



OPPORTUNITIES IN AGRICULTURE, FOOD & NATURAL RESOURCES

IOWA CAREER PATHWAYS



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**COMMUNITY COLLEGES &
WORKFORCE PREPARATION**
PROSPERITY THROUGH EDUCATION

This project was completed by the Iowa Department of Education, in support of the Future Ready Iowa Initiative, through a public/private collaboration with the Iowa Governor’s STEM Advisory Council, Agribusiness Association of Iowa, Iowa Institute for Cooperatives, Iowa Association of Municipal Utilities, Iowa Restaurant Association Education Foundation, and Iowa-Nebraska Equipment Dealers Association. Quantitative research was conducted to identify the most common occupations in agriculture, food and natural resource-related fields in Iowa, in addition to a series of online surveys and virtual focus groups with employers, educators and other stakeholders from around the state. This direct feedback and support was vital in building job descriptions and employer expectations, while the included education and wage levels are averaged based on labor market intelligence gathered from across the state. Project manager and lead content creator: Joseph Collins, Workforce Education Consultant, Iowa Department of Education.

FOREWORD

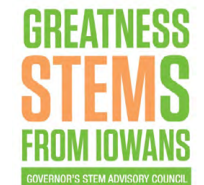
From the land to your hand, Iowa's agriculture, food and natural resources professionals provide the very foundation for which other industries and communities may thrive. Whether turning a faucet for a cup of water, flipping a switch to light a room or picking up a piece of food to eat, people around the world rely on our small, but mighty state to produce safe, affordable and reliable food, water, electricity, fuels, medications, and other products. This demand is expected to continue to grow and with it the need to repair and improve critical infrastructure or related equipment, such as harvesters, pipelines, wind turbines, telecommunications networks and smart power grids.

To meet these and similar workforce needs of industries across Iowa, the Governor's Office established the Future Ready Iowa Initiative with a goal of 70 percent of Iowans possessing education or training beyond high school by 2025. To support this important initiative, the Iowa Department of Education partnered with the Iowa Governor's STEM Advisory Council, Agribusiness Association of Iowa, Iowa Institute for Cooperatives, Iowa Association of Municipal Utilities, Iowa Restaurant Association Education Foundation, and Iowa-Nebraska Equipment Dealers Association to develop this career pathways resource to highlight a wide range of exciting career opportunities in Iowa's agriculture, food and natural resources fields.

A challenge to readers of this document, from students just beginning to learn about jobs to adults with extensive work experience who may be looking for a career change, is to drop any preconceived notions or ideas they may have about this industry. With an expansive list of career options, diverse work environments and innovations in technology, this industry offers much more than most Iowans realize.

No matter your experience, background, personality, or interests, you will find great opportunities in these fields and related careers that offer a good paycheck, pride in helping to support your community, huge potential for secure and long-term career growth, and the ability to transfer those skills anywhere in the world!

Download these pathways and additional resources at CareerPathways.EducateIowa.gov and FutureReadyIowa.gov.





WHAT AGRICULTURE, FOOD & NATURAL RESOURCES MEAN TO ME

Through a series of focus groups and surveys, we asked Iowans what it means to work in the areas of agriculture, food and natural resources. Below are a few of the responses we received. As reflected in the words and quotes provided, this industry is made up of proud, passionate and hard-working people.

“ Our work makes a difference each and every day. ”

“ I literally power my community. How awesome is that? ”

“ I help people get loans so they can feed and power their communities. ”

“ There is a real sense of community in this industry that you don't see anywhere else. ”

“ I like working outside and not being tied to a desk all day long! ”

“ Farming is so much more than just playing in the dirt. There is a lot of science to it! ”

“ I love being able to help our customer save money with energy improvements to their homes. ”

“ I'm learning things that can transfer to really any career I plan to try in the future. ”

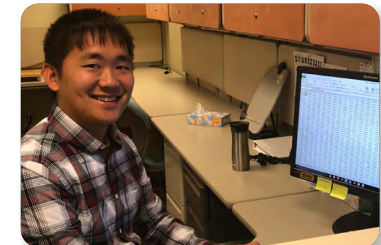
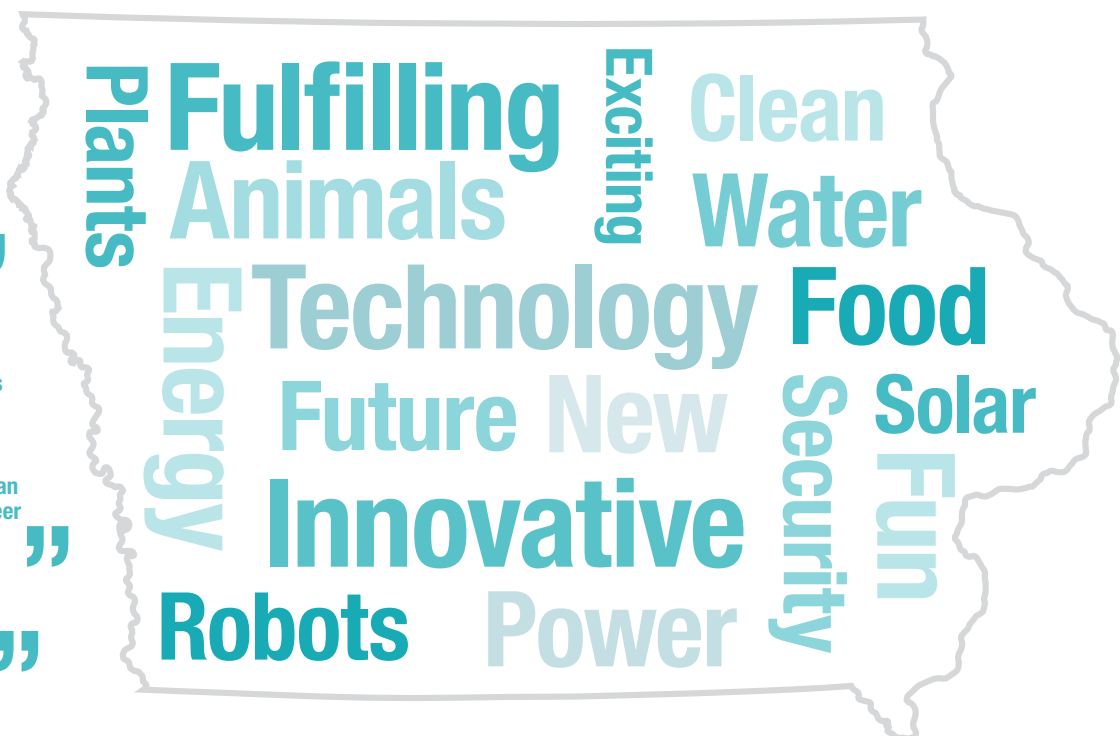
“ Every day presents a new challenge and things to do. ”

“ We help provide clean food and water in our community. I'm not sure it gets more important than that. ”

“ We make an honest living while helping those in our community. ”

“ I love driving by all the things I've helped build and power around town. ”

“ We are doing cutting edge research and developing new products that will be used around the world. ”



WHAT AGRICULTURE, FOOD & NATURAL RESOURCES MEAN TO ME



SHELBY E. - SALES AGRONOMIST FOR STATELINE COOPERATIVE (BURT, IA)

"I was first introduced to careers in agriculture growing up on my family farm. I realized during college that there were actually many more career opportunities in ag. In my current role, I provide farmers with agronomic support for new and innovative crop management strategies that result in increased yields to help meet their goals. I plan to move up to a manager position or top agronomist in my company to help our employees develop themselves professionally and improve agriculture around me. I recommend everyone take chances by applying for that job you are unqualified for, be a part of that organization that you never thought would accept you and make tough goals for yourself. If everything was easy, we would never be able to grow professionally and develop into better people. Reach for the stars and never look back!"



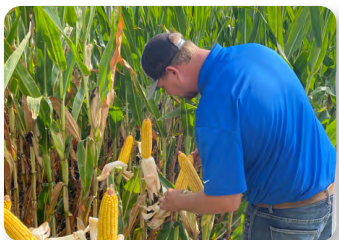
MATT B. - DEVELOPMENT AND RETENTION COORDINATOR FOR CARGILL (CEDAR RAPIDS, IA)

"I first learned about this industry from an uncle while I was in high school and it sounded like a great opportunity. I started working for Cargill 13 years ago as an operator and then as a feed loader. During that time I realized I had a passion for developing others. I was given the opportunity to turn that passion into a career and now work to improve our employee training, processes, communication, and relationships. Our employees are our most important asset. Everyone should consider working in this industry. Whether you have no experience or years of it, there are plenty of career options to explore."



SARA S. - AGRICULTURE FACULTY FOR NORTHEAST IOWA COMMUNITY COLLEGE (CALMAR, IA)

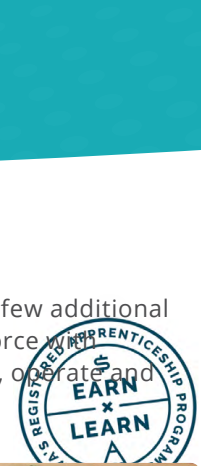
"I was involved in 4-H Youth Development programming growing up, which exposed me to the many career options available in agriculture. I eventually found my way into teaching at Northeast Iowa Community College. Depending on my course schedule, I am often in lecture and laboratory classroom settings with students. We are fortunate to have dairy and beef production facilities right on campus, so I'm often with students in the barn working cattle, guiding them in beef management decisions, and interacting with animals daily. These careers are essential and always will be, but that doesn't mean we can't learn to be more efficient, better stewards of our animals and land, and do a better job of telling the true story of agriculture production and animal care. Working in agriculture can give you such a sense of fulfillment at the end of the day and there are thousands of career paths available in our industry!"



BRADEN H. - AGRONOMY SALES SPECIALIST FOR NEW COOPERATIVE INC (POMEROY, IA)

"I grew up in Pomeroy and always wanted to move back after college and continue to work in agriculture. I was able to intern with NEW Cooperative in 2015 and 2016, giving me a great head start to where I am today. Now I work with farmers each day on their seed, fertilizer, sampling, and other needs to achieve their goals. A career in ag takes a good work ethic and flexibility, especially during the busy times of the seasons. Working in ag is a very rewarding job that is not going to ever go away. We will always need food to supply the world's needs."





TECHNOLOGIES OF THE FUTURE

Although there are already some amazing and innovative agriculture, food and natural resource technologies in use across the state, below are a few additional examples that have the potential for creating new and exciting career opportunities. These technologies further fuel the need for a skilled workforce with advanced computers, information technology and critical thinking abilities. Behind every new or improved technology are real people who set up, operate and maintain them as we continue to feed, power and improve the lives of people around the world.

ADVANCED ROBOTICS AND DRONES

Automation, drones, advanced robotics, and other collaborative robots, or “cobots”, provide a safer, quicker and more efficient experience for their human professional counterparts by assisting with repetitive or tedious tasks, complicated data collection and analysis, handling heavy or hazardous materials or equipment, and working in extreme or severe weather conditions or environments. Many Iowa companies are beginning to embrace these technologies and see the benefits, such as with drones that safely and remotely survey sites or resources, fully autonomous or driverless GPS-guided tractors, machines that use advanced optics and sensors to scan fields to isolate and remove weeds while not harming healthy crops, and a fully automated dairy farm where cows essentially milk themselves. The next time you sit down at a restaurant to enjoy a juicy cheeseburger, piece of sweet apple pie or even a perfectly grilled steak, you may need to leave a tip for a robot that carefully prepared or served it for you!



PRECISION AGRICULTURE & DATA ANALYTICS

Our interconnected world offers an immense and expanding amount of information, data and analytics that can be used by savvy farmers, food producers, restaurants, and other companies or businesses to be more innovative, efficient and successful, while also in compliance with any rules, regulations and standards. As our food, water and natural resources become less certain or more difficult to access on a global scale, we must identify new strategies, technologies and solutions to sustain our population. New innovations in vertical farming, advanced hydroponics and hyper-local farming will help to increase supply and equitable access in our communities, while tools like intelligent weather modeling and interactive satellite imagery that measure soil absorption rates or potential for optimal planting, fertilizing and watering will help improve efficiency and resource security. More lowans are needed to invent new or improve existing ways to stay ahead of these challenges.



SMART BUILDINGS & FOOD SERVICE

“Smart” homes, streets, farms, appliances, vehicles, and a growing number of other technologies or structures that are electrified and connected to the Internet present a new frontier for careers that blend information technology with a growing need for accessible, secure and reliable food, water, power, medications, and other products and services. A growing number of lowans are demanding technologies that afford them not just convenience, but also safety and security, such as mobile and contactless food ordering, payment and delivery options, appliances that can remotely monitor food or water safety and quality and the ability to review and control power and resource consumption from a mobile device. As our physical and digital worlds continue to combine, so also will the need for careers that offer support and services to ease, simplify and secure this transition.



FOOD FOR THOUGHT - IOWANS MAKE A DIFFERENCE AROUND THE WORLD, AS WELL AS A GREAT PAYCHECK!

Iowa's agriculture, food and natural resource professionals play a critical and often oversized role to feed, power and otherwise improve the lives of not only those in their communities, but also across the nation and sometimes around the world. Although relatively small geographically, Iowa is known as a leader for high quality and reliable agriculture, foods, renewable energy, pharmaceuticals, and other innovative products and services that quite literally save lives.

Although Iowans are known for this, and take great pride in it, they often don't boast about it enough. It's not uncommon to hear statements like "It's a calling, not a job" and "It's an honor to feed our community", particularly when faced with adversity like flooding, tornadoes, blizzards, fires, and other disruptive or severe weather patterns that are often difficult to predict or track. The unprecedented 2020 Iowa Derecho alone caused billions of dollars of damage across the state, leaving hundreds of thousands without food, water, power, or shelter. Countless dedicated and courageous farmers, linemen, technicians, dispatchers, engineers, truck drivers, and other skilled professionals rallied together to feed their neighbors, restore power and utilities and begin pulling our state back together piece by piece. It's not uncommon for these same Iowans to volunteer to answer the call for assistance from communities and colleagues across the country in similar times of need.

Hidden under these often selfless and impactful acts is another great benefit of this industry: job security. Unlike the extreme weather cycles here in Iowa, there will always be demand for safe, secure and reliable food, water, power, and other natural resource products and services. Although technologies, user preferences and other aspects may change over time, skilled and trained professionals will always be needed to produce, install, maintain, inspect, deliver, and support these products or resources throughout their communities and around the world.



INNOVATIVE EDUCATION & TRAINING SOLUTIONS

REGISTERED APPRENTICESHIP PROGRAMS LET YOU EARN WHILE YOU LEARN!

A growing number of Iowa employers offer flexible training or work options to fit varying schedules, learning preferences and career goals. Many careers highlighted in this document have a corresponding Registered Apprenticeship option that offers hands-on training and related technical instruction (RTI) that allows Registered Apprentices to earn a paycheck from day one. Look for the *Earn & Learn* logo for a career that is apprenticeable. Visit EarnAndLearnIowa.gov to learn more about these great opportunities, view testimonials from actual apprentices in Iowa and fill out a form to be contacted by a representative from a local IowaWORKS field office for a direct conversation. Work is also underway to develop exciting training opportunities through youth apprenticeships and new Quality Pre-Apprenticeship programs.



Iowa also consistently has the highest number of high school students jointly enrolled in a community college program in the nation, providing students the opportunity to earn college credit and sometimes even full industry-recognized credentials while still in school. A growing number of careers even include options to begin on-the-job training in high school or through one of Iowa's 15 community colleges, saving further time and money, allowing students and workers to begin planning for their future and earning a paycheck sooner. One such example is offered below, but there are many more across the state as Iowa's employers partner with education and training providers to develop our skilled workforce of the future.

GROWING OUR FUTURE ONE TREE AT A TIME

Trees Forever was founded in 1989 to help Iowans plant and care for the trees, shrubs, and native grasses and plants that make our communities greener, healthier and more vibrant places for future generations. The Growing Futures job employment program takes a unique approach to caring for our community's trees by utilizing teams of teenagers to help grow our tree canopy, while learning about the world around them and the potential within themselves.

Growing Futures has a powerful social and environmental impact because the program prioritizes underserved neighborhoods; neighborhoods that research shows already lack tree cover and are in need of dedicated resources. Healthy trees reduce stormwater, clean the air, save energy, create beauty, and even provide us with mental and physical well-being. This program offers a win-win where students earn a paycheck and learn valuable skills while the community and environment benefit from the increased tree and plant diversity.

Throughout the spring, summer and fall, teams of teen employees plant, water, and care for trees in Des Moines and Cedar Rapids, with a goal of expanding to other communities. With adult supervision and training, these teenagers learn new skills that will position them to be future leaders in the community. Team members also receive assistance with resume building, financial literacy, conflict resolution, and other invaluable transferable skills.



“Our Growing Futures program has been a huge success! Not only are we helping young adults earn valuable career experience and skills, but we are also improving our communities for generations to come.”

— Kiley Miller
President & CEO, Trees Forever



EXPERIENCE + ENTREPRENEURSHIP – A PATH TO BE YOUR OWN BOSS

Agriculture, food and natural resource fields offer the potential for starting a business and one day being your own boss. A mixture of hard work, skilled trade knowledge and industry experience opens the door to business opportunities that often do not exist in other industries or that would take much longer and cost significantly more to achieve.

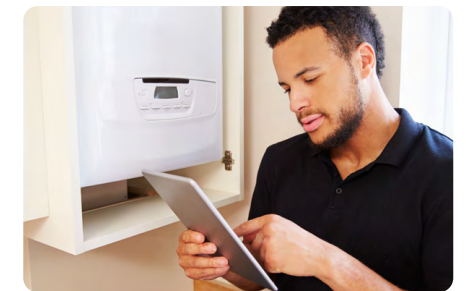
While education is a critical aspect of being successful in these fields, it is often to supplement what is being learned through shorter, more focused skill development opportunities and hands-on experiences from an internship, Registered Apprenticeship or other direct work experience. Professional licensure or certification may also be necessary for some occupations, depending on aspects such as location or type of products and services being offered.

Budding entrepreneurs are able to market their services and speak directly to current and potential customers much more quickly, easily and cheaply with social media and digital marketing tools. Specialized funding is also often available through partners like the [Iowa Economic Development Authority](#), [U.S. Department of Agriculture](#) and [U.S. Small Business Administration](#) to help plan, launch and strengthen farms, restaurants and other types of businesses.

The diagram to the right highlights a common pathway for someone wanting to start a business as either their own company and direct service provider or that provides contracting and oversight services for other companies, processes or technologies. Although not the only route for ambitious and driven entrepreneurs in Iowa, many appreciate learning on the job, having less student loan debt and working at their own pace.



