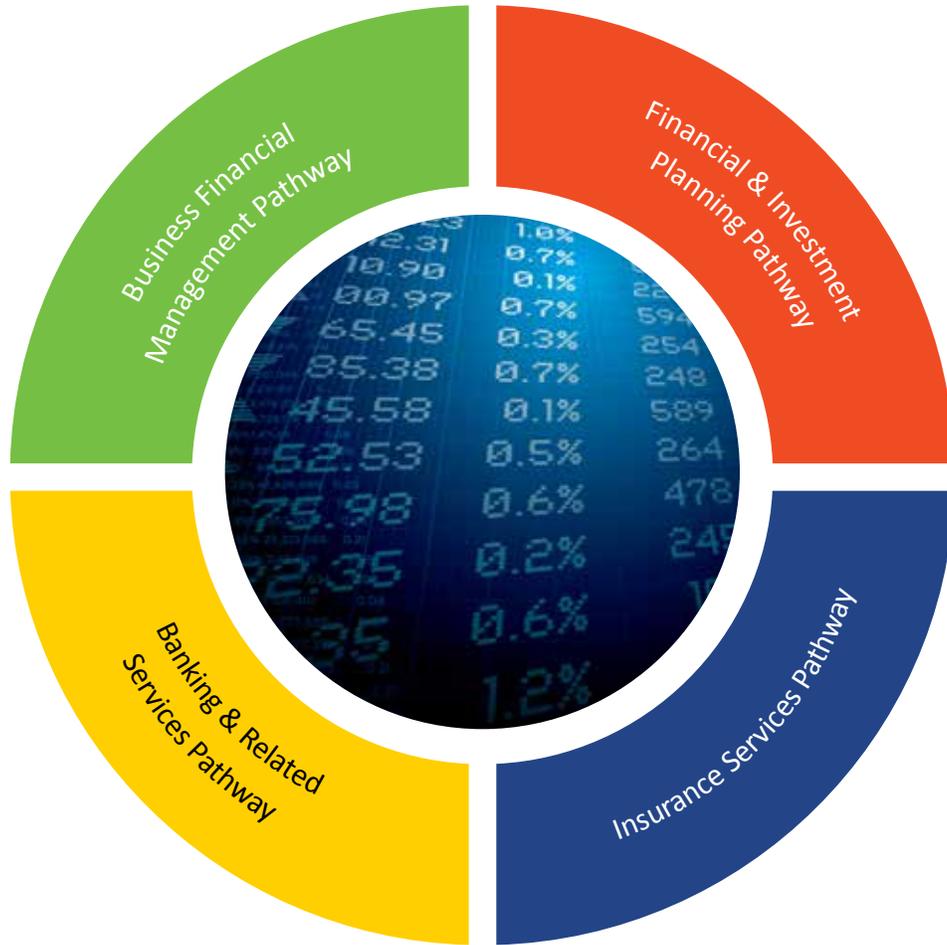
- **National Association of Business Economics:**  
[nabe.com/](http://nabe.com/)
- **American Bankers Association:**  
[aba.com/Pages/default.aspx](http://aba.com/Pages/default.aspx)
- **National Coordinating Council for Career and Technical Student Organizations:**  
[ctsos.org/](http://ctsos.org/)
- **Future Business Leaders of America/Phi Beta Lambda:**  
[fbla-pbl.org/](http://fbla-pbl.org/)
- **DECA:**  
[deca.org/](http://deca.org/)

Find more Finance occupations at:  
[onetonline.org/find/career?c=6&g=Go](http://onetonline.org/find/career?c=6&g=Go)



# Core Skills

- Mathematics
- Reading Comprehension
- Management of Financial Resources
- Persuasion
- Speaking
- Negotiation
- Writing
- Active Listening
- Critical Thinking
- Service Orientation



## Business Financial Management Pathway

Occup.

- Business & Financial Operations  
Financial Analysts

## Financial & Investment Planning Pathway

Occupation

- Business & Financial Operations  
Loan Officers; Financial Analysts; Personal Financial Advisors; Other Financial Specialists; Credit Analysts; Tax Preparers; Budget Analysts
- Education, Training & Library  
Business Teachers, Postsecondary
- Office & Administrative Support  
Brokerage Clerks
- Sales & Sales Related  
Sales Reps, Wholesale & Manufacturing, Except Technical & Scientific Products; Insurance Sales Agents; Telemarketers



## Insurance Services Pathway

Occupation

- **Business & Financial Operations**  
Claims Adjusters, Examiners & Investigators; Insurance Underwriters
- **Computer & Mathematical**  
Actuaries
- **Education, Training & Library**  
Business Teachers, Postsecondary
- **Office & Administrative Support**  
Insurance Claims & Policy Processing Clerks
- **Sales & Sales Related**  
Sales Reps, Wholesale & Manufacturing, Except Technical & Scientific Products; Insurance Sales Agents; Telemarketers

## Banking & Related Services Pathway

Occupation

- **Business & Financial Operations**  
Loan Officers; Credit Analysts
- **Legal**  
Title Examiners, Abstractors & Searchers
- **Office & Administrative Support**  
Tellers; Bill & Account Collectors; Loan Interviewers & Clerks; New Account Clerks; Credit Authorizers, Checkers, & Clerks



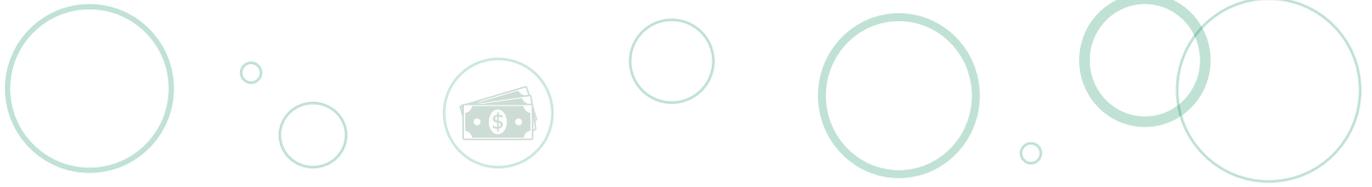


# Selected Careers<sup>1</sup>

Occupation	Career Pathway	Job Description
Claims Adjusters, Examiners, and Investigators	<ul style="list-style-type: none"> <li>Insurance Services</li> </ul>	Review settled insurance claims to make sure payments and settlements follow company guidelines. Consult attorneys about claims that need to go to court. May also settle insurance claims.
Credit Analysts	<ul style="list-style-type: none"> <li>Banking and Related Services</li> <li>Financial and Investment Planning</li> </ul>	Analyze credit data and financial statements to determine the degree of risk involved in extending credit or lending money. Prepare reports with credit information for use in decision making.
Financial Analysts	<ul style="list-style-type: none"> <li>Business Financial Management</li> <li>Financial Investment</li> </ul>	Use mathematical and statistical knowledge to analyze information that affects investment programs like stocks and bonds.
Financial Managers	<ul style="list-style-type: none"> <li>Financial and Investment Planning</li> </ul>	Produce financial reports, direct investment activities, and develop strategies to meet an organization's long-term financial goals. Coordinate accounting, investing, banking, insurance, securities, and other financial activities of an establishment.
Insurance Sales Agents	<ul style="list-style-type: none"> <li>Insurance Services</li> </ul>	Contact potential customers to sell them life, property, casualty, health, automotive, or other types of insurance. Explain various insurance policies and help clients choose plans that suit them. May refer clients to independent brokers, work as an independent broker, or be employed by an insurance company.
Investment Underwriters	<ul style="list-style-type: none"> <li>Financial and Investment Planning</li> </ul>	Manage communications or negotiations about private equity investments between corporate issuers of securities and clients. Underwrite the issuance of securities to provide capital for client growth. Negotiate and structure the terms of mergers or acquisitions.
Loan Officers	<ul style="list-style-type: none"> <li>Business Financial Management</li> <li>Financial and Investment Planning</li> </ul>	Evaluate, authorize, or recommend approval of commercial, real estate, or credit loans. Advise borrowers about conditions of the loan and payment methods. Includes mortgage loan officers and agents, collection analysts, loan servicing officers, and loan underwriters.
Personal Financial Advisors	<ul style="list-style-type: none"> <li>Business Financial Management</li> <li>Financial and Investment Planning</li> </ul>	Advise clients about financial plans using knowledge of tax and investment strategies, securities, insurance, pension plans, and real estate. Evaluate clients' assets, liabilities, cash flow, insurance coverage, tax status, and financial goals.
Securities, Commodities, and Financial Services Sales Agents	<ul style="list-style-type: none"> <li>Financial and Investment Planning</li> </ul>	Buy and sell securities or commodities in investment and trading firms. Provide financial services to businesses and individuals. May advise customers about stocks, bonds, mutual funds, commodities and market conditions.
Tellers	<ul style="list-style-type: none"> <li>Banking and Related Services</li> </ul>	Accurately receive and pay out money to bank customers. Process routine transactions like cashing checks, depositing money, and collecting loan payments.

**Source:** Information about occupation, career pathway, job description, and interest is from the O\*NET OnLine ([onetonline.org/](http://onetonline.org/)); data for annual opening, growth, and wage is prepared by the Labor & Economic Analysis Division of North Carolina Department of Commerce.

- Notes:**
- The table lists a sampling of occupations that represent careers in each pathway. For a full list of occupations by career pathway within this cluster, check out O\*NET OnLine at [onetonline.org/find/career?c=1&g=Go](http://onetonline.org/find/career?c=1&g=Go)
  - Total average annual opening includes the total number of jobs available due to growth and replacement needs per year. The number of openings by occupation is based on North Carolina's 2012-2022 Occupational Projections.



Total Avg. Annual Opening <sup>2</sup>	NC Annualized Growth Rate <sup>3</sup>	NC Entry Annual Wage	NC Median Annual Wage	Minimum Education <sup>4</sup>	Interest <sup>5</sup>
222	1.4%	\$38,860	\$59,080	High school diploma plus long-term, on-the-job training	C and E
130	2.2%	\$46,140	\$67,830	Bachelor's degree	C and E
335	2.3%	\$49,650	\$71,370	Bachelor's degree	C, I and E
574	1.6%	\$73,940	\$111,350	Bachelor's degree	C and E
566	2.4%	\$25,330	\$42,170	High school diploma plus moderate-term, on-the-job training	E, C and S
168	1.7%	\$40,600	\$59,400	Bachelor's degree	I and C
326	1.9%	\$40,120	\$62,230	Bachelor's degree	C, E and S
318	3.3%	\$37,980	\$59,540	Bachelor's degree	E, C and S
438	2.9%	\$40,190	\$74,640	Bachelor's degree	E and C
932	1.9%	\$21,870	\$26,580	High school diploma plus short-term, on-the-job training	C and E

- Annualized growth rate is the year-over-year growth rate over multiple years. Note that this growth rate is not obtained by averaging the year-to-year percentage changes. The annualized growth rate is useful for comparing growth rates for various time periods and for different series over the same time period; for example, comparing 5-year to 10-year growth or comparing growth in health care sector to education sector.
- Minimum education requirements for occupations are determined by the U.S. Bureau of Labor Statistics ([bls.gov/emp/ep\\_education\\_training\\_system.htm](https://www.bls.gov/emp/ep_education_training_system.htm)). Actual market conditions may require additional education and/or training.
- There are six interest types: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Discover your work-related interests on pages 5-8 to find out which types you are most like and the careers that fit you best.



## Career Story



### Rachel Selisker

Consultant

***“I attribute a great deal of the success in my career with making the decision to attend Wake Technical Community College.”***

Rachel Selisker is one of the Triangle’s most successful professionals. As a 1976 graduate of Wake Technical Community College’s accounting program, Rachel worked at several firms before setting her sights on becoming a Certified Public Accountant (CPA). She passed the CPA exam in 1987 and was offered a position as Director of Finance for a small clinical research organization called Quintiles. “It was a wonderful opportunity,” she says, “and I loved what I did.”

As that small company expanded into dozens of countries and added thousands of employees, Selisker stood at the helm as Chief Financial Officer. “If someone had told me this would happen when I first took the job, I would have been intimidated!” she says. Instead, she built on the confidence she had discovered in herself as a student years earlier: “It was at Wake Tech that I realized I could apply myself and learn whatever I wanted to.”

Selisker now works as a consultant and volunteers for several community organizations, including the Wake Tech Foundation Board of Directors, where she is both fundraiser and benefactor. She and her husband, also a Wake Tech graduate, donated \$25,000 to launch the Scott Scholars Presidential Scholarship Fund, which provides students with an opportunity to pursue studies while participating in leadership development. Her goal is to inspire others to become their best, the same way she was inspired when she was a student. “I attribute a great deal of the success in my career with making the decision to attend Wake Tech.”



## Government & Public Administration

Government ensures that citizens have vital services that they might not otherwise be able to access. Government employees provide regulatory oversight and support for transportation, public safety, healthcare, education, utilities, and courts. In North Carolina, most government employees work for state or local governments. Some people also work for the federal government. Occupations in government mirror careers found in almost every industry. They range from a number of business, management and administrative occupations to jobs related to construction and transportation.

Public work sector jobs typically require the same educational requirements as private sector occupations. Government employees' work schedules and environments depend on workers' specific jobs and — at times — on the size and level of government. This cluster includes desk jobs with regular eight-hour workdays as well as outdoor work with varying schedules. While hiring practices for most government workers are similar to those in other sectors, some public sector employees are elected or appointed to their jobs.

### CAREER RESEARCH

- **Federal Jobs Network:**  
[federaljobs.net/student.htm](https://federaljobs.net/student.htm)
- **American Planning Association:**  
[planning.org/join/students/](https://planning.org/join/students/)
- **National Coordinating Council for Career and Technical Student Organizations:**  
[ctsos.org/](https://ctsos.org/)
- **Junior Achievement:**  
[studentcenter.ja.org/careers/research/government/pages/default.aspx](https://studentcenter.ja.org/careers/research/government/pages/default.aspx)
- **North Carolina State Jobs :**  
[agency.governmentjobs.com/northcarolina/default.cfm](https://agency.governmentjobs.com/northcarolina/default.cfm)

Find more Government & Public Administration occupations at:  
[onetonline.org/find/career?c=7&g=Go](https://onetonline.org/find/career?c=7&g=Go)



# Core Skills

- Writing
- Negotiation
- Reading Comprehension
- Speaking
- Management of Financial Resources
- Mathematics
- Management of Personnel Resources
- Systems Analysis
- Social Perceptiveness
- Active Listening



## Revenue & Taxation Pathway

Occup.

- **Business & Financial Operations**  
Accountants & Auditors; Appraisers & Assessors of Real Estate; Financial Examiners
- **Tax**  
Tax Preparers; Tax Examiners & Collectors and Revenue Agents

## Governance Pathway

Occupation

- **Architecture & Engineering**  
Surveying & Mapping Technicians
- **Arts, Design, Entertainment, Sports & Media**  
Public Relations Specialists
- **Education, Training & Library**  
Communications Teachers, Postsecondary; Political Science Teachers, Postsecondary
- **Management**  
General & Operations Managers; Other Managers; Administrative Services Managers; Chief Executive; Social & Community Service Managers; Transportation, Storage & Distribution Managers; Postmasters & Mail Superintendents



## Planning Pathway

Occupation

- **Education, Training & Library**  
Political Science Teachers, Postsecondary
- **Life, Physical & Social Science**  
Urban & Regional Planners; Economists
- **Management**  
Architectural & Engineering Managers
- **Office & Administrative Support**  
Interviewers, Except Eligibility & Loan; Statistical Assistants

## Public Management & Administration Pathway

Occupation

- **Management**  
Other Managers; Social & Community Service Managers; Postmasters & Mail Superintendents
- **Office & Administrative Support**  
Postal Service Mail Carriers; Court Municipal & License Clerks; Eligibility Interviewers, Government Programs; Postal Service Mail Sorters, Processors & Processing Machine Operators; Postal Service Clerks

## Regulation Pathway

Occupation

- **Business & Financial Operations**  
Compliance Officers; Financial Examiners
- **Construction & Extraction**  
Construction & Building Inspectors
- **Protective Service**  
Detectives & Criminal Investigators
- **Transportation & Material Moving**  
Transportation Inspectors

## National Security Pathway

Occupation

- **Military Enlisted Tactical Operations & Air/Weapons Specialists & Crew Members**  
Air Crew members, Aircraft Launch & Recovery Specialists, Armored Assault Vehicle Crew Members, Artillery & Missile Crew Members, Command and Control Center Specialists, Infantry, Radar & Sonar Technicians, Special Forces
- **First-Line Enlisted Military Supervisor/Managers**  
First-Line Supervisors of Air Crew Members, First-Line Supervisors of Weapons Specialists/Crew Members
- **Military Enlisted Tactical Operations & Air/Weapons Specialists & Crew Members**  
Air Crew Officers, Aircraft Launch & Recovery Officers, Armored Assault Vehicle Officers, Artillery & Missile Officers, Command and Control Center Officers, Infantry Officers, Special Forces Officers





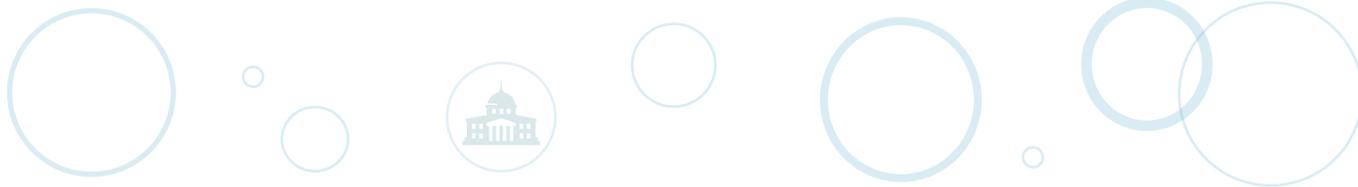
# Selected Careers<sup>1</sup>

Occupation	Career Pathway	Job Description
Accountants and Auditors	<ul style="list-style-type: none"> <li>Revenue and Taxation</li> </ul>	Examine, analyze, and interpret accounting records. Use this information to prepare accurate financial statements, give advice, or audit and evaluate statements prepared by others. Install or advise about systems to record costs or other financial data.
Administrative Services Managers	<ul style="list-style-type: none"> <li>Governance</li> </ul>	Plan, direct, or coordinate one or more administrative services of an organization. Services may include records and information management, mail distribution, facilities planning and maintenance, custodial operations, or other office support services.
City and Regional Planning Aides	<ul style="list-style-type: none"> <li>Planning</li> </ul>	Compile data for city planner to use in making planning studies. Data comes from sources like maps, reports and field and file investigations.
Climate Change Analysts	<ul style="list-style-type: none"> <li>Planning</li> </ul>	Research and analyze policies related to climate change. Make climate-related recommendations for actions such as legislation, awareness campaigns, or fundraising approaches.
Construction and Building Inspectors	<ul style="list-style-type: none"> <li>Regulation</li> </ul>	Inspect structures and to ensure that construction meets local and national building codes, zoning regulations, and contract specifications. Inspections may be general in nature or may be limited to a specific area like electrical systems or plumbing.
Court, Municipal, and License Clerks	<ul style="list-style-type: none"> <li>Public Management and Administration</li> </ul>	Perform clerical duties for courts, towns, or government licensing agencies and bureaus. May prepare docket of cases to be called and get information for judges and court. Also may prepare documents for town or city council, answer official correspondence, and keep fiscal records and accounts. May issue licenses or permits, record data, administer tests, or collect fees.
Financial Examiners	<ul style="list-style-type: none"> <li>Revenue and Taxation</li> </ul>	Ensure compliance with laws governing financial institutions and transactions. Review balance sheets, evaluate the risk level of loans, and assess bank management.
Licensing Examiners and Inspectors	<ul style="list-style-type: none"> <li>Regulation</li> </ul>	Examine, evaluate, and investigate whether people are eligible to receive licenses or permits.
Surveying and Mapping Technicians	<ul style="list-style-type: none"> <li>Governance</li> </ul>	Assist surveyors, cartographers, and photogrammetrists. Collect data used for construction, mapmaking, or other purposes by performing surveying and mapping duties. May calculate mapmaking information and create maps from source data like surveying notes, aerial photography, satellite data, or other maps. May check accuracy and completeness of maps.
Urban and Regional Planners	<ul style="list-style-type: none"> <li>Planning</li> </ul>	Develop comprehensive plans and programs for the use of land and facilities. These plans help create communities, accommodate population growth, and revitalize physical facilities in towns, cities, counties, and metropolitan areas.

