

Explore the Roles of Drafters

DRAFTERS have essentially been around for thousands of years, creating images and communicating ideas. They can have a range of responsibilities and require knowledge and skills across different fields. Drafters have influenced our history by documenting and communicating designs, resulting in products and structures. Drafters can work in various fields. All of the positions require general skills and abilities, but each individual field may require specific knowledge and education.



Objectives:



1. Describe the role of drafters.
2. Explain the historical influence of drafters, designers, architects, and engineers.
3. Identify career possibilities related to drafting.

Key Terms:



architectural drafters
cartographers
civil drafters
drafting educators

electrical drafters
electronic drafters
mapping technicians
mechanical drafters

patent drafters
pipeline drafters

Understanding the Role of Drafters

Being a drafter requires possessing a range of knowledge across a variety of fields, depending on the specific disciplines involved. The position also requires skills and abilities to assist with successful task completion and proper communication.

DEFINITION

Drafting is the process of creating a form of communication that graphically represents information needed to manufacture, fabricate, or construct products and buildings. Drafting, which is a language form, can vary slightly across different industries. It has become a vital tool in modern development. Drafters create graphic drawings—with developed standards of communication—that can be the best and most accurate way to explain ideas. Historically, drafting used drawing boards, so lead holders and tasks were done manually. Today, computer aided drafting and design (CADD) systems have almost completely replaced manual drafting. Although drafting can be considered an art form, it is subject to rules and standards as well as timelines for work completion.



FIGURE 1. Drafting has developed with technology. Most drafters today use a combination of drawings and computer software.

KNOWLEDGE

Knowledge of a range of information is required for drafting.



FIGURE 2. Drafters are usually part of a larger team, all working together to complete a project. This requires good communication skills.

Design

It is necessary to be knowledgeable of design techniques, tools, and principles involved in the production of precision technical plans, construction documents (blueprints), drawings, and models.

Engineering and Technology

Depending on the specific discipline, more appropriate or specific knowledge may be required. For example, if you are in the field of engineering and technology, you will need to understand the practical applications of engineering science and technology.

Mathematics

Knowledge of arithmetic, algebra, geometry, calculus, and statistics as well as how they are applied can be critical to success.

English

The ability to use and construct the English language is also necessary. Without correct spelling, grammar, and composition of text (which always accompanies drawings), inaccurate information may be communicated.

Production and Processing

Awareness of production processes and techniques (e.g., how raw materials are refined) is useful. In addition, ways of controlling quality and cost are essential for drafters.

Customer and Personal Service

Drafters must possess the abilities to conduct customer needs assessments, evaluations of customer satisfaction, and other customer service tasks.

SKILLS

Drafters must possess a variety of skills (e.g., time management, active listening, reading comprehension, math, judgment and decision making, writing, and critical thinking) for success in their field.

Time Management

Being able to manage your time and others is essential for drafting. Some tasks may take weeks to complete.

Active Listening

Clear communication is critical. You must pay close attention to directions, listen, and understand points being made. Therefore, repeating what someone tells you to verify comprehension is essential.

Reading Comprehension

Some documents may be long and in depth, thereby requiring reading comprehension to fully understand what is written.

Math

Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications is critical.

Judgment and Decision Making

Many factors and alternative ways to approach problems can arise, so being able to make decisions based on historical criteria is essential.

Writing

Knowledge of the structure and content of the English language (e.g., the meaning and spelling of words, rules of composition, and grammar) is necessary for success in this field.

Critical Thinking

There may be alternate solutions or approaches to design problems, so the ability to think critically and to make judgment calls using logic and reasoning is valuable. Deductive reasoning skills help you find more efficient answers and help you choose the most appropriate action to take. Originality or creating clever and unusual ways to solve problems is also important. Paying attention to details is critical and allows you to recognize problems and to see where things may be inaccurate or inconsistent.

ABILITIES

A number of abilities are needed to be successful as a drafter: oral comprehension, oral expression, deductive reasoning, originality, written comprehension, and problem sensitivity.