APPRENTICESHIP/TRAINING PROGRAM
(Power/Utilities Apprentice)



WORK EXPERIENCE/ LEADERSHIP ROLE
(Energy/Sustainability Advisor)



BUSINESS OWNER/ CONTRACTING
(Sustainability Consulting Company)

IOWA ENTREPRENEUR SPOTLIGHT



Lynn Pritchard - Chef/Restaurant Owner of Table 128 (Des Moines, IA)

"I grew up on a farm and my first job off the farm was working for a small family type restaurant. I worked as a prep cook and dishwasher on night one, line cook the next, and by the end of the summer had been promoted to Kitchen Manager. I really enjoyed it, especially the flexible hours that allowed me to continue to work while in college. Early on, I didn't really see myself working in the restaurant industry long-term, until a friend opened my eyes to the potential and I took a trip to visit the Culinary Institute of America. The ability to be creative and take beautiful raw ingredients and transform

them into a plate or a sequence of plates that brings joy to someone is the thing I like most about my career. I also appreciate the social interactions with my staff and guests and bringing that special experience to the table. I recommend everyone try to find something they're interested in, something that gives them inspiration, something that makes them hungry for more and then keep going back and don't take "no" for an answer. Owning a restaurant is hard work, but is so rewarding and worthwhile."



DIVERSE WORK ENVIRONMENT OPTIONS – YOU WORK WHERE?

Modern agriculture, food and natural resource fields offer the ability to research, design, produce, maintain, and support a wide range of products, services or projects and associated vehicles or equipment in a growing number of locations or work environments, either indoors or outdoors, year round. In addition to harvesting crops outdoors or preparing food in a kitchen, these professionals may work in offices, labs, distribution centers, and maybe even from the comfort of their homes to feed, power and improve the lives of those in their community.

The table below offers a few examples of the more common types of environments or areas of focus that offer some of these new and exciting opportunities. Each occupation description throughout this document is also clearly labeled to assist the reader with finding one that may fit their personality or interest type. As our world becomes more connected and technology continues to expand, so will the types of work environments and the ways in which we work. Which fits you best?

Work Environment	Description
Mobile/Remote	Professionals have the opportunity to be primarily outdoors while handling, transporting and distributing various products, resources, goods, or services in a local, regional or national area. May also include remote locations or vehicle/equipment service, maintenance or repair requests.
Agricultural/Resource Processing	Farms, livestock facilities and other structures or locations involved primarily in the housing, production and storage of animals, agriculture, biomass, or materials to be used in the development of various products, resources, goods, and services. Offer a mix of indoor/outdoor work, sometimes in a refrigerated or other controlled environment.
Commercial/Industrial	Manufacturing facilities, power plants, substations, construction sites, and other commercial or industrial settings that produce various products, resources, goods, and materials for consumption or use by different types of customers around the world. Offers a mix of indoor/outdoor work.
Residential/Personal	Homes, apartments, living communities, and other residential dwellings or facilities that involve interacting with members of the public while in the field. Mixture of indoor and outdoor work, depending on type of products or services being delivered, installed, maintained, or repaired.
Warehouse/Storage	Locations that focus on the safe, accurate and secure handling and storage of food, electricity, fuels, and other perishable or non-perishable goods, resources and materials before they are sold, shipped, transmitted, consumed, or otherwise used. Most work will be conducted indoors, sometimes in a restricted, refrigerated or other controlled environment.
Business/Office	Secure office environment with reliable access to power, telecommunications, inventory controls, and other computer or database systems. Advances in remote access systems, vehicles and monitoring will also expand this area. Most work will be conducted indoors, but may allow for some travel and outdoors work.
Laboratory/Research Facility	Secure and often sterile locations dedicated to the research, development, inspection, and other quality control efforts necessary to keep products, resources, goods, and related vehicles or equipment safe, efficient and desirable to customers. Most work is conducted indoors while observing, gathering and testing samples or procedures, often in a controlled and monitored environment.
Renewable Energy Site/Center	Solar, wind, geothermal, and biomass are growing areas of sustainable or alternative energy production that provide unique types of new or improved methods to collect, transport, store, and distribute power, fuels and other natural resources to our communities. Most work will be conducted outdoors, often in remote areas, but could include some indoors. Terms like “solar farm” or “wind park” may also be used.
Specialized/HAZMAT	Some hazardous materials (HAZMAT), waste or specialized locations and related products, pharmaceuticals, fuels, services, or projects may require advanced training, licensing or endorsements, tracking or monitoring, and clearance because of heightened security or safety concerns and special handling codes, rules, regulations, and laws. Most work likely conducted indoors, but could also include some outdoors.
Home/Telework	Many employers now allow professionals to work from home, a satellite office and other de-centralized or branch locations that are located closer to home, school, daycare, or other convenient locations. Most work likely conducted indoors, but may include some outdoors. Employees may be expected to provide their own reliable and secure internet, phone service and other equipment or technologies.

MEAT, MILK, & MEDICINES...OH MY! - IOWANS CREATE PRODUCTS TO IMPROVE AND SAVE LIVES IN MANY WAYS

Many of us don't know exactly how our food, beverages, cosmetics, medications, cleaning supplies, and other products are created, let alone the raw materials that are used and how they are grown or collected. The list below goes through some of the more common types of materials, products or resources that are produced in Iowa. There is something for everyone in this industry. Which fits you best?



Bugs/Insects — Crickets, grasshoppers, bees, and many other bugs or insects provide a surprising amount of nutrition, utility or medicinal value when eaten directly, ground to be used as flour substitute, and by harvesting or collecting their own products or resources, such as honey, pollen, or silk.



Field/Row Crops – Corn, soybeans, hay, clover, wheat, and other field or row-based crops are often planted and harvested on a large scale to produce food products, supplements, textiles, oils, animal feed, fuels, and other products that are used by consumers around the world.



Plants/Botanicals – Some cacti, flowers, algae, leaves, spices, and other plant components are used for direct application or as ingredients in many foods, medications, cosmetics, paints, and cleaning supplies. A growing number of consumers are interested in purchasing products with these plant-based or natural ingredients, coloring and components.



Fruits/Vegetables – Many different types of fruits or vegetables are grown and harvested for their direct nutritional value when consumed or added as ingredients to more complex recipes, such as apples, carrots, onions, peas, and berries. The leaves, roots, tubers, flowers, stems, and shoots are also often used to create other types of products or resources.



Livestock/Large Animals – Cows, pigs, sheep, bison, elk, goats, and other large animal breeds are used not only for their meat, but also often for their hides, milk, and natural enzymes or resources. Many of these animals are also used for service, utility or entertainment purposes, such as horses and donkeys.



Small Animals/Poultry – Similar to large animals, many small animals and poultry like rabbits, mink, chickens, ducks, and geese are used not only for their meat, but also their hides, feathers, eggs, milk, and other natural resources. Many of these animals are also used for their service, utility or entertainment purposes, sometimes at hobby farms or other venues.



Fish/Aquaculture – A wide variety of wild and domesticated fish, clams, turtles, shrimp, kelp, and other aquatic animals or crops are grown or managed outdoors in areas like ponds, lakes or rivers and indoors in areas like temperature-controlled tanks and systems for food, cosmetics, medications, and other personal care or household products.



Fungi/Mold – Mushrooms, yeast, mold, and other types of microorganisms are used in a growing number of ways to produce or supplement foods, alcohols, antibiotics, cleaning products, medications, enzymes, fertilizers, and commercial or waste decomposition products.



Nuts/Grains – Many types of nuts, seeds, grains, and other raw materials are eaten directly or used as spices, cosmetics, fragrances, medications, oils, and other cleaning or household products. Many of these products produce an immense amount of nutritional value for their size.



Wood/Fiber Crops - Trees, bushes, hemp, cotton, and other fiber crops are used to create building products, furniture, paper, textiles, ropes, filling, and other products or resources. They are also often burned for various heat, power and lighting purposes.



Organic/Kosher – A growing number of consumers are demanding produce, livestock and other products that are certified as organic, kosher, natural, or that have a minimal number of ingredients. These are generally not treated in any way with artificial preservatives, pesticides, fertilizers, or other products and may require specialized farming techniques, equipment and licensing or certifications.

CAREER INTEREST TYPES - WHAT TYPE OF CAREER MATCHES YOUR PERSONALITY AND INTERESTS?

We are born with certain character traits, while some are developed as we grow and experience new things. There are many different tests or assessments available to help us determine what careers might match our personality or interests. The most common test includes six interest themes based on research by John Holland that can be taken for free at [FutureReadyIowa.gov](https://www.futurereadyiowa.gov). These include the Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C) groups, reflected in the diagram to the right.

After identifying the top three preferred interest areas, a user is left with an interest type, such as RIA, CES, or ECR. Occupations in this document have been labeled with these codes to help readers better understand potential matches for further research and investigation. Don't worry if a career doesn't match exactly to your code as this is not an exact science, but rather a starting point to help guide users in their career exploration process. There are careers for everyone in Iowa's innovative and growing agriculture, food and natural resource fields!



R

REALISTIC

You like to work with your hands and use physical skills including repairing and making things with tools and machines. You prefer working on projects you can see and feel, not what can be imagined or theorized.

I

INVESTIGATIVE

You tend to focus on ideas and enjoy collecting and analyzing information. You are curious and tend to prefer situations with minimal rules or regulations. You tend to like math and science.

A

ARTISTIC

You focus on artistic self-expression, value independence, and are not afraid to experiment with ideas. You enjoy variety and tend to feel cramped in structured situations. Creativity guides you.

S

SOCIAL

You are highly concerned with people, make friends easily, and are a good communicator. You enjoy working with others to identify and solve problems. You are helpful, friendly, and trustworthy.

E

ENTERPRISING

You are goal-oriented and often provide leadership and a high degree of energy when working with others. You tend to get bogged down by too much science, data, and analytical thinking. You are more comfortable selling and negotiating.

C

CONVENTIONAL

You pay close attention to detail and work well with numbers and data. You prefer following the rules and working with clear expectations.

USING THESE CAREER PATHWAYS

The information in these pathways is not intended to cover every type of agriculture, food or natural resource-related occupations in Iowa. Rather, it is intended to provide the reader with a high-level view of some in-demand or growing positions. Information has been averaged to help guide the reader in evaluating which of these jobs are of interest and worthy of further research through the online [Future Ready Iowa Career Coach](#) tool, which allows readers to customize wages, education needs and other information based on their location within the state. Additional recommendations for next steps and a career exploration action plan are included at the end of the document.

Occupations have been grouped into the following three levels based on factors such as typical education, experience and wages. Many workers in this industry do not follow a direct pathway within the same occupation family, but rather enter and progress through a wide range of different careers from each area of focus. Actual education requirements, job duties and wage levels will vary from employer to employer around the state. Leadership and management opportunities are also available in all families, but may not be reflected in these materials.



AGRICULTURE, FOOD & NATURAL RESOURCES OCCUPATION FAMILIES

There are many roles to play in the process for planning, producing and providing safe, quality and reliable agriculture, food and natural resources, products or services in Iowa. The occupation families below outline how these various roles will be grouped by general job duties for purposes of this project. There are a growing number of innovative solutions and services to help feed, power and otherwise improve the lives of those in our communities. Which fits you best?



SERVICE & SKILLED TRADES - THE CREATORS

[Common Interest Types: Realistic, Investigative, Conventional]

You enjoy creating things! Your ability to work with your hands to grow, build, install, and service things make you an invaluable part of the food and resource production cycle. You are truly a master of your craft and take great pride in seeing the direct impact you have on your community and around the world.



PLANNING & DESIGN - THE VISIONARIES

[Common Interest Types: Investigative, Realistic, Conventional]

You can see the bigger picture! People present you with a problem, idea or goal and you find a way to get it done by pulling together all of the necessary professionals, systems, technologies, and services in a timely and efficient manner. Your ideas, designs and solutions lead the way.



RESEARCH & DEVELOPMENT - THE INNOVATORS

[Common Interest Types: Investigative, Realistic, Conventional]

You're changing the world! Your curiosity and creativity are leading the way in the research and development of new and innovative foods, pharmaceuticals, energy sources, and advanced technologies or products that improve the lives of people around the world. These professionals are on the cutting edge of modern science.



PRODUCTION & OPERATIONS - THE PRODUCERS

[Common Interest Types: Conventional, Realistic, Investigative]

You produce amazing things! Your attention to detail, curiosity for how things work and ability to work with different types of people, materials and technology ensure that foods, utilities, medications, and other products and services are produced that improve the lives of those in your community every day and in accordance with all applicable rules, laws and regulations.



STORAGE & DISTRIBUTION - THE CONNECTORS

[Common Interest Types: Conventional, Enterprising, Realistic]

You keep everyone and everything connected! Every home, business and community needs food, water, power and other supplies or resources to be successful. You provide a reliable, safe and secure method to store and access or connect these products, tools or services to customers, suppliers, coworkers, and other partners around the world. Without your attention to detail and problem-solving skills, everything else would fall apart.



SALES & BUSINESS OPERATIONS - THE CLOSERS

[Common Interest Types: Enterprising, Conventional, Social]

You seal the deal! Your outgoing personality, competitive nature and desire to understand customer needs helps companies create new or improved products and services that will be valued and purchased. You also serve as the connector between your company and customers, providing support and services so that everyone wins.

THE FOOD & RESOURCE PRODUCTION CYCLE - THERE ARE MANY STOPS BETWEEN THE LAND AND YOUR HAND!

The occupations outlined in this document are part of a modern, complex and interconnected food and resource production or usage cycle. The diagram below showcases some of the general stages from initial design to final sales and offers a brief description of what is being done, which families are likely involved and how they interact with one another towards the successful, safe and reliable feeding, powering and supporting of our communities. Which fits your personality and interest type best?

Overview: Final stage of marketing, selling and supporting or maintaining various types of foods, resources, equipment, or products and systems. May feed ideas for new or improved products and services back to teams from the other stages for continuous improvement and customer satisfaction.

Families Involved: Service & Skilled Trades, Planning & Design, Research & Development, Sales & Business Operations

Common Interest Types: Enterprising, Social, Conventional

Overview: Transporting, transmitting or otherwise distributing various types of foods, products, resources, or services for use by customers in a safe, efficient and reliable manner and in accordance with all associated rules, regulations or specifications by pipeline, powerline, road, air, rail, or other physical and electronic means.

Families Involved: Service & Skilled Trades, Production & Operations, Storage & Distribution, Sales & Business Operations

Common Interest Types: Realistic, Conventional, Investigative

Overview: Handling, storing, inspecting, and managing various types of foods, fuels, resources, and other products and materials, often in specially designed and secure storage centers, containers or systems prior to being finished, used or transmitted for final sale and use.

Families Involved: Service & Skilled Trades, Production & Operations, Research & Development, Storage & Distribution, Sales & Business Operations

Common Interest Types: Realistic, Conventional, Investigative

1 PLANNING & DESIGN

Overview: Initial stage of planning, designing and consulting with customers and team members to determine timeline, cost and best course of action to achieve food or resource service needs and goals.

Families Involved: Service & Skilled Trades, Planning & Design, Production & Operations, Research & Development, Sales & Business Operations

Common Interest Types: Artistic, Investigative, Conventional

2 CONSTRUCTION & INSTALLATION

Overview: Building or installing the various farms, plants, pipelines, restaurants, and other buildings, infrastructure or related systems that will be used to create, provide, distribute or store various types of foods, resources, products, or services.

Families Involved: Service & Skilled Trades, Planning & Design, Sales & Business Operations

Common Interest Types: Realistic, Conventional, Investigative

3 HARVEST & PRODUCTION

Overview: Harvesting, producing, processing or refining various forms of foods, products, resources, or services, often within a plant, laboratory, facility, or other secure environment, but will also include mobile or remote locations.

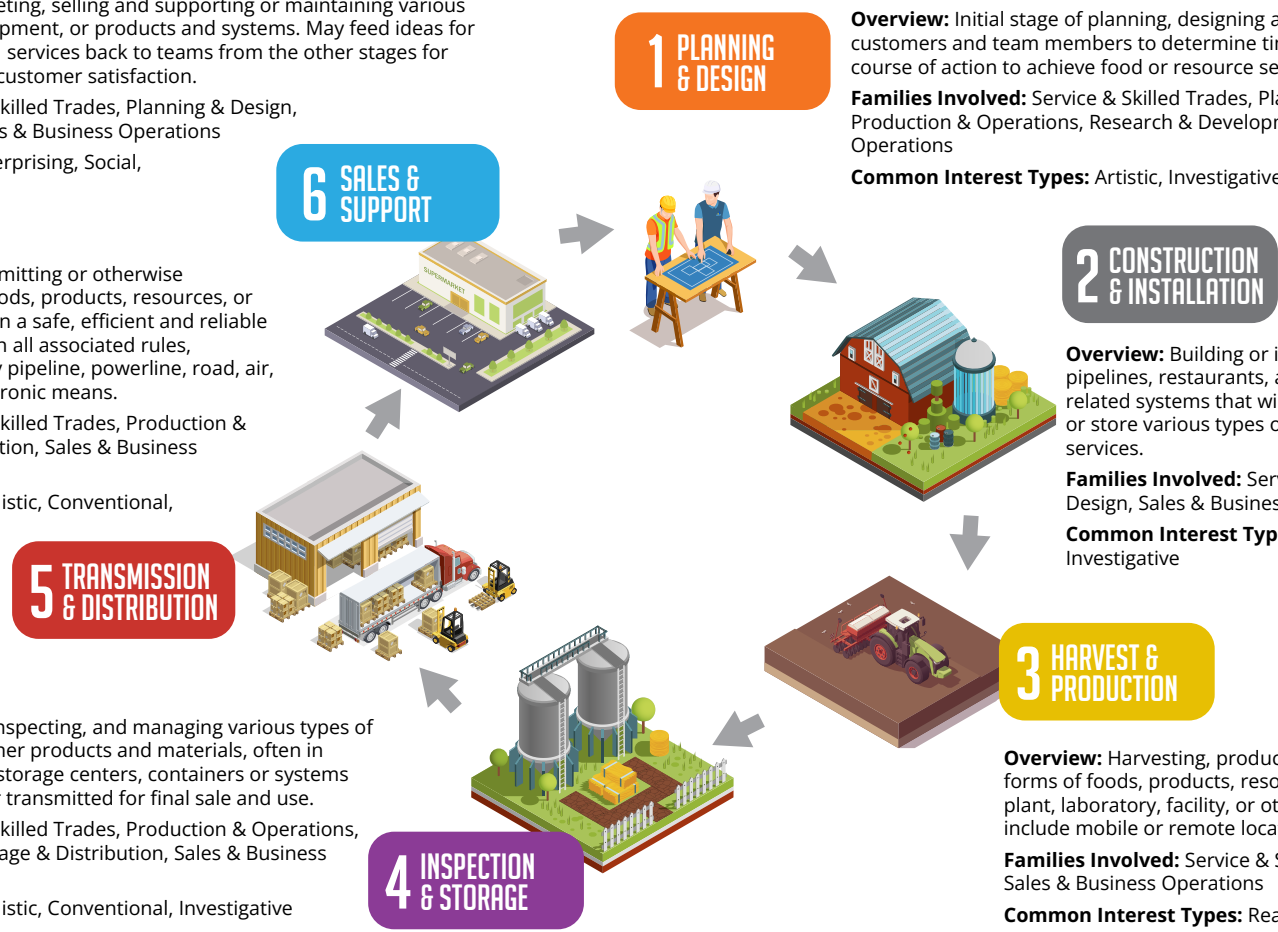
Families Involved: Service & Skilled Trades, Planning & Design, Sales & Business Operations

Common Interest Types: Realistic, Conventional, Investigative

6 SALES & SUPPORT

5 TRANSMISSION & DISTRIBUTION

4 INSPECTION & STORAGE





Professionals in the *Service & Skilled Trades* family receive specialized training in a specific area, such as electricity, plumbing, farming, or utility line service and will work together to create and maintain great things. Some career opportunities involve learning multiple skill sets, but most are designed to learn and perfect a single craft over time.