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**Notes:**

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Total Avg. Annual Opening <sup>2</sup>	NC Annualized Growth Rate <sup>3</sup>	NC Entry Annual Wage	NC Median Annual Wage	Minimum Education <sup>4</sup>	Interest <sup>5</sup>
1,519	1.6%	\$44,370	\$60,950	Bachelor's degree	C and E
130	1.3%	\$56,900	\$82,220	Bachelor's degree	E and C
67	1.2%	\$32,300	\$43,490	Associate degree	C and I
216	2.0%	\$40,760	\$53,120	Bachelor's degree	I, R and C
135	1.5%	\$33,830	\$48,510	High school diploma plus moderate-term, on-the-job training	R, C and I
138	1.1%	\$24,380	\$32,210	High school diploma plus moderate-term, on-the-job training	C, E and R
39	1.9%	\$52,940	\$79,050	Bachelor's degree	E and C
150	1.2%	\$38,400	\$57,420	Bachelor's degree	C, I and R
100	2.1%	\$25,100	\$35,060	High school diploma plus moderate-term, on-the-job training	R and C
65	0.8%	\$43,080	\$55,980	Master's degree	I, E and A

- Annualized growth rate is the year-over-year growth rate over multiple years. Note that this growth rate is not obtained by averaging the year-to-year percentage changes. The annualized growth rate is useful for comparing growth rates for various time periods and for different series over the same time period; for example, comparing 5-year to 10-year growth or comparing growth in health care sector to education sector.
- Minimum education requirements for occupations are determined by the U.S. Bureau of Labor Statistics ([bls.gov/emp/ep\\_education\\_training\\_system.htm](https://www.bls.gov/emp/ep_education_training_system.htm)). Actual market conditions may require additional education and/or training.
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## Career Story



### **Marcus Abernethy**

City Manager

***“Caldwell Community College’s Educational Talent Search program instilled in me a strong desire to lead others. I knew by the time I left high school that I wanted to pursue a career in public service.”***

Marcus Abernethy earned a Master’s Degree in Public Administration from Appalachian State University (ASU) and currently serves as the City Manager of Hamlet, N.C., a small city near Rockingham. But just 12 short years ago, Abernethy was a seventh grader at Granite Falls Middle School about to be inducted into Caldwell Community College and Technical Institute’s TRIO/Educational Talent Search (ETS) program.

In addition to helping make decisions about his education and career path, the TRIO program helped Abernethy discover what it takes to be a leader and his own passion for public service. “ETS instilled in me a strong desire to lead others,” said Abernethy. “I knew by the time I left high school that I wanted to pursue a career in public service.”

Once Abernethy finished at South Caldwell High School, Caldwell Community College and Technical Institute (CCC&TI) seemed like the perfect place to begin his college education. He received the G. Lewis Bernhardt Fellowship, a scholarship for ETS students, which helped pay some of his tuition.

While at CCC&TI, Abernethy further developed his leadership skills with a variety of student activities. He continued his involvement with TRIO, in the Student Support Services program for college students, served as both a senator and vice president for CCC&TI’s Student Government Association, served as a CCC&TI Student Ambassador, and also attended the NC Community College System Student Leadership Institute, a year-long program that selects only a few students from across the state for participation.

Abernethy earned his Associate in Arts degree in 2010 and transferred to ASU where he earned his Bachelor of Science Degree in Political Science in 2012 and his Master of Arts degree in Public Administration in 2014.

Abernethy indicated that his success is due, in part, to his hard work and the support he received through CCC&TI’s TRIO program, but also to those who have helped him along the way.



## Health Science

Where do medical technologies and human touch intersect? They meet within the Health Science career cluster, which is a North Carolina and national growth industry. As the proportion of Americans over age 65 grows and more people survive serious injuries and other health issues, the need for healthcare has increased. If you want to work in a cluster that has good job growth, this cluster may be for you. It is expected to include the greatest number of new jobs in North Carolina over the next 10 years and about one-third of the state’s “hot jobs.”

Hospitals or doctors’ offices usually come to mind first when we think about healthcare workplaces, but home health care organizations and nursing homes also employ workers in this cluster. Some employees in this industry have 8 to 5 schedules, while others work less traditional shifts.

If you’re thinking about a healthcare career, many jobs require good math and science skills. Jobs in this industry include a wide variety of educational backgrounds, ranging from medical degrees to many jobs that require less than four years of college.

### CAREER RESEARCH

- **Council on Education for Public Health:**  
[ceph.org/](http://ceph.org/)
- **Academy of Nutrition and Dietetics:**  
[eatright.org/](http://eatright.org/)
- **Johnson & Johnson/Discovering Nursing:**  
[discovernursing.com/](http://discovernursing.com/)
- **Commission on Accreditation of Allied Health Programs:**  
[caahep.org/](http://caahep.org/)
- **Association of University Programs in Health Administration:**  
[aupha.org/ResourceCenter/FutureStudents](http://aupha.org/ResourceCenter/FutureStudents)
- **Future Health Professionals (HOSA):**  
[hosa.org/](http://hosa.org/)
- **Center for Disease Control:**  
[jobs.cdc.gov/](http://jobs.cdc.gov/)

Find more Health Science occupations at:  
[onetonline.org/find/career?c=8&g=Go](http://onetonline.org/find/career?c=8&g=Go)



# Core Skills

- Science
- Service Orientation
- Social Perceptiveness
- Learning Strategies
- Active Learning
- Writing
- Instructing
- Reading Comprehension
- Active Listening
- Monitoring



## Support Services Pathway

Occupation

- **Community & Social Service**  
Mental Health & Substance Abuse Social Workers
- **Food Preparation & Serving Related**  
First Line Supervisors of Food Preparation & Serving Workers;  
Cooks, Institution & Cafeteria
- **Healthcare Practitioners & Technicians**  
Dietitians & Nutritionists
- **Production Occupations**  
Food Batchmakers

## Biotechnology Research & Development Pathway

Occupation

- **Architecture & Engineering**  
Biomedical Engineers
- **Computer & Mathematical**  
Other Computer Occupations
- **Education, Training & Library**  
Health Specialties Teachers, Postsecondary
- **Healthcare Practitioners & Technicians**  
Pharmacists
- **Healthcare Support**  
Medical Equipment Preparers
- **Life, Physical & Social Science**  
Medical Scientists, Except Epidemiologists; Other Biological Scientists
- **Management**  
Natural Sciences Managers



## Diagnostic Services Pathway

Occupation

- **Education, Training & Library**  
Health Specialties Teachers, Postsecondary
- **Healthcare Practitioners & Technicians**  
Emergency Medical Technicians & Paramedics; Medical & Clinical Laboratory Technicians; Radiologic Technologists; Physician Assistants; Other Health Technologists & Technicians; Medical & Clinical Laboratory Technologists; Surgical Technologists; Diagnostic Medical Sonographers; Ophthalmic Medical Technicians; Cardiovascular Technologists & Technicians; Other Health Diagnosing & Treating Practitioners; Other Healthcare Practitioners & Technical Workers; Nuclear Medicine Technologists; Radiation Therapists; Athletic Trainers; Respiratory Therapy Technicians
- **Healthcare Support**  
Medical Assistants; Other Healthcare Support Workers; Veterinary Assistants & Laboratory Animal Caretakers; Medical Equipment Preparers
- **Life, Physical & Social Science**  
Other Physical Scientists
- **Management**  
Medical & Health Services Managers
- **Production**  
Ophthalmic Laboratory Technicians
- **Transportation & Material Moving**  
Ambulance Drivers & Attendants, Except Emergency Medical Technicians

## Health Informatics Pathway

Occupation

- **Architecture & Engineering**  
Other Engineers
- **Arts, Design, Entertainment, Sports & Media**  
Public Relations Specialists; Editors; Fine Artists, Including Painters, Sculptors & Illustrators
- **Business & Financial Operations**  
Claims Adjusters, Examiners & Investigators
- **Community & Social Service**  
Mental Health Counselors; Rehabilitation Counselors; Substance Abuse & Behavioral Disorder Counselors; Health Educators
- **Computer & Mathematical**  
Software Developers, Applications; Computer User Support Specialists; Computer Programmers
- **Education, Training & Library**  
Health Specialties Teachers, Postsecondary; Communications Teachers, Postsecondary
- **Healthcare Practitioners & Technicians**  
Physical Therapists; Medical Records & Health Information Technicians; Psychiatric Technicians; Occupational Therapists; Occupational Health & Safety Technicians
- **Healthcare Support**  
Medical Assistants; Medical Transcriptionists; Psychiatric Aides
- **Management**  
Medical & Health Services Managers; Administrative Services Managers
- **Office & Administrative Support**  
First-Line Supervisors of Office & Administrative Support Workers; Receptionists & Information Clerks; Executive Secretaries & Executive Administrative Assistants; Billing & Posting Clerks; Medical Secretaries
- **Production**  
Dental Laboratory Technicians; Medical Appliance Technicians

## Therapeutic Services Pathway

Occupation

- **Community & Social Service**  
Social & Human Service Assistants; Other Community & Social Service Specialists; Substance Abuse & Behavioral Disorder Counselors
- **Education, Training & Library**  
Health Specialties Teachers, Postsecondary; Art, Drama & Music Teachers, Postsecondary; Nursing Instructors & Teachers, Postsecondary; Psychology Teachers, Postsecondary
- **Healthcare Practitioners & Technicians**  
Registered Nurses; Licensed Practical & Licensed Vocational Nurses; Pharmacy Technicians; Other Physicians & Surgeons; Pharmacists; Medical & Clinical Laboratory Technicians; Family & General Practitioners; Dentists, General; Speech-Language Pathologists; Nurse Practitioners; Veterinary Technologists & Technicians; Respiratory Therapists; Veterinarians; Diagnostic Medical Sonographers; Nurse Anesthetists; Surgeons; Opticians, Dispensing; Dietitians & Nutritionists; Internists, General; Other Health Diagnosing & Treating Practitioners; Chiropractors; Optometrists; Other Healthcare Practitioners & Technical Workers; Anesthesiologists; Obstetricians & Gynecologists; Pediatricians, General; Nuclear Medicine Technologists; Radiation Therapists; Audiologists; Athletic Trainers;
- **Healthcare Support**  
Psychiatrists; Recreational Therapists; Occupational Health & Safety Technicians; Respiratory Therapy Technicians
- **Healthcare Support**  
Nursing Assistants; Medical Assistants; Dental Assistants; Massage Therapists; Other Healthcare Support Workers; Physical Therapist Assistants; Medical Equipment Preparers; Psychiatric Aides; Occupational Therapy Assistants; Physical Therapist Aides; Orderlies
- **Life, Physical & Social Science**  
Medical Scientists, Except Epidemiologists; Clinical, Counseling & School Psychologists; Other Life, Physical & Social Science Technicians
- **Management**  
Medical & Health Services Managers
- **Office & Administrative Support**  
Medical Secretaries
- **Production**  
Dental Laboratory Technicians; Ophthalmic Laboratory Technicians

# Selected Careers<sup>1</sup>

Occupation	Career Pathway	Job Description
Dental Hygienists	<ul style="list-style-type: none"> <li>Therapeutic Services</li> </ul>	Clean teeth, examine patients for signs of oral diseases such as gingivitis, and provide other preventative dental care. Educate patients on ways to improve and maintain good oral health. May take and develop X-rays or apply fluoride or sealants.
Informatics Nurse Specialists	<ul style="list-style-type: none"> <li>Health Informatics</li> </ul>	Use nursing and informatics knowledge to help design, develop, and continually modify computerized health care systems. May teach staff and help solve problems related to using the system.
Medical and Clinical Laboratory Technologists	<ul style="list-style-type: none"> <li>Diagnostic Services</li> </ul>	Perform complex medical laboratory tests to diagnose, treat, and prevent disease. May train or supervise staff.
Medical and Health Services Managers	<ul style="list-style-type: none"> <li>Diagnostic Services</li> <li>Health Informatics</li> <li>Therapeutic Services</li> </ul>	Plan, direct, or coordinate medical and health services. May manage an entire facility or specialize in managing a specific clinical area or department, or manage a medical practice for a group of physicians.
Occupational Therapists	<ul style="list-style-type: none"> <li>Health Informatics</li> <li>Therapeutic Services</li> </ul>	Treat injured, ill, or disabled patients through the therapeutic use of everyday activities. Help patients develop, recover, and improve skills needed for daily living and working.
Pharmacists	<ul style="list-style-type: none"> <li>Biotechnology Research and Development</li> <li>Therapeutic Services</li> </ul>	Dispense prescription medicines to patients and provide information on using them safely. May also give advice about how to lead a healthy lifestyle. Other duties may include conducting health and wellness screenings, providing immunizations, and overseeing medications given to patients.
Physician Assistants	<ul style="list-style-type: none"> <li>Diagnostic Services</li> <li>Therapeutic Services</li> </ul>	Practice medicine on a team under the supervision of physicians. Examine patients, diagnose injuries and illnesses, and provide treatment. Prescribe therapy or medication with physician approval.
Radiologic Technicians	<ul style="list-style-type: none"> <li>Diagnostic Services</li> </ul>	Maintain and use equipment and supplies necessary to show portions of the human body on X-ray film or fluoroscopic screen for diagnostic purposes.
Registered Nurses	<ul style="list-style-type: none"> <li>Therapeutic Services</li> </ul>	Provide and coordinate patient care and maintain accurate records. Assess health problems and implement patient care plans. Educate patients and the public about various health conditions.
Respiratory Therapists	<ul style="list-style-type: none"> <li>Therapeutic Services</li> </ul>	Evaluate, treat, and care for patients who have breathing disorders like asthma or emphysema. Responsible for all respiratory care processes, including supervising respiratory therapy technicians. Initiate and conduct therapeutic procedures; maintain patient records; and select, assemble, check, and operate equipment.

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- Notes:**
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Total Avg. Annual Opening <sup>2</sup>	NC Annualized Growth Rate <sup>3</sup>	NC Entry Annual Wage	NC Median Annual Wage	Minimum Education <sup>4</sup>	Interest <sup>5</sup>
501	4.5%	\$51,210	\$65,530	Associate degree	S, R and C
557	2.3%	\$55,350	\$80,610	Bachelor's degree	I, C and R
167	1.6%	\$45,750	\$56,140	Bachelor's degree	I, R and C
388	2.4%	\$66,740	\$88,730	Bachelor's degree	E, C and S
100	2.2%	\$51,200	\$73,240	Master's degree	S and I
363	1.6%	\$95,340	\$123,770	Doctoral or professional degree	I, C and S
253	3.6%	\$76,590	\$89,860	Master's degree	S, I and R
145	2.4%	\$27,100	\$35,320	High school diploma plus work experience	R and I
3,491	1.9%	\$45,840	\$57,990	Associate degree	S, I and C
121	1.8%	\$42,470	\$51,920	Associate degree	S, I and R

3. Annualized growth rate is the year-over-year growth rate over multiple years. Note that this growth rate is not obtained by averaging the year-to-year percentage changes. The annualized growth rate is useful for comparing growth rates for various time periods and for different series over the same time period; for example, comparing 5-year to 10-year growth or comparing growth in health care sector to education sector.

4. Minimum education requirements for occupations are determined by the U.S. Bureau of Labor Statistics ([bls.gov/emp/ep\\_education\\_training\\_system.htm](https://www.bls.gov/emp/ep_education_training_system.htm)). Actual market conditions may require additional education and/or training.

5. There are six interest types: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Discover your work-related interests on pages 5-8 to find out which types you are most like and the careers that fit you best.

## Career Stories



### Maricsa Vasquez

Emergency Room Nurse

***“Could I really get my nursing degree?” — WPCC’S Maricsa Vasquez: “I CAN DO IT!”***

As soon as you meet new nursing graduate Maricsa Vasquez, you are impressed by her joyful demeanor. She bubbles with enthusiasm about recently receiving her diploma and radiates with excitement at beginning her career as a registered nurse. Maricsa is an exceptional example of the “I can do it!” attitude.

Looking back a few years, as a Western Piedmont Community College (WPCC) nursing student, Maricsa felt a lot of fear and self-doubt. “I knew I loved the medical field, but I continually asked myself, ‘Could I really get my nursing degree?’ I was not sure I could do it.” Born in Mexico, she came to the Morganton area with her family when she was only two years old. For that reason, she found cultural and language barriers challenging. She also lacked a role model in the medical profession.

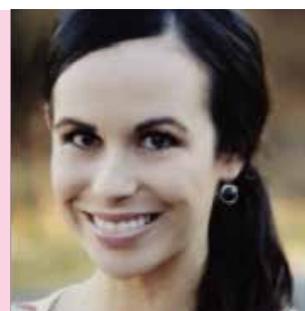
But this determined student had some secret weapons: Maricsa has a wonderfully supportive family. When she started her journey a few years ago, her then-boyfriend (now husband) supported her. “He reminded me how much I wanted my degree — he just would not let me give up!” she explained.

Maricsa, the first in her family to graduate from high school and college, is already working as an emergency room nurse at Valdese Hospital. Armed with her “can-do” attitude, she is also looking ahead to completing master’s and doctoral degrees. Her heart’s desire is to participate in missionary work, going places where others won’t go, and helping those that others may not want to help.

### Chelsey Routh

Medical Coder

***Once a Technology Assistant, now a Medical Coder, Chelsey loves her new career***



Chelsey Routh originally wanted to become a nurse, so she began taking classes as a part-time student at Davidson County Community College that counted toward the nursing program. At that time, Chelsey was working full time at Oak Hill Elementary School as a technology assistant for Guilford County Schools and providing care for her young son.

