

CAREER PROFILES

in the Fertilizer and
Agriculture Industry



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Sales Representative

Description

A **sales representative** for fertilizer markets their product to different companies within the agricultural sector, including producers, suppliers and dealers. To be able to do so, they are given a certain territory to work within.

Responsibilities

- Maintain and grow a territory of clients
- Introduce new products and ensure results
- Understand business and market conditions, intensively plan sales efforts, recognize new opportunities within each account and maintain the necessary territory records
- Provide educational training to accounts through seminars and trade events
- Build and develop the trust and confidence of the retailer through knowledge of products, persuasive presentations and overcoming objections
- Conduct sales meetings for sales staff

Preparation

What courses should I take in high school?

Focus on agriculture education, agriculture business, agriculture leadership, leadership, science, chemistry, math and computer courses.

What education is required for this job?

A bachelor's degree in agricultural business or agricultural major that relates to the product you are representing.

Where can I go to get an education for this job?

There are a number of junior colleges and four-year universities that offer majors in agriculture and agriculture business.

Where can I work?

Sales representatives in the fertilizer industry typically work for fertilizer companies and fertilizer distributors.

Professional Organizations and Associations

- State Agribusiness Associations
- National Agri-Marketing Association
- Agriculture & Applied Economics Association
- Women in Agribusiness
- Agriculture Council of America
- The Fertilizer Institute

Job Market Outlook

The future outlook for a **sales representative** is projected to be excellent.

Average Full Time Salary

\$65,000 average salary per year, largely dependent on commissions on sales.

Executive Assistant

Description

An **executive assistant** provides support to the Chief Executive Officer (CEO) or President of the company performing planning, coordination, scheduling and secretarial activities on their behalf.

Responsibilities

- Act as a personal assistant and confidential secretary
- Perform secretarial tasks with a high level of competence, inclusive of personal correspondence
- Attend regular meetings and record resolutions
- Manage travel arrangements, business schedules and appointments
- Communicate with other senior management, as required, and act on the executive's behalf in routine matters requiring immediate attention
- Organize all report and filing methods and procedures, and may participate in other functions, such as public relations, accounting and personnel
- Prepare meeting schedules including coordinating itineraries, compiling materials, organizing annual meetings and reconciling expense reports
- Compose and prepare correspondence, such as staff notifications, Board minutes and all messages from the CEO
- Update and facilitate notifications pertaining to the CEO and internal executive team, such as biographies, new hire welcome announcements, organizational changes and business contacts
- Communicate on behalf of the CEO with good judgment and articulate with a clear understanding of the company mission
- Work closely and effectively with the CEO to keep him/her well informed of upcoming commitments and responsibilities, following up appropriately
- Act as a "barometer," having a sense for the issues taking place in the environment and keeping the CEO well informed

Preparation

What courses should I take in high school?

Focus on agricultural education, mathematics, English, computer courses and business courses.

What education is required for this job?

It is not a requirement, but it may be beneficial, for an **executive assistant** to have an associate's or bachelor's degree in business administration.

Where can I go to get an education for this job?

There are a number of junior colleges and four-year universities that offer associate's and bachelor's degrees.

Where can I work?

Executive assistants can be employed by essentially any type of company or organization, both large and small.

Professional Organizations and Associations

- Association of Executive and Administration Professionals
- National Executive Assistant Association

Job Market Outlook

The future outlook for an **executive assistant** will be good over the next five years.

Average Full Time Salary

\$52,000 is the average base salary per year.

Digital Specialist

Description

Digital specialists use a variety of digital marketing and design techniques, such as digital marketing, email marketing and video marketing. They often incorporate graphic design, video production, written and verbal communication skills, social media savvy and an eye for analysis into their daily work.

Responsibilities

- Design digital media campaigns aligned with business goals
- Coordinate the creation of digital content (e.g., website, blogs, press releases, and podcasts)
- Manage end-to-end digital projects
- Establish web presence to boost brand awareness
- Maintain a strong online company voice through social media
- Liaise with marketing, sales and product development teams to ensure brand consistency
- Suggest and implement direct marketing methods to increase profitability
- Monitor ROI and KPIs
- Stay up to date with digital media developments

Preparation

What courses should I take in high school?

Focus on agricultural business, English, computer courses and business courses.

What education is required for this job?

A high school diploma or a GED certificate. You also need previous job experience in a similar position. Some companies prefer candidates who hold a bachelor's degree in a relevant field, such as English, communications or digital media, and some experience in digital media.

