

UNIT 2 – EXPLORING STEM CAREERS

KEY VOCABULARY

LESSON 6: WHAT IS A SCIENTIST?

Scientist: A person who is engaged in and has expert knowledge of a science, especially a biological or physical science.

LESSON 7: DEAF PROFESSIONALS IN STEM CAREERS

Active ingredients: An active ingredient (AI) is the ingredient in a pharmaceutical drug or a pesticide that is biologically active. In contrast with the active ingredients, the inactive ingredients are usually called excipients in pharmaceutical contexts.

Black Hawk Helicopter: a medium-lift, rotary-wing helicopter designed and manufactured by Sikorsky Aircraft to meet evolving warfighting needs.

Blueprint: a design plan or other technical drawing.

Capsules: a small case or container, especially a round or cylindrical one.

CH 47 Helicopter: an American twin-engined, tandem rotor, heavy-lift helicopter developed by American rotorcraft company Vertol and manufactured by Boeing Vertol (later known as Boeing Rotorcraft Systems). The CH-47 is among the heaviest lifting Western helicopters.

CH-47F Helicopter: an advanced multi-mission helicopter for the U.S. Army and international defense forces. It contains a fully integrated, digital cockpit management system, Common Aviation Architecture Cockpit and advanced cargo-handling capabilities that complement the aircraft's mission performance and handling characteristics.

Chemistry Technician: Chemical technologists and technicians are workers who provide technical support or services in chemical-related fields. They may work under direct supervision or may work independently, depending on their specific position and duties.

CNC operator: CNC machinists work with computer numeric controlled (CNC) heavy machinery from setup to operation to produce parts and tools from metal, plastic or other materials. Computer numeric controlled equipment is precision machinery that cuts, grinds, or drills into the material

Computer Integrated Machine Technology: Computer-integrated manufacturing (CIM) is the manufacturing approach of using computers to control entire production process. This integration allows individual processes to exchange information with each other and initiate actions.

Dietary Supplements: products taken by mouth that contains a "dietary ingredient." Dietary ingredients include vitamins, minerals, amino acids, and herbs or botanicals, as well as other substances that can be used to supplement the diet.

Digital Measurements: a measuring device in which the value of the measured physical quantity is automatically represented by a number on a digital display or by a code, that is, a set of discrete signals. Digital measuring devices can be divided into digital measuring instruments and digital measuring transducers.

Electronic notepad: Digital Notepads allow users to write on the board and save their notes in PDF format, so they can then use them on a PC or tablet. Intended as a replacement for the legal notepad that has become a staple during the workday, a digital notepad blends the convenience of a notepad with the functionality of a tablet.

Experiments: a scientific procedure undertaken to make a discovery, test a hypothesis, or demonstrate a known fact.

Injections: an instance of injecting or being injected.

Instant Messaging: send (someone) an instant message.

Machinist: a person who operates a machine, especially a machine tool.

Medicine: a compound or preparation used for the treatment or prevention of disease, especially a drug or drugs taken by mouth. OR the science or practice of the diagnosis, treatment, and prevention of disease (in technical use often taken to exclude surgery).

Mobile Applications: A mobile application, most commonly referred to as an app, is a type of application software designed to run on a mobile device, such as a smartphone or tablet computer. Mobile applications frequently serve to provide users with similar services to those accessed on PCs.

Optimized: make the best or most effective use of (a situation, opportunity, or resource).

Quality Assurance: the maintenance of a desired level of quality in a service or product, especially by means of attention to every stage of the process of delivery or production.

Technology: the application of scientific knowledge for practical purposes, especially in industry.

Writing code: 1) In programming, code (noun) is a term used for both the statements written in a particular programming language - the source code , and a term for the source code after it has been processed by a compiler and made ready to run in the computer - the object code.

LESSON 8: CHANGING TECHNOLOGIES

Auto Mechanic: A person skilled in repairing and maintaining automobiles and other motor vehicles.

Computer Game Designer: A computer game designer usually works under the direction of a lead designer and may be responsible for drawing a family of alien creatures for a new game, writing the stories for those creatures or giving practical input about how the game plays - determining whether or not it is actually fun to play! Because the nature of the job is usually collaborative, computer game designers may be given a variety of tasks based on their individual talents or on what needs to be accomplished in any specific stage of game development.