After applying for the nursing program and not getting accepted into the program, Chelsey looked into other, more immediate options. That’s when she met Heather Watson, instructor for the Health Information Technology program at Davidson County Community College. Heather introduced Chelsey to Health Information Technology, and it seemed like an awesome opportunity to Chelsey, given her interest in the medical field and her love for technology.

Chelsey decided to take the opportunity and became a full-time student. After two years, Chelsey graduated from the Health Information Technology program and was hired to the Novant Health coding team. Since that time, Chelsey has worked for Novant as a medical coder for two years, and she loves every aspect of it.



## Hospitality & Tourism

When you pick up takeout food, eat in a restaurant or cafeteria, and enjoy food at catered events, you're helping support the hospitality industry. If you travel and stay in a hotel, bed-and-breakfast, or RV park, the tourism industry benefits. Going to baseball games, casinos, and museums are other activities that contribute to this industry's part of the economy.

As in most clusters, technology has changed how people work and serve customers. Some restaurants have recently decided to give customers tablets to use for ordering and paying for meals and for playing games while waiting to be served. Computer systems allow managers to track inventory and to set up worker schedules.

Hospitality and tourism occupations include many entry-level positions. Although some management jobs require postsecondary education, a high school diploma is sufficient for a number of occupations. The work environment for these occupations varies according to job function. Kitchen employees work in hot, noisy surroundings while event planners may spend much of their time in an office. Tourism workers often have schedules that depend on their locations and on special events and seasons. Industries that tend to employ the highest number of hospitality and tourism workers include full-service and fast-food restaurants, hotels and motels, janitorial companies, and public schools.

### CAREER RESEARCH

- **Destination Marketing Association International:**  
[destinationmarketing.org/](https://www.destinationmarketing.org/)
- **National Restaurant Association Educational Foundation:**  
[nraef.org/Students](https://nraef.org/Students)
- **North Carolina Restaurant & Lodging Association:**  
[ncrla.org/?page=NCHEFScholarships](https://ncrla.org/?page=NCHEFScholarships)
- **IDEA Health & Fitness Association:**  
[ideaft.com/fitness-career](https://ideaft.com/fitness-career)
- **International Association of Amusement Parks and Attractions:**  
[iaiei.org/](https://iaiei.org/)
- **Family, Career and Community Leaders of America (FCCLA)**  
[fccla.com/](https://fccla.com/)

Find more Hospitality & Tourism occupations at:  
[onetonline.org/find/career?c=9&g=Go](https://onetonline.org/find/career?c=9&g=Go)

# Core Skills

- Service Orientation
- Social Perceptiveness
- Coordination
- Management of Financial Resources
- Management of Personal Resources
- Negotiation
- Management of Material Resources
- Persuasion
- Monitoring
- Speaking



## Travel & Tourism Pathway

Occupation

- **Business & Financial Operations**  
Meeting, Convention, & Event Planners
- **Management**  
Other Managers; Food Service Managers; Lodging Managers
- **Office & Administrative Support**  
Reservation & Transportation Ticket Agents & Travel Clerks
- **Personal Care & Service**  
Tour Guides; Travel Agents; Interpreters & Translators



## Lodging Pathway

Occupation

- **Building & Grounds Cleaning & Maintenance**  
Janitors & Cleaners, Except Maids & Housekeeping Cleaners; First-Line Supervisors of Housekeeping & Janitorial Workers
- **Management**  
Food Services Managers; Lodging Managers
- **Personal Care & Service**  
Residential Advisors; Concierges; Baggage Porters & Bellhops; Switchboard Operators; Ushers; Lobby Attendants & Ticket Takers

## Recreation, Amusements & Attractions Pathway

Occupation

- **Arts, Design, Entertainment, Sports & Media**  
Athletes & Sports Competitors; Umpires, Referees & Other Sports Officials; Set & Exhibit Designers; Motion Picture Projectionists
- **Education, Training & Library**  
Self-Enrichment Education Teachers; Museum Technicians & Conservators
- **Management**  
Lodging Managers; Natural Sciences Managers; Gaming Managers
- **Personal Care & Service**  
Recreation Workers; Animal Trainers

## Restaurants & Food/Beverage Services Pathway

Occupation

- **Food Preparation & Serving Related**  
First-Line Supervisors of Food Preparation & Serving Workers; Cooks, Restaurant; Cooks, Institution & Cafeteria; Chefs & Head Cooks; Bakers
- **Management**  
Food Service Managers; First-Line Supervisors of Food Preparation & Serving Workers
- **Production**  
Slaughterers & Meat Packers; Meat, Poultry & Fish Cutters & Trimmers; Bakers; Butchers & Meat Cutters; Separating, Filtering, Clarifying, Precipitating & Still Machine Setters, Operators & Tenders

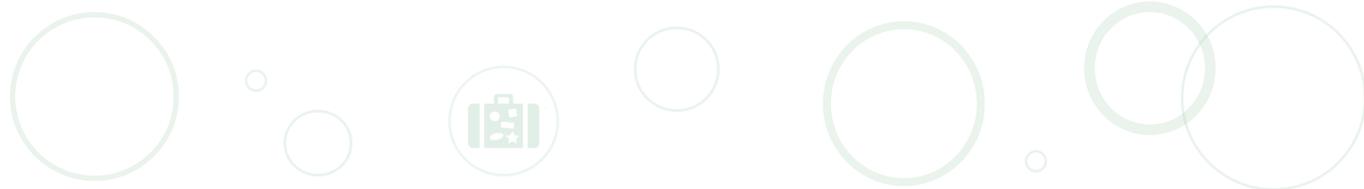


# Selected Careers<sup>1</sup>

Occupation	Career Pathway	Job Description
Chefs and Head Cooks	<ul style="list-style-type: none"> <li>Restaurants and Food/Beverage Services</li> </ul>	Oversee food preparation at restaurants and other places where food is served. Direct kitchen staff and handle any food-related concerns. May participate in preparing, seasoning, and cooking food. Also may plan and price menu items, order supplies, and keep records and accounts.
First-Line Supervisors of Food Preparation and Serving Workers	<ul style="list-style-type: none"> <li>Restaurants and Food/Beverage Services</li> </ul>	Directly supervise and coordinate activities of food service workers.
First-Line Supervisors of Housekeeping and Janitorial Workers	<ul style="list-style-type: none"> <li>Lodging</li> </ul>	Directly supervise and coordinate work activities of cleaning staff in hotels, hospitals, offices, and other establishments.
Food Service Managers	<ul style="list-style-type: none"> <li>Lodging</li> <li>Restaurants and Food/Beverage Services</li> <li>Travel and Tourism</li> </ul>	Oversee staff, plan, and coordinate activities in restaurants and other establishments that prepare and serve food and beverages. Ensure that customers are satisfied and that the business is profitable.
Hotel, Motel, and Resort Desk Clerks	<ul style="list-style-type: none"> <li>Lodging</li> </ul>	Assist hotel, motel, and resort guests. Register and assign rooms to guests and provide keys or cards. Give and receive messages and keep records of occupied rooms and guests' accounts. Make and confirm reservations. Give statements to and collect payments from departing guests.
Lodging Managers	<ul style="list-style-type: none"> <li>Lodging</li> <li>Recreation, Amusements and Attractions</li> <li>Travel and Tourism</li> </ul>	Oversee staff, plan, and coordinate activities in a hotel, motel, or other type of lodging facility. Ensure that customers have a pleasant experience and that the business is profitable and efficient.
Meeting, Convention, and Event Planners	<ul style="list-style-type: none"> <li>Travel and Tourism</li> </ul>	Coordinate all aspects of professional meetings and events, including staff, convention personnel, and client activities. Choose meeting locations, arrange transportation, and coordinate other details.
Recreation Workers	<ul style="list-style-type: none"> <li>Recreation, Amusements and Attractions</li> </ul>	Design and lead recreation activities for groups in public, private, or volunteer agencies or recreation facilities. Organize and promote activities like arts and crafts, sports, games, music, dramatics, social recreation, and camping.
Residential Advisors	<ul style="list-style-type: none"> <li>Lodging</li> </ul>	Coordinate activities in dormitories, group homes, or similar organizations. Order supplies and determine need for maintenance, repairs, and furnishings. May maintain household records and assign rooms. May assist residents with problem-solving or refer them to counseling resources.
Self-Enrichment Education Teachers	<ul style="list-style-type: none"> <li>Recreation, Amusements and Attractions</li> </ul>	Teach or instruct courses that don't usually lead to an occupation or degree. Courses may include self-improvement, nonvocational, and nonacademic subjects. Teaching may take place in a classroom or elsewhere.

**Source:** Information about occupation, career pathway, job description, and interest is from the O\*NET OnLine ([ononline.org](https://ononline.org/)); data for annual opening, growth, and wage is prepared by the Labor & Economic Analysis Division of North Carolina Department of Commerce.

- Notes:**
- The table lists a sampling of occupations that represent careers in each pathway. For a full list of occupations by career pathway within this cluster, check out O\*NET OnLine at [ononline.org/find/career?c=1&g=Go](https://ononline.org/find/career?c=1&g=Go)
  - Total average annual opening includes the total number of jobs available due to growth and replacement needs per year. The number of openings by occupation is based on North Carolina's 2012-2022 Occupational Projections.



Total Avg. Annual Opening <sup>2</sup>	NC Annualized Growth Rate <sup>3</sup>	NC Entry Annual Wage	NC Median Annual Wage	Minimum Education <sup>4</sup>	Interest <sup>5</sup>
68	0.8%	\$32,740	\$46,090	High school diploma plus work experience	E, R and A
1,525	1.5%	\$21,090	\$29,240	High school diploma plus work experience	E, C and R
314	1.5%	\$23,370	\$31,130	High school diploma plus work experience	E, C and R
215	0.6%	\$39,210	\$52,890	High school diploma plus work experience	E, C and R
515	1.8%	\$16,830	\$19,920	High school diploma plus work experience	C, E and S
101	0.7%	\$32,070	\$41,670	High school diploma plus work experience	E, C and S
109	3.0%	\$30,170	\$42,750	Bachelor's degree	E, C and S
241	1.4%	\$16,710	\$20,810	Bachelor's degree	S, E and A
117	2.9%	\$16,730	\$24,880	High school diploma plus moderate-term, on-the-job training	S, E and C
227	2.4%	\$20,740	\$34,330	High school diploma plus work experience	S, A and E

3. Annualized growth rate is the year-over-year growth rate over multiple years. Note that this growth rate is not obtained by averaging the year-to-year percentage changes. The annualized growth rate is useful for comparing growth rates for various time periods and for different series over the same time period; for example, comparing 5-year to 10-year growth or comparing growth in health care sector to education sector.

4. Minimum education requirements for occupations are determined by the U.S. Bureau of Labor Statistics ([bls.gov/emp/ep\\_education\\_training\\_system.htm](https://www.bls.gov/emp/ep_education_training_system.htm)). Actual market conditions may require additional education and/or training.

5. There are six interest types: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Discover your work-related interests on pages 5-8 to find out which types you are most like and the careers that fit you best.

## Career Stories



### Alvin Brame

Dinner Cook

***“The culinary instructors in Vance-Granville Community College gave me free range to use my creativity and imagination, and the tools I needed for success.”***

Alvin C. Brame of Middleburg graduated from Northern Vance High School, enlisted in the U.S. Marine Corps and served for more than seven years as a food service specialist. Even with his training, when he exited the military and tried to find a job in the hospitality world, he found that he did not have the formal education required by employers. So Brame decided to use his veterans’ education benefits to combine his experience with an education from the Culinary Arts program at Vance-Granville Community College (VGCC).

“I appreciated the leadership and guidance I received from the Culinary instructors,” Brame said. “They gave me free range to use my creativity and imagination, and the tools I needed for success.” After making the Dean’s List and receiving an endowed VGCC scholarship, he graduated with his degree in 2010. Within days, with the help of a glowing recommendation from Culinary program head Chef Ross Ragonese, Brame was offered a job as the dinner cook at a Ribeyes Steakhouse.

Now employed doing what he loves, Brame still continued his education at VGCC and completed a Business Administration degree, graduating on his 32nd birthday. “My business courses are helping me on the job today and will be beneficial to me later as I further my career,” Brame said. “When I graduated from high school, I never dreamed of graduating from college once, let alone twice!”



## Human Services

From customer service representatives to mental health counselors to hairdressers, human services workers provide a wide range of assistance to individuals and families. People who choose to work in this cluster usually have a deep desire to enrich and make life easier for others. The social assistance industry shows the largest projected job growth rate in North Carolina over the next 10 years, and is among the top 10 for total numbers of new jobs during that time.

What kinds of services do human services customers need? They may benefit from rehabilitation therapy; psychological assistance; help with daily activities such as meal preparation or housekeeping; spiritual guidance; or health education. Their needs have an impact on where workers provide services. Psychologists and Social and Community Service Managers are likely to work in office settings. Others like clergy and social workers may work part of the time in an office and also visit people at home.

Since the services provided in this industry vary greatly, workers in this cluster have educational backgrounds that range from high school diplomas to doctorates. They may also need credentials such as certifications and licenses. Day care centers, fitness and sports centers, social assistance organizations and local and state government tend to offer more human services jobs than other work settings.

### **CAREER RESEARCH**

- **National Association of Social Workers:**  
[naswdc.org/](http://naswdc.org/)
- **National Association for Family Child Care:**  
[nafcc.org](http://nafcc.org)
- **Association for Early Learning Leaders:**  
[earlylearningleaders.org/](http://earlylearningleaders.org/)
- **Associated Bodywork & Massage Professionals:**  
[abmp.com/](http://abmp.com/)
- **American Society for Training and Development:**  
[astd.org/](http://astd.org/)
- **US Department of Health and Human Services:**  
[hhs.gov/careers/index.html](http://hhs.gov/careers/index.html)

Find more Human Services occupations at:  
[onetonline.org/find/career?c=10&g=Go](http://onetonline.org/find/career?c=10&g=Go)



# Core Skills

- Service Orientation
- Social Perceptiveness
- Instructing
- Learning Strategies
- Operations Analysis
- Persuasion
- Speaking
- Negotiation
- Writing
- Active Listening



## Early Childhood Development & Services Pathway

Occupation

- Education, Training & Library  
Preschool Teachers, Except Special Education

## Consumer Services Pathway

Occupation

- Arts, Design, Entertainment, Sports & Media  
Public Relations Specialists; Writers & Authors; Technical Writers
- Management  
Sales Managers; Marketing Managers; Property, Real Estate & Community Association Managers
- Office & Administrative Support  
Customer Service Reps
- Sales & Related  
First-Line Supervisors of Retail Sales Workers



## Counseling & Mental Health Services Pathway

Occupation

- **Arts, Design, Entertainment, Sports & Media**  
Music Directors & Composers
- **Community & Social Service**  
Clergy; Other Religious Workers; Directors, Religious Activities & Education; Mental Health Counselors; Mental Health & Substance Abuse Social Workers; Rehabilitation Counselors; Healthcare Social Workers; Substance Abuse & Behavioral Disorder Counselors; Health Educators
- **Education, Training & Library**  
Mathematical Science Teachers, Postsecondary; Psychology Teachers, Postsecondary; Philosophy & Religion Teachers, Postsecondary; Social Work Teachers, Postsecondary
- **Healthcare Practitioners & Technicians**  
Other Physicians & Surgeons
- **Life, Physical, & Social Science**  
Clinical, Counseling & School Psychologists
- **Management**  
Social & Community Service Managers; Natural Science Managers
- **Personal Care & Service**  
Recreation Workers

## Family & Community Services Pathway

Occupation

- **Community & Social Service**  
Clergy; Child, Family & School Social Workers; Social & Human Service Assistants; Directors, Religious Activities & Education; Healthcare Social Workers; Probation Officers & Correctional Treatment Specialists; Other Social Workers
- **Education, Training & Library**  
Social Work Teachers, Postsecondary
- **Life, Physical & Social Science**  
Social Science Research Assistants; Other Social Scientists & Related Workers
- **Management**  
Other Managers; Chief Executives; Social & Community Service Managers
- **Office & Administrative Support**  
Eligibility Interviewers, Government Programs
- **Personal Care & Service**  
Residential Advisors
- **Protective Service**  
Other Protective Service Workers

## Personal Care Services Pathway

Occupation

- **Healthcare Support**  
Massage Therapists
- **Personal Care & Service**  
Hairdressers, Hairstylists & Cosmetologists; First-Line Supervisors of Personal Service Workers; Fitness Trainers & Aerobics Instructors; Funeral Attendants; Barbers; Morticians, Undertakers & Funeral Directors; Skincare Specialists
- **Production**  
Tailors, Dressmakers & Custom Sewers



# Selected Careers<sup>1</sup>

Occupation	Career Pathway	Job Description
Child, Family, and School Social Workers	<ul style="list-style-type: none"> <li>Family and Community Services</li> </ul>	Help children and their families solve and cope with problems by providing social services and assistance. Address problems like teenage pregnancy, misbehavior, and truancy in schools. May focus on ways to improve children's school performance and may also advise teachers.
Childcare Workers	<ul style="list-style-type: none"> <li>Early Childhood Development and Services</li> <li>Family and Community Services</li> </ul>	Take care of children at schools, businesses, private households, and childcare institutions. Perform a variety of tasks for children, like dressing, feeding, bathing, and overseeing play. May help children prepare for kindergarten or help older children with homework.
Healthcare Social Workers	<ul style="list-style-type: none"> <li>Counseling and Mental Health Services</li> <li>Family and Community Services</li> </ul>	Give psychological and social support to individuals, families, and groups coping with chronic, acute, or terminal illnesses. May advise family caregivers, provide patient education and counseling, and make referrals for other services. May also provide care and case management or take actions to promote health, prevent disease, and help clients access healthcare.
Massage Therapists	<ul style="list-style-type: none"> <li>Personal Care Services</li> </ul>	Perform therapeutic massages of soft tissues and joints. Relieve pain and stress, improve circulation, and aid in clients' general wellness. May help assess range of motion and muscle strength or propose client therapy plans.
Mental Health Counselors	<ul style="list-style-type: none"> <li>Counseling and Mental Health Services</li> </ul>	Help people manage and overcome mental and emotional disorders as well as problems with their family and relationships. Listen to clients and ask questions to help them understand their problems and develop strategies to improve their lives. May help individuals deal with issues like addictions and managing stress.
Mental Health and Substance Abuse Social Workers	<ul style="list-style-type: none"> <li>Counseling and Mental Health Services</li> </ul>	Assess and treat individuals who have mental, emotional, or substance abuse problems, including alcohol, tobacco and/or drug abuse. Activities may include individual and group therapy, crisis intervention, case management, client advocacy, prevention, and education.
Rehabilitation Counselors	<ul style="list-style-type: none"> <li>Counseling and Mental Health Services</li> </ul>	Help people with emotional and physical disabilities live independently. Coordinate activities for residents of care and treatment facilities. Assess client needs. Design and carry out rehabilitation programs that may include personal and career counseling, training, and job placement.
Social and Community Service Managers	<ul style="list-style-type: none"> <li>Counseling and Mental Health Services</li> <li>Family and Community Services</li> </ul>	Oversee or coordinate social service programs or community organizations. Administer organizations' budgets and policies about participant involvement, program requirements, and benefits. May direct social workers, counselors, or probation officers.
Social and Human Service Assistants	<ul style="list-style-type: none"> <li>Family and Community Services</li> </ul>	Provide client services that help people get through difficult times or get extra support. May help clients find appropriate social and community services and benefits. May also help social workers develop, organize, and conduct programs to prevent or deal with substance abuse, relationships, or dependent care.
Social Science Research Assistants	<ul style="list-style-type: none"> <li>Family and Community Services</li> </ul>	Assist social scientists in social science research. May help prepare findings for publication and assist with laboratory analysis, quality control, or data management.

