

CAREER MATCH

PURPOSE:

To acquaint the student with career opportunities in the Minerals Industry.

INSTRUCTION:

1. Have individual career sheets with clues on back. Have individual career clue cards made up with four (4) clues per career.
2. Place career sheets on walls around classroom and give each student a clue card. Give them a few minutes to read their clues then go stand in front of the career sheet they think matches their clues. At the end of five minutes have them check the back of the sheets to find out if they are correct. Once they have all found the correct career you might have several read their clues and explain how the clues relate to the specific career.

EVALUATION:

1. How many careers were included in the game? Are there other careers in the Minerals Industry not included?
2. Do any of the careers have something in common? What might make one career stand out from the others?
3. Which careers can be classified as entry positions? What other career could these entry positions lead to?

OPTIONS:

1. Some students can be given career cards and others the clues. The students with the clues need to find their matching career.
2. Students could be given a career card or could select another career available in the Minerals Industry and research information on it. An oral or written report could be prepared on wages, opportunities, etc.



SURVEYOR

1. Likes walking out of doors in any weather.
2. Provides information to others.
3. Detailed, accurate and conscientious.
4. Equipment ranges from tapes to lasers.

ENGINEER

1. Obsessed with detail.
2. Works with numbers and computers.
3. Works inside and outside.
4. Creates maps and drawings.

ELECTRICIAN

1. Has nimble fingers.
2. Has a language all its own.
3. Works with special equipment.
4. Can be a shocking experience and is all powerful

GEOLOGIST

1. Usually works in remote open areas.
2. Wears a special vest and belt to carry tools.
3. Pockets wear out rapidly.
4. Knows how rocks were formed.

MOBILE MECHANIC

1. Likes to know how things work.
2. Found under or inside something.
3. Doesn't mind dirt, grime or grease.
4. Likes to put things back together.

PURCHASING

1. Numbers are a mainstay.
2. Likes people and making deals.
3. Needs to know all facets of the operation.
4. Good at spending money.



ENVIRONMENTAL MANAGER

1. Communicates and negotiates well.
2. Likes all aspects of nature.
3. Stickler for detail and enjoys paper work.
4. Responsible for air, water and soil.

SAMPLE PREP

1. Doesn't mind repetitive action.
2. Works with numbers accurately.
3. Good weight lifting exercise.
4. Grinds rock to powder.

ASSAYER

1. Accuracy and detail a must.
2. Likes to mix things up.
3. Enjoys the physical and chemical reactions.
4. First to know ore grade.

EQUIPMENT OPERATOR

1. May climb a ladder to start work.
2. Must be in tune with what you are doing.
3. Needs to always be aware of immediate surroundings.
4. Seated but in motion all day.

SAFETY TECHNICIAN

1. Demanding of all those on site.
2. Knowledgeable of laws and miners rights.
3. Enjoys helping others.
4. Knows life saving skills.

HUMAN RESOURCES

1. Works with people.
2. Needs to know laws and regulations.
3. Walks a tightrope between employees and employers.
4. Hires and Fires.



WAREHOUSE PERSON

1. Must be very organized.
2. Physical labor required.
3. Enjoys contact with all mine employees.
4. Monitors inventory by computer.

ACCOUNTANT

1. Very self-motivated, usually introverted.
2. Keeps track of costs.
3. Numbers are the name of the game.
4. Budgets are vital to their existence.

WELDER

1. Puts things together, like a puzzle.
2. Works with metal.
3. Can work in a variety of locations.
4. Uses extreme heat to get required results.

DRILLER

1. Enjoys messy, repetitive work.
2. Usually found in a pit.
3. Collects samples for assay, the most important job on site.
4. Puts holes in the ground.

BLASTER

1. Calculates tons of broken rock.
2. Breaks large rocks into smaller rocks.
3. Safely handles explosives.
4. Enjoys blowing things up.