These professionals are often involved throughout the entire food and resource production cycle and can be found in a wide range of work environments, both indoors and outdoors, year round. They help to design an agriculture or food system, build the production or storage facilities, install equipment and infrastructure to distribute the goods or products, and finally to service or repair all of the related equipment, buildings and machines.

Most of these occupations require little formal education, and instead opt for an “earn and learn” training model where skills are learned on the job observing and assisting a licensed master trades professional, while also taking necessary courses in areas such as applied mathematics, job site safety and other specialized skills. These occupations offer a good entry into this industry with huge potential for advancement with focus, hard work and a willingness to learn.

Someone who enjoys working with their hands, likes to see and feel their work and doesn’t want to sit in an office all day would fit well in these careers. They take pride in building, maintaining and repairing the various interconnected parts and systems that power, feed and improve the lives of those in our communities each and every day.

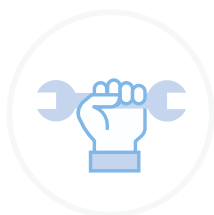


CAREER SPOTLIGHT:

Ron B. - Line Mechanic for MidAmerican Energy Company (Altoona, IA)

“In my role as a line mechanic, I am a first responder to all different kinds of customer problems. I troubleshoot to determine what is causing the problem and then use my knowledge and training to restore power as quick as I can. Sometimes it’s as easy as switching the source of power around the problem, while other times it might be a more difficult solution by actually repairing the power line to the customer’s home. It is incredibly satisfying when the problem is fixed and I see the customer’s lights come back on!”





NOVICE/ENTRY LEVEL

Apprentice, Intern,
Assistant, Helper,
Technician

High School Diploma

Years 0 - 4

INTERMEDIATE/MID-LEVEL

Journeyman, Supervisor,
Coordinator, Foreman

High School Diploma +
Training & Professional
License

Years 5 - 9

ADVANCED/SENIOR LEVEL

Master, Manager,
Superintendent, Engineer

High School Diploma
+ Advanced Training &
Professional License

Years 10+

	NOVICE/ENTRY LEVEL	INTERMEDIATE/MID-LEVEL	ADVANCED/SENIOR LEVEL
Alternative Energy - Solar/Wind/Geothermal	\$17 - \$21/hr	\$25 - \$38/hr	\$42 - \$50/hr
Animal Services - Care/Breeding	\$12 - \$16/hr	\$17 - \$22/hr	\$24 - \$35/hr
Chemical Application - Fertilizer/Pesticide	\$16 - \$20/hr	\$22 - \$28/hr	\$30 - \$40/hr
Conservation - Water/Land/Air	\$12 - \$18/hr	\$20 - \$25/hr	\$28 - \$36/hr
Culinary Arts - Cooking/Food Preparation	\$11 - \$17/hr	\$19 - \$24/hr	\$26 - \$36/hr
Electricity - Low/High Voltage	\$15 - \$19/hr	\$31 - \$39/hr	\$42 - \$52/hr
Equipment Operation/Maintenance	\$15 - \$20/hr	\$26 - \$38/hr	\$40 - \$55/hr
Farming - Agriculture/Crops	\$11 - \$19/hr	\$20 - \$28/hr	\$30 - \$39/hr
Farming - Livestock/Animals	\$12 - \$20/hr	\$22 - \$30/hr	\$32 - \$45/hr
Fleet Service/Repair (Automotive)	\$13 - \$17/hr	\$22 - \$30/hr	\$35 - \$50/hr
Hospitality - Food/Guest Services	\$10 - \$15/hr	\$17 - \$25/hr	\$28 - \$40/hr
Labor/Installation	\$12 - \$15/hr	\$22 - \$30/hr	\$35 - \$47/hr
Line Service/Repair - Electrical/Gas	\$17 - \$24/hr	\$26 - \$39/hr	\$43 - \$58/hr
Metal Working/Welding (Iron/Steel)	\$12 - \$16/hr	\$24 - \$32/hr	\$37 - \$47/hr
Plumbing/Pipefitting	\$17 - \$21/hr	\$34 - \$42/hr	\$47 - \$57/hr

SERVICE & SKILLED TRADES

THE CREATORS



ALTERNATIVE ENERGY - SOLAR/WIND/GEOTHERMAL

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED + Hands-On Experience + Professional License

Wage Range: \$17 - \$50/hour

Design, assemble, install, and maintain solar, wind, geothermal, and other hybrid or alternative energy equipment, storage systems and related components, often in open areas or on roofs, walls, or other structures to meet sustainability, efficiency or design specifications. May also plan, cut, assemble, and secure necessary structural framing, wiring, plumbing, and other components, testing when necessary to ensure compliance and safety. Professional licensure may be required.

Knowledge & Skills:

- 1) Electricity and Alternative Energy
- 2) Basic Building & Construction
- 3) Math & Measuring
- 4) Computers & Technology
- 5) Safety, Inspection & Quality Control
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Solar Panel Installer, Electrician, Wind Turbine Technician, Alternative Energy Specialist, Geothermal Service Technician, Electrical Apprentice

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized

ANIMAL SERVICES - CARE/BREEDING

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED + Hands-On Experience + Professional License

Wage Range: \$12 - \$35/hour

Assist with feeding, watering, exercising, bathing, and other types of care or training to promote and maintain animal or pet health and well-being. Research, select and breed animals according to desired genealogy, characteristics and offspring. May clean, disinfect and repair cages, pens or fish tanks. Observe, document and track animal behavior, medication needs, reproductive schedules, and other paper or digital records. Professional licensure may be required.

Knowledge & Skills:

- 1) Animal Service & Health Care
- 2) Animal Breeding & Genetics
- 3) Inspection & Research
- 4) Attention to Detail & Recordkeeping
- 5) Computers & Technology
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Veterinary Technician, Breeder, Livestock Technician, Animal Care Specialist, Kennel Technician, Animal Trainer

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Office, Laboratory, Specialized

CHEMICAL APPLICATION - FERTILIZER/PESTICIDE

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED + Hands-On Experience + Professional License

Wage Range: \$16 - \$40/hour

Measure, mix, and apply or spray liquid, aerosol, and other physical forms of natural or chemical pesticides, herbicides, fungicides, or insecticides on trees, shrubs, lawns, or crops with various hand or digital tools, vehicles or power equipment. May assist with soil sampling, testing and identification of pests, diseases, nutrient deficiencies, or other issues and provide recommendations to clients for how to resolve. Professional licensure may be required.

Knowledge & Skills:

- 1) Fertilizers & Pesticides
- 2) Lawn & Plant Care
- 3) Math & Measuring
- 4) Computers & Technology
- 5) Inspection & Safety
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Commercial Application Sprayer, Fertilization Technician, Lawn Technician, Licensed Pesticide Applicator, Tree and Shrub Technician

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Office, Laboratory, Renewable, Specialized

SERVICE & SKILLED TRADES

THE CREATORS



CONSERVATION - WATER/LAND/AIR

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED + Hands-On Experience

Wage Range: \$12 - \$36/hour

Provide advocacy and support services for the conservation of soil, water, air, and other types of natural resources and environments. Manage, improve and protect areas such as forests, wetlands, parks, and wildlife habitats through activities such as raising seedlings, combating insects or disease threats, and building structures or systems to control water, erosion, and leaching of soil.

Knowledge & Skills:

- 1) Natural Resources & Conservation
- 2) Math & Measuring
- 3) Computers & Technology
- 4) Inspection & Attention to Detail
- 5) Critical Thinking & Problem Solving
- 6) Forestry & Land Management

Similar Roles/Titles:

Conservation Officer, Forester, Resource Technician, Forestry Support Specialist, Park Maintainer, Nature Rehabilitation Specialist

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized

CULINARY ARTS - COOLING/FOOD PREPARATION

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED + Hands-On Experience

Wage Range: \$11 - \$36/hour

Prepare, season and cook different types of foods, such as soups, meats, vegetables, or desserts in restaurants, cafeterias and other settings. Plan menus, price items, order supplies, and keep records and accounts to ensure customer satisfaction and profitability. Perform a variety of other food preparation duties, such as slicing meat, brewing coffee or tea and wrapping or packaging food products for sale. Inspect and test food products for quality, safety and to avoid spoilage.

Knowledge & Skills:

- 1) Food Preparation & Safety
- 2) Math & Measuring
- 3) Customer Service & Communication
- 4) Health & Nutrition
- 5) Critical Thinking & Problem Solving
- 6) Attention to Detail & Inspection



Similar Roles/Titles:

Cook, Chef, Prep Cook, Food Service Worker, Line Cook, Food Preparation Worker

Typical Work Environments:

Remote, Commercial, Residential, Storage, Office, Laboratory, Specialized

ELECTRICITY - LOW/HIGH VOLTAGE

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED + Hands-On Experience + Professional License

Wage Range: \$15 - \$52/hour

Design, install and maintain low or high voltage residential, commercial or industrial electrical wiring, equipment, fixtures, and control systems in accordance with all appropriate safety, regulatory and compliance codes or guidelines. Inspect, test and repair related systems and components to resolve hazards, defects or other performance concerns. May also specialize in above and underground power lines, transformers, utilities, and other telecommunications systems or components.

Knowledge & Skills:

- 1) Electricity & Electronics
- 2) Building & Construction
- 3) Math & Measuring
- 4) Computers and Technology
- 5) Inspection & Safety
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Electrician, Commercial Electrician, Residential Electrician, Electrical Apprentice, Electrical Systems Engineer, Electrical Engineer

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized

SERVICE & SKILLED TRADES

THE CREATORS



EQUIPMENT OPERATION/MAINTENANCE

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED + Hands-On Experience + Professional License

Wage Range: \$15 - \$55/hour

Drive or operate different types of power equipment and vehicles, such as tractors, bulldozers, cranes, harvesters, or dump trucks to excavate, move or grade work sites, harvest or process crops and support other related agriculture or construction projects. May also inspect, repair and maintain equipment to keep operational and running smoothly, safely and efficiently. May require professional licensure.

Knowledge & Skills:

- 1) Mechanical, Digital & Diagnostic Tools
- 2) Machine Operation & Maintenance
- 3) Critical Thinking & Problem Solving
- 4) Safety & Inspection
- 5) Math & Measuring
- 6) Computers & Technology



Similar Roles/Titles:

Operating Engineer, Tractor Mechanic, Equipment Operator, Heavy Equipment Mechanic, Truck Mechanic, Operation Apprentice

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized

FARMING - AGRICULTURE/CROPS

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED + Hands-On Experience

Wage Range: \$11 - \$39/hour

Plant, cultivate, manage, and harvest vegetables, fruits, nuts, and field crops, such as corn or soybeans, often with advanced or autonomous equipment like tractors or harvesters and other precision agriculture technologies and practices. May also use various hand or power tools to install or repair fences, farm buildings and various fertilization, irrigation or other systems. Inspect, test, identify and resolve any issues with weeds, pests, diseases, nutrient deficiency, or other issues impacting crop and yield.

Knowledge & Skills:

- 1) Soil Nutrition & Plant Care
- 2) Hand, Power & Digital Tools
- 3) Math & Measuring
- 4) Inspection & Safety
- 5) Critical Thinking & Problem Solving
- 6) Equipment Operation & Maintenance



Similar Roles/Titles:

Farmer, Farm Worker, Greenhouse Worker, Harvester, Orchard Worker, Agricultural Technician

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized

FARMING - LIVESTOCK/ANIMALS

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED + Hands-On Experience

Wage Range: \$12 - \$45/hour

Oversee and attend to farm, ranch, open range, or aquaculture animals or livestock, such as cattle, sheep, swine, fish, and poultry that are primarily used for products such as meat, fur, eggs, and milk. Duties may include feeding, watering, herding, milking, branding, weighing, and loading animals for sale or processing. Assist with keeping records, repairing buildings or housing, observing animals to detect diseases or injuries, and administering medications, vaccinations or treatments as appropriate.

Knowledge & Skills:

- 1) Animal Care & Nutrition
- 2) Hand, Power & Digital Tools
- 3) Math & Measuring
- 4) Equipment Operation & Maintenance
- 5) Inspection & Safety
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Farmer, Farm Worker, Livestock Worker, Rancher, Fishery Worker, Agricultural Technician

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized

SERVICE & SKILLED TRADES

THE CREATORS



FLEET SERVICE/REPAIR (AUTOMOTIVE)

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED + Hands-On Experience

Wage Range: \$13 - \$49/hour

Inspect, test drive, repair, and service automotive or fleet vehicles that have been damaged or are in need of routine maintenance, such as oil changes, brake replacement and tire alignments. Use digital, diagnostic and hand tools to identify current and potential issues or malfunctions, providing recommendations for updates or repairs. May specialize in certain models, types or systems, such as transmissions, tractor trailers or foreign vehicles.

Knowledge & Skills:

- 1) Vehicle Maintenance & Repair
- 2) Critical Thinking & Problem Solving
- 3) Hand, Mechanical & Digital Tools
- 4) Computers & Technology
- 5) Customer & Personal Service
- 6) System Diagnostics & Attention to Detail



Similar Roles/Titles:

Automotive Mechanic, Automotive Tech, Fleet Services Specialist, Automotive Repair Specialist, ASE Master Mechanic

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized

HOSPITALITY - FOOD/GUEST SERVICES

SEI - SOCIAL, ENTERPRISING, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED + Hands-On Experience

Wage Range: \$10 - \$40/hour

Assist with providing a pleasant and satisfying experience for guests, visitors or customers to food service, lodging, entertainment, or other types of venues or establishments. Welcome, seat, serve, entertain, and otherwise offer support in different ways. May assist with the documentation of complaints and inspection of potential issues to ensure quality of facilities, products or services, providing recommendations for repairs or improvements when necessary.

Knowledge & Skills:

- 1) Customer & Personal Service
- 2) Listening & Communication
- 3) Basic Math & Measuring
- 4) Food Quality & Safety
- 5) Attention to Detail & Recordkeeping
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Host/Hostess, Waiter/Waitress, Guest Services Representative, Food Service Worker, Hospitality Specialist, Server

Typical Work Environments:

Remote, Commercial, Residential, Office, Laboratory, Specialized

LABOR/INSTALLATION

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED + Hands-On Experience

Wage Range: \$12 - \$47/hour

Assist a wide range of service and trades professionals with tasks involving physical or skilled labor in the preparation, construction, remodel, or demolition of buildings, infrastructure, and other types of work sites or building projects. Use hand or power tools and operate equipment to assist on projects as-needed, including clean-up procedures to ensure a safe, secure and efficient job site. May specialize in specific areas or offer support in many.

Knowledge & Skills:

- 1) Basic Building & Construction
- 2) Physical & Manual Labor
- 3) Hand & Power Tools
- 4) Math & Measuring
- 5) Critical Thinking & Problem Solving
- 6) Listening & Following Instructions



Similar Roles/Titles:

Construction Laborer, Construction Worker, Teamster Worker, Labor Apprentice, Skilled Labor

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized

SERVICE & SKILLED TRADES

THE CREATORS



LINE SERVICE/REPAIR - ELECTRICAL/GAS

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED + Hands-On Experience + Professional License

Wage Range: \$17 - \$58/hour

Design, install and service above and underground power, gas and other types of fuel or electrical lines, transformers, valves, switches, and other related equipment or machinery, often in remote locations and extreme heights or weather conditions. Inspect, test, and repair related systems and components to resolve hazards, leaks, defects, or other performance concerns. May require professional licensure.

Knowledge & Skills:

- 1) Electricity, Gas & Fuel Basics
- 2) Climbing & Hand or Power Tools
- 3) Math & Measuring
- 4) Computers and Technology
- 5) Inspection & Safety
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Lineman, Electrical Lineman, Lineworker, Gas Lineman, Lineman Apprentice, Journeyman Lineman

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized

METAL WORKING/WELDING (IRON/STEEL)

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED + Hands-On Experience

Wage Range: \$12 - \$47/hour

Lift, position and join iron or steel girders, beams, pipes, and other metal pieces to form walls, service lines, infrastructure, or completed structures and systems. Verify vertical and horizontal alignment of parts and connect using bolts, rivets, welds, and other temporary or permanent methods, dismantling when necessary to correct or modify. Read specifications or blueprints to determine locations, quantities and sizes of required materials.

Knowledge & Skills:

- 1) Basic Building & Construction
- 2) Metal Working & Cutting
- 3) Hand, Power & Welding Tools
- 4) Critical Thinking & Problem Solving
- 5) Math & Measuring
- 6) Attention to Detail & Inspection



Similar Roles/Titles:

Iron/Steel Worker, Fitter, Welder, Iron/Steel Apprentice, Metals Specialist

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized

PLUMBING/PIPEFITTING

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED + Hands-On Experience + Professional License

Wage Range: \$17 - \$57/hour

Assemble, install and maintain pipes, fittings, fixtures, and other materials used for water, heating, cooling, fuel, lubrication, waste removal, or drainage systems. Inspect, test and repair plumbing systems for defective materials, leaks, clogs, corrosion, and other potential hazards, replacing or fixing components and materials when necessary. Cut, bend, and join metal, plastic and other types of above and underground pipes with various hand tools, power equipment and other fasteners and adhesives.