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Total Avg. Annual Opening <sup>2</sup>	NC Annualized Growth Rate <sup>3</sup>	NC Entry Annual Wage	NC Median Annual Wage	Minimum Education <sup>4</sup>	Interest <sup>5</sup>
367	1.6%	\$33,210	\$42,760	Bachelor's degree	S and E
1896	2.0%	\$16,750	\$18,840	High school diploma plus short-term, on-the-job training	S and A
172	2.4%	\$32,760	\$45,050	Master's degree	S and I
138	1.9%	\$27,100	\$40,420	Postsecondary nondegree award	S and R
239	3.2%	\$33,240	\$41,620	Master's degree	S, I and A
219	2.7%	\$33,310	\$43,720	Bachelor's degree	S, I and A
187	2.6%	\$24,880	\$36,970	Master's degree	S and I
155	3.2%	\$40,700	\$58,700	Bachelor's degree	E and S
449	2.7%	\$20,260	\$27,020	High school diploma plus short-term, on-the-job training	C, S and E
67	1.2%	\$32,300	\$43,490	Associate degree	C and I

3. Annualized growth rate is the year-over-year growth rate over multiple years. Note that this growth rate is not obtained by averaging the year-to-year percentage changes. The annualized growth rate is useful for comparing growth rates for various time periods and for different series over the same time period; for example, comparing 5-year to 10-year growth or comparing growth in health care sector to education sector.

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# Career Stories



## Jennifer Etters

Lead Career Coach

### *Gaston College's Human Service Career Path Doesn't Disappoint*

Jennifer's education and career path began with disappointment. The day before she was to graduate from high school in 2001, she discovered that she would not be able to participate in the commencement because she lacked a science class. After crying for days, Jennifer realized she could get her Adult High School Diploma. That was her first experience with the community college. She completed her diploma in December 2001.

Jennifer recognized that she liked hearing peoples' stories and that she wanted to help people. Due to her difficulty in high school, including being a pregnant teen, she especially wanted to help young women who needed assistance in getting back on track.

Jennifer was one of the first students to enroll in the Associate in Applied Science degree program called Human Services Technology at Gaston College. She entered into her first internship in the fall of 2011 with the Workforce Investment Act/Gaston YouthWorks program. Along with some clerical duties, Jennifer attended case study meetings and organized workshops for students. She could see the benefit of this program for students who weren't much different from her when she was their age. During that internship, Jennifer was able to have a real hands-on experience with clerical tasks and students. She also began to work with the worksite monitor to help prepare for the Summer Work Experience Program.

In the spring of 2012 Jennifer graduated with Honors and was elected as President of the Human Service Technology Club. The weekend of her graduation, the worksite monitor had some medical issues and had to take a leave. Gaston YouthWorks offered Jennifer the job of worksite monitor. With her degree in hand and only a little bit of experience with the worksite monitor, Jennifer was able to dive right in and take on the huge task.

Jennifer's job was to ensure that the Summer Work Experience Program was beneficial to not only the work sites but also to the youth. Once the summer program was complete, Jennifer was able to continue as worksite monitor with students who were allowed to extend the work experience into the year-round work program. The program director also allowed Jennifer to carry a small case load of 10 students on top of the monitoring responsibilities. Once the worksite monitor returned to work in January of 2013, Jennifer became a case manager with a case load of about 20 students.

Today, three and a half years later, while there have been major changes in the program, Jennifer is still working with Gaston YouthWorks as a Lead Career Coach.



## Information Technology

Maybe you used to shop more at the mall but now order things online. Smart electronics can give directions, and even turn on your oven while you're out. You can push a button to start your car and immediately stop to move the bicycle that showed up in your backup camera. Who's responsible for these tools?

Workers in the information technology (IT) industry develop the software and hardware that make our lives easier, and they fix and help us use these tools. As organizations and individuals face the threats and consequences of data theft, they need information security analysts to maintain online privacy. In North Carolina, this occupation has the highest expected percentage of new job growth in the IT career cluster. Because they occur in almost any industry, three IT occupations are likely to be among those that have the largest number of new jobs in North Carolina: applications software developers, computer user support specialists, and computer systems analysts.

Many IT jobs are professional, and most new jobs will require postsecondary education. IT careers can be found in many work settings. The kinds of organizations most likely to employ more IT workers include: custom computer programming companies; computer systems design companies; corporate and regional managing offices; software publishers; and data processing and hosting businesses.

IT has changed the technical skills required in many occupations. While reducing the availability of some jobs, it has also produced totally new career options. As IT continues to evolve, we will need to keep pace with its changes in our workplaces.

### **CAREER RESEARCH**

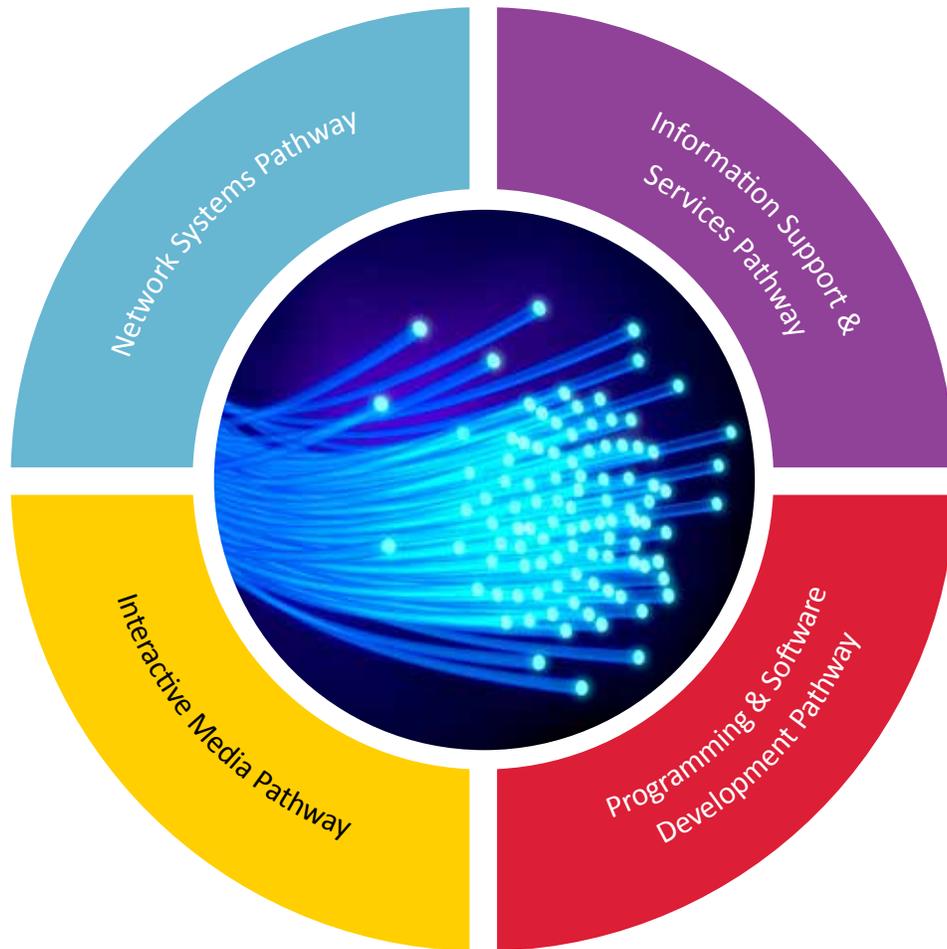
- **Center of Excellence for Information and Computing Technology:**  
[coeforict.org/](http://coeforict.org/)
- **National Center for Women and Information Technology:**  
[ncwit.org/](http://ncwit.org/)
- **Institute of Electrical and Electronics Engineers Computer Society:**  
[computer.org](http://computer.org)
- **Technology Services Industry Association:**  
[tsia.com/](http://tsia.com/)
- **National Center for Systems Security and Information Assurance:**  
[cssia.org/](http://cssia.org/)
- **SkillsUSA:**  
[skillsusa.org/](http://skillsusa.org/)

Find more Information Technology occupations at:  
[onetonline.org/find/career?c=11&g=Go](http://onetonline.org/find/career?c=11&g=Go)



# Core Skills

- Programming
- Technology Design
- Operation Analysis
- Installation
- Systems Analysis
- Systems Evaluation
- Troubleshooting
- Equipment Selection
- Mathematics
- Science



## Network Systems Pathway

- **Arts, Design, Entertainment, Sports & Media**  
Graphic Designers; Multimedia Artists & Animators
- **Computer & Mathematical**  
Software Developers, Applications; Software Developers, Systems Software; Network & Computer Systems Administrators; Computer Programmers; Computer Network Support Specialists; Computer Network Architects; Information Security Analysts; Other Computer Occupations; Database Administrators
- **Education, Training & Library**  
Computer Science Teachers, Postsecondary
- **Management**  
Computer & Information Systems Managers

Occupation

## Information Support & Services Pathway

Occupation

- **Computer & Mathematical**  
Software Applications Developers; Computer User Support Specialists; Computer Systems Analysts; Software Developers, Systems Software; Network & Computer Systems Administrators; Computer Network Architects; Other Computer Occupations; Database Administrators
- **Education, Training & Library**  
Computer Science Teachers, Postsecondary
- **Management**  
Computer & Information Systems Managers
- **Production**  
Computer Numerically Controlled Machine Tool Programmers, Metal & Plastic

## Programming & Software Development Pathway

Occupation

- **Architecture & Engineering**  
Computer Hardware Engineers
- **Computer & Mathematical**  
Software Applications Developers; Computer Systems Analysts; Software Developers, Systems Software; Network & Computer Systems Administrators; Computer Programmers; Computer Network Architects; Web Developers; Information Security Analysts; Database Administrators
- **Education, Training & Library**  
Computer Science Teachers, Postsecondary; Engineering Teachers, Postsecondary
- **Management**  
Computer & Information Systems Managers; Architectural & Engineering Managers
- **Production**  
Computer Numerically Controlled Machine Tool Programmers, Metal & Plastic

## Interactive Media Pathway

Occupation

- **Computer & Mathematical**  
Software Developers, Applications; Computer Systems Analysts; Software Developers, Systems Software; Computer Programmers



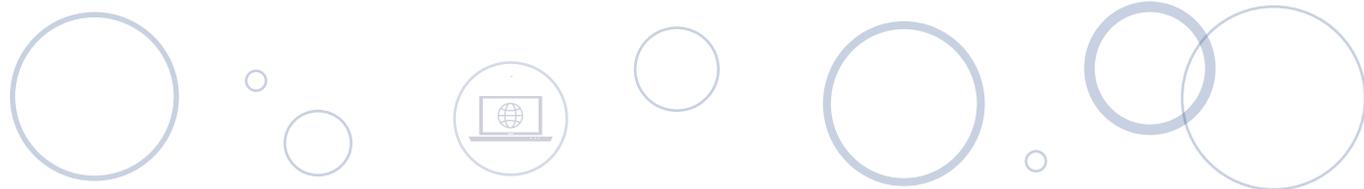
# Selected Careers<sup>1</sup>

Occupation	Career Pathway	Job Description
Computer and Information Systems Managers	<ul style="list-style-type: none"> <li>Information Support and Services</li> <li>Network Systems Programming and Software Development</li> </ul>	Plan, direct, or coordinate activities in such fields as electronic data processing, information systems, systems analysis, and computer programming.
Computer Network Architects	<ul style="list-style-type: none"> <li>Information Support and Services</li> <li>Network Systems Programming and Software Development</li> </ul>	Design and implement computer and information networks, such as local area networks (LAN), wide area networks (WAN), intranets; extranets, and other data communications networks. Perform network modeling, analysis, and planning.
Computer Network Support Specialists	<ul style="list-style-type: none"> <li>Network Systems</li> </ul>	Analyze, test, troubleshoot, and evaluate existing network systems, such as local area network (LAN), wide area network (WAN), and Internet systems or a segment of a network system. Perform network maintenance to ensure networks operate correctly with minimal interruption.
Computer Programmers	<ul style="list-style-type: none"> <li>Interactive Media</li> <li>Network Systems Programming and Software Development</li> </ul>	Create, modify, and test the code, forms, and script that allow computer applications to run. Work from specifications drawn up by software developers or other individuals.
Computer Systems Analysts	<ul style="list-style-type: none"> <li>Information Support and Services</li> <li>Interactive Media</li> <li>Programming and Software Development</li> </ul>	Analyze science, engineering, business, and other data processing problems to implement and improve computer systems. Analyze user requirements, procedures, and problems to automate or improve existing systems and review computer system capabilities, workflow, and scheduling limitations.
Computer User Support Specialists	<ul style="list-style-type: none"> <li>Information Support and Services</li> </ul>	Provide technical assistance to computer users. Answer questions or resolve computer problems for clients in person, or via telephone or electronically.
Information Security Analysts	<ul style="list-style-type: none"> <li>Network Systems Programming and Software Development</li> </ul>	Plan, implement, upgrade, or monitor security measures for the protection of computer networks and information. May ensure appropriate security controls are in place that will safeguard digital files and vital electronic infrastructure.
Network and Computer Systems Administrators	<ul style="list-style-type: none"> <li>Information Support and Services</li> <li>Network Systems Programming and Software Development</li> </ul>	Install, configure, and support an organization's local area network (LAN), wide area network (WAN), and Internet systems or a segment of a network system. Monitor network to ensure network availability to all system users and may perform necessary maintenance to support network availability.
Software Developers, Applications	<ul style="list-style-type: none"> <li>Information Support and Services</li> <li>Interactive Media</li> <li>Network Systems Programming and Software Development</li> </ul>	Develop, create, and modify general computer applications software or specialized utility programs. Analyze user needs and develop software solutions. Design software or customize software for client use with the aim of optimizing operational efficiency.
Web Developers	<ul style="list-style-type: none"> <li>Programming and Software Development</li> </ul>	Design, create, and modify websites. Analyze user needs to implement website content, graphics, performance, and capacity. May integrate websites with other computer applications.

**Source:** Information about occupation, career pathway, job description, and interest is from the O\*NET OnLine ([ononline.org/](https://ononline.org/)); data for annual opening, growth, and wage is prepared by the Labor & Economic Analysis Division of North Carolina Department of Commerce.

**Notes:**

- The table lists a sampling of occupations that represent careers in each pathway. For a full list of occupations by career pathway within this cluster, check out O\*NET OnLine at [ononline.org/find/career?c=1&g=Go](https://ononline.org/find/career?c=1&g=Go)
- Total average annual opening includes the total number of jobs available due to growth and replacement needs per year. The number of openings by occupation is based on North Carolina's 2012-2022 Occupational Projections.



Total Avg. Annual Opening <sup>2</sup>	NC Annualized Growth Rate <sup>3</sup>	NC Entry Annual Wage	NC Median Annual Wage	Minimum Education <sup>4</sup>	Interest <sup>5</sup>
353	1.6%	\$87,310	\$121,030	Bachelor's degree	E, C and I
148	1.2%	\$61,720	\$91,500	Bachelor's degree	I, C and E
142	0.8%	\$38,750	\$60,570	Associate degree	R, E and C
269	0.4%	\$48,420	\$76,450	Bachelor's degree	I and C
557	2.3%	\$55,350	\$80,610	Bachelor's degree	I, C and R
662	1.7%	\$32,260	\$47,680	Some college with moderate-term, on-the-job training	R, I and C
169	3.4%	\$58,070	\$84,360	Bachelor's degree	C, I and R
238	1.1%	\$50,050	\$72,140	Bachelor's degree	I, R and C
661	1.9%	\$60,450	\$85,980	Bachelor's degree	I, R and C
162	2.2%	\$35,450	\$62,890	Associate degree	C, I and R

3. Annualized growth rate is the year-over-year growth rate over multiple years. Note that this growth rate is not obtained by averaging the year-to-year percentage changes. The annualized growth rate is useful for comparing growth rates for various time periods and for different series over the same time period; for example, comparing 5-year to 10-year growth or comparing growth in health care sector to education sector.

4. Minimum education requirements for occupations are determined by the U.S. Bureau of Labor Statistics ([bls.gov/emp/ep\\_education\\_training\\_system.htm](https://www.bls.gov/emp/ep_education_training_system.htm)). Actual market conditions may require additional education and/or training.

5. There are six interest types: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Discover your work-related interests on pages 5-8 to find out which types you are most like and the careers that fit you best.

## Career Stories



### Kevin Lipford

IT Technician

*“The education I got at Forsyth Tech made it a lot easier to complete my bachelor’s degree at ECU.”*

Kevin Lipford wanted options, so he graduated from Forsyth Tech in 2009 with not one degree, but two: an Associate of Applied Science (AAS) in Networking Technologies and an AAS in Information Systems Security. “Going into the job market,” he explains, “I wanted to be able to cover two very big and growing industries.”

His strategy paid off. Today Kevin is an Information Technology Technician at Gannet-owned WFMY News 2 in Greensboro where he works on “a hodgepodge of different things. I handle pretty much anything that has to do with information technology.” It’s a job that allows him to use everything he learned at Forsyth Tech, which he credits with much of his success.

Kevin grew up in Georgia and attended a four-year school there for one year after high school. When his family moved to Winston-Salem, he considered his options, and Forsyth Tech made the most sense. “Why go to a big four-year school when I can go somewhere that’s more convenient and a lot less expensive, and still get a quality education?” Following graduation from Forsyth Tech, Kevin enrolled in a four-year school, earning a bachelor’s degree in Information Technology at East Carolina University. “The education I got at Forsyth Tech made it a lot easier to complete my bachelor’s degree at ECU,” he says.

Kevin is focused on his career growth. He wants to become a manager of technology for a TV station or a senior IT analyst for Gannett.



## Law, Public Safety, Corrections & Security

When there's something strange in your neighborhood, who are you going to call? Typically someone from this career cluster will respond to your request for help. These workers protect us from crime and other sources of harm like natural disasters. They help us receive fair treatment and get justice when we've been wronged. Some workers also set up and implement security plans.

If you pay attention to the evening news or watch television dramas, you're aware of the most obvious occupations in this industry: police officers, firefighters, and lawyers. Less apparent careers include hazardous material removal workers, ski patrol workers, and postsecondary educators who teach criminal justice, psychology, and anthropology classes. Occupations with faster-than-average growth in North Carolina include security guards, paralegals, and emergency medical technicians.