SECURITY GUARD

1. Honest as the day is long.
2. Has a keen eye.
3. Enjoys solitude.
4. Gracious figure of authority.



PROCESS OPERATOR

1. Monitors material and solution flow.
2. Collects samples.
3. Can be found inside or outside.
4. Must wear ear plugs.

REFINER

1. Kept separate from all others.
2. Good at recipes.
3. Great house cleaner.
4. First to see final results.

CRUSHER OPERATOR

1. Can deal with monotony.
2. Can use a torch.
3. Knows belts, rollers, liners and balls.
4. Sizes rocks.

ADMINISTRATIVE ASSISTANT

1. Friendly personality.
2. Must have dexterity.
3. Uses latest technology.
4. Knows their ABC's.

SYSTEMS MANAGER

1. Knows several languages.
2. Good at problem solving.
3. Knows the difference between hardware and software.
4. Good at interfacing.

METALLURGIST

1. Great at chemical analysis.
2. Can be physical or extractive.
3. Uses lots of resources.
4. Knows how to produce a pure product.



ACCOUNTANT

If you enjoy working with numbers (dollars), like to work by yourself and are self-motivated then maybe accounting is a career for you.

An Accountant provides all the cost information for the mine site. This includes the maintenance of the general ledgers, reviewing payroll records, performing internal audits, providing all financial reports and assists in preparing annual budgets. In addition you will be working to train other department staff on the use of the chart of accounts.

As an Accountant you must have a bachelors degree in accounting or business administration. In addition you may be required to obtain a CPA (Certified Professional Accountant) certificate.

High school courses that will help prepare for this career are: Math, Accounting, Bookkeeping, Computer Science, English and Speech.

ADMINISTRATIVE ASSISTANT

Do you enjoy working with people and providing information? Do you like office clerical work and business machines? If so you might like to be an Administrative Assistant.

As such you will assist various departments with clerical functions, route mail, type reports and maintain files. In addition you will screen and route phone calls and visitors. You will work with various types of business machines, computers, typewriters, copy machines, calculators, etc.

To be an Administrative Assistant you will need a high school diploma or equivalent and know basic office machines.

Helpful high school courses: Math, English, Computer Science, Typing and Office Machines. You may wish to obtain a business certificate from an accredited business school or college.

ASSAYER

Are you interested in Chemistry? Do you enjoy routine chemical tests? If so, maybe you would like to be an Assayer.

As an Assayer you would set up procedures for sample preparation and perform fire assaying. In addition you would do the analysis that determines the quantity of elements in the sample through the Atomic Absorption, perform basic assay calculations and fill out daily reports.

To be an Assayer you will need a high school diploma or equivalent and a minimum of six (6) months experience related to fire assaying and sample preparation. You must also pass written and hands on tests for basic assay calculations, assay techniques, reagents, and safety policies.

Helpful high school courses include: Math, English, Chemistry and Computer Science.

ASSAY TECHNICIAN

Do you like the security of repetitive work? Do you like to be both inside and outside? Do you like to work with your hands? If you do then you might like the job of Assay Technician.

As an Assay technician you would collect samples from the mine then, split, dry, crush, split again and pulverize the sample to the consistency of talcum powder. You would have the opportunity to operate different types of pulverizers, lab sized crushers and a forklift. You would keep daily records of sample prep activities. In addition some minor maintenance work would be required on the pulverizer and lab crusher and computer skills are necessary.

To assume the duties of this position you will need a high school diploma or equivalent and either on-the-job training or vocational school. You will also need to be in good physical condition.

Helpful high school courses: English, Math, Science, Chemistry, Computer Science and Physical Education.



BLASTER

If you think you would enjoy the challenge of breaking up a large block of ground then maybe you would like a career as a Blaster.

As a Blaster you will learn how to safely handle explosives, load and tie in blast patterns, calculate the tons of rock broken and quantities of explosives used. In addition you must understand the basics of blasting, be able to fill out all required reports and communicate effectively both verbally and in writing.

To be a Blaster you will need a high school diploma or equivalent and a minimum of one to two years experience working as a laborer on a powder crew. You will also be expected to attend any required blasting schools and may be required to obtain a State Certified Blasting License.

Helpful high school courses are: Math, English, Computer Science and Speech.