Computer Programmer: A person who develops and implements various sets of instructions to enable a computer to do a certain task. These instructions are considered computer programs and help the computer to operate smoothly. The language used to program computers is not understood by an untrained eye.

DNA Lab Technician: A person who works in a variety of settings, including police departments, forensic laboratories, and prisons. Their basic job is to collect and analyze samples of DNA. This information is then added to state or national databases, or used in the investigation of crimes and prosecution of criminal suspects.

Meteorologist: A specialist who studies processes in the earth's atmosphere that cause weather conditions

National Security Agent: A person who is responsible for global monitoring, collection, and processing of information and data for foreign and domestic intelligence and counterintelligence purposes,

Pilot: A person who operates the flying controls of an aircraft.

Rocket Scientist: A person who designs or builds rockets.

Technology: the application of scientific knowledge for practical purposes. We use it to expand every aspect of our lives – through computers, cell phones, video cameras, almost anything.

Telephone Operator: A person who takes calls from customers who are typically looking to contact an individual, business or organization for which they do not have a telephone number. Telephone operators check a variety of telephone directories and other information resources to help callers find a current contact number for a second party.

LESSON 9: WHY STUDENTS SHOULD BE INTERESTED IN A STEM CAREER

B.A.: An abbreviation for Bachelor of Arts(a first college degree in an art or social sciences area).

Department of Labor Occupational Outlook Handbook: A publication of the United States Department of Labor's Bureau of Labor Statistics that includes information about the nature of work, working conditions, training and education, earnings and job outlook for hundreds of different occupations in the United States.

Engineering: is the branch of science concerned with the design, building, and use of engines, machines and structures. The application of science and mathematics by which the properties of matter and the sources of energy in nature are made useful to people. Engineering focuses on things like the designs of roads and bridges, but also tackles the challenges of changing global weather and environmentally friendly changes to our home.

Mathematics: The science of numbers and their operations. Algebra, arithmetic, calculus, geometry, and trigonometry are branches of mathematics. It is in every occupation, every activity we do in our lives.

Mechanical Engineer: The branch of engineering dealing with the design, construction, and use of machines.

National Basketball Association: A men's professional basketball league in North America, composed of 30 teams (29 in the United States and 1 in Canada). It is one of the four major professional sports leagues in the United States and Canada, and is widely considered to be the premier men's professional basketball league in the world.

National Football Players Association: The labor organization representing the professional American football players in the National Football League (NFL).

Occupation: A job or profession.

Science: is a systematic enterprise that builds and organizes knowledge in the form of testable explanations and predictions about the universe.

STEM: (acronym for Science, Technology, Engineering, Mathematics –STEM) is an educational program developed to prepare primary and secondary students for college and graduate study in the fields of science, technology, engineering, and mathematics. In addition to subject-specific learning, STEM aims to foster inquiring minds, logical reasoning, and collaboration skills.

Technology: The application of scientific knowledge for practical purposes. We use it to expand every aspect of our lives – through computers, cell phones, video cameras, almost anything.

LESSON 10: COOL STEM CAREERS

Flash: An Adobe tool used to develop graphics, animation, and rich internet applications. Flash is optimized for fast delivery of graphical and media content, making it a popular choice for movies (such as you see on YouTube) and interactive multimedia materials.

Forensic Scientist: A person who applies the application of scientific principles and techniques to matters of criminal justice, especially as relating to the collection, examination, and analysis of physical evidence

Web Adventures: A website with a collection of Flash games in which you may explore science and health related subjects, including forensic science, microbiology, neuroscience, and body systems.

LESSON 11: MEET MORE DEAF PROFESSIONALS WORKING IN STEM CAREERS

Machinist: a person who operates a machine, especially a machine tool.

3-D Modeling(three-dimensional modeling): is the process of developing a mathematical representation of any surface of an object (either inanimate or living) in three dimensions via specialized software.

Blueprint: a design plan or other technical drawing.

Blackhawk Helicopter: a four-bladed, twin-engine, medium-lift utility helicopter.

47F Helicopter: an American twin-engine, tandem rotor heavy-lift helicopter whose primary roles are troop movement, artillery placement and battlefield resupply.

Tool and Die: One of the cutting tools and forming dies used by machine tools.