Knowledge & Skills:

- 1) Basic Building & Construction
- 2) Pipe Bending, Working, & Cutting
- 3) Hand, Power, & Welding Tools
- 4) Water, Gas, & Fluid Dynamics
- 5) Math & Measuring
- 6) Attention to Detail & Inspection



Similar Roles/Titles:

Plumber, Pipefitter, Steamfitter, Plumbing Specialist, Plumbing/Pipefitting Apprentice

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized

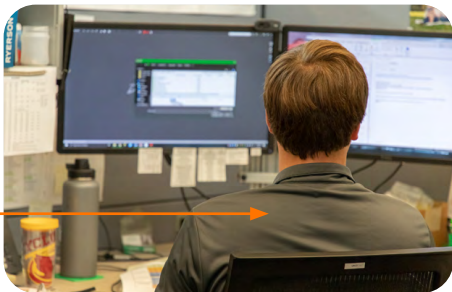


Occupations in the *Planning & Design* family focus on turning ideas or concepts into reality!

These professionals use their vision and creativity to work with customers to assess agriculture, food, natural resources, utilities, or power needs, develop 3D structural or system blueprints, identify potential funding or financing options, and provide detailed project design plans that will be used by other skilled and trade professionals during the initial construction or installation process and for longer term service and maintenance.

Many of these occupations require a higher level of formal education, such as an associate or bachelor's degree, but some only require a technical certificate and little or no industry experience. A growing number of these careers offer an "earn and learn" option as well, such as an internship or apprenticeship.

Someone who is creative, enjoys working with technology and doesn't mind working mostly in an office setting will do well in these careers. Travel may be required to survey or visit potential agriculture, production, processing, or other work sites, but advances in satellite imagery, global positioning systems (GPS) and smart drone technology are changing and expanding how many of these careers are practiced. Artificial intelligence and cloud computing will also continue to improve the accuracy, efficiency and ease of use of many of the technology and tools used by these professionals.

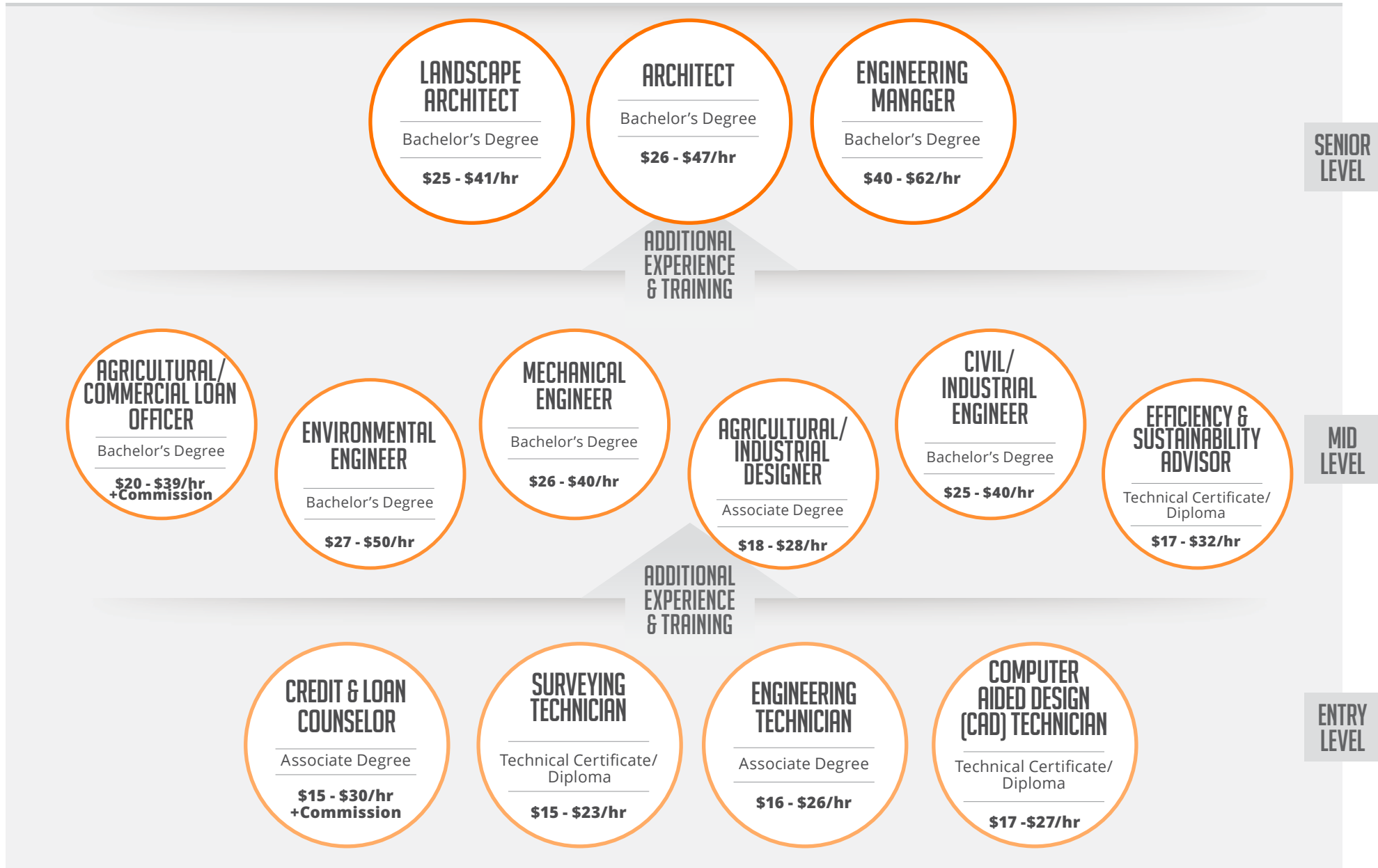


CAREER SPOTLIGHT:

Casey H. - Agricultural Engineer for Sukup Manufacturing Co. (Sheffield, IA)

"I grew up on a family farm near Latimer, IA and have been exposed to agriculture my whole life. My first taste of engineering came in high school and I instantly knew I wanted to blend the two somehow for a career. I design new products that are used in grain processing, storage and handling. I also maintain and improve the design of existing products, as well as test products for capacity and efficiency. The overall goal is to help the company to develop products that will provide improved solutions to existing problems in agriculture. The full product development process is a lot of fun, and being able to work on equipment used in agriculture is an added bonus. Field testing equipment is my favorite part of the job. Due to my background, I am truly invested in designing products that meet the end customer's needs. I want to continue designing things that I can be proud of, and make products that help drive forward progress in agriculture."







SURVEYING TECHNICIAN

ENTRY LEVEL

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 0 - 3 years

Wage Range: \$15 - \$23/hour

Research, conduct and document property measurements, elevations and relation to natural features, structures and other physical barriers with various hand tools, electronic instruments and drones or advanced surveying technology. Make sketches or maps, enter data into software tools or applications and analyze or compare findings to other sources, such as satellite imagery and infrared heat scans.

Knowledge & Skills:

- 1) Engineering & Geography
- 2) Building & Construction Basics
- 3) Math & Measuring
- 4) Surveying Tools & Equipment
- 5) Analytical Thinking & Problem Solving
- 6) Computers & Technology



Similar Roles/Titles:

Survey Crew, Engineering Technician, Surveying Instrument Assistant, Surveying Specialist, Instrument Operator

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

CREDIT & LOAN COUNSELOR

ENTRY LEVEL

ESC - ENTERPRISING, SOCIAL, CONVENTIONAL

Typical Education/Training: Associate Degree

Work Experience: 0 - 3 years

Wage Range: \$15 - \$30/hour +Commission

Educate and advise individuals or organizations on acquiring and managing debt, such as for farm or restaurant financing. Provide guidance in determining the best type of loan and explaining product details based on variables like monthly income, credit history and financial goals. May require professional licensure and include opportunity for commissions or referral bonus pay.

Knowledge & Skills:

- 1) Finance & Economics
- 2) Communication & Active Listening
- 3) Personal & Customer Service
- 4) Math & Data Analysis
- 5) Critical Thinking & Problem Solving
- 6) Education & Training

Similar Roles/Titles:

Financial Counselor, Credit and Housing Counselor, Financial Aid Counselor, Financial Health Counselor, Financial Assistance Advisor

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

ENGINEERING TECHNICIAN

ENTRY LEVEL

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: Associate Degree

Work Experience: 0 - 3 years

Wage Range: \$16 - \$26/hour

Assist with the planning, design and oversight of the construction and maintenance of food or resource production systems and related structures, lines and facilities, usually under the direction of engineering staff. Collect, analyze and report data research findings, often with detailed dimensional drawings, maps and diagrams created and managed with advanced or 3D modeling and design software or applications.

Knowledge & Skills:

- 1) Engineering & Technology
- 2) CAD/AutoCAD & Design Software
- 3) Math & Measuring
- 4) Mechanical Tools & Equipment
- 5) Analytical Thinking & Problem Solving
- 6) Comprehend & Follow Instructions



Similar Roles/Titles:

Civil Designer, Engineering Assistant, Design Technician, Engineer Technician, Civil Engineering Technician

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home



COMPUTER-AIDED DESIGN (CAD) TECHNICIAN

ENTRY LEVEL

RIA - REALISTIC, INVESTIGATIVE, ARTISTIC

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 0 - 3 years

Wage Range: \$17 - \$27/hour

Assist designers, drafters and engineers with the development, review and analysis of detailed design drawings and specifications for construction and installation projects, using computer-aided design (CAD) equipment and other advanced design software. Consult and coordinate with other workers to design, layout or detail systems and related components and to resolve problems to ensure high levels of quality and safety.

Knowledge & Skills:

- 1) CAD/AutoCAD & Design Software
- 2) System Design & Creative Drawing
- 3) Engineering & Technology
- 4) Math & Measuring
- 5) Building & Construction Basics
- 6) Analytical Thinking & Problem Solving

Similar Roles/Titles:

CAD Designer, CAD Drafter, Drafting Assistant, Design Drafter, Civil Drafting Technician

Typical Work Environments:

Remote, Office, Laboratory, Renewable, Specialized, Home

EFFICIENCY & SUSTAINABILITY ADVISOR

MID LEVEL

CEI - CONVENTIONAL, ENTERPRISING, INVESTIGATIVE

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 4 - 7 years

Wage Range: \$17 - \$32/hour

Advise design, construction and engineering teams on energy or resource efficiency, sustainability and environmentally friendly building or business practices. Review plans, provide audits and make recommendations to improve the operation, maintenance or efficiency of new or existing structures and systems. May also assist with financial impact studies, permits or contracts and attaining financial assistance or rebates.

Knowledge & Skills:

- 1) Basic Building & Construction
- 2) Inspection & Attention to Detail
- 3) Critical Thinking & Problem Solving
- 4) Math & Measuring
- 5) Resource Efficiency & Sustainability
- 6) Data Collection & Analysis

Similar Roles/Titles:

Energy Advisor, Energy Efficiency Consultant, Sustainability Specialist, Sustainable Building Consultant, Energy Advisor

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

AGRICULTURAL/INDUSTRIAL DESIGNER

MID LEVEL

ARI - ARTISTIC, REALISTIC, INVESTIGATIVE

Typical Education/Training: Associate Degree

Work Experience: 4 - 7 years

Wage Range: \$18 - \$28/hour

Prepare and deliver detailed drawings, designs, charts, and plans for buildings, structures, farms, utilities, and other construction or installation projects according to specifications provided by architects and engineers with computer-aided design (CAD) equipment, 3D modeling and other interactive design tools. Consider and analyze building codes, site or spacing limitations, utility or line locations, and other factors to keep projects on track and within budget.

Knowledge & Skills:

- 1) Engineering, Design & Technology
- 2) CAD/AutoCAD & Design Software
- 3) Math & Measuring
- 4) Mechanical Tools & Equipment
- 5) Analytical Thinking & Problem Solving
- 6) Communication & Negotiation



Similar Roles/Titles:

Drafter, Architectural Designer, Civil Drafter, Draftsman, Civil Designer

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home



CIVIL/INDUSTRIAL ENGINEER

MID LEVEL

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$25 - \$40/hour

Research, design and oversee the construction and maintenance of buildings, restaurants, storage facilities, and other structures, such as roads, railroads, bridges, pipelines, and water or sewage systems with advanced design and modeling tools. May inspect work and project sites to ensure compliance with design specifications, budget, timeline, and other regulatory or safety guidelines.

Knowledge & Skills:

- 1) Engineering & Technology
- 2) Project & Time Management
- 3) Math & Measuring
- 4) Data Collection & Analysis
- 5) Building & Construction
- 6) Analytical Thinking & Problem Solving

Similar Roles/Titles:

Hardscape Engineer, Civil Engineering Manager, Infrastructure Engineer, Structural Engineer, City Planner

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

MECHANICAL ENGINEER

MID LEVEL

IRC - INVESTIGATIVE, REALISTIC, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$27 - \$50/hour

Research, plan and design machines, tools, engines, turbines, controls, and other equipment or technology and how they interact with one another as part of a larger interconnected resource or power grid, system or related projects and services. Oversee installation, operation, maintenance, and repair of equipment or machinery throughout the entire production and use cycle based on factors like power, budget, efficiency, time, and quality needs.

Knowledge & Skills:

- 1) Critical Thinking & Problem Solving
- 2) Engineering & Technology
- 3) Machine Repair & Maintenance
- 4) Drafting & System Design
- 5) CAD/AutoCAD & Design Software
- 6) Math & Physics

Similar Roles/Titles:

Mechanical Drafter, Systems Engineer, Application Engineer, Equipment Engineer, Mechanical Design Engineer

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

ENVIRONMENTAL ENGINEER

MID LEVEL

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$27 - \$50/hour

Research needs, design solutions and advise service and trade professionals on the prevention, control or remediation of environmental hazards using various engineering principles, strategies and technologies. May inspect work and project sites to ensure compliance with design specifications, budget, timeline, and other environmental safety or regulatory guidelines, such as the handling of hazardous materials, water and waste treatment or storage.

Knowledge & Skills:

- 1) Engineering & Technology
- 2) Environmental Science & Protection
- 3) Math & Measuring
- 4) Data Collection & Analysis
- 5) Hazardous Materials & Waste Handling
- 6) Analytical Thinking & Problem Solving

Similar Roles/Titles:

Pollution Control Engineer, Environmental Project Engineer, Wastewater Engineer, Environmental Remediation Specialist, Sanitary Engineer

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

PLANNING & DESIGN

THE VISIONARIES



AGRICULTURAL/COMMERCIAL LOAN OFFICER

MID LEVEL

EIC - ENTERPRISING, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$20 - \$39/hour + Commission

Evaluate, authorize or recommend approval of various commercial, agricultural, business, and other types of loan products or services. Research products, obtain additional information and advise borrowers on financial status, payment methods, terms of service, and other related rules, regulations or restrictions for consideration. May require professional licensure and include opportunity for commissions or referral bonus pay.

Knowledge & Skills:

- 1) Finance & Economics
- 2) Contracts & Regulations
- 3) Computers & Technology
- 4) Math & Data Analysis
- 5) Critical Thinking & Problem Solving
- 6) Education & Training

Similar Roles/Titles:

Commercial Banker, Ag Lender, Loan Officer, Banking Officer, Business Loan Originator

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

LANDSCAPE ARCHITECT

SENIOR LEVEL

AIE - ARTISTIC, INVESTIGATIVE, ENTERPRISING

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$25 - \$41/hour

Research, plan and design land areas for public or recreational purposes like parks, facilities, airports, highways, hospitals, schools, and golf courses with advanced design and modeling tools, in accordance with environmental, safety and other regulations. Consult with customers, develop contracts and direct or oversee activities of technicians, contractors and other project staff to ensure customer needs and goals are met on time and within budget.

Knowledge & Skills:

- 1) Landscape & Public Space Design
- 2) Project & Time Management
- 3) Math & Measuring
- 4) Data Collection & Analysis
- 5) Analytical Thinking & Problem Solving
- 6) Computers & Technology

Similar Roles/Titles:

Professional Landscape Architect (PLA), Landscape Planner, Park Planner, Landscape Designer, Architect

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

ARCHITECT

SENIOR LEVEL

AIE - ARTISTIC, INVESTIGATIVE, ENTERPRISING

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$26 - \$47/hour

Research, plan and design architectural structures or systems, such as farms, storage facilities, factories, and related infrastructure projects with advanced design and modeling tools, in accordance with environmental, safety and other regulations. Consult with customers, develop contracts and direct or oversee activities of technicians, contractors and other project staff to ensure customer needs and goals are met on time and within budget.

Knowledge & Skills:

- 1) Architecture & System Design
- 2) Project & Time Management
- 3) Math & Measuring
- 4) Data Collection & Analysis
- 5) Analytical Thinking & Problem Solving
- 6) Advanced Computers & Technology

Similar Roles/Titles:

Design Architect, Principal Architect, Project Architect, Senior Architectural Designer, Systems Architect

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home



ENGINEERING MANAGER

SENIOR LEVEL

ERI - ENTERPRISING, REALISTIC, INVESTIGATIVE

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$40 - \$62/hour

Assemble, supervise and manage teams of designers, technicians, engineers and other related trade or engineering professionals. Provide guidance and oversight to staff, contractors and other stakeholders on both day-to-day activities or operations and periodic system update or improvement projects. Consult with other departments and present proposals, reports, or findings to clients or upper management.

Knowledge & Skills:

- 1) Analyze Test Results & Data
- 2) Engineering & Technology
- 3) Management & Leadership
- 4) Personnel & Human Resources
- 5) Advanced Math & Physics
- 6) Communication & Project Management

Similar Roles/Titles:

Chief Engineer, Director of Engineering, Plant Engineer, Project Research Manager, Lead Engineer

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

CAREER SPOTLIGHT



Natalie P. - Energy Extern for Southern Iowa Electric Cooperative (Bloomfield, IA)

"Although I currently work as a math teacher for Davis County High School, I was able to take advantage of a summer teacher externship opportunity through the Governor's STEM Advisory Council and was placed with the Southern Iowa Electric Cooperative. I wanted to help them use data to be more efficient and successful. I created a computer program to identify any issues with reliability in the service lines so the technicians could address them and keep things running smoothly for the customers. Even as a math teacher I didn't realize how important algebra and geometry are in IT and the energy industry. Yes, you really will use math in the real world!"



CAREER SPOTLIGHT



LaKrecia J. - Senior Grain Merchandiser for POET Bioprocessing (Emmetsburg, IA)

"Some of my family farmed and I married a farmer, so I guess I was destined to work in an ag related field. I am on the phone in my office with producers each and every day, talking about markets, crop and weather conditions, and discussing marketing plans. I try to serve as a sounding board for anything they want to discuss. I love that I work for a renewable energy company and am proud to explain the ethanol industry to others, especially our contribution to the environment and how we help farmers in our community. I volunteer with the Iowa Women in Agriculture program to educate girls and women about careers in ag. It is truly a great industry to be involved with and we make a real difference every day."





Occupations in the *Research & Development* family are on the cutting edge of modern science!