CRUSHER OPERATOR/MECHANIC

If you like to work with your hands and machinery, do a variety of different tasks then you might like to be a crusher operator/mechanic.

As such you would operate and maintain all equipment associated with the crushing system. This includes all support equipment (trucks, loaders, dozers, forklifts and bobcats). You will also be required to perform physical work in an effort to keep the crushing system operational. You will need to be able to make decisions concerning the timeliness of repairs to lessen downtime.

To be a crusher operator/mechanic you will need a high school diploma or equivalent and receive on -the-job training or vocational schooling. You will need to be in good physical condition, have a background in mechanics and have good verbal and written skills to perform this job successfully.

Helpful high school courses: Math, English, Computer Science, Shop and Physical Education.

DRILLER

Do you enjoy the feeling of accomplishment when you look back at the quantity and quality of work you have done? Do you enjoy doing somewhat repetitive work? If you enjoy these and think you might like to operate a drill then this is the choice for you.

As a driller you will be required to operate your equipment safely and efficiently. You will have to perform all preshift inspections, drill holes to designated depths, collect cutting samples to the proper specifications, change bits and hammers on the drill to keep it operational and fill out all required reports. You will also need to be able to communicate effectively.

To be a driller you will need a high school diploma or equivalent and a minimum of one to two years, mining experience. You may also wish to have some blasting and or lab experience to help you understand the results of the job.

Helpful high school courses: Math, English, Science and Auto Shop.

ELECTRICIAN

If you enjoy electronics, are curious about how electricity works or just want to learn more about both, then maybe you would like to be an Electrician.

As an Electrician you would work on electrical construction, instrumentation and all electrical repairs on mine equipment. You will also be required to use electrical hand and power tools, plus electrical test equipment. In addition you must have a working knowledge of Alternating Current (AC) and Direct Current (DC), electrical theory and be able to work from schematics and blueprints.

You must be willing to train on programmable controllers and computers. You will also be required to pass a written test.

To be an Electrician you will need a high school diploma or equivalent and two (2) years experience in maintenance, electrical construction, instrumentation, or other associated electrical fields. Helpful high school courses: Math, Physics, Drafting, Auto Shop, Computer Science and any other opportunities that provide a background in electronics. Trade schools and the U. S. Military branches provide excellent technical training for this field.



ENVIRONMENTAL MANAGER

If you love the out-of-doors and want to see the environment managed carefully, if you are self-motivated with good negotiating skills and tact then you might enjoy the job of Environmental Manager. In this position you will work with all kinds of people on the mine site as well as State and Federal Environmental personnel.

As environmental manager, you would be responsible for water, soil and air monitoring procedures and reports, implementing environmental programs that would include reclamation and water management as well as guiding on-site environmental tours and inspections.

To become an Environmental Manager a college degree in Environmental Science, Engineering, Geohydrology, Metallurgy, Geology, Chemistry or Resource Management is required. In addition you will also need one to 2 years experience in the mining industry.

Helpful high school courses: Chemistry, Earth and/or Biological Science, Computer Science and Math.

EQUIPMENT OPERATOR

If you enjoy watching large equipment operate maybe you should consider the job of Equipment Operator.

As an Equipment Operator you will learn how to safely operate any one or more of the large pieces of equipment used on a mine site. Dozers, loaders, graders, shovels, off-road haul trucks are some examples. Included with the safe operation of the equipment you will be required to perform the safety and mechanical inspections of the equipment you operate. You will need to be able to remain alert during a shift, climb a 10 foot ladder to get on the equipment and communicate effectively both verbally and written.

Equipment operators receive training either on-the-job or from a heavy equipment trade school. You will also be required to have a high school diploma or equivalent and a minimum of one year mining experience before being considered for training.

Helpful High School courses: Math, English, Computer Science and Auto Shop.

HUMAN RESOURCES

If you enjoy people, have an interest in learning State and Federal employment laws, company policies and have no fear of enforcing such then this may be the field for you.

As a Human Resource Manager you would work to make sure all company policies are followed consistently, that all Federal and State Labor laws are correctly followed and work to have a positive company image in the community and business climate. In addition you would assist in the training and development of all employees, interview prospective employees, coordinate benefit programs and mediate grievance cases.