Oral Comprehension

The ability to listen to and understand information and ideas presented through spoken words and sentences is essential.

Oral Expression

The ability to communicate information and ideas (through speaking) so others will understand is extremely important.

Deductive Reasoning

The ability to apply general rules to specific problems to produce answers that make sense is vital to success in this field.

Originality

The ability to create unusual or clever ideas about a given topic or situation or to develop creative ways to solve a problem is useful.

Written Comprehension

The ability to read and understand information and ideas presented in writing is mandatory.

Problem Sensitivity

The ability to tell when something is wrong or is likely to go wrong is critical. This does not involve solving the problem, merely recognizing that a problem exists.

TASKS

Drafters prepare sketches of ideas, detailed drawings, illustrations, artwork, or blueprints by using drafting instruments, paints and brushes, or computer-aided design equipment. They direct and coordinate the fabrication of models or samples and the drafting of working drawings and specification sheets from sketches. In addition, drafters modify and refine designs—using working models—to conform to customer specifications, production limitations, or changes in design trends. Drafters present designs and reports to customers or design committees for approval and discuss any need for modifications. They evaluate the feasibility of design ideas based on factors such as appearance, safety, function, serviceability, budget, production costs/methods, and market characteristics. Drafters read publications, attend shows, and study competing products, design styles, and motifs to obtain perspective and to generate design concepts.

Historical Influences

Drafting is one of the oldest documented professions. We are able to research the lives of primitive cultures through illustrations on cave walls. They tell stories of worship ceremonies and hunting expeditions that essentially were created by drafters.

PAPER

The beginning of modern drafting was made possible with the advent of paper manufacturing and tools used to make drawings more accurate and legible. This included the development of rice paper during the Chinese Empire and notable developments of paper and surveying tools during the Egyptian Empire. Since then, a series of changes in technology have allowed for advances in drafting. In addition, the advances allowed for more complete and accurate building constructions and object production. These changes influenced the construction of great creations during the Roman Empire (e.g., the Coliseum and the Parthenon in Rome).

EQUIPMENT AND PRECISION

Through the Industrial Revolution, significant changes occurred in drafting equipment, making drafting more precise. Pens and lead holders, drafting tables with parallel rulers, more accurate measuring devices, and a progressive development of paper quality aided in the precision. During this time, bridges were constructed, the Eiffel Tower was designed, and the first skyscrapers were built.

TECHNOLOGY

In more recent times, the influence of drafters, designers, architects, and engineers has become substantial with the use of digital technology. CADD has completely revolutionized the design and production industries. All of the modern electronic devices you use—from your TV to your cell phone—have been influenced by the capabilities of these professions.



FIGURE 3. The construction of the Eiffel Tower was made possible by drafters, designers, and engineers.

Career Possibilities

Drafters have a variety of options when it comes to career opportunities. They may take basic courses and then specialize in a certain area. When pursuing a career in drafting, it is important to be aware of the numerous options. Sources (e.g., the Occupational Information Network and the Occupational Outlook Handbook) can be consulted online for up-to-date information regarding job growth, work conditions, and average earnings. Education requirements are also listed. Most of the following fields require drafters to be trained in vocational schools, through related on the job experience, or at a community college. However, some employers or specific positions may require additional education.

ARCHITECTURAL DRAFTERS

Architectural drafters are people who create drawings that detail specifics of an architectural design. They can include plans for buildings and structures, according to specifications and sketches provided by architects. The median wage is \$21.39 hourly or \$48,260 annually.

CARTOGRAPHERS

Cartographers are people who collect and analyze data to create and draw maps. With today's technology, their scope of work now includes a broader range of activities. They interpret geographic information provided by geodetic surveys, aerial photographs, and satellite data. Cartographers also research, study, and prepare maps and other spatial data in digital or graphic form for legal, social, political, educational, and design purposes. The median wage is \$24.60 hourly or \$51,180 annually.