These professionals lead the charge to change the world by pioneering new theories to research and develop new or improved foods, pharmaceuticals, fuels, technologies, and other products or services that improve the quality and length of human, animal and plant life around the world. The first gasoline-powered tractor, trampoline, vending machine, and automatic electronic digital computer are just some of the inventions credited to lowans that have made a real and lasting impact for generations to come.

Much of this work is conducted in a laboratory, facility or other external site that offers little direct interaction with customers and staff who will ultimately be using these new products, services or procedures. Some occupations may specialize on specific types of products, such as food additives or pharmaceuticals, while others may focus on a specific issue or problem, such as drought resistant crops and curing diseases or health conditions.

Those who enjoy testing new ideas and aren't afraid of failure will do well in this family. Their hard work, critical thinking and creativity also help lead the way to create new or improved methods for testing, diagnosing and treating a wide range of social and environmental problems, such as preventing hunger, pollution and the spread of disease. The work from this family has the potential to truly change the world!

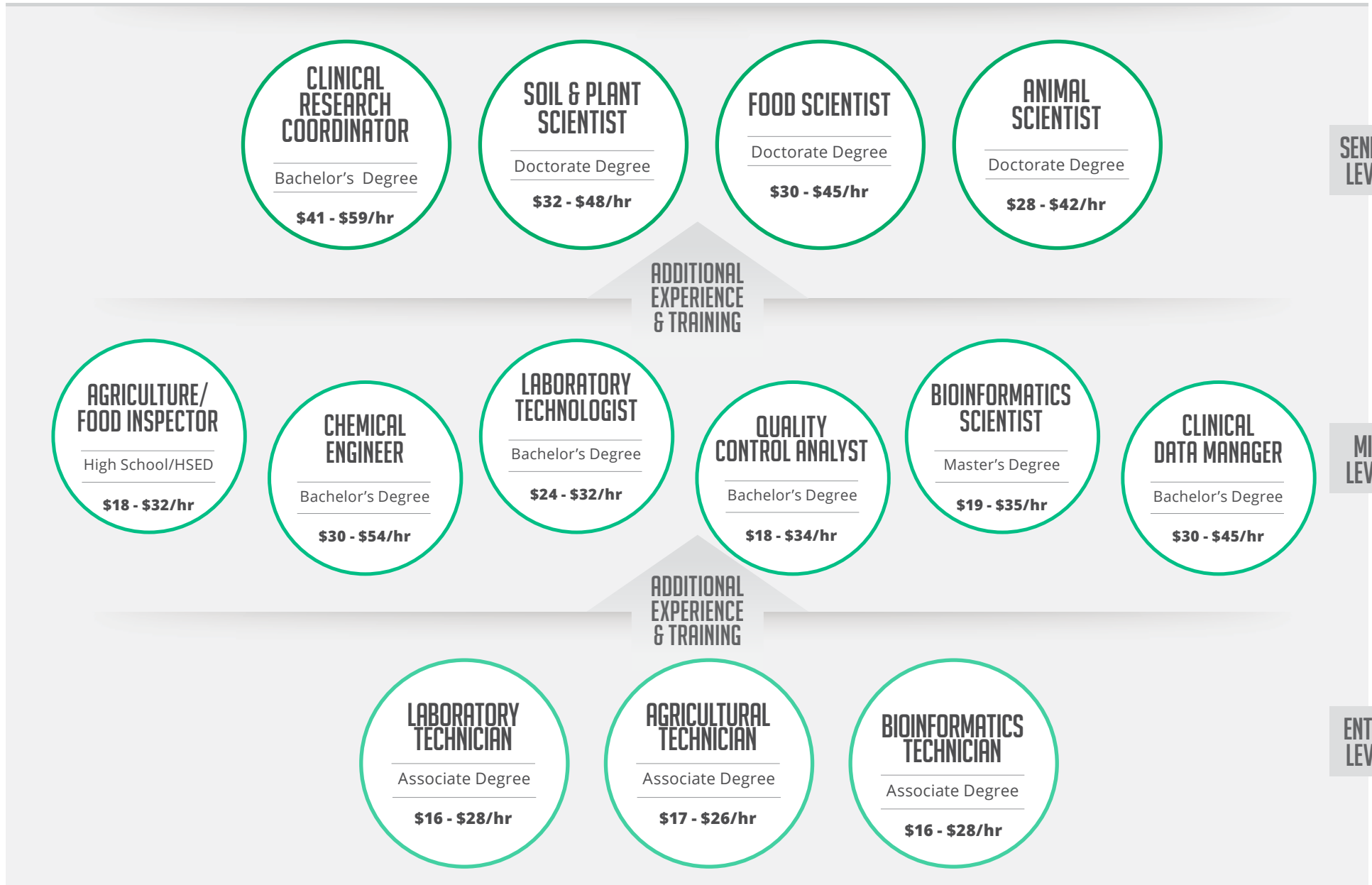


CAREER SPOTLIGHT:

Scott G. - Research Scientist for Kemin Industries (Des Moines, IA)

“Although I grew up in rural Iowa, it wasn’t until my first job in a soil testing lab that I that I wanted to work as a chemist in agriculture. When I first started out with Kemin, I was testing samples and creating new testing methods for everything from fat quality to intestinal health. Now I work in R&D doing things like setting up pilot-scale equipment, collaborating with our global teams running extrusion trials and plenty of troubleshooting along the way. Part of what makes this job enjoyable is the relationships we have with our customers. I hear of problems they’re facing and get the opportunity to help find solutions. There are so many opportunities to explore careers in agriculture and bioscience here in Iowa. We have clubs, trade shows, farmers and companies looking for help throughout the growing season - there are lots of way to get involved, so I suggest exploring all avenues. Knowing that I’m supporting an industry essential to so many lowans’ (and Americans’ and beyond) lives has been very rewarding.”







LABORATORY TECHNICIAN

ENTRY LEVEL

IRC - INVESTIGATIVE, REALISTIC, CONVENTIONAL

Typical Education/Training: Associate Degree

Work Experience: 0 - 3 years

Wage Range: \$16 - \$28/hour

Conduct chemical, physical and other types of laboratory tests to assist scientists in making qualitative and quantitative analyses of solids, liquids and gaseous materials or finished foods, medications, fuels, and other resources or products. Maintain, clean or sterilize laboratory instruments or equipment to ensure a safe, secure and efficient work environment. May also assist with experimental or theoretical applications to develop new or improve existing products and services.

Knowledge & Skills:

- 1) Chemistry & Math
- 2) Testing & Measuring
- 3) Safety & Quality Control
- 4) Computers & Technology
- 5) Inspection & Accuracy
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Lab Tech, Chemical Technician, Lab Analyst, Research Technician, Fuel Technician

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized, Home

BIOINFORMATICS TECHNICIAN

ENTRY LEVEL

IRC - INVESTIGATIVE, REALISTIC, CONVENTIONAL

Typical Education/Training: Associate Degree

Work Experience: 0 - 3 years

Wage Range: \$16 - \$28/hour

Gather, analyze and track data about biological functions or characteristics to assist scientists in areas such as pharmaceuticals, medical technology, plant or crop functions, and improve food quality for human consumption. Work with and maintain databases for processing and analyzing genomic or other biological information to be used in the development of new or improved foods, medications, resources, or technology. May prepare charts, reports and other visualizations of findings.

Knowledge & Skills:

- 1) Chemistry & Biology
- 2) Math & Measuring
- 3) Data Collection & Analysis
- 4) Computers & Technology
- 5) Inspection & Attention to Detail
- 6) Critical Thinking & Problem Solving

Similar Roles/Titles:

Bioinformatics Analyst, Bioinformatics Specialist, Assistant Biotechnician, Plant Technician, Data Technician

Typical Work Environments:

Remote, Agricultural, Commercial, Office, Laboratory, Renewable, Specialized, Home

AGRICULTURAL TECHNICIAN

ENTRY LEVEL

IRC - INVESTIGATIVE, REALISTIC, CONVENTIONAL

Typical Education/Training: Associate Degree

Work Experience: 0 - 3 years

Wage Range: \$17 - \$28/hour

Assist scientists with the research of plants, fibers, animals, medications, and other related products or resources by conducting laboratory tests or experiments. Prepare specimens, record data, and report test findings to scientists, engineers, and research coordinators. May focus on a specific area, such as improving production yields or increasing disease and pest resistance, or assist in researching and resolving many different problems or issues.

Knowledge & Skills:

- 1) Chemistry & Biology
- 2) Math & Measuring
- 3) Safety & Quality Control
- 4) Computers & Technology
- 5) Plant & Animal Nutrition
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Agricultural Research Technician, Agricultural Technologist, Seed Analyst, Yield Analyst, Farm Research Technician

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized, Home



AGRICULTURE/FOOD INSPECTOR

MID LEVEL

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED

Work Experience: 4 - 7 years

Wage Range: \$18 - \$32/hour

Visit, inspect and document agricultural and animal commodities, food products or resources, processing equipment and practices, storage or refrigeration facilities, and other pieces of related machinery, technology or infrastructure to ensure compliance with local, state and federal regulations and laws. Analyze observations or findings and prepare reports that outline proposed or required improvements or modifications. May work with law or code enforcement officials when necessary.

Knowledge & Skills:

- 1) Quality Control & Safety
- 2) Inspection & Attention to Detail
- 3) Critical Thinking & Problem Solving
- 4) Communication & Conflict Resolution
- 5) Computers & Technology
- 6) Rules, Laws & Regulations

Similar Roles/Titles:

Inspector, Quality Assurance Officer, Food Safety and Inspection Specialist, Grain Inspector, Seed and Fertilizer Specialist

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

QUALITY CONTROL ANALYST

MID LEVEL

CIR - CONVENTIONAL, INVESTIGATIVE, REALISTIC

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$18 - \$34/hour

Perform tests, inspections and monitoring of agriculture, food or natural resource products, services and related work activities to ensure high levels of quality, safety and efficiency at all times. Conduct routine and on-the-spot audits of materials, processes, equipment, and components to identify any current or potential issues. Analyze findings and write technical reports or documentation such as testing protocols and trend analyses for review by engineers, managers and other teams.

Knowledge & Skills:

- 1) Quality Assurance & Control
- 2) Computers & Technology
- 3) Critical Thinking & Problem Solving
- 4) Inspection & Attention to Detail
- 5) Math & Measuring
- 6) Data Research & Analysis

Similar Roles/Titles:

Quality Assurance Analyst, Quality Control Technician, Quality Control Auditor, Lab Analyst, Quality Control Specialist

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized

BIOINFORMATICS SCIENTIST

MID LEVEL

IRC - INVESTIGATIVE, REALISTIC, CONVENTIONAL

Typical Education/Training: Master's Degree

Work Experience: 4 - 7 years

Wage Range: \$19 - \$35/hour

Organize, direct or lead a research team using bioinformatics theory and methods for pharmaceuticals, genomic testing, DNA sequencing, and plant, crop or food functions, safety and quality. Design, build and manage databases and develop algorithms for processing and analyzing genomic or bioinformation or other biological information to be used in the development of new or improved foods, medications, resources, or technology.

Knowledge & Skills:

- 1) Advanced Chemistry & Biology
- 2) Advanced Math & Analysis
- 3) Safety & Quality Control
- 4) Computers & Technology
- 5) Inspection & Attention to Detail
- 6) Critical Thinking & Problem Solving

Similar Roles/Titles:

Bioinformaticist, Director of Bioinformatics, Director of Informatics, Informatics Scientist, Information Process Engineer

Typical Work Environments:

Remote, Agricultural, Commercial, Office, Laboratory, Renewable, Specialized, Home



LABORATORY TECHNOLOGIST

MID LEVEL

IRC - INVESTIGATIVE, REALISTIC, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$24 - \$32/hour

Perform complex tests or experiments for use in various ways to develop new or improved foods, pharmaceuticals, fuels, and other resources, products or services. Oversee the receipt, preparation, testing, and analysis of plant, blood, resource, or tissue samples. Assist scientists, engineers and other professionals with advanced screening and testing procedures for hazardous, high-risk or complicated samples and materials. May assist in the training and development of technicians and other lab staff.

Knowledge & Skills:

- 1) Advanced Chemistry & Math
- 2) Measuring & Data Analysis
- 3) Critical Thinking & Problem Solving
- 4) Inspection & Attention to Detail
- 5) Computers & Technology
- 6) Safety & Quality Control

Similar Roles/Titles:

Clinical Laboratory Scientist, Lead Lab Tech, Research Assistant, Chief Lab Technologist, Researcher

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized, Home

CLINICAL DATA MANAGER

MID LEVEL

CIE - CONVENTIONAL, INVESTIGATIVE, ENTERPRISING

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$30 - \$45/hour

Accurately and efficiently collect and manage data from a variety of scientific or research projects, such as seed genome testing, clinical or pharmaceutical trials and biofuel quality analysis. Analyze data closely to spot any trends or promising findings, collaborating with scientists, researchers and other data or statistical analysts to understand potential impact and value. Document and report findings to management or stakeholders. May lead a team of other scientists, technicians and data management professionals.

Knowledge & Skills:

- 1) Advanced Math & Data Analysis
- 2) Analytical & Scientific Software
- 3) Critical Thinking & Problem Solving
- 4) Inspection & Attention to Detail
- 5) Management & Leadership
- 6) Safety & Quality Control

Similar Roles/Titles:

Director of Clinical Data Management, Clinical Informatics Manager, Project Data Manager, Clinical Lab Manager, Lead Data Manager

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized, Home

CHEMICAL ENGINEER

MID LEVEL

IRC - INVESTIGATIVE, REALISTIC, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$30 - \$54/hour

Oversee, analyze and provide technical and engineering support to develop or improve foods, medications, fuels, and other products. Run various tests or experiments to prove theories, produce desired chemical reactions and explore new areas for research and development. Identify and propose safety procedures to be used by workers who will be near on-going chemical reactions or handling hazardous materials and resources.

Knowledge & Skills:

- 1) Chemistry & Engineering
- 2) Computers & Technology
- 3) Critical Thinking & Problem Solving
- 4) Inspection & Attention to Detail
- 5) Advanced Math & Measuring
- 6) Data Research & Analysis

Similar Roles/Titles:

Chemist, Process Engineer, Research Engineer, Process Control Engineer, Scientist

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized, Home



ANIMAL SCIENTIST

SENIOR LEVEL

IRC - INVESTIGATIVE, REALISTIC, CONVENTIONAL

Typical Education/Training: Doctorate Degree

Work Experience: 8+ years

Wage Range: \$28 - \$42/hour

Lead or conduct research covering the genetics, nutrition, reproduction, and development of animals. May specialize in specific types or breeds (fish or livestock), ailments (diseases or defects), goal (increased nutrition or less waste), or other chemical, physical and biological factors. Conduct tests or experiments to develop new or improved varieties of animal-based products, byproducts or services. May require professional licensure.

Knowledge & Skills:
 1) Biology, Chemistry & Physics
 2) Advanced Math & Measuring
 3) Critical Thinking & Problem Solving
 4) Animal Behavior & Anatomy
 5) Computers & Technology
 6) Research & Data Analysis

Similar Roles/Titles:
 Animal Nutritionist, Livestock Animal Specialist, Animal Research and Development, Research Center Partner, Research Scientist
Typical Work Environments:
 Remote, Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized, Home

FOOD SCIENTIST

SENIOR LEVEL

IRC - INVESTIGATIVE, REALISTIC, CONVENTIONAL

Typical Education/Training: Doctorate Degree

Work Experience: 8+ years

Wage Range: \$30 - \$45/hour

Conduct or lead research into the processing, production, deterioration, nutrition, and other aspects of foods, beverages and other food products to ensure the highest levels of quality and safety at all times. Conduct tests or experiments to discover new food sources, improve taste or appearance and determine best ways to process, package, preserve, store, and distribute raw and finished food or food products. May require professional licensure.

Knowledge & Skills:
 1) Food Safety & Nutrition
 2) Advanced Math & Data Analysis
 3) Critical Thinking & Problem Solving
 4) Advanced Chemistry & Biology
 5) Computers & Technology
 6) Quality Control & Inspection

Similar Roles/Titles:
 Food and Drug Scientist, Food Chemist, Food Engineer, Product Development Scientist, Research Chef
Typical Work Environments:
 Remote, Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized, Home

SOIL & PLANT SCIENTIST

SENIOR LEVEL

IRC - INVESTIGATIVE, REALISTIC, CONVENTIONAL

Typical Education/Training: Doctorate Degree

Work Experience: 8+ years

Wage Range: \$32 - \$48/hour

Lead or conduct research in areas of soil or plant breeding, physiology, production, yield, and management. May specialize in specific types of soil (farm or prairie), plant life (crops or trees), threats (diseases or pests), and other chemical, physical and biological factors. Conduct test or experiments to develop new or improved varieties of field crops, develop methods to conserve or manage soil and identify other best practices or recommendations. May require professional licensure.

Knowledge & Skills:
 1) Plant & Soil Management
 2) Advanced Math & Data Analysis
 3) Critical Thinking & Problem Solving
 4) Nutrition & Seed Science
 5) Computers & Technology
 6) Quality Control & Safety

Similar Roles/Titles:
 Agronomist, Crop Nutrition Scientist, Forage Physiologist, Horticulture Specialist, Plant Physiologist, Plant Research Geneticist
Typical Work Environments:
 Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home



CLINICAL RESEARCH COORDINATOR

SENIOR LEVEL

EIC - ENTERPRISING, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$41 - \$59/hour

Plan, oversee or coordinate clinical research projects, such as pharmaceutical trials or seed testing procedures. Direct the activities of scientists, technicians and other professionals engaged in clinical research to ensure compliance with all appropriate rules, regulations and protocols and to remain in line with overall clinical objectives. May assist in the evaluation and analysis of clinical data and report trends, promising findings and additional research or usage recommendations to various audiences and stakeholders. May require professional licensure.

Knowledge & Skills:

- 1) Management & Leadership
- 2) Advanced Math & Data Analysis
- 3) Critical Thinking & Problem Solving
- 4) Advanced Chemistry, Biology, & Physics
- 5) Advanced Computers & Technology
- 6) Inspection & Attention to Detail

Similar Roles/Titles:

Clinical Program Coordinator, Research Manager, Clinical Research Administrator, Director of Research & Development, R&D Manager

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized, Home



CAREER SPOTLIGHT

Laura M. - Vaccine Design & Biotherapeutics Scientist for Boehringer Ingelheim Animal Health USA Inc. (Ames, IA)

"I'm originally from California, but moved to Iowa to attend Iowa State University with the intention of studying veterinary medicine. After a summer internship in vaccine research, however, I realized this was actually the right career path for me. I then obtained a Bachelor's of Science in Biology/Spanish and a Master's of Science in Microbiology and began working as a Scientist in Vaccine Design and Biotherapeutics. Although I didn't plan to stay in Iowa, I found rewarding opportunities that have kept me here. I love research because I'm constantly learning, answering scientific questions, and making data driven decisions at every turn. I enjoy the challenge of having to be agile when an experiment's results differ from the hypothesis. I've also found a passion for coaching employees - from student interns to other scientists - and supporting them as they continue to advance through their career journeys."