To be a Human Resource Manager a college degree in Psychology, Sociology, Human Resource or a related field and six to ten years experience working in a human resource environment. Helpful High School courses: English, Speech and Computer Science.

MECHANIC

Do you enjoy the challenge of machinery? Do you think you would have satisfaction from diagnosing to repairing a problem on equipment? Do you enjoy tools and working with your hands? If so then you could consider a career in maintenance.

As a mechanic you will diagnose, document and repair (with technical assistance when required) all mobile equipment on the mine site. You will be trained on the operation of all mobile equipment which includes loaders, trucks, graders, dozers, pickups, cranes, forklifts, shovels, etc. You will be knowledgeable about the proper use of tools and equipment for repair operations and also do some minor welding. To be a Mechanic you will need a high school diploma or equivalent and a minimum of two years experience in mobile equipment repairs. In addition you will need to be able to communicate both verbally and written.

Helpful High School courses: Math, Auto Shop, Welding, Computer Science and English. You may decide to attend a trade school for diesel equipment repair.



METALLURGIST

Do you like science and math? Are you good at playing mind games? Do you like challenges? If so you would like being a metallurgist.

As a metallurgist you would monitor processing to maintain or increase production while keeping costs at a minimum. You also would keep records of the production on daily, monthly and yearly reports. You would work with the process operators and work on computers. You will receive information concerning production and will interpret and apply the information to the process system. You could have the opportunity to test new methods of extraction to improve production. Most metallurgists in the mining industry are extractive (removes product from rock) but some may specialize in physical metallurgy (combines different minerals or elements together to make a final product, for example: steel).

To be a metallurgist you will need a college degree in Metallurgical Engineering.
Helpful high school courses: Math, Chemistry, Physics, English and Computer Science.

MINE ENGINEER

If you like to determine cause and effect, work with numbers, ask questions and enjoy design work then a Mine Engineering career may be for you.

As a Mine Engineer you will work with all kinds of people to optimize mine operations to reduce costs. This can be achieved through mine design, mine planning, equipment selection and production reporting. Other functions may include designing ore control from assays and flagging the ore in the field.

A Mine Engineer requires a college degree in Mine Engineering, Geological Engineering, Civil Engineering or some other related Engineering field.

Helpful High School classes: Math, Physics, Earth Science, English and Computer Science.

MINE GEOLOGIST

Are you curious about the earth and how it was formed and do you like rocks and minerals? Do you want to know where mineral resources occur and do you enjoy challenges? If so you might consider becoming a Geologist.

As a mine geologist you will look at rocks in a mine setting, study the relationship of geology (faults, rock types, structures, etc) to ore formation and drill to identify ore deposits. Your time will be split between office work of drawing maps and logging information to working in the field to obtain further information.

To be a mine geologist you will need a college degree in Geology or a related field.

Helpful High School courses: Earth Science, Chemistry, Math, Computer Science and Physics.

MINE SURVEYOR

Do you like the out of doors? Do you find it challenging to work math problems, especially algebra and trigonometry? Do you enjoy people. Do you like both physical and mental work? If so then consider becoming a Mine Surveyor.

A mine surveyor provides all sorts of information to personnel on the mine site. This information may include the location of ore and waste, show the location of buildings, fences or power lines. You may be called upon to provide elevations or to locate underground workings, drill bits, etc. In the field. In addition you may be required to supervise personnel.

As a surveyor you will have to have a degree in surveying (2 years) from a college certified by the Accreditation Board for Engineering & Technology (ABET), or you may have an engineering degree with a surveying emphasis. You will also need two to five years experience working on a mine survey crew.

Helpful High School courses: Math, Drafting, Computer Science and English.



PROCESS OPERATOR

Does the idea of working with electronic equipment appeal to you? Are you someone who doesn't mind physical activity on the job? If so, then maybe you should consider being a Process Operator.