Associate of Occupational Studies (AOS): this degree is designed for students to learn workforce skills. Most degrees in this program are geared toward basic entry-level jobs rather than professional jobs.

Computer Integrated Machinery: the use of computer-controlled machines and automation systems in manufacturing products.

Mechanical Engineering Technology: the application of engineering principles and technological developments to the creation of useful machinery or products.

Triple Seven Production Build Integrator (BI): Working on the production of the Boeing 777 airplanes.

Prototype: a first, typical or preliminary model of something, especially a machine, from which other forms are developed or copied.

Calculus: the branch of mathematics that deals with the finding and properties of derivatives and integrals of functions, by methods originally based on the summation of infinitesimal differences.

Application Development: the development of a software product in a planned and structured process.

Computer Programming: writing programs for the operation of computers.

Code: instructions for a computer (as within a piece of software).

Emulator: hardware or software that permits programs written for one computer to be run on another computer.

Mobile Applications: a mobile application, most commonly referred to as an app, is a type of application software designed to run on a mobile device, such as a smartphone or tablet computer.

Information Technology (IT): the application of computers to store, study, retrieve, transmit, and manipulate data
Accounting: a systematic process of identifying, recording, measuring, classifying, verifying, summarizing, interpreting and communicating financial information.

Management Information systems: an organized approach to the study of the information needs of an organization's management at every level in making operational, tactical, and strategic decisions.

Database: a structured set of data held in a computer, especially one that is accessible in various ways.

Software: the programs and other operating information used by a computer.

Software Engineer: the application of engineering to the development of software in a systematic method

Innovations: a new idea, device or method which is viewed as the application of better solutions that meet new requirements, unarticulated needs, or existing market needs

Patents: a government authority or license conferring a right or title for a set period, especially the sole right to exclude others from making, using, or selling an invention.

Software Engineer: a branch of computer science that deals with the design, implementation, and maintenance of complex computer programs.

Remote Technical Assistance: providing advice, assistance, and training pertaining to the installation, operation, and maintenance of equipment from an offsite location.

Technical Analysis: examination and evaluation by experts of materials, processes, practices and other factors associated with economy, efficiency, effectiveness, or safety.

Weld: join together (metal pieces or parts) by heating the surfaces to the point of melting using a blowtorch, electric arc, or other means, and uniting them by pressing, hammering, etc.:

Plasma Torches: a device that heats a gas by electrical means to form a plasma for high-temperature operations (such as melting metal).

Lasers: a device that generates an intense beam of coherent monochromatic light (or other electromagnetic radiation) by stimulated emission of photons from excited atoms or molecules. Lasers are used in drilling and cutting, in surgery; reading bar codes, and in recording and playing compact discs.

Electric Arcs: an electrical breakdown of a gas that produces an ongoing electrical discharge.

Gas Tungsten Arc Welding (TIG): an arc welding process that uses a non-consumable tungsten electrode to produce the weld

Gas Metal Arc Welding (MIG): a welding process in which an electric arc forms between a consumable wire electrode and the workpiece metal(s), which heats the workpiece metal(s), causing them to melt and join.

Shielded Metal Arc Welding (stick welding): a manual arc welding process that uses a consumable electrode covered with a flux to lay the weld.

LESSON 12: POSSIBLE STEM CAREER: COMPUTERS

Algorithm: A list of steps that you can follow to finish a task.

Binary: A way of representing information using only two options.

Coding: the process of designing, writing, testing, debugging / troubleshooting, and maintaining the source code of computer programs.

Computer: a device that can be instructed to carry out an arbitrary set of arithmetic or logical operations automatically. The ability of computers to follow programs enables them to perform a wide range of tasks.

Data: acts and statistics collected together for reference or analysis.

Debugging: identify and remove errors from (computer hardware or software).

Input: put (data) into a computer.

Loop: The action of doing something over and over again.

Output: take (data) out of a computer.

Processing: when a computer that carries out the instructions of a computer program by performing the basic arithmetic, logical, control and input/output (I/O) operations specified by the instructions.

Program: An algorithm that has been coded into something that can be run by a machine.

Storage: Computer data storage, often called storage or memory, is a technology consisting of computer components and recording media used to retain digital data.

LESSON 13: EXPLORING CURRENT STEM JOBS

3-D Animator: a three-dimensional medium, display, or performance, especially a cinematic or graphic medium in three dimensions:

Actuary: a person who compiles and analyzes statistics and uses them to calculate insurance risks and premiums.