CAREER SPOTLIGHT

John von Harz - Founder and CEO of Resource Refinery (Des Moines, IA)

"I formed Resource Refinery in 2017 after seeing that the views on energy efficiency were unfortunately changing here in Iowa. I decided to pivot away from hunting for more efficiency and instead focus towards more cost-effective solutions to deploy existing efficiency programs. My first solution was to license an administrative software platform and to configure programs that were drawn from the state technical reference manual. We are now heavily invested in mobile solutions through our mobile app, DSMally, which is an in-field tool that enables installers and trade allies to register their efficient installations and also by salespersons and auditors to pre-enroll inefficient replacement opportunities."





Occupations in the *Production & Operations* family are able to turn raw materials or resources into great things!

These professionals ensure the safe, secure and efficient production and management of various sources or types of food, utilities, resources, and agriculture products or services across a growing number of traditional and non-traditional sources or production practices. These professionals must stay on their toes to keep up with fluctuating product or service demands, changing consumer preferences and potential supply chain, system or production disruptions or outages.

Some occupations may allow for some flexibility, but most will focus on a specific type of production process, technology or resource type, such as renewable energy, food production or water management. Due to the nature and complexity of this work, many of these occupations will require an advanced degree like an associate or bachelor's degree. A growing number, however may only require a high school diploma or equivalent and a willingness to learn or offer an "earn and learn" option, such as an internship or apprenticeship.

An increasing worldwide demand for safe and clean food, water and natural resources products or services, combined with strict safety and environmental regulations, will continue to change how these occupations are practiced here in Iowa. Attention to detail, troubleshooting and problem-solving skills are also necessary to ensure the production process runs smoothly and high-quality products and services are delivered to customers.



CAREER SPOTLIGHT:

JJ S. - Field Operations Manager for Corteva Agriscience (Algona, IA)

"Participating in FFA and taking agriculture classes in high school was when I realized I could make a career from my passion for Agriculture. Every day is different throughout each of the seasons, from planning for the up-coming season, meeting with growers, to all the infield activities it takes to produce and harvest our crop. One of the best things about this industry is the wide range of professions all working together to produce food and fiber sustainably for the growing population. My future goals are to continue to learn and adapt new technologies and processes to improve our work flow, while continuing to produce high quality seed corn for our farmer customers. My advice would be to take advantage of all the experiences you can, try out different areas of agriculture, and continue to learn new things along the way."



CORTEVA™
agriscience





RESOURCE/MATERIALS HANDLER

ENTRY LEVEL

REI - REALISTIC, ENTERPRISING, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$14 - \$20/hour

Assist with the shipping and receiving of raw materials or resources and finished foods, beverages and other goods or products, sometimes as liquid fuels, aerosol gases, and other potentially hazardous or flammable chemicals manually or with forklifts, power jacks or other technology. Review shipping logs, inspect materials and attach tags or mark containers with identifying information. Read work orders and record numbers of units stored, handled, or moved with production and tracking sheets or tickets.

Knowledge & Skills:

- 1) Attention to Detail & Organization
- 2) Gather & Analyze Data
- 3) Computers & Technology
- 4) Hazardous Chemicals & Waste Management
- 5) Communication & Critical Thinking
- 6) Safety & Quality Control

Similar Roles/Titles:

Materials Receiver, Materials Tender, Merchandise Pickup/Receiving Associate, Shipping and Receiving Materials Handler, Warehouse Worker

Typical Work Environments:

Agricultural, Commercial, Storage, Laboratory, Renewable, Specialized

FOOD PRODUCTION WORKER

ENTRY LEVEL

RCE - REALISTIC, CONVENTIONAL, ENTERPRISING

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$14 - \$22/hour

Set up, operate and monitor equipment that cuts, trims, mixes, or blends ingredients used in the manufacturing of a wide range of foods, beverages, meats, and other raw or finished goods and products. May include using hand or digital tools and instruments to inspect, sample or test, and wrap or package products for final sale to ensure high quality and safety before final sale.

Knowledge & Skills:

- 1) Food Quality & Safety
- 2) Hand, Power & Digital Tools
- 3) Math & Measuring
- 4) Inspection & Attention to Detail
- 5) Manufacturing & Production Basics
- 6) Critical Thinking & Problem Solving

Similar Roles/Titles:

Food Batch Maker, Food and Meat Trimmer, Food and Meat Processor, Processing Operator, Batching Operator

Typical Work Environments:

Agricultural, Commercial, Storage, Laboratory, Renewable, Specialized

PRODUCTION TECHNICIAN

ENTRY LEVEL

RCS - REALISTIC, CONVENTIONAL, SOCIAL

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$15 - \$21/hour

Work individually or as part of a team to produce or assemble products or the materials and components to be used to finish a product, good or resource. Move between various roles or positions, sometimes on an assembly line, to keep production running smoothly, quickly and efficiently. Identify and help resolve down times and production delays. Assist with loading materials, setting-up machines and testing or making adjustments to maintain a high level of safety and quality for finished food and non-food products.

Knowledge & Skills:

- 1) Manufacturing & Production Basics
- 2) Hand, Power & Digital Tools
- 3) Math & Measuring
- 4) Inspection & Attention to Detail
- 5) Quality Control & Safety
- 6) Critical Thinking & Problem Solving

Similar Roles/Titles:

Production Worker, Assembly Worker, Manufacturing Technician, Resource Technician, Operations Technician

Typical Work Environments:

Agricultural, Commercial, Storage, Laboratory, Renewable, Specialized

PRODUCTION & OPERATIONS

THE PRODUCERS



OCCUPATIONAL HEALTH & SAFETY TECHNICIAN

ENTRY LEVEL

RCS - REALISTIC, CONVENTIONAL, SOCIAL

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 0 - 3 years

Wage Range: \$16 - \$24/hour

Observe, collect and maintain data on work environments for analysis by engineers, analysts and health and safety specialists, providing recommendations where necessary for improvements or modifications, such as to limit chemical, physical, biological, and ergonomic risks to workers. May assist in training employees in-person or virtually on work site safety equipment and policies.

Knowledge & Skills:

- 1) Health & Safety Regulations
- 2) Customer & Personal Service
- 3) Critical Thinking & Problem Solving
- 4) Active Listening & Questioning
- 5) Math, Physics & Measuring
- 6) Inspection & Data Analysis

Similar Roles/Titles:

Safety Consultant, Environmental, Health, and Safety (EHS) Technician, Health and Safety Tech, Project Safety Assistant, Production Safety Professional

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

ASSISTANT PLANT OPERATOR

ENTRY LEVEL

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$18 - \$32/hour

Assist plant operators, engineers and other staff with monitoring food, power, fuels, and other types of production or generation. Ensure machines, equipment, facilities, or building grounds are repaired and in safe and optimal working order. Diagnose mechanical, structural or safety problems and determine how to correct them quickly and efficiently by checking system blueprints, repair manuals, technical journals, or parts catalogs.

Knowledge & Skills:

- 1) Production & Generation Basics
- 2) Gather & Analyze Data
- 3) Mechanical & Digital Tools
- 4) Computers & Technology
- 5) Machine & Facilities Maintenance
- 6) Safety & Inspection

Similar Roles/Titles:

Assistant Operator, Assistant Plant Manager, Maintenance Technician, Assistant Facilities Manager, Generation Specialist

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized

WATER SYSTEMS OPERATOR

MID LEVEL

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 4 - 7 years

Wage Range: \$15 - \$28/hour

Oversee and assist with the collection, testing, treatment, disposal, and use of water resources for direct consumption or to be used to produce various products or services, heat or cool machinery and equipment, and assist in other production, operations or maintenance uses. Track and analyze findings, prepare reports and advise on necessary facility, system or other repairs or maintenance to remain in compliance with local, state and federal health or environmental laws, rules and regulations.

Knowledge & Skills:

- 1) Water & Wastewater Systems
- 2) Data Research & Analysis
- 3) Math & Chemistry
- 4) Computers & Technology
- 5) Waste Treatment & Disposal
- 6) Safety & Inspection



Similar Roles/Titles:

Utilities Operator, Wastewater Plant Operator, Water Operator, Water Treatment Specialist, Water Engineer

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized

PRODUCTION & OPERATIONS

THE PRODUCERS



PRODUCTION SUPERVISOR

MID LEVEL

ERC - ENTERPRISING, REALISTIC, CONVENTIONAL

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 4 - 7 years

Wage Range: \$19 - \$30/hour

Directly supervise and coordinate the activities of production workers individually or as part of an assembly line to keep production running smoothly, quickly and efficiently. Inspect, sample and test completed work to ensure high levels of quality and safety before final sale. Assist with training of new employees and identification of site, equipment, materials, or personnel needs, improvements and other recommendations for upper management.

Knowledge & Skills:

- 1) Management & Leadership
- 2) Communication & Negotiation
- 3) Math & Measuring
- 4) Inspection & Attention to Detail
- 5) Computers & Technology
- 6) Critical Thinking & Problem Solving

Similar Roles/Titles:

Front Line Supervisor, Foreman, Assembly Supervisor, Production Lead, Shift Supervisor

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized

BOILER OPERATOR

MID LEVEL

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED

Work Experience: 4 - 7 years

Wage Range: \$23 - \$38/hour

Operate and maintain boiler and steam generation systems to ensure safety, efficiency & reliability. Monitor temperatures, pressures and flow rates on all systems and ensure production goals or targets are met. Inspect and repair boiler and steam fixtures or equipment. Test, analyze and record chemical content in steam and water systems, providing treatment or remediation when necessary and according to guidelines.

Knowledge & Skills:

- 1) Steam Power & Generation
- 2) Computers & Technology
- 3) Inspection & Attention to Detail
- 4) Math & Measuring
- 5) Machine Maintenance & Repair
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Boiler Technician, Operating Engineer, Plant Utilities Engineer, Steam Engineer, Utilities Operator

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Laboratory, Renewable, Specialized

OCCUPATIONAL HEALTH & SAFETY SPECIALIST

MID LEVEL

ICR - INVESTIGATIVE, CONVENTIONAL, REALISTIC

Typical Education/Training: Associate Degree

Work Experience: 4 - 7 years

Wage Range: \$21 - \$34/hour

Review and evaluate work environments, policies and practices for health and safety concerns. Make recommendations and design programs or procedures to help protect workers from potentially hazardous chemical, physical and environmental factors. May conduct inspections, enforce laws and regulations and provide training to ensure the health and safety of all employees within a company, work site or facility.

Knowledge & Skills:

- 1) Health & Safety Regulations
- 2) Computers & Technology
- 3) Critical Thinking & Problem Solving
- 4) Active Listening & Questioning
- 5) Math, Physics, & Measuring
- 6) Inspection & Data Analysis

Similar Roles/Titles:

Safety Officer, Environmental, Health, and Safety (EHS) Officer, Health and Safety Manager, Safety Consultant, Health & Safety Technician

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

PRODUCTION & OPERATIONS

THE PRODUCERS



PLANT OPERATOR

MID LEVEL

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 4 - 7 years

Wage Range: \$25 - \$42/hour

Control, operate or maintain machinery, equipment and other technologies and resources used to generate and manage food, electricity, gas, fuels, or other types of products, resources and services. Monitor production and usage, adjusting equipment or controls to meet user needs demands and to regulate the flow of products or resources throughout a grid or system. Gather data, create reports or logs and advise management of proposed system and equipment updates or recommendations.

Knowledge & Skills:

- 1) Power & Resource Generation
- 2) Computers & Technology
- 3) Leadership & Communication
- 4) Math & Data Analysis
- 5) Mechanical Tools & Equipment
- 6) Safety & Inspection Procedures



Similar Roles/Titles:

Power Plant Operator, Plant Control Operator, Station Operator, Gas Plant Operator, Production Manager

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

OPERATIONS ENGINEER

MID LEVEL

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$32 - \$60/hour

Provide oversight and guidance to ensure interconnected plants, factories, systems, and other related machinery or components are operating efficiently. Prepare reports and design continuous improvement projects or plans to assist with current or improved plant operations. Ensure safe, reliable and secure plant operations. Analyze impacts of equipment outages and develop contingencies to address quickly and efficiently.

Knowledge & Skills:

- 1) Engineering & Operations
- 2) Computers & Technology
- 3) Critical Thinking & Problem Solving
- 4) Inspection & Attention to Detail
- 5) Advanced Math & Measuring
- 6) Data Research & Analysis

Similar Roles/Titles:

Systems Engineer, Instrumentation Engineer, Process Engineer, Electrical Engineer, Plant Engineer

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

SAFETY DIRECTOR

SENIOR LEVEL

ERC - ENTERPRISING, REALISTIC, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$25 - \$45/hour

Plan, direct and coordinate the activities of an organization to ensure compliance with safety, regulatory and quality standards throughout the entire production or usage cycle, from raw materials to final sale and regular maintenance or upkeep. Oversee teams, provide related employee training programs and consult with other department heads and governing or legislative groups to remain updated and in compliance.

Knowledge & Skills:

- 1) Health, Safety, & Quality Control
- 2) Management & Leadership
- 3) Listening & Communication
- 4) Math & Finance
- 5) Quality Control & Inspection
- 6) Critical Thinking & Problem Solving

Similar Roles/Titles:

Compliance Officer, Occupational Health Director, Site Safety Director, Project Superintendent, Director of Compliance

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home



PLANT MANAGER

SENIOR LEVEL

ECS - ENTERPRISING, CONVENTIONAL, SOCIAL

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$30 - \$59/hour

Direct the efforts of plant personnel to meet all established safety, quality, performance, and delivery or service level agreements and goals. Develop budgets and direct or initiate cost savings efforts to meet financial objectives. Inspect print and digital records, logs and performance data to assess plant production and operations. Strategize, communicate or coordinate with management and teams from other departments, sites or plants.

Knowledge & Skills:

- 1) Management & Leadership
- 2) Plant Operations & Production
- 3) Communication & Negotiation
- 4) Critical Thinking & Problem Solving
- 5) Sales & Negotiation
- 6) Human Resources & Contracts

Similar Roles/Titles:

Production Manager, General Production Manager, Manufacturing Manager, Production Control Manager, Plant Superintendent

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized

DIRECTOR OF OPERATIONS

SENIOR LEVEL

ECS - ENTERPRISING, CONVENTIONAL, SOCIAL

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$35 - \$68/hour

Oversee and manage a single unit or multiple departments or divisions within a company, collaborative or system to ensure profitability and long-term growth. Plan, direct and coordinate the work of the organization and all related personnel. Research, administer and coordinate the development and execution of any capital improvement or service expansion projects.

Knowledge & Skills:

- 1) Production & Operations
- 2) Management & Leadership
- 3) Communication & Corporate Strategy
- 4) Complex Critical Thinking & Problem Solving
- 5) Sales & Negotiation
- 6) Contracts, Budgets & Finance

Similar Roles/Titles:

Business Manager, General Manager (GM), Operations Director, Operations Manager, Director of Generation

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized, Home



CAREER SPOTLIGHT

Jon K. - Water & Resource Recovery Facility Director for the City of Muscatine (Muscatine, IA)

"After 20 years in the water industry, I can't see myself ever doing anything else. With the versatility of this industry I am also able to break into the renewable energy arena with the most exciting work out there...waste to energy. At the Muscatine Waster & Resource Recovery Facility (wastewater plant previously) we are pioneering the recovery of energy from things previously considered waste. We are even recovering food waste to increase our biogas production. It is the most exciting time in our industry where we get to explore biology, physics and chemistry in action every day while bringing people clean water and renewable energy."





Occupations in the *Storage & Distribution* family focus on keeping everyone and everything connected and working!

These professionals store, secure, monitor and transmit, transport or otherwise distribute various agriculture, food and natural resource products or services throughout the community and across the world in a safe, efficient and reliable manner. These professionals need to be prepared for severe weather, natural disasters, supply chain issues, and other unexpected or unplanned circumstances that can quickly cause disruptions or delays that bring the entire system to a grinding halt.

Many of these careers require a high school diploma or equivalent and a specialized certification or training to be successful. Similar to the *Service & Skilled Trades* family, these occupations can be a good entry into this industry, with huge potential for advancement with focus, hard work and a willingness to learn.

Someone with initiative, enjoys supporting others and is able to deal with uncertainty will do well in these careers. An eye for detail and ability to think quickly is also often needed to solve sudden issues and stay ahead of potential supply or resource shortages.



CAREER SPOTLIGHT:

Kris H. - Grain Origination Specialist for PRO Cooperative (Pocahontas, IA)

“Although I grew up on a farm and my dad was a member-owner of the cooperative, I ended up working in accounting and banking. Being around the grain elevator with my dad, I knew a little about scaling and grading grain and running grain facilities, but I didn’t realize there was more going on behind the scenes that would interest me. I now have the privilege of helping our customers with their grain marketing needs, which includes things like discussing market prices, weather and growing conditions, and trucking logistics. At times, I also get to be a financial consultant as we talk through how to manage their farm revenue to cover their costs and cash flow. I plan to continue working in this industry and maybe one day being a CEO or GM of a cooperative. The market is always changing, so there is a never-ending opportunity to learn and grow.”





STORAGE & DISTRIBUTION

THE CONNECTORS



DELIVERY DRIVER

ENTRY LEVEL

RES - REALISTIC, ENTERPRISING, SOCIAL

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$12 - \$21/hour

Deliver different types of foods, supplies, fuels, equipment, and other packages safely and in accordance with all transportation rules, laws and regulations. May assist with the collection of money, offering product or route recommendations and building relationships with customers. May also include the potential for sales or performance-based wage compensation. Vehicle size, cargo and length of routes may require specialized license or certification, such as a Class C CDL.

Knowledge & Skills:

- 1) Driving & Operating Vehicles
- 2) Reliability & Time Management
- 3) Transportation Safety & Laws
- 4) Sales & Negotiation
- 5) GPS & Route Logging Technology
- 6) Customer & Personal Service



Similar Roles/Titles:

Driver, Deliveryman, Route Driver, Sales Route Driver, Truck Driver

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized

SECURITY OFFICER

ENTRY LEVEL

RCE - REALISTIC, CONVENTIONAL, ENTERPRISING

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$12 - \$22/hour

Guard, patrol or monitor products or premises to prevent theft, violence or infractions of other rules, regulations and laws. Monitor and authorize entrance and departure of employees, visitors and other persons, including any associated materials, baggage and other inventory or resources. Utilize metal detectors, security cameras, x-ray machines, and other surveillance technology and equipment. Collaborate with local law enforcement professionals.

