

# Science & Your Career



## Why do I need to study science?

Studying science helps us understand the discoveries that affect our lives. Every time we use a smart phone, television, or computer, we are using a product of science. We use our knowledge of science when making decisions about our health. Even hobbies, such as cooking, gardening, and photography, rely on scientific principles. By studying science, we learn SKILLS such as: How to observe (gather information from watching); Classify (organize things); Measure; Predict (make an intelligent guess about the future of events); Interpret (understand and explain something); and Communicate data (tell others about information). Skills that come from studying science are important in many jobs.

Colleges require two years of high school science classes, regardless of your major. If you want a science or technical major, you will need three or four years of high school science.

## What types of careers use science on the job?

There are over 8.6 million scientific, technical, engineering, and mathematical (STEM) workers in the United States, but other types of workers use science on the job also. For example, *mechanics* use science procedures when repairing or testing motors. *Physical therapists* use biology and physics to rehabilitate (improve the condition of) patients. *Journalists* use science when writing about computers, health issues, or the environment. Although science skills are helpful in many jobs, some jobs rely heavily on science. If you have an interest in science, you might want to consider one of the following careers.

**Biologist (4 years college) & Biology Technician (2 years college).** *Biologists* study living organisms and their relationship to each other and environment. Biologists may **specialize in one branch of biology** such as *microbiology*, study of microscopic (too small to be seen with the human eye) organisms; *zoology*, study of animals; *botany*, study of plants. Branches of biology may be subdivided. For example, zoologists include *mammalogists*, who study mammals; *ichthyologists*, who study fish; *ornithologists*, who study birds; and *herpetologists*, who study reptiles and amphibians.

## Chemist (4 years college) & Chemical Technician (2 years college).

*Chemists* search for new chemicals and find uses for current ones. Their discoveries might be used to produce medicines (such as aspirin) or create stronger building materials (such as new type of plastic). *Biochemists* study chemical composition (parts) of living things (human, animal, or plant). *Physical chemists* examine characteristics of atoms, molecules, and chemical reactions (such as liquids, gasses, or a combination of both).



**Physicist (4 years college) & Physicist Technician (2 years college).** Physicists study matter (solid or liquid stuff), how energy is made and transferred (such as to electric car engine), and interaction of matter and energy (such as reasons behind earthquakes). They study gravity, nuclear energy, electromagnetism, electricity, light, and heat. They examine structure of an atom, or design equipment such as lasers.

**Agricultural scientists (4 years college) & Agricultural Technician (2 years college)** . Scientists work to improve agriculture. *Crop scientists* study genetic breeding and growing of crops to improve taste and yield (such as improving flavor of tomatoes sold to stores). *Soil scientists* use soil chemistry and microbiology to improve soil and plant growth. *Agronomists* develop applications (easiest ways to do things) for new plant discoveries so that farmers can use new methods of farming.



**Other scientists & technicians.** *Geologists* study history and what makes up our planet, including volcanoes, earthquakes, mines, oil fields. *Oceanographers* study oceans movements. *Meteorologists* study the atmosphere and help make weather predictions. *Astronomers* study the universe to understand stars, planets, and galaxies. Scientists may need knowledge several types of science. *Agronomists*, for example, combine knowledge of biology, geology, chemistry, and math to find better ways to grow food while saving valuable topsoil.

**Engineers (4 years college) & Engineer Technicians (2 years college).** *Engineers* use scientific theories to solve problems and develop new products (such as cellular phone towers and solar panels) and improve systems (such as trash recycling). Engineers design devices such as computers, generators (machine that creates electricity), helicopters, spacecraft, and others. Types of engineering include: *Chemical, Civil, Electrical, Mechanical, Systems, Environmental, Biomedical, Geotechnical, Computer, and Aerospace*.



**Technicians** are the skilled hands-on helpers who help draw and carry out the plans of scientists and engineers by: setting up experiments, recording results, building prototypes (the first models), or testing product quality. Technicians use testing and measuring devices and have an understanding of laboratory techniques (ways of doing things). When building prototype models, technicians may suggest design improvements to scientists and engineers.

#### **What other types of careers use science?**

*Physicians, nurses, dentists, emergency medical technicians (EMT), and veterinarians* are health jobs that require an understanding of science. *Chefs* and *cooks* use chemistry when preparing food because cooking ingredients contain chemicals. *Dietitians* and *nutritionists* also study chemical content of food. *Farmers* use fertilizers and pesticides, which were created by chemists. *Electricians* apply principles of physics when wiring a building. *Aircraft pilots* use physics and meteorology to plot flight paths and fly planes. *Firefighters* use chemistry to understand and combat different types of fires.

#### **How do I prepare for a career in a science?**

Careers in science are among the highest paying careers, and require the personal traits of: a) Orderly thinking; b) Organized work habits; c) Perseverance (sticking to a job until it is done). In addition, careers in science require: d) Love of life-long learning to keep current with inventions and ways of doing things. Visit the website [CareerKids.com](http://CareerKids.com) to read about the many science-related careers. Click on STEM Careers.