Where can I go to get an education for this job?

There are a number of junior colleges and four-year universities that offer associate's and bachelor's degrees in English, communications or digital media. There are also several certification programs available.

Where can I work?

Digital specialists are needed in a wide variety of industries, large and small, from manufacturing, to software, to finance and more.

Professional Organizations and Associations

- American Marketing Association

Job Market Outlook

The future outlook for a **digital specialist** will be good over the next five years.

Average Full Time Salary

The average **digital specialist** salary in the United States is \$63,300, but the range typically falls between \$52,500 and \$72,900.

Business Operations Manager

Description

Operations managers look at how every element of the business is done, what equipment or software is used, the financial aspect, market conditions, customers and more.

Responsibilities

- Work on budgets for equipment and technology needed for an organization
- Analyze current processes to help make the business as efficient as possible
- Keep up with business trends and economic trends to forecast how the business will need to adapt and change over time
- Work with every department, from marketing to manufacturing, to learn about staff and processes and help them be more productive
- Negotiate with vendors to find the fit for the organization's needs

Preparation

What courses should I take in high school?

Focus on agricultural education, agricultural business, mathematics, English, computer courses and business courses.

What education is required for this job?

An associate's or bachelor's degree in business management or accounting. For larger companies and higher positions, an MBA, or Master of Business Administration degree, is usually preferable.

Where can I go to get an education for this job?

There are a number of junior colleges and four-year universities that offer associate's and bachelor's degrees.

Where can I work?

Operations managers are needed in a wide variety of industries, large and small, from manufacturing, to software, to finance and more.

Professional Organizations and Associations

- Association of Executive and Administration Professionals
- National Executive Assistant Association

Job Market Outlook

The future outlook for a **business operations manager** will be good over the next five years.

Average Full Time Salary

The average salary for **business operations managers** is over \$100,000 per year.

Communications Specialist

Description

A **communications specialist** works in the area of communications with primary responsibilities in the fields of writing, editing, branding and public and media relations.

Responsibilities

- Prepare schedules and organize meetings and interviews
- Write and design company literature
- Create effective communication strategies
- Implement email marketing
- Ensure positive relationships with clients
- Write and coordinate the production of printed and electronic marketing and educational materials
- Research, draft and disseminate press materials to appropriate news media
- Assist in the creation of audiovisual aids for staff
- Serve as photographer, as needed
- Manage the media database and news clipping log
- Update information on company website and social media outlets
- Develop appealing presentations and speeches for leadership

Preparation

What courses should I take in high school?

Focus on agricultural education, computer courses, English and public speaking.

What education is required for this job?

A bachelor's degree in agriculture communications, agriculture marketing, agricultural journalism, communications, public relations or related field.

Where can I go to get an education for this job?

There are a number of junior colleges and four-year universities that offer associate's and bachelor's degrees in communications, marketing, agricultural communications, public relations or other related fields.

Where can I work?

Communications specialists work for companies and organizations, both large and small. You may also work for a marketing agency and work with a variety of companies overseeing their communication strategies. Some **communications specialists** freelance for different companies and are self-employed.

Professional Organizations and Associations

- AgChat Foundation
- Public Relations Society of America
- National Agri-Marketing Association
- North American Agricultural Journalist

Job Market Outlook

The future outlook for a **communications specialist** will be great over the next five years.

Average Full Time Salary

The average salary is over \$55,000 per year.

Social Media Specialist

Description

A **social media specialist**, or **social media marketing specialist**, is responsible for overseeing one or more social media accounts for a business. Their duties include creating and updating social media posting schedules, replying to comments from subscribers or liking tagged photos and coordinating with other professionals to determine how to market a brand and its products or services using social media.

Responsibilities

- Ability to develop and implement a corporate social media strategy
- Ability to monitor online activity across departments and geographical areas to ensure anyone using the company's online tools is following established guidelines and best-practice rules
- Encourage greater social media participation
- Identify opportunities to influence public perception through audience engagement and publicly speaking about the brand's social media strategy
- Check and maintain social media accounts
- Like posts, respond to follower comments and record the reception of past social media posts
- Participate in meetings with the social media and marketing teams to determine new campaign ideas
- Present social media analytics in meetings
- Monitor activities across their employer's social media accounts and make sure posts go out at scheduled times and post or add to stories

Preparation

What courses should I take in high school?

Focus on agricultural education, leadership, computer courses, English and public speaking.

What education is required for this job?