Knowledge & Skills:

- 1) Public Safety & Security
- 2) Computers & Technology
- 3) Attention to Detail & Monitoring
- 4) Customer & Personal Service
- 5) Accurate Record & Time Keeping
- 6) Critical Thinking & Problem Solving

Similar Roles/Titles:

Security Guard, Security Agent, Security Management Specialist, Loss Prevention Officer, Site Security Specialist

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized

WAREHOUSE EQUIPMENT OPERATOR

ENTRY LEVEL

RCE - REALISTIC, CONVENTIONAL, ENTERPRISING

Typical Education/Training: Associate Degree

Work Experience: 0 - 3 years

Wage Range: \$13 - \$26/hour

Operate, inspect and maintain various types of fork lifts, pallet jacks, loaders, hoists, and other materials handling or inventory control equipment to safely and efficiently lift or move materials or resources and finished products into, around and out of a warehouse or distribution center. Review product loads for accuracy, comply with safety standards and assist in meeting production and shipping deadlines. May require specialized training, certification or licensure.

Knowledge & Skills:

- 1) Equipment Operation & Maintenance
- 2) Quality Control & Safety
- 3) Materials Storage & Organization
- 4) Communication & Listening
- 5) Critical Thinking & Problem Solving
- 6) Time & Record Keeping



Similar Roles/Titles:

Fork Lift Technician, Fork Lift Driver, Materials Loader, Warehouse Transporter, Materials Mover

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Laboratory, Renewable, Specialized

STORAGE & DISTRIBUTION

THE CONNECTORS



DISPATCHER

ENTRY LEVEL

CRE - CONVENTIONAL, REALISTIC, ENTERPRISING

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$14 - \$22/hour

Schedule, monitor and dispatch drivers, vehicles, equipment, and other workers to transport or distribute products, materials and other resources. Coordinate with service and repair workers, sometimes in emergency situations, to respond to and fix vehicles or equipment. Use various forms of radio, digital, telecommunications, and advanced technology to interact with teams, provide weather or hazardous alerts and remotely monitor vehicle factors like location, speed and service or repair needs.

Knowledge & Skills:

- 1) Communication & Active Listening
- 2) Computers & Technology
- 3) Accurate Time & Record Keeping
- 4) Transportation & Remote Monitoring
- 5) Data Gathering & Analysis
- 6) Critical Thinking & Problem Solving

Similar Roles/Titles:

Route Dispatcher, Dispatch Manager, Operations Dispatcher, Route Controller, Truck Dispatcher

Typical Work Environments:

Agricultural, Commercial, Storage, Office, Renewable, Specialized, Home

METER READER/TECHNICIAN

ENTRY LEVEL

CRI - CONVENTIONAL, REALISTIC, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$16 - \$28/hour

Collect, analyze and monitor data from gas, electric or other utility meters either in-person or remotely with advanced computer data management and monitoring systems. Travel to inspect meters, prevent unauthorized use or tampering, deliver notices to customers, or repair broken, malfunctioning or outdated equipment. May provide recommendations for service needs or modifications based on observed usage, reliability and other trends or patterns.

Knowledge & Skills:

- 1) Inspection & Attention to Detail
- 2) Data Monitoring & Analysis
- 3) Critical Thinking & Problem Solving
- 4) Safety & Security
- 5) Computers & Technology
- 6) Customer & Personal Service



Similar Roles/Titles:

Field Technician, Utilities Technician, Member Services Technician, Utility Service Specialist, Meter Data Analyst

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

TRUCK DRIVER

ENTRY LEVEL

RCS - REALISTIC, CONVENTIONAL, SOCIAL

Typical Education/Training: Technical Certificate/Diploma & Commercial Driver's License (CDL)

Work Experience: 0 - 3 years

Wage Range: \$16 - \$32/hour

Drive trucks or large vehicles to transport raw materials, fuels, cargo, and other finished or unfinished foods, products or resources. Maneuver trucks into loading or unloading positions, following signals from loading crew and checking that vehicle and loading equipment are properly positioned. Vehicle size, cargo and length of routes may require specialized license or certification, such as a Class A CDL or HAZMAT endorsement.

Knowledge & Skills:

- 1) Driving & Operating Vehicles
- 2) Comprehend & Follow Instructions
- 3) Loading & Unloading Cargo
- 4) Safety Regulations & Procedures
- 5) Reliability & Problem Solving
- 6) Transportation Technology & GPS Systems



Similar Roles/Titles:

Materials Hauler, Materials Transporter, Line Haul Driver, Over the Road Driver (OTR Driver), Driver Apprentice

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

STORAGE & DISTRIBUTION

THE CONNECTORS



LOGISTICS PLANNER

MID LEVEL

ECR - ENTERPRISING, CONVENTIONAL, REALISTIC

Typical Education/Training: Associate Degree

Work Experience: 4 - 7 years

Wage Range: \$20 - \$32/hour

Analyze and coordinate the overall logistical functions for a business or service provider, including the purchase, receipt and distribution or delivery of both raw materials and finished goods, products or services to, from and within designated sites or systems. Maintain and develop positive business relationships with customers and vendors to assist in long term business growth and success.

Knowledge & Skills:

- 1) Analyze Data & Information
- 2) Logistics & Supply Chain
- 3) Project & Time Management
- 4) Critical Thinking & Problem Solving
- 5) Communication & Coordination
- 6) Inspection & Attention to Detail



Similar Roles/Titles:

Logistician, Logistics Team Lead, Supply Chain Planner, Logistics Analyst, Resource Engineer

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized, Home

BUYER

MID LEVEL

ECS - ENTERPRISING, CONVENTIONAL, SOCIAL

Typical Education/Training: Associate Degree

Work Experience: 4 - 7 years

Wage Range: \$20 - \$36/hour

Purchase or contract all necessary materials, equipment or services to ensure the business runs smoothly and profitably. Analyze past buying trends, sales records, price, and quality of merchandise to determine value and yield. Select, order and authorize payment for equipment and supplies according to contractual agreements and forecasting estimations to avoid service disruptions, poor quality and or other negative impacts on customers.

Knowledge & Skills:

- 1) Sales & Negotiation
- 2) Computers & Technology
- 3) Data Analysis & Forecasting
- 4) Business & Finance
- 5) Critical Thinking & Problem Solving
- 6) Contracts & Communication

Similar Roles/Titles:

Materials Purchaser, Purchasing Specialist, Purchasing Agent, Procurement Agent, Resource Broker

Typical Work Environments:

Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized, Home

AUDITOR

MID LEVEL

CEI - CONVENTIONAL, ENTERPRISING, INVESTIGATIVE

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$23 - \$38/hour

Oversee and audit purchases of materials, supplies and other resources to ensure legal, safety and regulatory compliance guidelines are being followed by departments and personnel. Monitor purchase activity to identify or prevent cybersecurity threats or criminal activities. Prepare and present detailed reports on findings and recommendations. Advise on financial and regulatory matters or trends impacting the industry and associated contracts or partners.

Knowledge & Skills:

- 1) Accounting & Math
- 2) Financial Regulations & Laws
- 3) Advanced Computers & Technology
- 4) Analytical & Critical Thinking
- 5) Inspection & Attention to Detail
- 6) Contracts & Procurement Procedures

Similar Roles/Titles:

Procurement Auditor, Purchasing Auditor, Compliance Auditor, Financial Auditor, Internal Audit Director

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Laboratory, Renewable, Specialized, Home



WAREHOUSE SUPERVISOR

MID LEVEL

CER - CONVENTIONAL, ENTERPRISING, REALISTIC

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 4 - 7 years

Wage Range: \$23 - \$39/hour

Directly supervise and coordinate the activities of storage, inventory control and other support workers to keep storage and warehouse operations running safely and smoothly. Review procedures and policies, discuss findings with management and support staff and make recommendations for improvements or repairs to facilities, machinery, vehicles, and other related systems or departments.

Knowledge & Skills:

- 1) Leadership & Management
- 2) Storage & Inventory Control Systems
- 3) Safety Regulations & Procedures
- 4) Computers & Mobile Technology
- 5) Communication & Coordination
- 6) Critical Thinking & Decision Making

Similar Roles/Titles:

Front Line Supervisor, Warehouse Foreman, Inventory Control Supervisor, Dock Supervisor, Shift Supervisor

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Renewable, Specialized

WAREHOUSE MANAGER

SENIOR LEVEL

ECS - ENTERPRISING, CONVENTIONAL, SOCIAL

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$26 - \$42/hour

Plan, direct and coordinate the storage and warehousing operations within an organization. Work with supervisors and other staff to prepare and manage departmental budgets. Supervise the activities of workers engaged in receiving, storing and handling of products or materials. Utilize inventory control software and other advanced computer database systems to monitor inventory and prevent spoilage, loss, theft, and other quality control issues.

Knowledge & Skills:

- 1) Electronic Inventory Controls & Systems
- 2) Management & Leadership
- 3) Safety & Quality Control
- 4) Communication & Delegation
- 5) Accounting & Finance
- 6) Math, Data & Analytics

Similar Roles/Titles:

Distribution Center Manager, Inventory Control Manager, Shipping & Receiving Manager, Warehouse Operations Manager, Warehouse Director

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Renewable, Specialized

SUPPLY CHAIN MANAGER

SENIOR LEVEL

ECI - ENTERPRISING, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$30 - \$49/hour

Direct or coordinate the purchasing, storage and distribution of all finished products or services and the raw materials or supplies used to create, finish or improve them. Provide inventory management and financial forecasting activities to limit service disruptions, cut costs and improve accuracy, customer service or safety. Stay updated on industry trends, production timelines and global demand to stay ahead of costly and disruptive impacts to the long-term success and growth of the company.

Knowledge & Skills:

- 1) Management & Leadership
- 2) Computers & Technology
- 3) Sales & Negotiation
- 4) Critical Thinking & Adaptability
- 5) Communication & Coordination
- 6) Supply Chain & Logistics

Similar Roles/Titles:

Supply Chain Director, Procurement Manager, Logistics Manager, Logistics Solution Manager, Director of Sourcing

Typical Work Environments:

Remote, Agricultural, Commercial, Storage, Office, Renewable, Specialized, Home

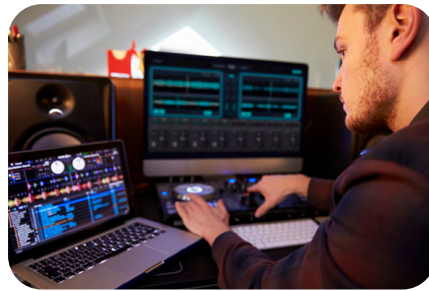
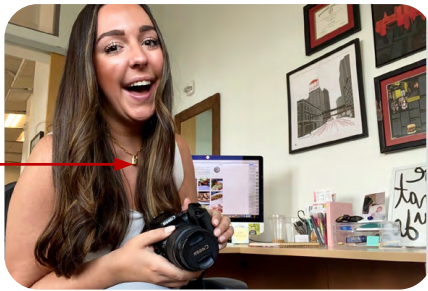


Professionals from the *Sales & Business Operations* family market, sell and manage customer expectations for products and services to keep a company profitable and competitive!

Simply having great products or services isn't enough to be successful if no one is aware of or wants to purchase them. These professionals work directly with customers, clients or end users to provide education or training, resolve complaints or issues and promote new or improved products and services to ensure customer satisfaction and long-term success. Advances in technology, changing customer preferences and the mixing of our physical and digital identities will continue to change how important client or customer relationships are managed and many of these occupations are practiced.

Many of these occupations will require advanced education or training in addition to a high school diploma or equivalent. Experience in the industry may serve as a replacement, however, to help professionals "speak the language" when selling or consulting on projects. Experience with social media and digital communications tools is often a must as client and customer relationship management preferences change in a digital or virtual environment. An added perk for some of these occupations is that they may include the opportunity for increased wages through commissions based on sales performance or service level agreements, allowing workers to make substantially more than their base pay.

Someone who works well with others, has a competitive side and doesn't mind the uncertainty of interacting with potentially unhappy customers will do well in these roles. They often work behind the scenes to ensure customers are happy and more likely to return for future business or refer others.

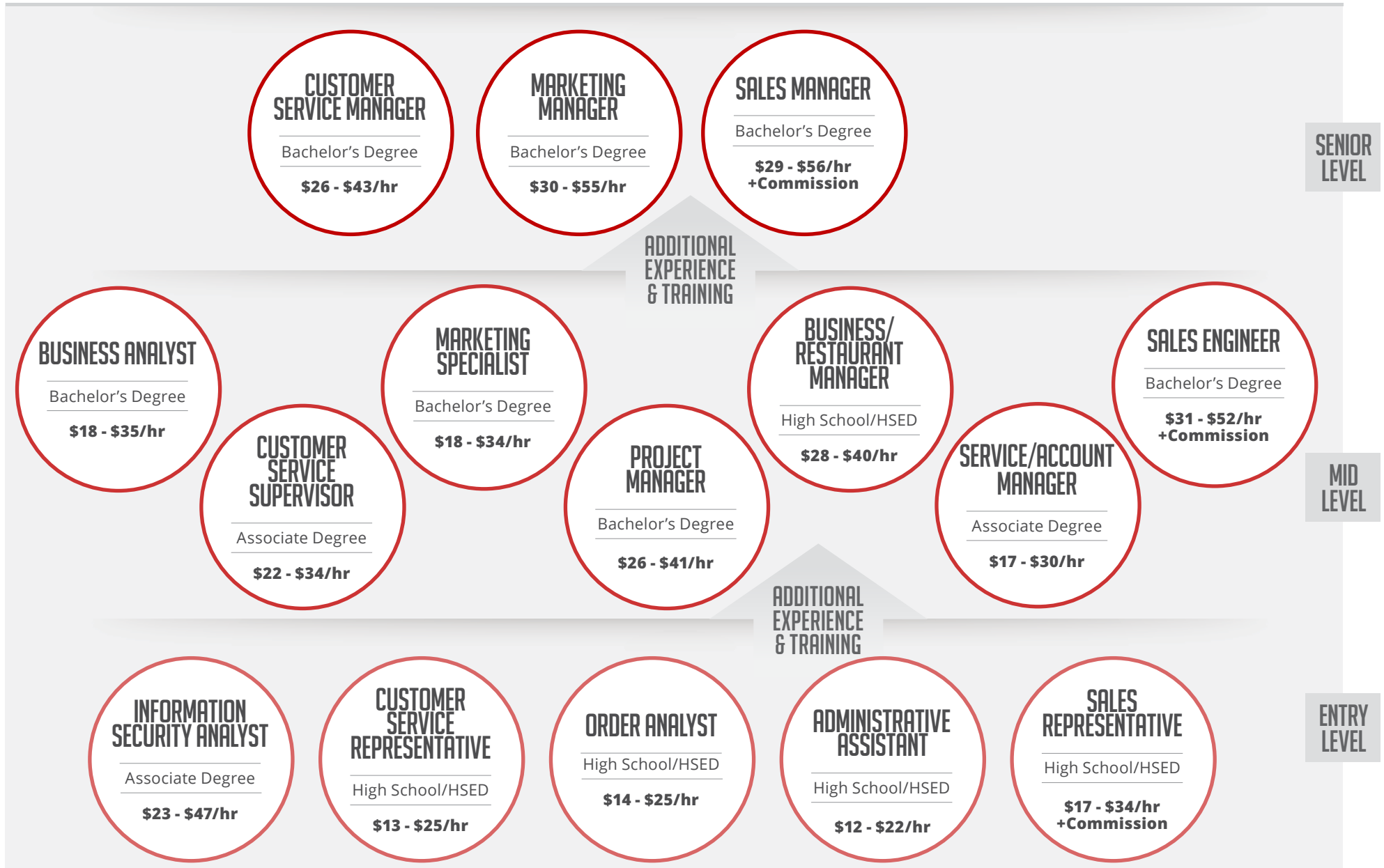


CAREER SPOTLIGHT:

Angela L. — Marketing & Engagement Coordinator at Orchestrate Hospitality (Des Moines, IA)

"I always knew I wanted a career in a public-facing field. My first work experiences were in mass media but I wasn't happy with its day-to-day routines, so I broadened my scope to other opportunities. I was very familiar with Orchestrate's popular family of restaurants - as a Des Moines native they were always where my family celebrated special occasions - but hadn't really thought about a career in hospitality. When this position opened up, I noticed it checked all the boxes of what I was looking for and quickly applied. In my day-to-day duties, I coordinate guest engagement for all nine Orchestrate restaurant brands; developing social media content, fielding customer feedback and working on a host of other marketing initiatives. I love the interactive and dynamic nature of our industry - no two days are ever the same!"







ADMINISTRATIVE ASSISTANT

ENTRY LEVEL

CEI - CONVENTIONAL, ENTERPRISING, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$12 - \$22/hour

Provide administrative or clerical support for specific staff, departments or teams, such as handling communication, facilitating information between team members, scheduling meetings or team events, and writing, editing or organizing billing, financing or other paperwork and digital records. May also assist in training or onboarding of new employees.

Knowledge & Skills:

- 1) Computers & Technology
- 2) Account & Project Management
- 3) Written & Oral Communication
- 4) Customer & Personal Service
- 5) Critical Thinking & Problem Solving
- 6) Inspection & Record Keeping

Similar Roles/Titles:

Admin Assistant, Secretary, Administrative Aide, Administrative Associate, Office Aide

Typical Project Types:

Agricultural, Commercial, Storage, Office, Renewable, Specialized, Home

CUSTOMER SERVICE REPRESENTATIVE

ENTRY LEVEL

ESC - ENTERPRISING, SOCIAL, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$13 - \$25/hour

Interact with customers by phone, email, online, and in person to provide information in response to inquiries about products and services. Handle, record and resolve complaints when necessary, weighing the needs of the customer and the company for long-term growth and success. May provide recommendations for new or improved product and service offerings.

Knowledge & Skills:

- 1) Customer & Personal Service
- 2) Critical Thinking & Problem Solving
- 3) Sales & Negotiation
- 4) Communication & Social Media Tools
- 5) Active Listening & Understanding
- 6) Conflict Management & Resolution



Similar Roles/Titles:

Customer Service Agent, Customer Care Representative, Customer Service Specialist, Member Services Representative, User Assistance Agent

Typical Project Types:

Agricultural, Commercial, Residential, Storage, Office, Renewable, Specialized, Home

ORDER ANALYST

ENTRY LEVEL

ESC - ENTERPRISING, SOCIAL, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$14 - \$25/hour

Receive, review and process incoming orders via mail, phone, fax, online, or other electronic means for materials, resources, foods, rentals, and other products or services. Work directly with customers to resolve order problems or complaints, answer questions about prices, shipping dates, or delays and assist with contracts or sales negotiations.