Work environments and educational backgrounds differ in these careers. Although some workers stay in offices most of the day, others work in the outdoors. For certain jobs, workers have to pass medical exams and demonstrate strength and agility. Some careers may be dangerous and require shift work, sometimes with long hours. Many of these jobs can be found at all levels of government, in law offices, and security businesses.

### CAREER RESEARCH

- **American Bar Association:**  
[americanbar.org/aba.html](http://americanbar.org/aba.html)
- **International City/County Management Association:**  
[icma.org/en/icma/home](http://icma.org/en/icma/home)
- **U.S. Department of Homeland Security:**  
[dhs.gov/](http://dhs.gov/)
- **National Institute of Corrections:**  
[nicic.gov/](http://nicic.gov/)
- **Fraternal Order of Police:**  
[grandlodgefop.org/](http://grandlodgefop.org/)
- **Federal Law Enforcement Jobs:**  
[federaljobs.net/law.htm](http://federaljobs.net/law.htm)

Find more Law, Public Safety, Corrections & Security occupations at:  
[onetonline.org/find/career?c=12&g=Go](http://onetonline.org/find/career?c=12&g=Go)



# Core Skills

- Negotiation
- Persuasion
- Speaking
- Social Perceptiveness
- Active Listening
- Writing
- Service Orientation
- Critical Thinking
- Judgement & Decision Making
- Instructing



## Security & Protective Services Pathway

Occupation

- Education, Training & Library  
Criminal Justice & Law Enforcement Teachers, Postsecondary
- Protective Service  
Security Guards; Other First-Line Supervisors of Protective Service Workers; Private Detectives & Investigators; Crossing Guards; Animal Control Workers

## Legal Services Pathway

Occupation

- Education, Training & Library  
Law Teachers, Postsecondary
- Legal  
Lawyers; Paralegals & Legal Assistants; Other Legal Support Workers; Title Examiners, Abstractors & Searchers
- Office & Administrative Support  
Legal Secretaries



## Correction Services Pathway

Occupation

- **Community & Social Service**  
Child, Family & School Social Workers; Probation Officers & Correctional Treatment Specialists; Other Social Workers
- **Education, Training & Library**  
Criminal Justice & Law Enforcement Teachers, Postsecondary; Psychology Teachers, Postsecondary
- **Protective Service**  
Security Guards; Correctional Officers & Jailers; First-Line Supervisors of Police & Detectives; Other Protective Service Workers; First-Line Supervisors of Correctional Officers

## Emergency & Fire Management Services Pathway

Occupation

- **Construction & Extraction**  
Hazardous Materials Removal Workers
- **Healthcare Practitioners & Technicians**  
Emergency Medical Technicians & Paramedics
- **Office & Administrative Support**  
Police, Fire & Ambulance Drivers
- **Protective Service**  
Correctional Officers & Jailers; Firefighters; First-Line Supervisors of Firefighting & Prevention Workers; Fire Inspectors & Investigators

## Law Enforcement Services Pathway

Occupation

- **Education, Training & Library**  
Criminal Justice & Law Enforcement Teachers, Postsecondary
- **Life, Physical & Social Science**  
Forensic Science Technicians
- **Protective Service**  
Police & Sheriff's Patrol Officers; Correctional Officers & Jailers; First-Line Supervisors of Police & Detectives; Detectives & Criminal Investigators; Other Protective Service Workers; Transportation Security Screeners; Animal Control Workers; Bailiffs



# Selected Careers<sup>1</sup>

Occupation	Career Pathway	Job Description
Correctional Officers and Jailers	<ul style="list-style-type: none"> <li>Correction Services</li> <li>Emergency and Fire Management Services</li> <li>Law Enforcement Services</li> </ul>	Oversee individuals who have been arrested and are awaiting trial or who have been sentenced to serve time in a jail or prison. Guard inmates following regulations and procedures. May guard prisoners traveling between jail, courtroom, prison, or other points.
Criminal Investigators and Special Agents	<ul style="list-style-type: none"> <li>Law Enforcement Services</li> </ul>	Gather facts and collect evidence of possible federal, state, or local crimes to help determine if enough evidence exists to recommend going to court.
Emergency Medical Technicians and Paramedics	<ul style="list-style-type: none"> <li>Emergency and Fire Management Services</li> </ul>	Assess injuries, administer emergency medical care, and remove people who are trapped. Transport injured or sick persons to hospitals.
Firefighters	<ul style="list-style-type: none"> <li>Emergency and Fire Management Services</li> </ul>	Control and put out fires or respond to emergency situations where life, property, or the environment is at risk. Duties may include fire prevention, emergency medical service, hazardous material response, search and rescue, and disaster assistance.
First-Line Supervisors of Firefighting and Prevention Workers	<ul style="list-style-type: none"> <li>Emergency and Fire Management Services</li> </ul>	Directly supervise and coordinate activities of workers engaged in firefighting and fire prevention and control.
Forensic Science Technicians	<ul style="list-style-type: none"> <li>Law Enforcement Services</li> </ul>	Help investigate crimes by collecting and analyzing physical evidence. Many technicians specialize in either crime scene investigation or laboratory analysis. Most forensic science technicians spend some time writing reports.
Lawyers	<ul style="list-style-type: none"> <li>Legal Services</li> </ul>	Represent clients in criminal and civil court and other legal proceedings. Manage or advise clients on legal matters. Draw up legal documents. May specialize in a single area or practice in many areas of law.
Paralegals and Legal Assistants	<ul style="list-style-type: none"> <li>Legal Services</li> </ul>	Investigate facts, prepare legal documents, or research previous legal findings to assist lawyers. Conduct research to support a legal proceeding, build a defense, or start legal action.
Police and Sheriff's Patrol Officers	<ul style="list-style-type: none"> <li>Law Enforcement Services</li> </ul>	Enforce laws to keep order and protect lives and property. May patrol a specific area, direct traffic, and issue traffic citations. Also may investigate accidents, apprehend and arrest suspects, or serve legal documents.
Security Management Specialists	<ul style="list-style-type: none"> <li>Security and Protective Services</li> </ul>	Evaluate organizations' security programs and design security systems and processes. May specialize in areas like physical security, personnel security, and information security. May work in fields such as healthcare, banking, gaming, security engineering, or manufacturing.

Source: Information about occupation, career pathway, job description, and interest is from the O\*NET OnLine ([onetonline.org](https://onetonline.org/)); data for annual opening, growth, and wage is prepared by the Labor & Economic Analysis Division of North Carolina Department of Commerce.

- Notes:
- The table lists a sampling of occupations that represent careers in each pathway. For a full list of occupations by career pathway within this cluster, check out O\*NET OnLine at [onetonline.org/find/career?c=1&g=Go](https://onetonline.org/find/career?c=1&g=Go)
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Total Avg. Annual Opening <sup>2</sup>	NC Annualized Growth Rate <sup>3</sup>	NC Entry Annual Wage	NC Median Annual Wage	Minimum Education <sup>4</sup>	Interest <sup>5</sup>
616	0.7%	\$27,840	\$29,680	High school diploma plus moderate-term, on-the-job training	R, E and C
87	0.6%	\$36,280	\$45,810	High school diploma plus moderate-term, on-the-job training	E and I
482	2.0%	\$23,090	\$31,190	Postsecondary nondegree award	S, I and R
402	0.4%	\$21,190	\$30,480	Postsecondary nondegree award	R, S and E
128	0.5%	\$41,010	\$54,710	Postsecondary nondegree award	E, R and S
20	0.7%	\$34,370	\$41,610	Bachelor's degree	I, R and C
506	1.7%	\$52,550	\$92,900	Doctoral or professional degree	E and I
440	2.4%	\$27,960	\$38,970	Associate degree	C, I and E
732	0.6%	\$30,440	\$39,050	High school diploma plus moderate-term, on-the-job training	R, E and C
797	1.2%	\$40,870	\$61,530	High school diploma plus work experience	C and E

- Annualized growth rate is the year-over-year growth rate over multiple years. Note that this growth rate is not obtained by averaging the year-to-year percentage changes. The annualized growth rate is useful for comparing growth rates for various time periods and for different series over the same time period; for example, comparing 5-year to 10-year growth or comparing growth in health care sector to education sector.
- Minimum education requirements for occupations are determined by the U.S. Bureau of Labor Statistics ([bls.gov/emp/ep\\_education\\_training\\_system.htm](https://www.bls.gov/emp/ep_education_training_system.htm)). Actual market conditions may require additional education and/or training.
- There are six interest types: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Discover your work-related interests on pages 5-8 to find out which types you are most like and the careers that fit you best.



# Career Stories



## Barry Stanley

Police Chief

***“Good, quality training is what is needed to excel in a law enforcement career and better-educated and trained officers serve their communities much better.”***

While many struggle to identify their life’s calling, it’s a safe bet to say Barry Stanley never experienced that frustration. Stanley, who is police chief for the Town of Ayden, says he knew early on that he wanted to pursue a law enforcement career.

“I have always enjoyed helping people and doing things that will better my community,” he says. “I was very involved in the Law Enforcement Explorer program from age 15 until I turned 20.”

Stanley, now 43 years old, says he was well-prepared for a life of protecting and serving his fellow citizens when he completed Pitt Community College’s Basic Law Enforcement Training (BLET) program in March 1993. His first law enforcement job was with the Town of Grifton, where he served as a patrol officer for two years.

Next he joined the Ayden Police Department as a patrol officer in 1996 and worked his way up to sergeant. Stanley then went on to become Bethel’s assistant police chief in 2001. He took over as chief in October 2005 and remained in that capacity until taking the same position with Ayden Police Department, December 9, 2011.

Looking back on his career, Stanley says education “played a strong role” in his rise through the ranks. “Good, quality training is what is needed to excel in a law enforcement career,” he says. “... Better-educated and trained officers serve their communities much better.”

Stanley notes that police training doesn’t end with BLET graduation. He says officers must seek professional development in specialized and in-service instruction throughout their careers in order to stay current with changes in the law and to be ready for the duties they must perform each day.

"Successful law enforcement personnel", Stanley says, "possess good social skills and outgoing personalities." He says it also takes a good sense of humor, compassion, and empathy combined with honesty and integrity to do the job well.



## Manufacturing

Although manufacturing often brings to mind huge, wide-open factory floors, it also includes small businesses. Manufacturing businesses can range from in-home bakeries to large corporations like Siemens. One thing most manufacturing businesses have in common: increasing use of technology. From roastmasters who use programmable coffee roasting machines to industrial engineering technicians who operate 3-D printers that make metal parts, manufacturing is quite different than it was even a decade ago.

Manufacturing workers change materials, substances, or components into new products. Manufactured goods include or are made from chemicals, computers and electronics, fabricated metal products, food, machinery, plastics and rubber products, or transportation equipment. While businesses still hire workers for traditional mass production of simple products, manufacturing jobs increasingly use technologies that enable workers to customize, shorten production time, and create lighter weight, more durable products.

Manufacturing includes occupations with a variety of education and experience backgrounds, but job numbers have been decreasing in occupations that require the least amount of education. North Carolina's growth careers in manufacturing often involve installing, maintaining, and repairing increasingly technical equipment. Industries most likely to hire this cluster's workers include temporary service agencies, poultry processing plants, and furniture and drug manufacturers.

### CAREER RESEARCH

- **National Coordinating Council for Career and Technical Student Organizations:**  
[ctsos.org/](https://www.ctsos.org/)
- **Association for Manufacturing Technology:**  
[amtonline.org/](https://www.amtonline.org/)
- **National Science Foundation:**  
[nsf.gov/](https://www.nsf.gov/)
- **National Nanomanufacturing Network:**  
[internano.org/](https://www.internano.org/)
- **Manufacturing Day:**  
[mfgday.com/](https://www.mfgday.com/)
- **SkillsUSA:**  
[skillsusa.org/](https://www.skillsusa.org/)
- **Biomanufacturing Training and Education Center:**  
[btec.ncsu.edu/](https://www.btec.ncsu.edu/)

Find more Manufacturing occupations at:  
[onetonline.org/find/career?c=13&g=Go](https://www.onetonline.org/find/career?c=13&g=Go)



# Core Skills

- Repairing
- Equipment Maintenance
- Operation and Control
- Equipment Selection
- Troubleshooting
- Operation Monitoring
- Quality Control Analysis
- Installation
- Technology Design
- Monitoring



## Manufacturing Production Process Development Pathway

Occupation

- Life, Physical & Social Science  
Chemical Technicians; Environmental Science & Protection Technicians , Including Health; Other Life, Physical & Social Science Technicians
- Production  
Chemical Equipment Operators & Tenders; Electromechanical Equipment Assemblers

## Quality Assurance Pathway

Occupation

- Architecture & Engineering  
Environmental Engineering Technicians
- Healthcare Practitioners & Technicians  
Occupational Health & Safety Specialists
- Production  
Inspectors, Testers, Sorters, Samplers & Weighers



## Maintenance, Installation & Repair Pathway

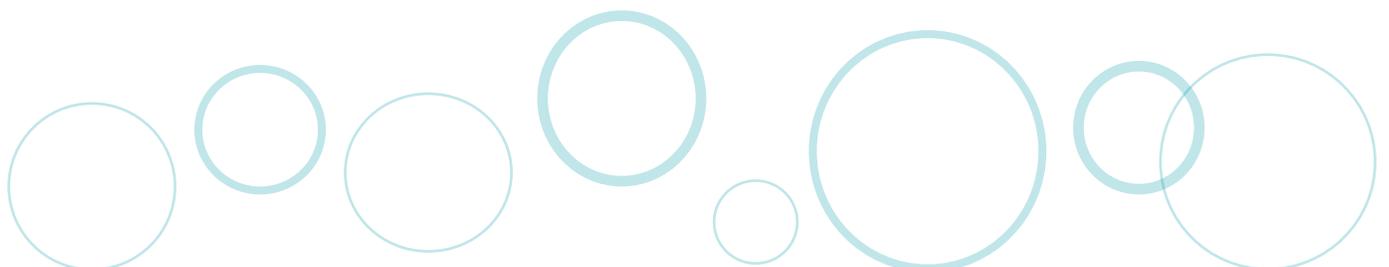
Occupation

- **Architecture & Engineering**  
Civil Engineering Technicians; Electrical & Electronic Engineering Technicians; Industrial Engineering Technicians; Mechanical Engineering Technicians; Other Engineering Technicians, Except Drafters
- **Arts, Design, Entertainment, Sports & Media**  
Interior Designers
- **Computer & Mathematical**  
Software Developers, Applications; Computer User Support Specialists
- **Construction & Extraction**  
Other Construction & Related Workers; Hazardous Materials Removal Workers; Fence Erectors; Elevator Installers & Repairers
- **Installation, Maintenance & Repair**  
Maintenance & Repair Workers, General; First-Line Supervisors of Mechanics, Installers & Repairers; Industrial Machinery Mechanics; Telecommunications Equipment Installers & Repairers, Except Line Installers; Helpers – Installation, Maintenance & Repair Workers; Computer Automated Teller & Officer Machine Repairers; Maintenance Workers, Machinery; Other Installation, Maintenance & Repair Workers; Mobile Heavy Equipment Mechanics, Except Engines; Telecommunications Line Installers & Repairers; Security & Fire Alarm Systems Installers; Electrical & Electronics Repairers, Commercial & Industrial Equipment; Medical Equipment Repairers; Outdoor Power Equipment & Other Small Engine Mechanics; Home Appliance Repairers; Millwrights; Rail Car Repairers; Locksmiths & Safe Repairers; Other Precision Instrument & Equipment Repairers
- **Life, Physical & Social Science**  
Biological Technicians
- **Office & Administrative Support**  
Production, Planning & Expediting Clerks
- **Computer & Mathematical**  
Inspectors, Testers, Sorters, Samplers & Weighers; Electromechanical Equipment Assemblers; Engine & Other Machine Assemblers; Jewelers & Precious Stone Metal Workers; Medical Appliance Technicians

## Production Pathway

Occupation

- **Architecture & Engineering**  
Industrial Engineering Technicians; Mechanical Engineering Technicians
- **Business & Financial Operations**  
Purchasing Agents, Except Wholesale, Retail, & Farm Products
- **Construction & Extraction**  
Sheet Metal Workers; Hazardous Materials Removal Workers
- **Installation, Maintenance & Repair**  
Millwrights; Recreational Vehicle Service Technicians
- **Management**  
Industrial Production Managers
- **Office & Administrative Support**  
Weighers, Measurers, Checkers & Samplers, Recordkeeping
- **Production**  
Team Assemblers; First-Line Supervisors of Production & Operating Workers; Inspectors, Testers, Sorters, Samplers, & Weighers; Helpers – Production Workers; Packaging & Filling Machine Operators & Tenders; Machinists; Welders, Cutters, Solderers & Brazers; Bakers; Mixing & Blending Machine Setters, Operators & Tenders; Computer-Controlled Machine Tool Operators; Metal & Plastic; Woodworking Machine Setters, Operators & Tenders, Except Sawing; Other Production Workers; Paper Goods Machine Setters, Operators & Tenders; Separating, Filtering, Clarifying, Precipitating & Still Machine Setters, Operators & Tenders; Coating, Painting & Spraying Machine Setters, Operators & Tenders; Structural Metal Fabricators & Fitters; Tool & Die Makers; Chemical Equipment Operators & Tenders; Painters, Transportation Equipment; Photographic Process Workers & Processing Machine Operators; Electromechanical Equipment Assemblers; Adhesive Bonding Machine Operators & Tenders; Forging Machine Setters, Operators & Tenders, Metal & Plastic; Engine & Other Machine Assemblers; Plating & Coating Machine Setters, Operators, & Tenders, Metal & Plastic; Computer Numerically Controlled Machine Tool Programmers, Metal & Plastic; Jewelers & Precious Stone & Metal Workers; Molders, Shapers & Casters, Except Metal & Plastic; Painting, Coating, & Decorating Workers; Fiberglass Laminators & Fabricators; Tool Grinders, Filers & Sharpeners; Crushing, Grinding, & Polishing Machine Setters, Operators, & Tenders; Ophthalmic Laboratory Technicians
- **Transportation & Material Moving**  
Machine Feeders & Offbearers



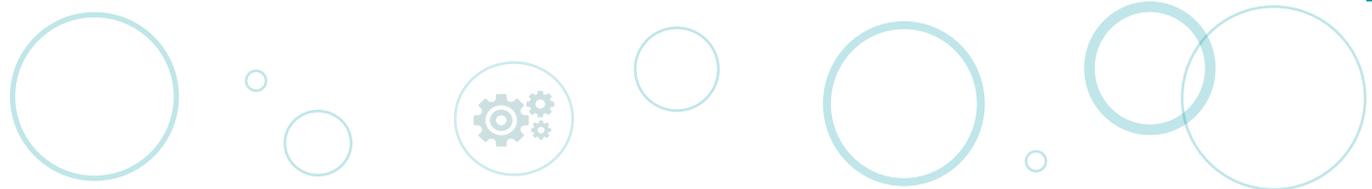


# Selected Careers<sup>1</sup>

Occupation	Career Pathway	Job Description
Biological Technicians	<ul style="list-style-type: none"> <li>Maintenance, Installation and Repair</li> </ul>	Help biological and medical scientists conduct laboratory tests and experiments. Set up, operate, and maintain laboratory instruments and equipment. Monitor experiments, make observations, and calculate and record results. May analyze organic substances like blood, food, and drugs.
Computer-Controlled Machine Tool Operators, Metal and Plastic	<ul style="list-style-type: none"> <li>Production</li> </ul>	Operate computer-controlled machines or robots to cut, shape, and form metal or plastic materials.
Industrial Machinery Mechanics	<ul style="list-style-type: none"> <li>Maintenance, Installation and Repair</li> </ul>	Repair, install, adjust, or maintain machinery used in industrial production and processing. Provide similar services for refinery and pipeline distribution systems.
Machinists	<ul style="list-style-type: none"> <li>Production</li> </ul>	Set up and operate machine tools to produce precision parts and instruments. Includes precision instrument makers who make, modify, or repair mechanical instruments. Use knowledge of mechanics, mathematics, metal properties, layout, and machining procedures to perform work.
Manufacturing Production Technicians	<ul style="list-style-type: none"> <li>Production</li> </ul>	Set up, test, and adjust manufacturing machinery or equipment to ensure quality production. Plan and lay out work to meet production and schedule requirements.
Medical Equipment Repairers	<ul style="list-style-type: none"> <li>Maintenance, Installation and Repair</li> </ul>	Test, adjust, or repair biomedical or electromedical equipment.
Occupational Health and Safety Specialists	<ul style="list-style-type: none"> <li>Quality Assurance</li> </ul>	Analyze many types of work environments and work procedures. Inspect workplaces to make sure regulations on safety, health, and the environment are being followed. Design programs to prevent disease or injury to workers and damage to the environment.
Sheet Metal Workers	<ul style="list-style-type: none"> <li>Production</li> </ul>	Fabricate, assemble, install, and repair sheet metal products and equipment like ducts for heating and air-conditioning, control boxes, and drainpipes.
Telecommunications Equipment Installers and Repairers, Except Line Installers	<ul style="list-style-type: none"> <li>Maintenance, Installation and Repair</li> </ul>	Set up and maintain devices or equipment that carry communications signals, connect to telephone lines, or access the Internet.
Welders, Cutters, Solderers, and Brazers	<ul style="list-style-type: none"> <li>Production</li> </ul>	Weld or join metal parts using hand welding, flame cutting, hand soldering, or brazing equipment. Fill holes, indentations, or seams of fabricated metal products.