A bachelor's degree is typically required for a **social media specialist** position. Areas including journalism, business, public relations and communications are of particular importance. Some individuals also complete a master's degree in internet marketing. Employers often look for applicants who have completed an internship or have other proven work experience. While not mandatory, certifications are available and demonstrate a willingness toward continued learning and self-improvement.

Where can I go to get an education for this job?

There are a number of junior colleges and four-year universities that offer associate's and bachelor's degrees in journalism, business, public relations and communications.

Where can I work?

Social media specialists typically work for corporations across industries to ensure proper representation of multiple social media platforms.

Professional Organizations and Associations

- AgChat Foundation
- Public Relations Society of America
- National Agri-Marketing Association
- North American Agricultural Journalist

Job Market Outlook

The future outlook for a **social media specialist** will be great over the next five years.

Average Full Time Salary

The average pay is \$13.71 per hour.

Agronomist

Description

An **agronomist** provides knowledge and leadership to growers about what and how they grow their crop. They also perform job duties, such as field scouting, soil management and market analysis.

Responsibilities

- Make recommendations to growers on how to grow their crops
- Evaluate soil textures and soil types
- Conduct research on crops and irrigation methods
- Scout fields for weed, insects, disease and nutrition issues
- Advise customers on the application of seeding, fertility and pesticide usage
- Provide training for staff responsible for sales and marketing
- Establish budgets and monitor costs
- Interact with suppliers, applicators and agronomy laboratories
- Remain up to date on crop nutrition and protection technology

Preparation

What courses should I take in high school?

Focus on agriculture education, science, chemistry, math and computer courses.

What education is required for this job?

A bachelor's or master's degree in agronomy or a related field is required to become an **agronomist**. It is also recommended that you receive and maintain your Certified Crop Advisor (CCA) certification.

Where can I go to get an education for this job?

There are a number of junior colleges and four-year universities that offer majors in agronomy and crop science.

Where can I work?

Agronomists work for medium- to large-scale farms, crop and seed production companies, crop protection companies, government agencies, research firms, environmental organizations and colleges or universities.

Professional Organizations and Associations

- American Society of Agronomy
- Crop Science Society of America
- Weed Science Society of America
- American Society of Plant Biologist

Job Market Outlook

The future outlook for an **agronomist** is great, with lots of jobs available.

Average Full Time Salary

Agronomists earn between \$44,000 and \$83,000 per year.

Pest Control Adviser

Description

Pest control advisers are responsible for scouting crops and identifying pests that can affect a farmer's harvest. Based on their observations, they then make recommendations on treatment and suggest products or other methods to control or prevent problems.

Responsibilities

- Inspect farmers' fields for pests that can impact yield
- Identify pests that are present and the damage that they are causing
- Make recommendations on treatment plans based on findings
- Sell company products and services
- Maintain sales programs within assigned territory/accounts
- Monitor competitive activity and trends
- Continue to learn new product features, benefits and usage
- Responsible to continue education on marketing techniques, products and services
- Provide training to employees, farmers and technicians, as needed
- Work with farmers to conduct field trials in your territory
- Determine cost analysis in order to establish the most economical solutions
- Develop fertilizer formulations based on pesticide application
- Publish and distribute periodic summaries of agronomic observations and research to customers
- Maintain and build customer contracts
- Speak at industry events on topics that are of interest to growers

Preparation

What courses should I take in high school?

Focus on agricultural education, a focus on sciences, such as chemistry and biology and mathematics.

What education is required for this job?

A bachelor's degree in agricultural-related program, such as agronomy or entomology.

Where can I go to get an education for this job?

There are a number of junior colleges and four-year universities that offer associate's and bachelor's degrees in agronomy, agriculture or entomology.

Where can I work?

Pest control advisers may work independently and are hired on a contractual basis. Some advisers, especially in the vegetable industry, may be employed by large grower operations. Chemical companies also have advisers who work for them and suggest the right solution that they manufacture.

Professional Organizations and Associations

- National Agriculture Aviators Association
- National Alliance of Independent Crop Consultants
- American Society of Agricultural Consultants
- National Pest Management Association

Job Market Outlook

The job outlook for **pest control advisers** will be great over the next five years.

Average Full Time Salary

The average salary is \$54,000.

Plant Scientist

Description

Plant scientists plan, budget, establish, perform and document research trials and projects as they relate to agronomic crops. They are responsible for coordinating, budgeting, executing, performing and reporting on agronomic crop research trials.