Knowledge & Skills:

- 1) Account & Project Management
- 2) Computers & Technology
- 3) Written & Oral Communication
- 4) Customer & Personal Service
- 5) Critical Thinking & Problem Solving
- 6) Inspection & Record Keeping

Similar Roles/Titles:

Order Clerk, Order Entry Representative, Order Processing Clerk, Sales Assistant, Processing Specialist

Typical Project Types:

Agricultural, Commercial, Storage, Office, Renewable, Specialized, Home



SALES REPRESENTATIVE

ENTRY LEVEL

ESC - ENTERPRISING, SOCIAL, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$17 - \$34/hour + Commission

Identify the needs of current and potential customers through direct and indirect interaction and research. Match customer needs with product or service offerings, negotiate sales and train customers to operate, manage or maintain services or technology and related supplies, materials or equipment. Estimate or quote prices, credit or contract terms and service level agreements or timelines. Opportunity for increased wages through commissions based on sales performance.

Knowledge & Skills:

- 1) Sales & Negotiation
- 2) Social Media & Marketing
- 3) Customer & Personal Service
- 4) Computers & Technology
- 5) Critical Thinking & Problem Solving
- 6) Communication & Relationship Management



Similar Roles/Titles:

Sales Associate, Outside Sales, Inside Sales, Service Representative, Tech Sales Specialist

Typical Project Types:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

INFORMATION SECURITY ANALYST

ENTRY LEVEL

CIA - CONVENTIONAL, INVESTIGATIVE, ARTISTIC

Typical Education/Training: Associate Degree

Work Experience: 0 - 3 years

Wage Range: \$23 - \$47/hr

Monitor, inspect, test, and protect computer networks, databases and other related technologies, systems or sources of information against security breaches, viruses and other spyware, phishing or data hostage scenarios. Utilize a combination of technical programs, digital forensics or software tools and an understanding of psychology, social engineering and other human factors to provide full security support and guidance to address increasingly complex physical and cyber security threats.

Knowledge & Skills:

- 1) Inspection & Attention to Detail
- 2) Computers & Technology
- 3) Critical Thinking & Problem Solving
- 4) Psychology & Sociology
- 5) Analytical, Test, & Scientific Software
- 6) Data Collection & Analysis



Similar Roles/Titles:

Cybersecurity Analyst, Information Security Officer, Information Security Specialist, IT Security Analyst, Security Analyst

Typical Project Types:

Agricultural, Commercial, Office, Laboratory, Renewable, Specialized, Home

SERVICE/ACCOUNT MANAGER

MID LEVEL

CES - CONVENTIONAL, ENTERPRISING, SOCIAL

Typical Education/Training: Associate Degree

Work Experience: 4 - 7 years

Wage Range: \$17 - \$30/hour

Research issues, identify solutions and advise customers, operators, suppliers, and other internal or external users with administrative or technical support, such as reviewing product or service needs, project progress or goals and maintenance or repair needs. Build or strengthen important customer relationships to ensure continued or expanded business.

Knowledge & Skills:

- 1) Project & Time Management
- 2) Sales & Negotiation
- 3) Computers & Technology
- 4) Written & Oral Communication
- 5) Critical Thinking & Problem Solving
- 6) Customer & Personal Service

Similar Roles/Titles:

Account Coordinator, Service Advisor, Service Writer, Client Relations Manager, Client Relationship Manager

Typical Project Types:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home



MARKETING SPECIALIST

MID LEVEL

IEC - INVESTIGATIVE, ENTERPRISING, CONVENTION

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$18 - \$34/hour

Research market conditions and gather information to determine user needs and sales potential for various products, resources or services. Measure the effectiveness of marketing, advertising, and communications programs and strategies, including social media, search engine optimization, and other digital tools or strategies. Collect and analyze data on competition, customer base and advances in related technologies.

Knowledge & Skills:

- 1) Research, Data, & Analytics
- 2) Customer & Personal Service
- 3) Critical Thinking & Problem Solving
- 4) Sales & Marketing
- 5) Social Media & Communication Tools
- 6) Computers & Technology



Similar Roles/Titles:

Marketing Analyst, Communications Specialist, Market Research Analyst, Social Media Specialist, Digital Marketing Strategist

Typical Work Environments:

Remote, Agricultural, Commercial, Office, Renewable, Specialized, Home

BUSINESS ANALYST

MID LEVEL

IEC - INVESTIGATIVE, ENTERPRISING, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$18 - \$35/hr

Research, combine and analyze various sources of market or business intelligence to identify data patterns or trends that can be used to determine changing consumer needs or preferences, competitive pricing structures, and effective methods for the marketing or distribution of products or services. Prepare data files, reports, and recommendations for sales, marketing, design, compliance, and other business operations or client relations teams.

Knowledge & Skills:

- 1) Data Research & Analysis
- 2) Deductive & Inductive Reasoning
- 3) Critical Thinking & Problem Solving
- 4) Advanced Computers & Technology
- 5) Inspection & Attention to Detail
- 6) Communication & Project Management

Similar Roles/Titles:

Market Intelligence Analyst, Business Intelligence Specialist, Commercial Intelligence Analyst, Competitive Intelligence Analyst, Data Compliance Consultant

Typical Work Environments:

Agricultural, Commercial, Storage, Office, Renewable, Specialized, Home

BUSINESS/ RESTAURANT MANAGER

MID LEVEL

ECR - ENTERPRISING, CONVENTIONAL, REALISTIC

Typical Education/Training: High School Diploma/HSED

Work Experience: 4 - 7 years

Wage Range: \$28 - \$40/hour

Plan, direct and coordinate the activities of restaurant, food service and other types of related staff to ensure long-term business success and compliance with all applicable rules, regulations or laws. Research market pricing, establish relationships with suppliers and coordinate the purchase and delivery of necessary ingredients, materials and other supplies. May assist with hiring and training of new staff and the handling of customer complaints or special requests.

Knowledge & Skills:

- 1) Management & Leadership
- 2) Sales & Negotiation
- 3) Contracts, Budgets, & Financial Models
- 4) Logistics & Supply Chain Management
- 5) Critical Thinking & Problem Solving
- 6) Customer Service & Communication

Similar Roles/Titles:

Food and Beverage Manager, Front-of-House Manager, Kitchen Manager, Restaurant General Manager, Food Service Manager, Business Owner

Typical Work Environments:

Agricultural, Commercial, Storage, Office, Renewable, Specialized, Home



CUSTOMER SERVICE SUPERVISOR

MID LEVEL

ECS - ENTERPRISING, CONVENTIONAL, SOCIAL

Typical Education/Training: Associate Degree

Work Experience: 4 - 7 years

Wage Range: \$22 - \$34/hour

Plan, direct and coordinate the activities of customer service agents and representatives of the organization who answer questions, address complaints and may handle billing for customers. Handle complex or elevated cases and customer complaints. Monitor and trends in product or service requests, identify common problems or complaints and provide updates or recommendations for related solutions.

Knowledge & Skills:

- 1) Management & Leadership
- 2) Customer & Personal Service
- 3) Project & Time Management
- 4) Advanced Conflict Management & Negotiation
- 5) Critical Thinking & Problem Solving
- 6) Computers & Technology

Similar Roles/Titles:

Administrative Supervisor, Office Supervisor, Client Facing Supervisor, Customer Service Lead, Shift Manager

Typical Work Environments:

Agricultural, Commercial, Residential, Storage, Office, Renewable, Specialized, Home

PROJECT MANAGER

MID LEVEL

ECI - ENTERPRISING, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$26 - \$41/hour

Consult and negotiate with internal coworkers and external customers to determine the need for new or existing projects and related details, budgets and deadlines. Coordinate projects and delegate tasks across various design, operations and distribution teams. Use data and analytics to forecast potential setbacks or limitations. Monitor, gather and assess information for project status reports, ensuring compliance with regulations and keeping projects on time and within budget.

Knowledge & Skills:

- 1) Time & Project Management
- 2) Communication & Attention to Detail
- 3) Critical Thinking & Problem Solving
- 4) Computers & Technology
- 5) Basic Engineering & Design
- 6) Sales & Negotiation

Similar Roles/Titles:

Project Lead, Project Owner, Senior Project Engineer, Project Development Lead, Project Director

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

SALES ENGINEER

MID LEVEL

ERS - ENTERPRISING, REALISTIC, SOCIAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$31 - \$52/hour + Commission

Sell products or services requiring extensive technical expertise or support for installation and use, such as advanced computer or network systems, infrastructure modifications or improvements and autonomous processing or harvesting equipment. Prepare and deliver presentations that explain products or services to customers, sometimes at work sites, trade shows and on live production floors. May include opportunity for increased wages through commissions based on sales performance.

Knowledge & Skills:

- 1) Sales & Negotiation
- 2) Education & Training
- 3) Social Media & Digital Marketing
- 4) Advanced Technology & Computer Systems
- 5) Communication & Data Analysis
- 6) Critical Thinking & Problem Solving

Similar Roles/Titles:

Senior Sales Representative, Technical Sales Lead, Solutions Analyst, Product Sales Engineer, Account Executive

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home



CUSTOMER SERVICE MANAGER

SENIOR LEVEL

ECS - ENTERPRISING, CONVENTIONAL, SOCIAL

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$26 - \$43/hour

Oversee the management and coordination of all customer service agents, administrative staff and other employees who interact directly or indirectly with customers. Monitor customer trends, review and negotiate contracts or service level agreements and enact staffing, training or budgetary solutions to ensure long-term organizational success and growth.

Knowledge & Skills:

- 1) Management & Leadership
- 2) Advanced Customer & Personal Service
- 3) Contracts, Budgets, & Financial Models
- 4) Communication & Human Resources
- 5) Complex Critical Thinking & Problem Solving
- 6) Sales & Marketing

Similar Roles/Titles:

Customer Service Coordinator, Customer Service Director, Client Facing Manager, Administrative Officer, Business Administrator

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

SALES MANAGER

SENIOR LEVEL

ECS - ENTERPRISING, CONVENTIONAL, SOCIAL

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$29 - \$56/hour + Commission

Plan, direct and coordinate sales activities, goals and strategies, including the establishment of associated training programs for sales representatives and support staff. Analyze sales statistics, market intelligence data and product or service request trends to determine variables such as sales potential, inventory or service requirements and changing customer preferences or regulatory and political guidelines.

Knowledge & Skills:

- 1) Management & Leadership
- 2) Advanced Sales & Negotiation
- 3) Contracts, Budgets, & Financial Models
- 4) Market Research & Data Analysis
- 5) Complex Critical Thinking & Problem Solving
- 6) Social Media & Communication

Similar Roles/Titles:

National Sales Manager, Regional Sales Manager, Sales and Marketing Vice President, Sales Director, Client Solutions Manager

Typical Work Environments:

Remote, Agricultural, Commercial, Residential, Storage, Office, Laboratory, Renewable, Specialized, Home

MARKETING MANAGER

SENIOR LEVEL

ECS - ENTERPRISING, CONVENTIONAL, SOCIAL

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$30 - \$55/hour

Plan, develop and coordinate marketing policies and programs, such as determining product demand and competitive market analysis. Develop pricing strategies with the goal of maximizing profits or share of the market while ensuring customer satisfaction. Oversee product expansion efforts and monitor trends that indicate the need for new or improved foods, beverages, fuels, medications, and other agriculture or natural resource products and services.

Knowledge & Skills:

- 1) Sales & Negotiation
- 2) Management & Leadership
- 3) Advanced Communication & Marketing
- 4) Market Research & Analytics
- 5) Advanced Computers & Technology
- 6) Social Media & Digital Marketing Tools

Similar Roles/Titles:

Director of Marketing, Brand Manager, Business Developer, Marketing Officer, Marketing Planner

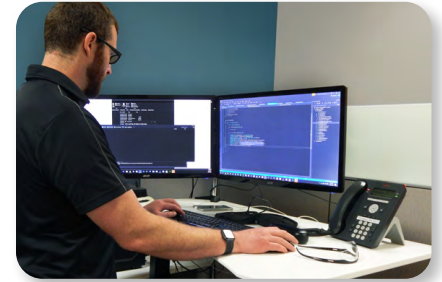
Typical Work Environments:

Agricultural, Commercial, Office, Renewable, Specialized, Home

ADDITIONAL CAREER OPTIONS - THERE IS A CAREER FOR EVERYONE IN AGRICULTURE, FOOD AND NATURAL RESOURCES!

Don't see a career you like? This document is not meant to cover every possible career option in these fields in Iowa, so don't worry if you don't see something that immediately grabs your attention or seems to match your career interest type. There are a wide range of additional career options available that are necessary for all types of businesses, regardless of industry, size or location. Below are just a few examples of where you might also fit within this exciting and growing industry that feeds, powers and improves the lives of those in your community each and every day. Also visit [CareerPathways.EducateIowa.gov](https://www.careerpathways.educatelowa.gov) to explore other industries!

- **INFORMATION TECHNOLOGY** – A wide range of additional careers that focus on the use of computers and other technology to receive, store, transmit, and work with different types of information and data.
HELP DESK TECHNICIANS, SOFTWARE DEVELOPERS, GRAPHIC DESIGNERS, WEB DEVELOPERS, AND DATA SCIENTISTS.
- **HUMAN RESOURCES** – Those in charge of overseeing various aspects of employment for a company, such as recruitment, employee benefits and compliance with labor laws.
HIRING MANAGERS, BENEFITS COORDINATORS, TRAINING AND DEVELOPMENT SPECIALISTS, PAYROLL ADMINISTRATORS, AND RECRUITERS.
- **ADMINISTRATIVE AND FINANCIAL SERVICES** – A group of support careers that assist in the day-to-day operations of a successful company, such as keeping track of finances, monitoring government regulations and administrative support to other departments.
ACCOUNTANTS, FINANCIAL ANALYSTS, COMPLIANCE OFFICERS, FINANCIAL ADVISORS, AND SUPPORT CLERKS.
- **EXECUTIVE MANAGEMENT** – A team of individuals at the highest level of management of an organization who oversee the mission, vision and general tasks of managing an organization.
PRESIDENTS, VICE PRESIDENTS, CHIEF OPERATIONS OFFICERS (COO), CHIEF INFORMATION OFFICERS (CIO), AND CHIEF EXECUTIVE OFFICERS (CEO).



NEXT STEPS & PLANNING RECOMMENDATIONS

This document was meant to begin the conversation about some great career opportunities available in Iowa. Below are some additional recommendations for next steps readers can take to continue their career exploration journey. Utilize the basic career exploration plan on the next few page to begin putting thought into action. There are many great resources to help prepare Iowans for careers in agriculture, food and natural resources!

STUDENTS AND JOB SEEKERS

- **FUTURE READY IOWA CAREER COACH** – The free interactive Career Coach tool at FutureReadyIowa.gov a great way for students and job seekers of all ages to learn more about their career interests and research specific occupations and related industries, including the ability to customize labor market information, education offerings, and employer listings to their specific geographic location. The new [Clearinghouse for Work-Based Learning](#) also allows students to tackle projects to learn more about different industries and gain real-world experience. Also consider checking out Iowa State University's new [Animal U](#) site to dig deeper into these careers.
- **HANDS-ON EXPERIENCE & VOLUNTEERING** – Contact an employer directly to ask questions, learn about current openings, and request either a site tour or job shadow opportunity for a better idea of what it would be like to work for them. Internships and volunteering are also great opportunities to earn experience, build up a resume, and test out a career before making any long-term and expensive career decisions. Consult with counselors, educators, and the Iowa Intermediary Network for local opportunities or visit VolunteerIowa.org to search for additional openings. Also consider starting or joining a local chapter of student organizations like [Iowa FFA](#) or the [Iowa Professional Agricultural Student Organization \(PAS\)](#) to make connections, gain industry skills and compete in statewide and national challenge events.
- **EARN SKILLS AND CERTIFICATIONS** – Many careers in this industry will rely on some foundational skills and certifications that can be earned relatively easily and affordably by students and job seekers proactively before entering the workforce. Some schools even have dual-enrollment or pre-apprenticeship agreements that allow students to earn college credit, apprenticeship technical requirements, and even full work certifications before graduating. Having these skills, experience, and certifications will increase your chances of landing a great job compared to others who have not taken any such action to improve themselves. Ask a guidance or career counselor for more information and begin exploring available in-person and virtual options.

EMPLOYERS, EDUCATORS, AND COMMUNITY SUPPORT PARTNERS

- **WORK-BASED LEARNING INTERMEDIARY NETWORK** – The Intermediary Network is made up of 15 regional networks that serve as a single one-stop point of contact by connecting businesses and schools with work-based learning opportunities. These can include job shadows, internships, site tours, guest speakers, and educator externships. Contact your regional [Intermediary](#) and access the [Work-Based Learning Guide](#) to learn more about setting up a successful local work-based learning experience. With adult supervision and appropriate privacy and safety measures, youth under the age of 18 can work in this industry.
- **IOWA STEM TEACHER EXTERNSHIPS** – Teachers across Iowa have the opportunity to take advantage of an externship program, where during the summer, they work side-by-side with knowledgeable and skilled professionals who help bring the classroom curriculum to life. Teacher Externships are full-time, six-week temporary summer positions in local businesses and agencies for secondary STEM educators. Teachers earn a stipend of up to \$4,800 (including two days of professional development), as well as one graduate credit through the University of Northern Iowa's Continuing Education program. Teacher Externships provide educators with the exposure to answer questions about real-world application, prepare students for careers they may have in the future, and improve educational experiences. Visit IowaSTEM.gov/externships to learn more and apply for these great opportunities.
- **SECTOR PARTNERSHIPS AND BOARDS** – Employers, educators and other community support partners can take a more active role in training and developing their local workforce by meeting to collaborate on local education, economic, and community issues. These employer-led groups are often referred to as sector partnerships or sector boards. There are currently over 60 of them spread throughout Iowa, with a growing number devoted exclusively to various aspects of agriculture, food, natural resources, and the skilled trades. More information, group locations, contact information, and resources can be found at SectorPartnerships.EducateIowa.gov.

MY CAREER EXPLORATION ACTION PLAN

Use the following template to create an action plan for taking the next steps towards a fun, exciting and fulfilling career in agriculture, food or natural resources in Iowa!

	What is the goal?	Who is involved?	How will it be completed?	Where will it be completed?	When will it be completed?
Goal Example	I want to actually see what it is like to be a Food Scientist.	Me, my teacher, my parents, and a Food Scientist.	I will watch videos online and call a local food company or processor to set up a job shadow opportunity to sit with and observe a Food Scientist at work.	Online and in-person at a local training center or job site.	Summer 2023
Goal #1					
Goal #2					
Goal #3					
Goal #4					



**COMMUNITY COLLEGES &
WORKFORCE PREPARATION**
PROSPERITY THROUGH EDUCATION

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