Source: Information about occupation, career pathway, job description, and interest is from the O\*NET OnLine ([ononline.org/](https://ononline.org/)); data for annual opening, growth, and wage is prepared by the Labor & Economic Analysis Division of North Carolina Department of Commerce.

- Notes:
- The table lists a sampling of occupations that represent careers in each pathway. For a full list of occupations by career pathway within this cluster, check out O\*NET OnLine at [ononline.org/find/career?c=1&g=Go](https://ononline.org/find/career?c=1&g=Go)
  - Total average annual opening includes the total number of jobs available due to growth and replacement needs per year. The number of openings by occupation is based on North Carolina's 2012-2022 Occupational Projections.



Total Avg. Annual Opening <sup>2</sup>	NC Annualized Growth Rate <sup>3</sup>	NC Entry Annual Wage	NC Median Annual Wage	Minimum Education <sup>4</sup>	Interest <sup>5</sup>
62	0.9%	\$30,270	\$40,450	Bachelor's degree	R, I and C
174	1.4%	\$25,530	\$34,000	High school diploma plus moderate-term, on-the-job training	R and C
349	1.1%	\$31,140	\$43,390	High school diploma plus long-term, on-the-job training	R, I and C
375	0.8%	\$25,620	\$37,040	High school diploma plus long-term, on-the-job training	R, C and I
22	0.7%	\$33,680	\$52,190	Associate degree	
88	3.4%	\$33,710	\$46,770	Associate degree	R, I and C
63	0.9%	\$43,640	\$63,390	Bachelor's degree	I and C
169	2.1%	\$24,330	\$33,840	High school diploma plus apprenticeship	R
194	1.4%	\$29,390	\$40,450	Postsecondary nondegree award plus moderate-term, on-the-job training	R, I and C
246	0.7%	\$26,640	\$35,620	High school diploma plus moderate-term, on-the-job training	R and C

3. Annualized growth rate is the year-over-year growth rate over multiple years. Note that this growth rate is not obtained by averaging the year-to-year percentage changes. The annualized growth rate is useful for comparing growth rates for various time periods and for different series over the same time period; for example, comparing 5-year to 10-year growth or comparing growth in health care sector to education sector.

4. Minimum education requirements for occupations are determined by the U.S. Bureau of Labor Statistics ([bls.gov/emp/ep\\_education\\_training\\_system.htm](https://www.bls.gov/emp/ep_education_training_system.htm)). Actual market conditions may require additional education and/or training.

5. There are six interest types: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Discover your work-related interests on pages 5-8 to find out which types you are most like and the careers that fit you best.



## Career Stories



### **Mark Prestipino**

TIG Welding Fabricator

***Welding class at WCC put students on a pathway to success***

In the fall of 2013, Mark Prestipino entered his first college course as a Career and College Promise high school student. The program that attracted Mark to his first college course was Welding Technology where he would earn four semester hours of college credit toward a Welding Diploma at Wilkes Community College (WCC). As an early graduate of North Wilkes High School, he followed the pathway model to WCC by enrolling in the Welding Technology program and will graduate in May 2015.

While Mark was completing his coursework, he received a job offer from Tyson Foods in Wilkesboro – a common theme for welding students who are proficient at MIG and TIG welding fabrication.\* As is the case with Mark, his mastery of TIG welding caught the eye of Tyson Foods, and he is now a TIG Welding Fabricator at Tyson while he completes his Welding Technology diploma.

Mark's successful career pathway resulted from local partnerships of high school, college, and industry. In addition to gaining a job through this collaboration, Mark became a 2014 SkillsUSA North Carolina 2nd place winner in Welding Fabrication. Wilkes Community College offers 13 Career and College Promise programs at four Wilkes County high schools. The Wilkes County Schools and Wilkes Community College alliance continues to strengthen, with WCC providing full-time faculty, equipment, and lab materials at each of the high schools. Mark's story shows what happens when education and industry partners work to achieve a common goal ... We Create Success.

\*MIG and TIG welding are arc welding processes. MIG uses a consumable wire electrode to melt metal, while TIG uses a tungsten electrode that isn't consumed by the process.



## Marketing, Sales & Service

Who helps form your first opinion of a business or other organization? First impressions count, so employees from hotel desk clerks to cashiers to property managers serve as important marketers. Marketing, Sales and Service also includes jobs that have a more obvious connection with marketing such as marketing managers and merchandise displayers and window trimmers. The main goal of employees in this cluster is to help their organization reach its objectives.

Among North Carolina's occupations with expected above average growth are: customer service representatives; real estate sales agents; market research analysts; and meeting, convention, and event planners. Retail salespersons top the list of the highest number of new jobs. While many workers in the Marketing, Sales and Service cluster need a high school education, careers that require an Associate or Bachelor's degree tend to have higher wages. Workplaces that are most likely to offer marketing positions include grocery stores, warehouse clubs, gasoline stations with convenience stores, home centers, and wholesale goods businesses.

The work environment for these occupations varies by job responsibilities. While some workers have desk jobs and regular weekday schedules, others will need to be on their feet most of the time. Work in marketing and advertising can involve long work hours with pressure to be creative within short time frames to meet deadlines. People who work in this industry need strong persuasive and customer service skills.

### CAREER RESEARCH

- **Distributive Education Clubs of America (DECA):**  
[deca.org/](http://deca.org/)
- **American Association of Advertising Agencies:**  
[aaaa.org](http://aaaa.org)
- **Insurance Vocational Education Student Training:**  
[investprogram.org](http://investprogram.org)
- **International Association of Business Communicators:**  
[iabc.com/](http://iabc.com/)

Find more Marketing, Sales & Service occupations at:  
[onetonline.org/find/career?c=14&g=Go](http://onetonline.org/find/career?c=14&g=Go)



# Core Skills

- Persuasion
- Negotiation
- Service Orientation
- Management of Financial Resources
- Social Perceptiveness
- Speaking
- Mathematics
- Active Listening
- Management of Material Resources
- Coordination



## E-Marketing Pathway

Occup.

- Computer & Mathematical  
Computer Programmers
- Sales & Sales Related  
First-Line Supervisors of Retail Sales Workers

## Buying & Merchandising Pathway

Occupation

- Business & Financial Operations  
Purchasing Agents, Except Wholesale, Retail & Farm Products;  
Wholesale & Retail Buyers, Except Farm Products
- Office & Administrative Support  
Customer Service Reps; Office Clerks, General; Order Clerks;  
Procurement Clerks
- Sales & Sales Related  
Retail Salespersons; Sales Reps, Wholesale & Manufacturing,  
Except Technical & Scientific Products; Counter & Rental Clerks;  
Telemarketers
- Transportation & Material Moving  
Parking Lot Attendants



## Marketing Information Management & Research Pathway

Occupation

- **Business & Financial Operations**  
Market Research Analysts & Marketing Specialists
- **Education, Training & Library**  
Business Teachers, Postsecondary
- **Management**  
Marketing Managers

## Professional Sales & Marketing Pathway

Occupation

- **Arts, Design, Entertainment, Sports & Media**  
Merchandise Displayers & Window Trimmers; Interior Designers; Floral Designers
- **Business & Financial Operations**  
Wholesale & Retail Buyers, Except Farm Products; Meeting, Convention & Event Planners; Appraisers & Assessors of Real Estate
- **Management**  
Marketing Managers; Property, Real Estate & Community Association Managers; Lodging Managers
- **Office & Administrative Support**  
Stock Clerks & Order Fillers; Reservation & Transportation Ticket Agents & Travel Clerks
- **Sales & Related**  
Retail Salespersons; First-Line Supervisors of Retail Sales Workers; Sales Reps, Wholesale & Manufacturing, Except Technical & Scientific Products; Other Sales Reps, Services; First-Line Supervisors of Non-Retail Sales Workers; Counter & Rental Clerks; Real Estate Brokers; Sales Reps, Wholesale & Manufacturing, Technical & Scientific Products; Real Estate Brokers; Parts Salespersons; Telemarketers; Other Sales & Related Workers; Demonstrators & Product Promoters Sales Engineers; Door-to-Door Sales Workers; News & Street Vendors & Related Workers
- **Transportation & Material Moving**  
Drivers/Sales Workers

## Marketing Communications & Promotion Pathway

Occup.

- **Management**  
Sales Managers

## Management & Entrepreneurship Pathway

Occup.

- **Education, Training & Library**  
Business Teachers, Postsecondary
- **Management**  
Sales Managers; Marketing Managers; Advertising & Promotions Managers

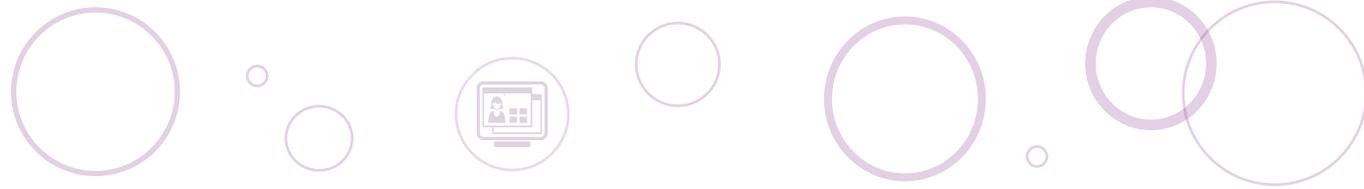


# Selected Careers<sup>1</sup>

Occupation	Career Pathway	Job Description
Advertising and Promotions Managers	<ul style="list-style-type: none"> <li>Management and Entrepreneurship</li> </ul>	Plan, direct, or coordinate advertising policies and programs or produce collateral materials, such as posters, contests, coupons, or give-aways to create extra interest in the purchase of a product or service.
Customer Service Representatives	<ul style="list-style-type: none"> <li>Buying and Merchandising</li> </ul>	Interact with customers to provide information in response to inquiries about products and services and to handle and resolve complaints.
First-Line Supervisors of Non-Retail Sales Workers	<ul style="list-style-type: none"> <li>Professional Sales and Marketing</li> </ul>	Directly supervise and coordinate activities of sales workers who are not involved in retail sales. May also perform duties like budgeting, accounting, and personnel work.
Market Research Analysts and Marketing Specialists	<ul style="list-style-type: none"> <li>Marketing Information Management and Research</li> </ul>	Research market conditions in local, regional, or national areas. Gather information to determine potential sales of a product or service or create a marketing campaign. May gather information about competitors, prices, sales, and methods of marketing and distribution.
Marketing Managers	<ul style="list-style-type: none"> <li>Management and Entrepreneurship</li> <li>Marketing Information Management and Research</li> <li>Professional Sales and Marketing</li> </ul>	Plan, direct, or coordinate marketing programs that generate interest in a specific product. Determine demand for products and services and monitor market trends. May identify potential customers. Develop pricing plans that maximize firm's profits while also keeping customers satisfied.
Online Merchants	<ul style="list-style-type: none"> <li>Buying and Merchandising</li> </ul>	Lead sales activities of online businesses. May perform duties like preparing business strategies, buying merchandise, and managing inventory. May also carry out marketing activities, fulfill and ship online orders, and balance financial records.
Real Estate Sales Agents	<ul style="list-style-type: none"> <li>Professional Sales and Marketing</li> </ul>	Help clients rent, buy, or sell property. Study property listings, interview prospective clients, and accompany clients to property site. Discuss conditions of sale and draw up real estate contracts. Includes agents who represent buyers.
Sales Managers	<ul style="list-style-type: none"> <li>Management and Entrepreneurship</li> <li>Marketing Communications and Promotion</li> </ul>	Set sales goals, analyze data, and develop training programs for organizations' sales representatives. Coordinate sales distribution by setting up sales territories. Determine sales potential and inventory needs. Monitor customer preferences.
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	<ul style="list-style-type: none"> <li>Professional Sales and Marketing</li> </ul>	Sell goods for wholesalers or manufacturers using technical or scientific knowledge of fields like biology, engineering, chemistry, and electronics. Contact customers, explain product features, answer customers' questions, and negotiate prices.
Search Marketing Strategists	<ul style="list-style-type: none"> <li>Professional Sales and Marketing</li> </ul>	Employ search marketing tactics to increase visibility and engagement with content, products, or services in Internet-enabled devices or interfaces. Examine search query behaviors on general or specialty search engines or other Internet-based content. Analyze research, data, or technology to understand user intent and measure outcomes for ongoing optimization.

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Total Avg. Annual Opening <sup>2</sup>	NC Annualized Growth Rate <sup>3</sup>	NC Entry Annual Wage	NC Median Annual Wage	Minimum Education <sup>4</sup>	Interest <sup>5</sup>
21	1.3%	\$57,590	\$90,610	Bachelor's degree	E and C
3,395	1.5%	\$21,180	\$29,880	High school diploma or equivalent	E, S and C
323	0.5%	\$43,790	\$71,530	High school diploma plus moderate-term, on-the-job training	E, C and S
583	3.2%	\$37,480	\$59,370	Bachelor's degree	I, E and C
193	1.6%	\$77,200	\$116,390	Bachelor's degree	E and C
797	1.2%	\$40,870	\$61,530	High school diploma or equivalent	C and E
331	2.5%	\$25,910	\$44,700	High school diploma plus long-term, on-the-job training	E and C
242	0.8%	\$58,600	\$102,450	Bachelor's degree	E and C
313	1.0%	\$39,950	\$69,040	Bachelor's degree	E and C
83	0.6%	\$50,220	\$75,640	Bachelor's degree	E, I and C

3. Annualized growth rate is the year-over-year growth rate over multiple years. Note that this growth rate is not obtained by averaging the year-to-year percentage changes. The annualized growth rate is useful for comparing growth rates for various time periods and for different series over the same time period; for example, comparing 5-year to 10-year growth or comparing growth in health care sector to education sector.

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# Career Stories



## Lawrence B. Spivey

Style Consultant

*“Durham Technical Community College is really a great place while you are transitioning from ‘just a job’ to prepare you for the vision, the career path that you will travel for the rest of your life.”*

“Style consultant, lifestyle blogger, and fashion journalist” — these are the words that introduce Lawrence B. Spivey on his web page, Sir Byron Laurent Style and Fashion Consulting. Lawrence has a passion for encouraging men through fashion advice, and for the past four years has presented workshops and seminars on WNCN-TV 17’s “My Carolina Today,” taught at North Carolina A&T, and is a permanent contributor for Carolina STYLE and EmergeNC magazines. This fall, he will teach “How to Dress for Success — For Less!” at Wake Technical Community College. Spivey sells vintage clothing through his website, and frequently consults with young professionals and entrepreneurs on affordable professional attire strategies for the workplace.

Spivey will graduate from Durham Technical Community College’s Business Administration program with an Associate in Arts Degree later this year. He is focusing on marketing, brand positioning, and social media to strengthen and grow his company. He is a member of Gamma Beta Phi, an academic honor society, and is active in the Visions Leadership Initiative.

He plans to transfer to NC State and earn his bachelor’s degree in Business and Marketing with a minor in Entrepreneurship. His wife also started her education at Durham Tech in Hospitality Management. She is currently taking online classes at East Carolina University to earn her degree in Business Administration with a concentration in Food and Beverage Management. She and Lawrence tag-team responsibilities when it comes to raising their new son.

Spivey is also juggling work in residential property management while he completes his degree, and he appreciates the consideration his Durham Tech instructors have shown him with regard to his ambitious work/life/school schedule. “It’s really a great place while you are transitioning from ‘just a job’ to prepare you for the vision, the career path that you will travel for the rest of your life,” he says. “My classwork was so relevant to my real work, and virtually every experience I’ve had here with an instructor has been simply amazing.”



## Science, Technology, Engineering & Mathematics

The Science, Technology, Engineering, and Mathematics (STEM) career cluster includes as many as 184 occupations. What do they have in common? Workers in these careers use scientific, technological, engineering, and/or mathematical processes to do research and solve problems. The problems they approach are as different as growing enough food, reducing our reliance on fossil fuels, developing medicines to treat mental illness, and creating computers that enhance our lives. Their career focus can be as small as a nanoparticle or as large as the universe.

Work settings vary with the topic of STEM research. While some jobs take place in front of a computer or in a laboratory, others require people to work in outdoor environments. Schedules also depend on the focus of STEM workers' research. Some individuals have very regular hours, but others' schedules depend upon availability of the subject they analyze. Employers who are likely to hire STEM qualified workers include engineering companies, the federal, state and local government, scientific research companies, colleges and universities, and drug manufacturers.