Responsibilities

- Responsible for making agronomic-related decisions regarding production activities
- Develop, conduct and evaluate tolerance for species at seedling stage of growth
- Understand the farmland (ground conditions, farming challenges, pest issues)
- Evaluate products, collect data on performance in different locations, make recommendations to management on new releases and position hybrids in their most favorable environment
- Regularly communicate with relevant industry sectors and educational institutions to initiate well-targeted research projects
- Investigate the feasibility of applying a wide variety of scientific principles and concepts to potential inventions, products and problems
- Prepare documented proposals and successfully establish research trials
- Manage trial establishment and collection of data
- Budget for research work and provide management reporting in regard to trial/research progress

Preparation

What courses should I take in high school?

Focus on agricultural education, a focus on science, earth science, biology, botany, chemistry and mathematics.

What education is required for this job?

A master's degree or PhD in plant breeding, biotechnology, plant pathology, agronomy, crop science, soil science, biology or a related field is preferred to become a **plant scientist**. A bachelor's degree in similar fields may be considered with some companies.

Where can I go to get an education for this job?

There are a number of four-year universities that offer degrees in plant breeding, biotechnology, plant pathology, agronomy, crop science, soil science, biology or a related field.

Where can I work?

Employed by seed companies, crop protection companies, research firms, governmental organizations, environmental organizations and colleges or universities.

Professional Organizations and Associations

- Soil Science Society of America
- National Alliance of Independent Crop Consultants
- American Society of Agronomy
- Committee for Sustainable Agriculture
- Crop Science Society of America
- Weed Science Society of America
- American Society of Plant Biologist

Job Market Outlook

For those with advanced degrees the current and future job market for **plant scientist/field agronomist** can be considered good.

Average Full Time Salary

The average salary is \$63,200.

Plant Breeder

Description

A **plant breeder** is responsible for the research of seed characteristics and strives to improve the seed characteristics that are of the best quality for the plant. They work towards finding the best possible trait that is desirable for yield, maturity, quality, size and can be resistant to drought, frost and pests in certain plants. **Plant breeders** should have extensive knowledge in molecular technologies, statistics, plant growth and genetics so that they can ensure that they will create the best possible plants for crossing.

Responsibilities

- Develop and manage a breeding program, plant or seed breeding schedule and associated activities required to achieve program objectives
- Develop and maintain links between the company and technology support providers to achieve agreed program objectives
- Maintain and forecast a budget for breeding activities
- Technical interaction with marketers and end-users of the company's products
- Technical interaction with relevant authorities and institutions
- Develop a plant breeding team succession plan
- Supervise plant breeding team
- Develop and maintain key industry links
- Undertake the manual operations required for the support of the production of seed and/or crops
- Utilize new technologies, such as a Global Positioning System

Preparation

What courses should I take in high school?

The following middle/high school courses are recommended to prepare for a degree program: a focus on science (particularly biology/chemistry/physics), mathematics, business and computer science. Practical and applied research is needed in this field of work – participate on campus in labs and research trials, when possible.

What education is required for this job?

A bachelor's degree in crop science, plant genetics or agronomy. In many cases, a PhD or Master of Science in plant science is required.

Where can I go to get an education for this job?

There are a number of four-year universities that offer degrees in crop science, plant genetics, plant science or agronomy.

Where can I work?

Seed and biotechnology companies, government, universities or cooperatives.

Professional Organizations and Associations

- Soil Science Society of America
- National Alliance of Independent Crop Consultants
- American Society of Agronomy
- Committee for Sustainable Agriculture
- Crop Science Society of America
- Weed Science Society of America
- American Society of Plant Biologist

Job Market Outlook

The future outlook for a **plant breeder** will be great over the next five years.

Average Full Time Salary

The average yearly salary is \$83,400.

Plant Pathologist

Description

Plant pathologists study the health of plants. They work to identify diseases, pests and other health problems a plant may experience.

Responsibilities

- Tissue sampling and other routine tasks associated with experiments
- Mechanical inoculation of virus, bacteria, fungi, oomycete, nematode and other pathogens in field, greenhouse and growth chambers
- Bio-assays with insects/vectors
- Perform routine data collection from various-sized research projects and entry into enterprise systems
- Prepare clear, accurate and concise reports of results, and communicate to customer or colleague stakeholders
- Perform or direct simple to complex molecular lab work
- Perform complex data analysis using parametric and non-parametric statistical models
- Lead a cross-functional team in innovating, developing and enabling new phenotyping, diagnostic and other assays for existing and new problems
- Network internally to innovate and enable new tests
- Network externally to assess state of the art technologies and evaluate new research opportunities
- Propose and lead external collaborations directed toward goals
- Innovate to design and implement new screening methods and platforms for existing or emerging diseases
- Review literature and stay up to date on latest technologies

Preparation

What courses should I take in high school?