CIVIL DRAFTERS

Civil drafters are people who create drawings for civil engineering projects (e.g., highways, bridges, flood control projects, and water and sewerage control systems). In many cases, they produce topographical maps and relief maps. The median wage is \$21.39 hourly or \$44,490 annually.

DRAFTING EDUCATORS

Drafting educators are people who teach at the secondary and postsecondary school levels. They instruct students on vocational or occupational subjects. The median wage is \$51,581 annually.

ELECTRICAL DRAFTERS

Electrical drafters are people who create drawings and specifications that give instructions for installing electrical equipment. This can range from large-scale installations (e.g., transmission lines or high-voltage distribution lines) to in-home consumer usage. Electrical drafters can display information about voltage transforms to overhead or underground cables. The median wage is \$24.67 hourly or \$51,320 annually.



FURTHER EXPLORATION...

ONLINE CONNECTION: Occupational Outlook Handbook

Understanding different aspects of a career is important when making a selection. Many sources can provide you with a range of information about drafting careers. One useful Web site is sponsored by the U.S. Department of Labor.

Visit the following link to see a range of statistical data:

<http://www.bls.gov/oco/ocos111.htm>

ELECTRONIC DRAFTERS

Electronic drafters are people who create drawings used for the manufacturing, installing, and repairing of electronic equipment (e.g., wire diagrams, circuit board assembly diagrams, and schematic layouts). The median wage is \$24.67 hourly or \$51,320 annually.

MAPPING TECHNICIANS

Mapping technicians are people who draw and verify the accuracy of topographical maps by calculating mapmaking data and by using field notes. The median wage is \$16.88 hourly or \$35,120 annually.

MECHANICAL DRAFTERS

Mechanical drafters are people who develop detailed drawings, specifications, and diagrams for machinery and mechanical devices. The diagrams include engineering information, location, sizes, dimensions, and fastening methods. The median wage is \$22.42 hourly or \$46,640 annually.

PATENT DRAFTERS

Patent drafters are people who produce drawings for products that require legal documentation of design ownership. The drawings may be of an entirely new product, or they may be improvements on an existing one. These people document products so inventors can register their creations with the U.S. Patent Office. The median wage is \$21.60 hourly or \$44,930 annually.



FIGURE 4. Mechanical drawings can range in what they communicate, but all are precise and technical for displaying information about mechanical devices.

PIPELINE DRAFTERS

Pipeline drafters are people who create drawings used for the layout and construction of pipeline parts. They also develop and display systems that distribute substances in refineries. Some of these refineries are chemical plants, oil fields, and sanitation areas. The median wage is \$21.60 hourly or \$44,930 annually.

Summary:



Drafting is the process of creating a form of communication that graphically represents information needed to manufacture, fabricate, or construct products and buildings. Although drafting can be considered an art form, it is subject to rules and standards as well as timelines for work completion. Drafters and designers have the opportunity to evaluate the feasibility of design ideas.

Drafting involves directing and coordinating the fabrication of models, working drawings, and specifications from sketches or verbal directions. It requires time management as well as good communication and organizational skills.

A range of responsibilities exist across different fields. Drafters can be involved in the design of architectural projects, mapping and infrastructural projects, mechanical equipment, or patents. They all require a minimum of some vocational training, and some may require a bachelor's degree.

Checking Your Knowledge:



1. Name two purposes for creating graphic drawings.
2. What are three knowledge areas in which drafters should be educated?
3. Name two skills or abilities essential for drafters.
4. Drafters can be employed in several different fields. Describe three.
5. What types of detailed drawings do mechanical drafters develop?

Expanding Your Knowledge:



If you are interested in becoming a drafter, plan a trip to several design, architecture, or engineering firms. Prepare a list of questions. Then discover how drafters work in each field and what responsibilities and knowledge they require. If a trip is not possible, search the Internet for videos on Web sites like YouTube.

Web Links:



Drafting Career Information

http://education-portal.com/drafting_career.html

Careers in Drafting Technology and Design

<http://www.pcc.edu/programs/drafting-design/employment.html>

Careers in Technology

http://www.essortment.com/career/careerstechnolo_sgjc.htm