More than any of the other clusters, many STEM careers require at least an Associates degree or higher. Most occupations require a bachelor's degree, and some workers need master's or doctoral-level credentials for a significant number of jobs. Typical educational backgrounds for entry into five occupations that are projected to have the most new jobs in North Carolina include:

- Market Research Analysts and Marketing Specialists – Bachelor's degree
- Applications Software Developers – Bachelor's degree
- Computer User Support Specialists – Some college, no degree
- Health Specialties Teachers – Doctoral or professional degree
- Civil Engineers – Bachelor's degree

### CAREER RESEARCH

- **American Geosciences Institute:**  
[americangeosciences.org/](http://americangeosciences.org/)
- **National Center for Women & Information Technology:**  
[ncwit.org/](http://ncwit.org/)
- **Society for Industrial and Applied Mathematics:**  
[siam.org/](http://siam.org/)
- **National Oceanic and Atmospheric Administration:**  
[noaa.gov/](http://noaa.gov/)
- **Technology Student Association (TSA):**  
[tsaweb.org/](http://tsaweb.org/)
- **North Carolina Biotechnology Center:**  
[ncbcjobs.ncbiotech.org/](http://ncbcjobs.ncbiotech.org/)
- **Careers in Math:**  
[coolmath.com/careers](http://coolmath.com/careers)
- **New Scientist:**  
[jobs.newscientist.com/searchjobs](http://jobs.newscientist.com/searchjobs)
- **Institute of Electrical and Electronics Engineers:**  
[careers.ieee.org/](http://careers.ieee.org/)

Find more Science, Technology, Engineering & Mathematics occupations at:

[onetonline.org/find/career?c=15&g=Go](http://onetonline.org/find/career?c=15&g=Go)



# Core Skills

- Science
- Programming
- Mathematics
- Technology Design
- Operations Analysis
- Systems Analysis
- Systems Evaluation
- Writing
- Reading Comprehension
- Complex Problem Solving



## Engineering & Technology Pathway

Occupation

- **Architecture & Engineering**  
Civil Engineers; Industrial Engineers; Mechanical Engineers; Electrical Engineers; Electronics Engineers, Except Computer; Surveying & Mapping Technicians; Electrical & Electronic Engineering Technicians; Architectural & Civil Drafter; Other Engineers; Environmental Engineers; Computer Hardware Engineers; Industrial Engineering Technicians; Other Engineering Technicians, Except Drafters; Chemical Engineers; Electrical & Electronic Drafters; Aerospace Engineers; Biomedical Engineers; Health & Safety Engineers, Except Mining Safety Engineers & Inspectors
- **Arts, Design, Entertainment, Sports & Media**  
Technical Writers
- **Business & Financial Operations**  
Cost Estimators
- **Education, Training & Library**  
Other Education, Training & Library Workers; Engineering Teachers, Postsecondary
- **Management**  
Architectural & Engineering Managers



## Science & Math Pathway

Occupation

- **Architecture & Engineering**  
Cartographers & Photogrammetrists
- **Business & Financial Operations**  
Market Research Analysts & Marketing Specialists
- **Community & Social Service**  
Other Community & Social Service Specialists
- **Management**  
Software Developers, Applications; Computer User Support Specialists; Computer Programmers; Other Computer Occupations; Statisticians
- **Education, Training & Library**  
Health Specialties Teachers, Postsecondary; Other Education, Training & Library Workers; Vocational Education Teachers, Postsecondary; Biological Science Teachers, Postsecondary; Mathematical Science Teachers, Postsecondary; History Teachers, Postsecondary; Philosophy & Religion Teachers, Postsecondary; Chemistry Teachers, Postsecondary; Engineering Teachers, Postsecondary; Political Science Teachers, Postsecondary; Curators; Physics Teachers, Postsecondary; Economics Teachers, Postsecondary
- **Healthcare Practitioners & Technicians**  
Family & General Practitioners; Dietitians & Nutritionists
- **Life, Physical & Social Science**  
Environmental Scientists & Specialists, Including Health; Medical Scientists, Except Epidemiologists; Chemists; Chemical Technicians; Biological Technicians; Other Physical Scientists; Social Science Research Assistants; Other Life Scientists; Other Biological Scientists; Other Social Scientists & Related Workers; Agricultural & Food Science Technicians; Geoscientists, Except Hydrologists & Geographers; Other Life, Physical & Social Science Technicians; Zoologists & Wildlife Biologists; Biochemists & Biophysicists; Microbiologists; Survey Researchers; Conservation Scientists; Material Scientists; Economists
- **Management**  
Architectural & Engineering Managers; Natural Science Managers



# Selected Careers<sup>1</sup>

Occupation	Career Pathway	Job Description
Automotive Engineers	<ul style="list-style-type: none"> <li>Engineering and Technology</li> </ul>	Use computer-assisted design technology to develop new or improved designs for vehicle parts, engines, transmissions, or other vehicle systems. Direct building, modification, or testing of vehicle or components.
Chemical Technicians	<ul style="list-style-type: none"> <li>Science and Math</li> </ul>	Use special tools and techniques to do chemical and physical laboratory tests that help scientists analyze solids, liquids and gaseous materials. Results are used for further research and for making new products or processes. Testing also helps with quality control and maintaining environmental standards.
Chemists	<ul style="list-style-type: none"> <li>Science and Math</li> </ul>	Conduct qualitative and quantitative chemical analyses or experiments in laboratories for quality or process control or to develop new products or knowledge.
Civil Engineers	<ul style="list-style-type: none"> <li>Engineering and Technology</li> </ul>	Use engineering skills to plan, design, and oversee construction and maintenance of buildings and facilities. Project examples include roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, and water and sewage systems.
Electrical Engineering Technicians	<ul style="list-style-type: none"> <li>Engineering and Technology</li> </ul>	Use electrical and electronic knowledge to help engineers design and develop products like computers, communications equipment, and medical monitoring devices. May design, build, repair, adjust, and modify electrical components, circuitry, controls, and machinery.
Electrical Engineers	<ul style="list-style-type: none"> <li>Engineering and Technology</li> </ul>	Research, design, develop, test, or supervise the manufacture and installation of electrical equipment like electric motors, radar and navigation systems, and power generation equipment. Equipment may be used for commercial, industrial, military, or scientific purposes.
Electronics Engineers, Except Computer	<ul style="list-style-type: none"> <li>Engineering and Technology</li> </ul>	Research, design, develop, or test electronic components and systems for commercial, industrial, military, or scientific use employing knowledge of electronic theory and materials properties. Design electronic circuits and components for use in fields such as telecommunications, aerospace guidance and propulsion control, acoustics, or instruments and controls.
Mechatronics Engineers	<ul style="list-style-type: none"> <li>Engineering and Technology</li> </ul>	Research, design, develop, or test automation, intelligent systems, smart devices, or industrial systems control.
Medical Scientists, Except Epidemiologists	<ul style="list-style-type: none"> <li>Science and Math</li> </ul>	Conduct research aimed at improving overall human health. Engage in clinical trials, research and development, or related activities. Includes physicians, dentists, public health specialists, pharmacologists and medical pathologists who focus on research.
Statisticians	<ul style="list-style-type: none"> <li>Science and Math</li> </ul>	Use mathematical or statistical theory and methods to collect, organize, interpret, and summarize numerical data to provide accurate information. May specialize in fields such as bio-statistics, agricultural statistics, business statistics, or economic statistics. Includes mathematical and survey statisticians.

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213	0.6%	\$54,900	\$73,930	Bachelor's degree	I, R and C
61	0.4%	\$29,860	\$39,980	Associate degree	S, I and R
129	0.9%	\$43,270	\$63,530	Bachelor's degree	I, R and C
409	2.3%	\$54,040	\$71,800	Bachelor's degree	I, R and C
63	0.1%	\$38,560	\$55,540	Associate degree	R, I and C
120	0.9%	\$59,220	\$81,170	Bachelor's degree	I and R
108	0.8%	\$60,370	\$85,040	Bachelor's degree	I and R
47	1.1%	\$54,920	\$85,020	Bachelor's degree	I and R
185	2.5%	\$50,540	\$81,230	Doctoral or professional degree	I and R
61	3.4%	\$58,310	\$89,820	Master's degree	I, C and E

3. Annualized growth rate is the year-over-year growth rate over multiple years. Note that this growth rate is not obtained by averaging the year-to-year percentage changes. The annualized growth rate is useful for comparing growth rates for various time periods and for different series over the same time period; for example, comparing 5-year to 10-year growth or comparing growth in health care sector to education sector.

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## Career Stories



### Holly Sears

Nuclear Instrumentation & Electrical Tech

***“Every single thing that I’m going over (at work) right now is exactly what I learned at Central Carolina Community College.”***

Like many young adults who graduate from high school, Holly Sears did not know what to do next.

Originally, she planned on going to cosmetology school. However, after her father, a Duke Energy employee at the Shearon Harris Nuclear Power Plant in New Hill, helped her get a contract position for an outage, her plans quickly changed.

Holly, 24, enrolled in the Industrial Systems Technology program at Central Carolina Community College (CCCC) due to the numerous referrals she had gotten from current employees at the plant.

She remembers being terrified when she came into the program. “I was really overwhelmed,” she said, noting that the program starts with the basics.

Holly is grateful for her experiences at CCCC, including her time as a member of the Ambassador program. And, through CCCC, she did receive an internship at the Harris Plant. A May 2014 graduate of CCCC, Holly’s internship extended past her graduation and led to a full-time position on the electrical crew.

Holly is currently involved in a Duke Energy training program. “Every single thing that I’m going over right now is exactly what I learned at CCCC,” she said. She praises her CCCC instructors, saying “They’ve been in the industry. They know what they’re talking about.”

Allen Howington, CCCC’s Industrial Systems Technology Department Chair, said Holly excelled in her work, and always took the time to do everything right and help her classmates. Holly also talks glowingly of the college’s support personnel. “The people who work at CCCC want you to succeed,” she said. “They will do everything in their power to help you to succeed.”



## Transportation, Distribution & Logistics

Transportation keeps our economy, people, and products moving. Occupations involved in transporting, distributing, and coordinating the movement of goods range from airline pilots to mechanics to logisticians. Additionally, this cluster includes occupations related to warehouse storage, including jobs like cargo and freight agents; supervisors; and non-emergency dispatchers.

The majority of this career cluster's work takes place on the ground via highways and railroads, but it also includes workers who move people and products over the water and through the air. Work environments vary by occupation. While some truck drivers may work long hours and travel large distances, people who work in warehouses are more likely to work eight-hour shifts. Physical strength is necessary for some jobs, while word processing and spreadsheet skills are priorities in other occupations.

For the Transportation, Distribution and Logistics career cluster, the greatest number of new jobs in North Carolina are projected to include heavy and tractor-trailer truck drivers; freight laborers, stock, and material movers; operating engineers and other construction equipment operators; and taxi drivers and chauffeurs. Many jobs require a high school education, but postsecondary education – usually no higher than a bachelor's degree – is needed for some occupations. Workers may often find jobs in temporary service agencies, long-distance freight trucking businesses, new car dealerships, warehouse and storage facilities, and express delivery companies.

### **CAREER RESEARCH**

- **American Trucking Associations:**  
[truckline.com/](http://truckline.com/)
- **Global Cold Chain Alliance:**  
[gcca.org/](http://gcca.org/)
- **Taxicab, Limousine and Paratransit Association:**  
[tlpa.org/](http://tlpa.org/)
- **Association of American Railroads:**  
[aar.org/Pages/HomePages.aspx](http://aar.org/Pages/HomePages.aspx)
- **Air Transport Association of America:**  
[airlines.org/](http://airlines.org/)
- **SkillsUSA:**  
[skillsusa.org/](http://skillsusa.org/)
- **Jobs in Motion:**  
[jobsinmotion.com/](http://jobsinmotion.com/)

Find more Transportation, Distribution  
& Logistics occupations at:  
[onetonline.org/find/career?c=16&g=Go](http://onetonline.org/find/career?c=16&g=Go)



# Core Skills

- Repairing
- Equipment Maintenance
- Operation and Control
- Troubleshooting
- Operation Monitoring
- Quality Control Analysis
- Installation
- Management of Material Resources
- Equipment Selection
- Monitoring



## Sales & Service Pathway

Occupation

- Office & Administrative Support  
First-Line Supervisors of Office & Administrative Support Workers; Billing & Posting Clerks; Reservation & Transportation Ticket Agents & Travel Clerks; Cargo & Freight Agents
- Sales & Related  
Parts Salespersons

## Logistics Planning & Management Services Pathway

Occup.

- Business & Financial Operations  
Logisticians
- Management  
Other Managers; Administrative Services Managers; Chief Executives



## Facility & Mobile Equipment Maintenance Pathway

Occupation

- **Installation, Maintenance & Repair**  
Automotive Service Technicians & Mechanics; Bus & Truck Mechanics & Diesel Engine Specialists; Automotive Body & Related Repairers; Aircraft Mechanics & Service Technicians; Other Installation, Maintenance & Repair Workers; Mobile Heavy Equipment Mechanics, Except Engines; Tire Repairers & Changers; Outdoor Power Equipment & Other Small Engine Mechanics; Automotive Glass Installers & Repairers; Avionics Technicians; Motorboat Mechanics & Service Technicians; Rail Car Repairers; Motorcycle Mechanics; Bicycle Repairers;

Recreational Vehicle Service Technicians

- **Production**  
Painters, Transportation Equipment; Engine & Other Machine Assemblers

## Transportation Operations Pathway

Occupation

- **Construction Extraction**  
Operating Engineers & Other Construction Equipment Operators
- **Healthcare Practitioners & Technicians**  
Occupational Health & Safety Specialists
- **Installation, Maintenance & Repair**  
Automotive Service Technicians & Mechanics
- **Management**  
Transportation, Storage & Distribution Managers
- **Office & Administrative Support**  
Dispatchers, Except Police, Fire & Ambulance
- **Production**  
Print Binding & Finishing Workers

- **Transportation & Material Moving**  
Manual Laborers & Freight, Stocks & Material Movers; Heavy & Tractor-Trailer Truck Drivers; Light Truck or Delivery Services Drivers; Bus Drivers, School or Special Client; Industrial Truck & Tractor Operators; First-Line Supervisors of Transportation & Material-Moving Machine & Vehicle Operators; First-Line Supervisors of Helpers, Laborers & Material Movers, Hand; Bus Drivers, Transit & Intercity; Parking Lot Attendants; Excavating & Loading Machine & Dragline Operators; Crane & Tower Operators; Other Transportation Workers; Commercial Pilots; Railroad Conductors & Yardmasters; Air Traffic Controllers; Ambulance Drivers & Attendants, Except Emergency Medical Technicians; Captains, Mates & Pilots of Water Vessels; Transportation Inspectors

## Warehousing & Distribution Center Operations Pathway

Occupation

- **Office & Administrative Support**  
Shipping, Receiving & Traffic Clerks; Production, Planning & Expediting Clerks

- **Transportation & Material Moving**  
Laborers & Freight, Stock & Material Movers, Hand; First-Line Supervisors of Transportation & Material-Moving Machine & Vehicle Operators; First-Line Supervisors of Helpers, Laborers & Material Movers, Hand; Tank Car, Truck & Ship Loaders

## Health, Safety & Environmental Management Pathway

Occupation

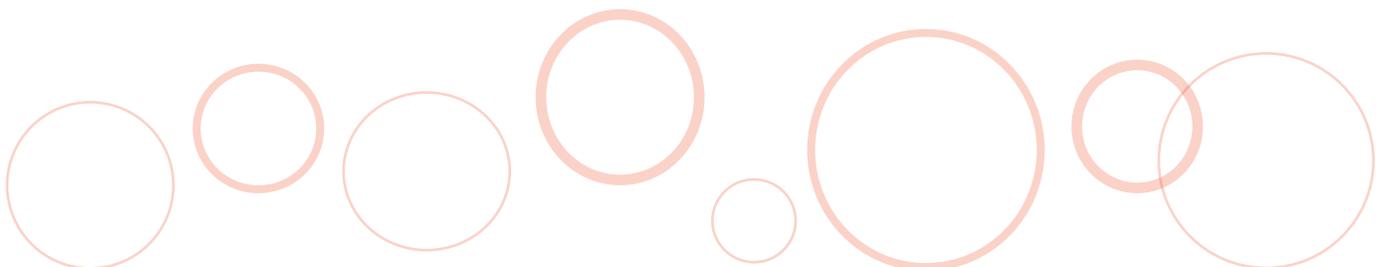
- **Engineering**  
Shipping, Receiving & Traffic Clerks; Production, Planning & Expediting Clerks

## Transportation Systems/Infrastructure Planning, Management & Regulation Pathway

Occupation

- **Transportation & Material Moving**  
Aviation Inspectors, Freight & Cargo Inspectors, Traffic Technicians, Transportation Vehicle, Equipment & Systems Inspectors, Transportation Planners

- **Business & Financial Operations**  
Customs Brokers





# Selected Careers<sup>1</sup>

Occupation	Career Pathway	Job Description
Air Traffic Controllers	<ul style="list-style-type: none"> <li>Transportation Operations</li> </ul>	Coordinate air traffic to make sure aircraft stay safe distances apart. Authorize, regulate, and control commercial airline flights following government or company regulations for safe and efficient flight.
Aircraft Mechanics and Service Technicians	<ul style="list-style-type: none"> <li>Facility and Mobile Equipment Maintenance</li> </ul>	Diagnose, adjust, repair, or overhaul aircraft engines and assemblies like hydraulic and pneumatic systems. Includes helicopter and aircraft engine specialists.
Automotive Service Technicians and Mechanics	<ul style="list-style-type: none"> <li>Transportation Operations</li> </ul>	Inspect, diagnose problems, adjust, repair, or overhaul automotive vehicles.
Avionics Technicians	<ul style="list-style-type: none"> <li>Facility and Mobile Equipment Maintenance</li> </ul>	Install, inspect, test, adjust, or repair avionics equipment like radar, radio, navigation, and missile control systems in aircraft or space vehicles.
Cargo and Freight Agents	<ul style="list-style-type: none"> <li>Sales and Service Warehousing and Distribution Center Operations</li> </ul>	Direct movement of cargo and freight shipments in airline, train, and trucking terminals and shipping docks. Take orders from customers and arrange pickup and delivery of products. Prepare and examine documents to determine shipping charges and tariffs.
Customs Brokers	<ul style="list-style-type: none"> <li>Transportation Systems/ Infrastructure Planning, Management and Regulation</li> </ul>	Ensure efficient import and export of products. Prepare customs documents and make sure shipments meet all applicable laws. Handle financial aspects of the process. Represent clients in meetings with customs officials. Coordinate transportation and storage of imported goods.
First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	<ul style="list-style-type: none"> <li>Warehousing and Distribution Center Operations</li> <li>Transportation Operations</li> </ul>	Directly supervise and coordinate activities of transportation and material-moving machine and vehicle operators and helpers.
Heavy and Tractor-Trailer Truck Drivers	<ul style="list-style-type: none"> <li>Transportation Operations</li> </ul>	Transport goods by driving a tractor-trailer combination or a truck with a capacity of at least 26,000 pounds Gross Vehicle Weight (GVW). May need to unload truck. Requires commercial driver's license.
Industrial Safety and Health Engineers	<ul style="list-style-type: none"> <li>Health, Safety and Environmental Management</li> </ul>	Develop safety programs to prevent people from getting sick or injured and to keep property from being damaged. Combine knowledge of engineering and health or safety to make sure that chemicals, machinery, software, furniture, and consumer products do not cause harm to people or buildings.
Logisticians	<ul style="list-style-type: none"> <li>Logistics Planning and Management Services</li> </ul>	Analyze and coordinate an organization's system that moves a product from supplier to consumer. Manage the entire life cycle of a product, which includes how a product is acquired, distributed, allocated, and delivered.