Focus on agricultural education, biology, chemistry, mathematics and environmental science.

What education is required for this job?

Typically **plant pathologists** obtain an undergraduate or graduate degree in botany, horticulture, plant pathology or biology; having a doctorate degree is recommended.

Where can I go to get an education for this job?

There are a number of four-year universities that offer degrees in botany, horticulture, plant pathology or biology.

Where can I work?

A **plant pathologist** can work in a wide variety of settings from the laboratory to the field. They are employed by seed research and biotech companies, the government, universities or even work independently for different clients.

Professional Organizations and Associations

- American Society of Plant Biologists
- American Phytopathological Society

Job Market Outlook

The future outlook for a **plant pathologist** will be great over the next five years.

Average Full Time Salary

The average salary is \$114,000.

Soil Scientist

Description

Soil scientists analyze characteristics of soil, the different soil types and research the ability to survive in differentiated conditions. They also are responsible for the study of soil structure, properties, chemical compensations and the different stages of transformations that soil goes through.

Responsibilities

- Research or study soil characteristics, map soil types and investigate responses of soils to known management practices to determine use capabilities of soils and effects of alternative practices on soil productivity
- Provide advice on rural or urban land use
- Perform chemical analysis on micro-organism content of soil to determine microbial reactions and chemical mineralogical relationship to plant growth
- Investigate responses of specific soil types to soil management practices, such as fertilization, crop rotation and industrial waste control
- Conduct experiments on farms or experimental stations to determine best soil types for different plants
- Initiate and implement research and development programs for soil research
- Prepare documented proposals and successfully establish research trials
- Regularly communicate with relevant industry sectors and initiate well-targeted research projects
- Meet the company requirements for trial planning and operation of research projects
- Manage trial establishment and collection of data
- Budget for research work and provide management reporting in regard to trial/ research progress

Preparation

What courses should I take in high school?

Focus on science (particularly earth science, chemistry, biology), mathematics and physics.

What education is required for this job?

A bachelor's degree in chemistry, crop science, soil science, biology or a related field, such as horticulture, plant physiology or environmental science is required to become a soil chemist. There are some positions, especially those that are more research driven, that require a master's or doctorate degree. Those degrees along with experience are needed for more administrative level positions in the field.

Where can I go to get an education for this job?

There are a number of four-year universities that offer degrees in crop science, plant genetics, plant science or agronomy.

Where can I work?

Conservation organizations and colleges or universities.

Professional Organizations and Associations

- Soil Science Society of America
- National Alliance of Independent Crop Consultants
- American Society of Agronomy
- Committee for Sustainable Agriculture
- Crop Science Society of America
- Weed Science Society of America
- American Farm Bureau Federation
- National Farmers Organization

Job Market Outlook

With increased training and proven success, advancement opportunities are available for **soil scientists** and opportunities will be increasing.

Average Full Time Salary

The average salary is \$73,484 per year.

Protein Biochemist

Description

Protein biochemists investigate and analyze the function and structure of proteins.

Responsibilities

- Lead development and implementation of biomolecule analysis
- Develop technologies for efficient detection and quantification of small and large biomolecules, including protein and nucleic acids to support product research and development
- Integrate technologies to improve protein efficacy or enzyme activities
- Apply metabolomics, proteomics, genetics and genomics knowledge to develop molecular analysis tools
- Develop new processes/methods/protocols and bring new technologies to improve function capability and efficiency
- Identify, evaluate and integrate novel analysis technologies
- Collaborate both internally and externally to develop new capabilities
- Provide scientific expertise required to design and deliver objectives defined by a group, project or supervisor
- Follow existing processes, procedures and systems to independently design and conduct complex experiments
- Initiate and implement changes to established protocols or systems
- Deliver results in fast-changing business and/or regulatory environments
- Use best practices and knowledge of internal business issues to improve products, process or service
- Contribute to product, process or service improvements

Preparation

What courses should I take in high school?

Focus on science (particularly earth science, chemistry, biology), mathematics and physics.

What education is required for this job?