Aerospace Engineer: the primary field of engineering concerned with the development of aircraft and spacecraft.

Agricultural Engineer: the branch of engineering that deals with the design of farm machinery, the location and planning of farm structures, farm drainage, soil management and erosion control, water supply and irrigation, rural electrification, and the processing of farm products.

Architect: a person who designs buildings and advises in their construction.

Astrobiologist: is the study of the origin, evolution, distribution, and future of life in the universe: extraterrestrial life and life on Earth.

Astronaut: a person trained by a human spaceflight program to command, pilot, or serve as a crewmember of a spacecraft.

Athletic Trainer: is a certified and licensed health care professional who practices in the field of sports medicine.

Audio Engineer: works on the recording, manipulating the record using equalization and electronic effects, mixing, reproduction, and reinforcement of sound.

Automotive Service Engineer: is the profession involved in the development of the appearance, and to some extent the ergonomics, of motor vehicles or more specifically road vehicles.

Biomedical Engineer: is the application of engineering principles and design concepts to medicine and biology for healthcare purposes (e.g. diagnostic or therapeutic).

Biometrics Technician: the study of measurable biological characteristics. In computer security, biometrics refers to authentication techniques that rely on measurable physical characteristics that can be automatically checked.

Botanist: an expert in or student of the scientific study of plants.

Building Inspector: is an inspection performed by a building inspector, a person who is employed by a city, township or county and is usually certified in one or more disciplines qualifying them to make professional judgment about whether a building meets building code requirements.

CAD Technician: uses CAD systems to create design plans for buildings and machinery.

Cartographer: a person who draws or produces maps.

Chemical Engineer: the branch of engineering concerned with the design and operation of industrial chemical plants.

Chemist: an expert in chemistry; a person engaged in chemical research or experiments.

Climate Scientist: a person who studies climate, scientifically defined as weather conditions averaged over a period of time.

Computer Graphic Designer: they use their creativity and technical skills on a computer to create graphic designs that visually represent a design concept.

Computer Hardware Engineer: this involves PC board timing delays, heat removal selection of microprocessors and their support chips. It involves the design of peripheral circuitry.

Computer Software Developer: a person concerned with facets of the software development process, including the research, design, programming, and testing of computer software.

Computer Systems Analyst: an information technology (IT) professional who specializes in analyzing, designing and implementing information systems.

Dental Hygienist: a licensed dental professional who work independently or alongside dentists and other dental professionals to provide full oral health care.

Diagnostic Medical Sonographer: provides patient services using diagnostic ultrasound under the supervision of a doctor responsible for the use and interpretation of ultrasound procedures.

Dietician: an individual whose training and experience is in the area of nutrition and who has the ability to apply that information to the dietary needs of the healthy and sick.

Ecologist: an individual who studies the interactions among organisms and their environment.

Economist: an individual who studies economics and may also study, develop, and apply theories and concepts from economics and write about economic policy.

Educational Technologist: an individual who uses physical hardware and educational theoretics to improve performance by creating, using, and managing appropriate technological processes and resources.

Electrical Engineer: an individual who deals with the study and application of electricity, electronics, and electromagnetism.

Engineer: an individual who designs, constructs and tests structures, materials and systems while considering the limitations imposed by practicality, regulation, safety, and cost.

Emergency Management Specialist (SEM): Emergency management specialists (SEM) respond to civil emergencies and natural disasters.

Environmental Engineer: an individual who is concerned with the application of scientific and engineering principles for the protection of human populations from the effects of adverse environmental factors; protection of environments, both local and global, from potentially deleterious effects of natural and human activities; and improvement of environmental quality.

Environmental Scientist: an individual who integrates physical, biological and information sciences (including ecology, biology, physics, chemistry, zoology, mineralogy, oceanology, limnology, soil science, geology, atmospheric science, and geodesy) to the study of the environment, and the solution of environmental problems.

Epidemiologist: a person who studies and analyzes the patterns, causes, and effects of health and disease conditions in defined populations.

Exercise Physiologist: an individual who is trained to work with patients with chronic diseases where exercise training has been shown to be of therapeutic benefit, including but not limited to cardiovascular disease, pulmonary disease, and metabolic disorders.