Source: Information about occupation, career pathway, job description, and interest is from the O\*NET OnLine ([onetonline.org/](http://onetonline.org/)); data for annual opening, growth, and wage is prepared by the Labor & Economic Analysis Division of North Carolina Department of Commerce.

- Notes:
- The table lists a sampling of occupations that represent careers in each pathway. For a full list of occupations by career pathway within this cluster, check out O\*NET OnLine at [onetonline.org/find/career?c=1&g=Go](http://onetonline.org/find/career?c=1&g=Go)
  - Total average annual opening includes the total number of jobs available due to growth and replacement needs per year. The number of openings by occupation is based on North Carolina's 2012-2022 Occupational Projections.



Total Avg. Annual Opening <sup>2</sup>	NC Annualized Growth Rate <sup>3</sup>	NC Entry Annual Wage	NC Median Annual Wage	Minimum Education <sup>4</sup>	Interest <sup>5</sup>
26	0.6%	\$69,940	\$95,970	Associate degree	E and C
154	1.0%	\$37,870	\$51,320	Postsecondary nondegree award	R, C and I
829	0.8%	\$23,620	\$36,370	High school diploma plus long-term, on-the-job training	R and I
20	0.9%	\$39,710	\$48,580	Associate degree	R, I and C
69	1.5%	\$28,520	\$41,900	High school diploma plus short-term, on-the-job training	C, E and R
797	1.2%	\$40,870	\$61,530	High school diploma plus work experience	C and E
314	0.9%	\$35,060	\$47,010	High school diploma or equivalent	E, C and R
1,520	1.3%	\$26,560	\$37,190	Postsecondary nondegree award	R and C
13	0.8%	\$50,290	\$69,870	Bachelor's degree	I, C and R
98	2.2%	\$49,010	\$69,040	Bachelor's degree	E and C

3. Annualized growth rate is the year-over-year growth rate over multiple years. Note that this growth rate is not obtained by averaging the year-to-year percentage changes. The annualized growth rate is useful for comparing growth rates for various time periods and for different series over the same time period; for example, comparing 5-year to 10-year growth or comparing growth in health care sector to education sector.

4. Minimum education requirements for occupations are determined by the U.S. Bureau of Labor Statistics ([bls.gov/emp/ep\\_education\\_training\\_system.htm](https://www.bls.gov/emp/ep_education_training_system.htm)). Actual market conditions may require additional education and/or training.

5. There are six interest types: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Discover your work-related interests on pages 5-8 to find out which types you are most like and the careers that fit you best.



# Career Stories



## Nathan Church

John Deere Diesel Technician

***Nathan’s achievements at West Wilkes High School, Wilkes Community College, and now working as a John Deere Technician are marks of a true Champion at Work!***

As a rising senior at West Wilkes High School, Nathan was ready to make the choice not to finish high school and instead go to work at a local farm. Then his high school principal, Mr. Wayne Sheppard, introduced him to faculty members from Wilkes Community College (WCC). Before he knew it, this introduction quickly changed his life as he became interested in Welding Technology and found himself enrolled in two college courses as a Career and College Promise (CCP) student.

Nathan became the first Wilkes County High School student to finish in 1st place at the North Carolina Skills USA competition for individual Welding Technology. Nathan would not stop there, following the pathway model to Wilkes Community College in 2012 where he enrolled in the Diesel & Heavy Equipment Technology program. Nathan entered the WCC program with 14 credit hours completed as a CCP student while at West Wilkes High School.

James River Equipment Company in Wilkesboro selected Nathan for an internship while he continued his coursework to complete his Associates in Applied Science Degree in Diesel and Heavy Equipment Technology, graduating in May 2015. Additionally, Nathan gathered a number of SkillsUSA awards:

- 2014: 2nd place winner in Diesel & Heavy Equipment Technology representing WCC
- 2012: 1st place winner in Welding Technology
- 2012: 11th place finish at the National SkillsUSA competition

Looking at all these accomplishments, one wonders where Nathan would be if he had made the choice not to finish high school – but he did finish high school and followed his pathway to success. Nathan’s achievements at West Wilkes High School, Wilkes Community College, and now working as a full-time John Deere Technician are marks of a true Champion at Work!



## Experiencing Real Jobs

Getting experience while exploring career options will give you a head start on your future career. Take advantage of opportunities to “try out” a career through work-based learning programs, summer or part-time jobs, or as a community volunteer. Your local school or college will offer some or all of the programs noted here. You’ll find others by searching the Internet and by contacting community businesses and organizations. Work-based learning is also helpful if you want or need to change careers.

Here are a few ways you can get involved in work-based learning:

- **Job Shadowing** programs usually involve going to work for one or several days with someone whose career interests you. You can observe tasks and skills required for the job, experience the work environment, and interact with people who currently work in your potential career field.
- **Internships and Cooperative Education** experiences usually last for a couple of weeks to several months. You not only observe individuals in your career field of interest, but also get a chance to perform some of the job’s tasks and duties. Internships and Cooperative Education include mentoring by an experienced career professional who can discuss your career decisions and goals. Internships can be paid or unpaid, but Cooperative Education is an activity that must provide pay. Either program may be eligible for academic credit at a high school or college.
- **School-Based Enterprises** allow you to plan and run a simulated or actual business at school. It’s an experience that provides direct links between what you learn in the classroom and what it’s like to work in an actual job.
- **Apprenticeships** offer combined academic instruction, structured training, and paid work experience that usually last for one to two years. Employers offer these programs in collaboration with the North Carolina Department of Commerce.
- **Service Learning** can be a great way to learn about a career and help out your community while developing new skills or applying existing skills. You will see how the services you provide connect with what you’ve learned in classes.
- **Business/Industry Field Trips** are opportunities to leave the classroom to see how what you’ve learned applies in workplaces. You can observe and investigate activities that relate to a specific school subject and to your career plans.

Work-based learning opportunities give you the edge when applying for new jobs. Not only will you gain valuable work experience, but you’ll also access people who can become part of your career network. They may be your best resource for meeting potential employers and other people who can provide job referrals. You’ll also find that these experiences boost the quality of your résumé!

## Work-Based Learning Stories



### Chris Owens

Maintenance Technical Staff  
Keihin Carolina System Technology

### Kaitlyn Phillips

Intern  
Keihin Carolina System Technology

*“In addition to learning how to build cables and other processes, I’m learning responsibility.”*

Chris Owens was one of the first Advanced Manufacturing Center students at Edgecombe Community College (ECC) to enroll in the internship program. He began working at the Keihin Carolina System Technology plant near the college while taking classes at ECC.

“I took electronics in high school, and we took a tour of Keihin,” Owens says. “I loved the electronics and robotics atmosphere. Now I’m getting lots of experience, taking the things I’ve learned in school and how it applies to the real world.”

As a test intern in the engineering department, he started out building cables and testing electronics boards. That was more than a year ago, and Keihin supervisors say they’re pleased with the partnership with ECC.

“(Owens) is a very capable person, and he is doing an excellent job,” says Connie Hunt, Keihin human resources manager. Keihin hired Owens to work full time in a maintenance technical staff position while still completing his associate degree in manufacturing. “The variety of skills he is learning from the college is transferring over to us, and his problem-solving and learning ability is very high,” Hunt says of Owens. “Based on the experience we had with him, we’ve also hired another intern, Kaitlyn Phillips, who is doing a great job as well.”

Phillips is hoping for a full-time position at Keihin following completion of the Electrical Systems Technology diploma program. “I’m getting such a good foundation, and I’m learning a lot,” Phillips says. “In addition to learning how to build cables and other processes, I’m learning responsibility. It’s been a great experience, and I still have a lot more to learn.”



## Stephanie Grise

### Mechatronics Apprentice

*“The work is fun, I’m learning a lot. I’m getting a paycheck. It’s nice to have a sense of purpose that most people my age don’t have.”*

Stephanie Grise began taking classes at Catawba Valley Community College (CVCC) the summer prior to her senior year at Hickory High School. Her interest in mechatronics and desire to participate as an apprentice in the highly competitive Apprenticeship Catawba Program was her driving force. While taking two community college classes, she also worked as an apprenticeship candidate with Sarstedt, producer of single-use medical items, in Newton, N.C. At the end of the summer, she was selected as an apprentice and spent her senior year working at Sarstedt while completing graduation requirements. Upon high school graduation, Grise will continue to work while completing the Associate of Applied Science Degree in Mechatronics. All of her education expenses are covered by Sarstedt. In addition, Grise is paid for her time in CVCC classes and at work. She is also guaranteed employment upon completion of her community college degree.

As she watches her friends enjoying their senior year at Hickory High and getting ready to go off to college, she knows she’s made the right choice for herself. “It’s so worth it — there’s no other opportunity like this,” she said. “The work is fun, (and) I’m learning a lot. I’m getting a paycheck. It’s nice to have a sense of purpose that most people my age don’t have.”

Grise’s enthusiasm, determination, maturity, and outgoing personality are evident when she talks about her experience. There is no doubt that CVCC, Sarstedt, and Grise are a great combination!

## Exploring the Job Market

Specific job requirements change from industry to industry, business to business, and hiring manager to hiring manager. Whether you're still planning your future career or getting ready to enter the job market, getting a well-rounded understanding of what employers are looking for in job candidates is always helpful. The more research you do in understanding job and employer requirements and preparing yourself to meet those needs, the better positioned you will be to land your dream job. Some steps you can take include:

- **Read job postings** – Get online and search to find what kinds of jobs are out there. Places to start include: NCWorks.gov (see following page), [wwwIndeed.com](http://wwwIndeed.com), and [LinkedIn.com/Job](http://LinkedIn.com/Job).
- **Research the occupation** – Make sure you understand the occupation and its potential. The Bureau of Labor Statistics' **Occupational Outlook Handbook** ([www.bls.gov/ooh](http://www.bls.gov/ooh)) and CareerOneStop ([www.careerinfonet.org/Occupations](http://www.careerinfonet.org/Occupations)) have thorough descriptions of hundreds of occupations with data on wages and job growth.
- **Research the industry that interests you** – Whether you're preparing for an interview or just trying to better understand a career, learn what you can about the business's industry or occupations. By doing this, you will gain understanding about the opportunities and challenges in this field. Is it growing and successful? Are global or technological changes likely to affect future jobs in this industry? Search engines can help you find information. Look specifically for industry associations – either national or state chapters. The first page of each Career Cluster in this Career Guide contains references to industry associations.
- **Find local employers** – Reviewing job postings will likely help you start to identify employers. Remember though that not all companies will be hiring at the moment and not all will post jobs online. Another way to find employers in your area is to use CareerOneStop's Employer Locator tool at [careerinfonet.org/employerlocator/employerlocator.asp?nodeid=18](http://careerinfonet.org/employerlocator/employerlocator.asp?nodeid=18). Or you can conduct a simple Google search for businesses in your town or city. Limiting your search to industries (advertising agencies, machine shops, medical clinics) may be more helpful than just looking for occupations (social media specialists, welders, nurses).
- **Research the company** – Before ever contacting a potential employer, do your homework and learn what the company does. The more you know about their business, the more impressive employers will find you when you talk with them. Start by reading the company's website and social media pages. If the business is especially large, it may post an annual report on its corporate website. Conduct a Google News search to gather other information about it.
- **Ask for an informational interview** – Talking directly with someone in the company is the best way to learn about what a business does and what the employer looks for in job candidates. Check with friends and other people that you or your family know to see if someone could introduce you to a company employee. If no one within your network is familiar with the business, call it directly. Explain that you would like to know more about the company and its jobs. If you're patient and polite, employers will often find 20-30 minutes to meet and talk with a student or someone who wants to get into their line of work. Make sure you come prepared with questions, don't ask for a job, and be respectful and appreciative of the person's time. For tips on networking and conducting an information interview, go to [careeronestop.org/JobSearch/Network/form-a-network.aspx](http://careeronestop.org/JobSearch/Network/form-a-network.aspx).



# Thinking about Your Future Career?

**You don't need to be looking for a job to start planning your next steps.**

NCWorks Online can help you learn more about careers and their job requirements! You can use the website to do the following:

- Learn more about the knowledge, skills, credentials, and experience you need to get a job in different fields.
- Find training programs in your area that will prepare you for your career.
- Find wage and employment projections in North Carolina to learn about what types of jobs are growing.
- Discover what jobs are available in your community and across the state.
- Compare your skills to those required by an employer for a particular job.
- Create a resume and search for jobs that need your skills.
- Apply for jobs after you've made your decision.

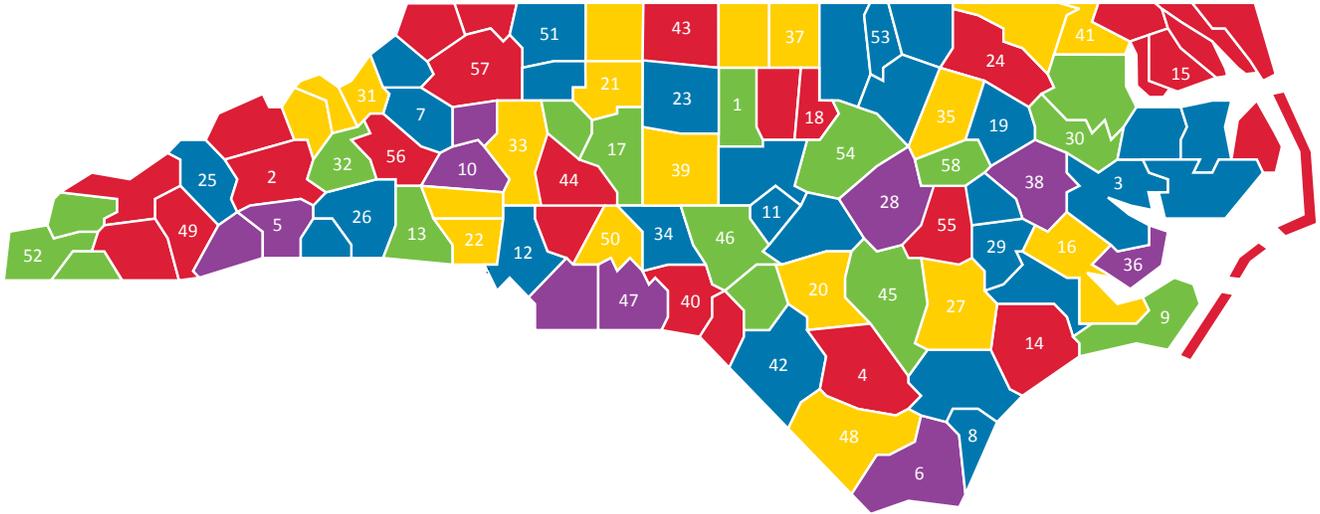


Register with NCWorks Online and get started today!

[www.ncworks.gov](http://www.ncworks.gov)

**NC** Works  
online

# NC Community Colleges



1 Alamance Community College <i>Graham, NC</i>	20 Fayetteville Technical Community College <i>Fayetteville, NC</i>	40 Richmond Community College <i>Hamlet, NC</i>
2 Asheville-Buncombe Technical Community College <i>Asheville, NC</i>	21 Forsyth Technical Community College <i>Winston-Salem, NC</i>	41 Roanoke-Chowan Community College <i>Ahoskie, NC</i>
3 Beaufort Community College <i>Washington, NC</i>	22 Gaston College <i>Dallas, NC</i>	42 Robeson Community College <i>Lumberton, NC</i>
4 Bladen Community College <i>Dublin, NC</i>	23 Guilford Technical Community College <i>Jamestown, NC</i>	43 Rockingham Community College <i>Wentworth, NC</i>
5 Blue Ridge Community College <i>Flat Rock, NC</i>	24 Halifax Community College <i>Weldon, NC</i>	44 Rowan-Cabarrus Community College <i>Salisbury, NC</i>
6 Brunswick Community College <i>Supply, NC</i>	25 Haywood Community College <i>Clyde, NC</i>	45 Sampson Community College <i>Clinton, NC</i>
7 Caldwell Community College & Technical Institute <i>Hudson, NC</i>	26 Isothermal Community College <i>Spindale, NC</i>	46 Sandhill Community College <i>Pinehurst, NC</i>
8 Cape Fear Community College <i>Wilmington, NC</i>	27 James Sprunt Community College <i>Kenansville, NC</i>	47 South Piedmont Community College <i>Polkton, NC</i>
9 Carteret Community College <i>Morehead City, NC</i>	28 Johnston Community College <i>Smithfield, NC</i>	48 Southeastern Community College <i>Whiteville, NC</i>
10 Catawba Valley Community College <i>Hickory, NC</i>	29 Lenoir Community College <i>Kinston, NC</i>	49 Southwestern Community College <i>Sylva, NC</i>
11 Central Carolina Community College <i>Sanford, NC</i>	30 Martin Community College <i>Williamston, NC</i>	50 Stanly Community College <i>Albemarle, NC</i>
12 Central Piedmont Community College <i>Charlotte, NC</i>	31 Mayland Community College <i>Spruce Pine, NC</i>	51 Surry Community College <i>Dobson, NC</i>
13 Cleveland Community College <i>Shelby, NC</i>	32 McDowell Technical Community College <i>Marion, NC</i>	52 Tri-County Community College <i>Murphy, NC</i>
14 Coastal Carolina Community College <i>Jacksonville, NC</i>	33 Mitchell Community College <i>Statesville, NC</i>	53 Vance-Granville Community College <i>Henderson, NC</i>
15 College of The Albemarle <i>Elizabeth City, NC</i>	34 Montgomery Community College <i>Troy, NC</i>	54 Wake Technical Community College <i>Raleigh, NC</i>
16 Craven Community College <i>New Bern, NC</i>	35 Nash Community College <i>Rocky Mount, NC</i>	55 Wayne Community College <i>Goldsboro, NC</i>
17 Davidson County Community College <i>Lexington, NC</i>	36 Pamlico Community College <i>Grantsboro, NC</i>	56 Western Piedmont Community College <i>Morganton, NC</i>
18 Durham Technical Community College <i>Durham, NC</i>	37 Piedmont Community College <i>Roxboro, NC</i>	57 Wilkes Community College <i>Wilkesboro, NC</i>
19 Edgecombe Community College <i>Tarboro, NC</i>	38 Pitt Community College <i>Greenville, NC</i>	58 Wilson Community College <i>Wilson, NC</i>
	39 Randolph Community College <i>Asheboro, NC</i>	