After earning a high school diploma or its equivalent, individuals desiring careers as **protein biochemistry research associates** need to complete a Bachelor of Science program in a biological science, such as biochemistry or bioengineering. Bachelor's programs are usually around four years in duration and require full-time attendance.

Where can I go to get an education for this job?

There are a number of four-year universities that offer degrees in biological science.

Where can I work?

They might be employed in private industry or academia, and they typically work in collaboration with scientists, other staff members and interns.

Professional Organizations and Associations

- International Union of Biochemistry and Molecular Biology
- American Society for Biochemistry and Molecular Biology

Job Market Outlook

With increased training and proven success, advancement opportunities are available for **protein biochemists** will be good and opportunities will be increasing.

Average Full Time Salary

The median annual salary is \$60,078.

Chef

Description

A **chef** or **cook** is responsible for using their culinary expertise to create appetizing dishes for diners to enjoy. Their duties include overseeing kitchen staff, tasting dishes before they go out to customers and restocking food produce, as needed. **Chefs** work with other staff to ensure that the kitchen runs effectively, and they have to be experts at ensuring food quality and maintaining kitchen equipment.

Responsibilities

- Ensure that all dishes are cooked well and presented in an aesthetically pleasing way
- Oversee food preparation, checking that all kitchen staff are performing their duties
- Monitor equipment quality and order new equipment, as needed
- Help the restaurant determine how much food and supplies need to be ordered
- Train new kitchen staff
- A typical day: A **chef** typically arrives at their workplace early in the morning to begin food preparation and receive produce deliveries. During this time, they also start making soups or meat dishes as some of these items take longer to cook. Throughout service, they divide their time in the kitchen, helping prepare orders and expediting those orders. **Chefs** also make themselves accessible to customers throughout service, should they have a complaint, question or compliment. After the completion of service, **chefs** work with the kitchen staff to clean their workspace and take inventory of remaining produce. During this time, they place orders for produce and throw out old produce.

Preparation

What courses should I take in high school?

Agricultural education, biology, chemistry, mathematics, food science and career technical education.

What education is required for this job?

Many **chefs** complete formal education before entering the workforce, such as culinary degrees and management programs. **Chefs** typically don't receive on-the-job training, since it's expected that they will have experience as a **cook** before moving into a role taking on broader responsibilities; the type of experience, such as the types of restaurants where a **chef** candidate worked, is also considered.

Where can I go to get an education for this job?

A number of training programs and junior colleges offer culinary programs.

Where can I work?

Chefs are typically employed by restaurants, but they also work for households and private facilities. They work closely with kitchen staff to prepare and cook food in a timely manner.

Professional Organizations and Associations

- American Culinary Federation
- American Institute of Food and Wine
- Bread Bakers Guild of America
- International Association of Culinary Professionals
- James Beard Foundation
- Society for Hospitality and Foodservice Management
- National Restaurant Association
- School Nutrition Association

Job Market Outlook

The future outlook for a professional **chef** will be great over the next five years.

Average Full Time Salary

The average salary of a **chef** ranges from \$39,928 to \$61,191.

Fertilizer/Formulation Chemist

Description

Formulation chemists design and develop new crop protection products and support existing products that meet the needs of farmers.

Responsibilities

- Plan, organize and conduct experiments to optimize the biological, marketing, regulatory and production performance of products
- Plan and control/carry out laboratory work to develop, understand and test new and improved manufacturing processes in order to meet agreed targets
- Deliver critical information to leadership and fellow researchers
- Plan and conduct laboratory support work to assist in the solution of manufacturing process problems and opportunities so that results can be implemented
- Take an active part in scale-up and plant introduction of newly developed products
- Develop and design new testing methods to ensure customer satisfaction with products under all kinds of conditions in the marketplace
- Oversee product stewardship responsibilities for selected existing products
- Benchmark competitors as a motivator to strive for innovative solutions for competitive advantage
- Submit patents, if needed, for developed formulations
- Organize, schedule and execute projects in accordance with company priorities
- Help newly developed products move through the regulatory process

Preparation

What courses should I take in high school?

Agricultural education, a focus on higher-level mathematics and science: statistics, algebra, genetics, biology, chemistry and physics.

What education is required for this job?

A master's degree at minimum or preferably a PhD in chemistry is required to be a **formulation chemist**.

Where can I go to get an education for this job?

A number of four-year universities offer degrees in chemistry.

Where can I work?

Formulation chemists mainly work in academia, in the animal pharmaceutical industry, biotechnology firms, alternative energy and for crop protection companies.