## Practical & Useful Applications of Science

These jobs require knowledge of basic science principles. Science classes and job training should be sufficient (good enough) but employers may prefer to hire workers with Community/Technical college Certificates.

Aerobics instructors  
 Automotive body repairers  
 Automotive mechanics  
 Barbers & cosmetologists  
 Beekeepers  
 Cable/Satellite Installers  
 Chefs & cooks  
 Crafts instructors  
 Dental assistants  
 Diesel mechanics  
 Dog & cat groomers  
 Electricians  
 Electronic equipment repairers  
 Elevator/escalator install/repairers  
 Farm equipment mechanics  
 Farmers & farm managers  
 Firefighters & fire investigators  
 Fishers, hunters & trappers  
 General maintenance mechanics  
 Heat, air-conditioning, refrigeration technicians  
 Home appliance & power tool repairers  
 Home entertainment equipment install/repairers  
 Industrial machinery repairers  
 Jewelers  
 Lake patrol officers  
 Landscaping, nursery, greenhouse jobs  
 Machinists & tool-machine programmers  
 Manicurists  
 Medical assistants & Medical secretaries  
 Mobile heavy equipment mechanics  
 Nursing aides & psychiatric aides  
 Ophthalmic lab technicians  
 Pest controllers  
 Pharmacy technicians  
 Physical therapy assistants  
 Plumbers and pipefitters  
 Small engine mechanics  
 Stationary (construction equipment) operators



## QUICK CHECK:

- List 6 skills we learn by studying science.
- What are the words for letters in "STEM"?
- When do mechanics use science procedures?
  - When do journalists use science?
- List 3 branches for biologists and describe what each branch studies.
- List 2 types of chemists and describe what each studies or examines.
- List 3 things studied by physicists.
- What do the following agricultural scientists do:
  - crop scientists,
  - soil scientists,
  - agronomists.
- What do the following scientists do:
  - geologists,
  - oceanographers,
  - meteorologists,
  - astronomers.
- For what 2 reasons do engineers use scientific theories?
  - List 6 types of engineers.
  - Which one of these 6 types sounds most interesting to you for a job?
  - Give a reason for your answer.
- List 4 things technicians do to carry out plans of scientists and engineers.
  - When building prototypes, what may technicians suggest?
- List 7 other careers that use science.
- List 4 personal traits required for workers in science careers.
- From page 3:
  - List 5 interesting jobs that require "practical and useful applications of science."
  - From these 5 jobs, which job do you think would make an interesting career?
  - Give a reason for your answer.
- From page 4:
  - List 5 interesting jobs that require "applied science."
  - From these 5 jobs, which job do you think would make an interesting career for you?
  - Give a reason for your answer.
- Do you enjoy learning about science?
  - Why or why not?
- At your school, which science class do you enjoy?
  - Give a reason for your answer.
- Why do you think that workers who use science in their jobs are usually paid higher wages than workers who do not use science?



## Applied Science

**These jobs require workers to use scientific principles to solve problems. Employers prefer to hire workers who earn 2-year Associate degree or 4-year Bachelor degree.**

Aircraft mechanics, including engine specialists

Aircraft pilots

Animal health technician

Broadcast technicians

Cardiovascular technicians

Cartographer

Clinical laboratory technologists

Construction managers & building inspectors

Dental hygienists

Dental laboratory technicians

Dietitians & nutritionists

Dispensing opticians

Drafters

Electroneurodiagnostic technologists

Emergency medical technicians

Engineering technicians (all types)

Fish & game wardens

Food & drug inspectors

Hazardous waste technicians

Health technicians

Helicopter pilots

Licensed practical nurses

Lifeguards

Medical assistants

Movie stunt technicians

Nuclear medicine technologists

Occupational & physical therapists & technicians

Paramedics & emergency medical technicians

Photographers & camera operators

Pilots & navigators

Police investigators & fingerprint technicians

Psychologists & psychiatric aides

Quality control technician

Radiologic technologists

Registered nurses

Respiratory & radiologic techs

Scientific photographers

Search & rescue technicians

Ski patrol specialists

Speech-language pathologists & audiologists



Substance abuse counselors

Surgical technologists

Surveyor & mapping scientists

Teachers

Technical writers & illustrators

Transplant coordinators

Water & wastewater treatment technicians

Weight reduction counselors

Wilderness tour guides

Zookeeper & animal trainers



**Make Money!**

## Advanced Science

**These jobs require advanced training in science and 4-year Bachelor, 6-year Master, or more.**

Agricultural scientists

Anesthesiologist

Architects

Archivists & curators

Astronaut

Artificial limb/prosthesis maker

Biological & medical scientists

Chemists

Chiropractors & pharmacists

Computer engineers & scientists

Crime scene lab technologist

Computer systems analysts

Dentists

Engineers & engineer managers (all types)

Forensic scientists

Foresters & environmental scientists

Geologists & geophysicists

Global security specialists

Horticulturist

Landscape architects

Marine biologist

Meteorologists & astronomers

Optometrists & podiatrists

Physical therapists

Physician assistants

Physicians

Physicists

Research scientists

Respiratory therapists

Science teachers

Veterinarians