Financial Analyst: an individual who is employed by a bank, brokerage, advisor, or mutual fund who studies companies and makes buy and sell recommendations, often specializing in a single sector or industry.

Food Technologist: a person trained in the science and technology of treatment, processing, preservation, and distribution of foods.

Forensic Accountant: an accountant who specializes in applying accountancy skills to the purposes of the law.

Forrester: a person whose job is to take care of forests by planting trees, cutting down trees, etc.

General Contractor: an individual who is responsible for the day-to-day oversight of a construction site, management of vendors and trades, and the communication of information to all involved parties throughout the course of a building project.

Genetic Counselor: an individual who works with people who are at risk of an inherited disorder and advises them of the consequences and nature of the disorder, the probability of developing or transmitting it, and the options open to them in management and family planning.

Geologist: a scientist who studies the solid and liquid matter that constitutes the Earth as well as the processes that shape it.

HVACR Technician: An HVAC technician installs, maintains, and repairs heating, air conditioning, and refrigeration systems. HVAC is an abbreviation for heating, ventilation, and air conditioning (an alternative abbreviation is HVACR).

High School STEM Teacher: a high school teacher who teaches STEM which is a curriculum based on the idea of educating students in four specific disciplines — science, technology, engineering and mathematics — in an interdisciplinary and applied approach.

Horticulturist: an individual who studies this branch of agriculture that deals with the art, science, technology, and business of growing plants. It also is the study of plants.

Hydrologist: an individual who studies the movement, distribution, and quality of water on Earth and other planets, including the water cycle, water resources and environmental watershed sustainability.

Industrial Designer: an individual who applies design to products that are to be manufactured through techniques of mass production.

Information Security Analyst: an individual that reviews and analyzes IT environments/infrastructures for information security design, implementation and maintenance-related processes.

Lab Research Technician: an individual who assists with or carries out work in a building or room equipped for conducting scientific research or for teaching practical science, such as by carrying out routine tests and analyzing the results.

Landscape Architect: an individual who designs outdoor public areas, landmarks, and structures to achieve environmental, social-behavioral, or aesthetic outcomes.

Librarian: a person who works professionally in a library, providing access to information and sometimes social or technical programming.

Lighting Designer: is an individual who works with the director, choreographer, set designer, costume designer, and sound designer to create the lighting, atmosphere, and time of day for the production in response to the text, while keeping in mind issues of visibility, safety, and cost.

Marine Biologist: an individual who studies the organisms in the sea.

Market Research Analyst: is principally responsible for interpreting data, formulating reports and making recommendations based upon the research findings.

Materials Engineer: an individual who researches and studies the discovery and design of new materials, with an emphasis on solids.

Mathematician: a person who is trained in the study of numbers and calculations.

Mechanical Engineer: a person who is trained in the branch of engineering concerned with the design, construction, and operation of machines and machinery.

Medical Robotacist: a person who develops & commercializes revolutionary image guided hand-held medical robotics for use in various therapeutic applications.

Meteorologist: a person who studies atmospheric sciences, which includes atmospheric chemistry and atmospheric physics with a major focus on weather forecasting.

Microbiologist: a biological scientist who studies microscopic life forms and processes or works in the field of microbiology.

Museum Conservator: an individual that cares for and restores those treasures—paintings, plant and animal specimens, pottery, jewelry, and other objects of historical value such as tools or weapons made by humans long ago.

Nanosystems Engineer: an individual that deals with the design, development and characterization of materials, devices, and systems in the range of 1-100 nanometers (1 nanometer is a billionth of a meter), as well as their integration with macroscale devices and systems.

Naval Architect: a person who uses basic and applied research, design, development, design evaluation and calculations during all stages of the life of a marine vehicle.

Nuclear Engineer: an individual who is concerned with the application of the breakdown (fission) as well as the combination (fusion) of atomic nuclei or the application of other subatomic physics, based on the principles of nuclear physics. In the sub-field of nuclear fission, it particularly includes the interaction and maintenance of systems and components like nuclear reactors, nuclear power plants, or nuclear weapons.

Oceanographer: an individual who works with earth science covering a wide range of topics, including ecosystem dynamics; ocean currents, waves, and geophysical fluid dynamics; plate tectonics and the geology of the sea floor; and fluxes of various chemical substances and physical properties within the ocean and across its boundaries.