Professional Organizations and Associations

- American Chemical Society
- Association of Formulation Chemists

Job Market Outlook

The job outlook for a **formulation chemist** will be good over the next five years.

Average Full Time Salary

The average annual salary is \$86,745.

Process Operating Technician

Description

Process operators oversee and manage the full production process of a manufacturing plant or other industrial facility. They monitor equipment to ensure the quality, efficiency and safety of the plant. They are also responsible for the safe operation, basic maintenance and troubleshooting of the facility's equipment and instruments.

Process operators are skilled professionals who often work as part of a team and provide leadership.

Responsibilities

- Operate the facility's computer system to control machinery, start and shut down the plant for production
- Conduct continuous inspections of all key process points in the facility, to identify anything abnormal; if an issue is identified, make necessary machinery and equipment adjustments and implement the proper response, including notifying supervisors
- Ensure that the products being produced under their supervision meet all specifications, may gather samples for laboratory analysis and perform quality control analyses
- Maintain detailed reports of operations: update process logbooks with activities and process adjustments made, noting any issues encountered and measures taken

Preparation

What courses should I take in high school?

Focus on career technical education, agriculture mechanics, mathematics and computer science.

What education is required for this job?

In order to qualify as a **process operator**, it is necessary to have a high school diploma or GED. **Process operators** do not need postsecondary training, although some form of vocational training may be an asset. Training on computers may also help those seeking work in this field. Some employers may prefer to hire those with previous manufacturing experience, though on-the-job training may also be provided for these positions.

Where can I go to get an education for this job?

You can immediately begin working as a **process operator** with a high school diploma, but an associate's degree or vocational programs may be necessary for some positions.

Where can I work?

Work is available at conservation organizations and colleges or universities.

Professional Organizations and Associations

- Soil Science Society of America
- National Alliance of Independent Crop Consultants
- American Society of Agronomy
- Committee for Sustainable Agriculture
- Crop Science Society of America
- Weed Science Society of America
- American Farm Bureau Federation
- National Farmers Organization

Job Market Outlook

Jobs in this sector are projected to grow 16% from 2014 to 2024, and market outlook is excellent.

Average Full Time Salary

The average salary ranges from \$47,760 to \$62,550.

Engineer

Description

An **engineer** uses math and science to solve different technical problems. Their main duties include developing new products for companies or individuals to use, providing maintenance to current products to enhance use and designing new machines to improve an organization's efficiency.

Responsibilities

- Make plans using detailed drawings
- Prepare estimates and budgets
- Create accurate project specifications
- Design engineering experiments
- Create technical reports for customers
- Complete regulatory documents concerning safety issues
- Finish projects on time and within budget
- Communicate with clients and coworkers about analysis results

Preparation

What courses should I take in high school?

Focus on career technical education, agriculture mechanics, mathematics and computer science.

What education is required for this job?

An **engineer** is required to have earned a bachelor's degree in engineering, and most jobs working with the public require a license too. Bachelor of Science degrees are available in a wide selection of specialties, including aerospace, agriculture, biomedical and computer engineering. Many **engineers** must complete a program accredited by ABET. This non-profit organization assures confidence in training programs that use science, technology, engineering and math (STEM). By taking courses approved by ABET, students are prepared to enter the global workforce. Factors for success focus on safety, precision and quality of work. ABET approval is sometimes not necessary for employers.

Where can I go to get an education for this job?

A variety of four-year universities offer bachelor's degrees in engineering.

Where can I work?

Most **engineers** work in office buildings, laboratories or industrial plants.

Professional Organizations and Associations

- American Society of Engineering
- National Society of Professional Engineers
- Society of Women Engineers
- American Society of Mechanical Engineers
- National Society of Black Engineers
- Society of Hispanic Engineers

Job Market Outlook

There are many opportunities for employment.

Average Full Time Salary

An **engineer** makes an average of \$85,720 per year. Salary may depend on level of experience, education and the geographical location.

IT Support Specialist

Description

IT support specialist is a position hired by a company to oversee and maintain their computer hardware and software systems. Their skills are an asset to the company, as they assist in resolving technical issues concerning customer accounts or company software infrastructure. **IT support specialists** will also support computer software integration by diagnosing and troubleshooting common problems. Employees holding this job title generally begin in entry-level IT roles.

Responsibilities

- Install and configure software and computer systems
- Troubleshoot and resolve issues with software or hardware
- Walk colleagues or clients through steps to help them resolve their technical problems
- Maintain procedures and reports that provide technical support to the entire organization
- Analyze records and logs to spot underlying trends and potential issues
- Support the implementation of new solutions or applications
- Establish accounts for new users and assist with password or login problems
- Test, evaluate and make decisions about new technology for the business
- Participate in business-wide meetings to provide insight into technical requirements

Preparation

What courses should I take in high school?

Focus on career technical education, agriculture mechanics, mathematics and computer science.

What education is required for this job?

To fulfill the role of **IT support specialist**, it is preferred to have an associate's or bachelor's degree in computer science or a related field and one or more years of experience in a technical support role. Certifications are preferred, but not required.

Where can I go to get an education for this job?

There are a variety of two- and four-year programs that offer bachelor's degrees in computer science.

Where can I work?

An **IT support specialist** may work within a help-desk environment or provide technical support in a company's IT department. They may work in a variety of fields, including computer systems, telecommunications, educational services and finance.

Professional Organizations and Associations

- Association for Computing Machinery (ACM)
- Association for Information Science and Technology (ASIS&T)
- Association for Women in Computing (AWC)
- Association of Information Technology Professionals (AITP)
- Computing Research Association (CRA)
- Information Systems Security Association (ISSA)

Job Market Outlook

There is strong employment growth for **IT support specialists**, and an excellent job outlook.

Average Full Time Salary

An **IT support specialist** makes an average of \$19.96 per hour.

Heavy Equipment Operator

Description

A **heavy equipment or forklift operator** is responsible for the loading and unloading of goods.

Responsibilities

- Pull and stage orders for delivery with extreme accuracy
- Load and unload trucks with designated products
- Unload incoming products and materials
- Ensure specification and quantity of orders are correct
- Secure loads, close and seal trucks where necessary
- Ensure product is transported from storage or receiving area in a manner consistent with safety, quality and production goals
- Verify stock and identify losses
- Keep inventory of goods loaded and record and sign tallies
- Remove, weigh, stretch wrap and record finished pallets
- Provide commodities to production lines
- Maintain a clean and safe working area around loading area
- Sample products and notify supervisor of any irregularities
- Process report requests, documents, deliveries and/or materials for the purpose of disseminating information and/or materials to appropriate parties
- Perform minor repair works as required for efficient loading operations

Preparation

What courses should I take in high school?

Focus on agricultural education, diesel mechanics and mathematics.

What education is required for this job?

A high school diploma and forklift certification is required to become a **heavy equipment or forklift operator**.

Where can I go to get an education for this job?

There are a variety of certification courses available for Heavy Equipment Operators.

Where can I work?

Heavy equipment or forklift operators may work for any agricultural business or organization that regularly transports and receives goods.

Professional Organizations and Associations

- The Forklift Truck Association
- Industrial Truck Association
- Material Handling Equipment Distributors Association

Job Market Outlook

The future outlook for a **heavy equipment or forklift operator** will be great over the next five years.

Average Full Time Salary

The base salary for **heavy equipment operator** ranges from \$55,395 to \$75,175 with the average base salary of \$66,253.

Truck Driver

Description

A **truck driver** is the point of contact for receiving, transporting and delivering products within the agriculture industry. They ensure that products, such as livestock, equipment and feed, are safely delivered to their desired locations.

Responsibilities

- Observe all government and company regulations at all times
- Ensure that the tractor and trailer are cleaned and maintained in a safe working manner, including identifying all needed maintenance on tractor or trailer requiring attention by maintenance
- Accurately perform a pre-trip inspection that includes tires, fuel, oil, etc.
- Before loading, ensure that the compartments are free of ingredients
- Ensure that the tarp cover is securely fastened and protecting ingredients from contamination
- Collect samples of ingredients for quality assurance testing
- Accurately complete delivery forms and forward the documentation for timely processing
- Load and unload trucks when at destination
- Perform minor repair works, as required, for efficient loading operations

Preparation

What courses should I take in high school?

Focus on agricultural education, diesel mechanics and mathematics.

What education is required for this job?

A high school diploma plus CDL certification are required.

Where can I go to get an education for this job?

There are a variety of CDL courses available for **truck drivers**.

Where can I work?

Employed by food production companies, grain merchandising companies, chemical companies, co-ops and seed production companies.

Professional Organizations and Associations

- United Truck Drivers Association
- American Trucking Association
- Women in Trucking Association

Job Market Outlook

The future outlook for a **truck driver** is excellent.

Average Full Time Salary

The average salary for **truck drivers** is \$67,378.