Orthodontist: a specialist who deals with the prevention and correction of irregular teeth, as by means of braces.

Paleontologist: a person who studies the science of the forms of life existing in former geologic periods, as represented by their fossils.

Paramedic: a person who is trained to assist a physician or to give first aid or other health care in the absence of a physician, often as part of a police, rescue, or firefighting squad.

Park Naturalist: a person who protects the park from vandalism and destruction caused by unruly campers and visitors, and even natural disasters and provides education about the park to the public.

Pharmacist: a person who is professionally qualified to prepare and dispense medicinal drugs.

Physical Therapist: a person who provides treatment of physical dysfunction or injury by the use of therapeutic exercise and the application of modalities, intended to restore or facilitate normal function or development.

Physician: a person qualified to practice medicine.

Physician Assistant: a person certified to provide basic medical services usually under the supervision of a licensed physician.

Physicist: a scientist who has specialized knowledge in the field of physics, the exploration of the interactions of matter and energy across the universe.

Pilot: a person who flies or navigates an aircraft Maritime pilot, a person who guides ships through hazardous.

Production Engineer: a person who combines manufacturing technology, engineering sciences with management science.

Psychologist: a professional who evaluates and studies behavior and mental processes.

Radiologic Technologist: a healthcare professional who specializes in the imaging of human anatomy for the diagnosis and treatment of pathology.

Robotics Technician: an individual involved in the design, maintenance, and use of robots.

Safety Engineer: is an individual involved with the process of designing safer products and structures and improving the safety of work sites, manufacturing facilities and products as safety standards change.

Science Illustrator: an individual who uses scientifically informed observation, combined with technical and aesthetic skills to accurately portray a subject.

Science Reporter: an individual that covers scientific occurrences and discoveries for journals, magazines, or other publications.

Sociologist: a person who studies the origin, development, organization, and functioning of human society; the science of the fundamental laws of social relations, institutions, etc.

Solar Technician: an individual responsible for permit submittal and retrieval, preparing documents for construction teams, coordinating and retrieving retail payments and interfacing with building departments.

Special Effects Technician: an individual responsible for creating the effects on screen in a movie, theater, television or multimedia production.

Statistician: an individual who works with theoretical or applied statistics.

Stockbroker: an individual, usually associated with a brokerage firm or broker-dealer, who buys and sells stocks and other securities for both retail and institutional clients through a stock exchange or over the counter in return for a fee or commission.

Structural Engineer: an individual who analyzes designs, plans, and researches structural components and structural systems to achieve design goals and ensure the safety and comfort of users or occupants.

Surveyor: an individual who determines the terrestrial or three-dimensional position of points and the distances and angles between them.

Urban Developer: an individual involved with the development or improvement of an urban area by building.

Veterinarian: a person who is qualified to treat sick or injured animals.

Veterinary Technologist: an individual who provides the veterinarian with technical support for all aspects of patient care.

Video Game Designer: a person who designs gameplay, conceiving and designing the rules and structure of a game.

Zoologist: a person that studies the animal kingdom, including the structure, embryology, evolution, classification, habits, and distribution of all animals, both living and extinct, and how they interact with their ecosystems.

LESSON 14: POSSIBLE STEM CAREERS IN THE FUTURE

Architect: a person who designs buildings and guides the planning or construction of that building.

Caretaker: one that takes care of the house or land of an owner who may be absent.

Fetus: an unborn or unhatched vertebrate especially after attaining the basic structural plan of its kind; specifically: a developing human from usually two months after conception to birth

Forecaster: to calculate or predict (some future event or condition) usually as a result of study and analysis of available pertinent data.

Fusion: the union of atomic nuclei to form heavier nuclei resulting in the release of enormous quantities of energy when certain light elements unite.

Galactic: of or relating to a galaxy and especially the Milky Way galaxy.

Hacker: an expert at programming and solving problems with a computer.

Interaction: mutual or reciprocal action or influence.

Migration: to move from one country, place, or locality to another.

Netflix Tagger: paid watcher of Netflix shows.

Organ: a differentiated structure (such as a heart, kidney, leaf, or stem) consisting of cells and tissues and performing some specific function in an organism.

Reporter: a person employed by a newspaper, magazine, or television company to gather and report news.