As such you would be responsible for the safe and productive use of the process equipment. You would need to understand the production process as well as respond when problems arise. You will need to be able to operate some machinery, including an overhead crane. You will need to update log books recording the production process and enter such on a computer.

To be a process operator you will need a high school diploma or equivalent and receive either on-the-job training or go through vocational training. You will need to be able to communicate clearly through written and verbal instructions and be able to train new employees.

Helpful high school courses: Math, English, Computer Science and Shop.

PURCHASING AGENT

Do you enjoy buying things? Do you like finding the best price for an item? Do you like dealing with people and consider yourself a wheeler and dealer? If so you might like to become a Purchasing Agent.

As a Purchasing Agent you will be responsible for locating, purchasing and obtaining delivery of all goods and services at a mine site. These tasks may be accomplished through the supervision of purchasing personnel and the use of computers. In addition you will make sure that a good relationship is developed and maintained between the company and its suppliers. You must also be familiar with all the phases of the mine operation (mining, crushing and processing), as well as be aware of the vendor supplied equipment and parts that match the company systems.

To be a purchasing agent you will need a high school diploma and must have a minimum of five to ten years experience in purchasing. You will also require contract negotiation experience and be able to communicate with all types of people.

Helpful high school courses: Math, English, Speech, Computer Science, Accounting and Business.

REFINER

Do you like working in small groups of people? Do you like the idea of being the first to see the final product? Do you think you can handle working in a secure area? If this sounds good then consider the job of Refiner.

In this position you would be responsible for the operation of all equipment used in the refining process. You would be expected to troubleshoot any problems that arise and keep accurate records of production. You will need to work with minimal supervision and be self-motivated.

To become a refiner you will need a high school diploma or equivalent and receive on-the-job training. You would also need to satisfactorily complete a stringent background check. You will need to be able to communicate effectively in writing. Some physical work is required so you will need to be in good physical condition.

Helpful high school courses: Math, English, Chemistry, Computer Science, Physical Education and Shop.



SAFETY TECHNICIAN

Do you like working and talking to people? Do you enjoy helping others learn new things or like organization? Then consider becoming a Safety Technician.

A Safety Technician performs all aspects of training, maintains personnel records for State Industrial Insurance, Mine Safety and Health Administration (MSHA), State Mine Inspectors as well as the company. In addition a technician collects statistical data and prepares written reports. This job leads to a Safety Coordinators position.

As a Safety Technician you would have a High School diploma, one years experience in surface mining, computer knowledge, be certified as an MSHA Instructor and certified as a First Responder and willing to continue to the level of Emergency Medical Technician (EMT).

Other helpful knowledge could be gained by becoming a hospital volunteer. Helpful high school courses: Math, Science, English and Computer Science.

SECURITY GUARD

If you are someone that likes quiet time intermixed with occasional bursts of excitement, are calm under pressure and like people you might consider becoming a Security Guard.

In the position you would protect and safeguard mine site employees, secure against loss of any company assets and be responsible for recording the entry and departure of all individuals to the site. In addition you would monitor activities in various locations around the mine site through electronic and visual surveillance. You would also be required to assist in life threatening situations. You will have to communicate with all areas of the mine site both verbally and written and demonstrate sound judgment.

To be a Security Guard you will need a high school diploma or equivalent and you may have to have previous experience or training in a security position. You could take law enforcement training from a vocational school or community college. You will be required to obtain advanced first aid training as a First Responder or Emergency Medical Technician. You may also be required to obtain hazard training and emergency response training.

Helpful high school courses: English, Math, Computer Science and Physical Education.

SYSTEMS MANAGER

If you enjoy the challenge of computers and like working with people then consider becoming a Systems Manager.

As a Systems Manager you will be responsible for the operation of all computer hardware and software on the mine site. In addition you will provide new or updated programming via development or purchase, training and troubleshooting for personnel on hardware and software and enforce company computer policy. You will need to be able to work with all types of people and good at solving problems.

As a Systems Manager you will need a college degree in Computer Science or related field. You will also need two to five years experience working with information (computer) systems.

Helpful high school courses: Math, Computer Science, English and Business Machines.

WAREHOUSE PERSON

If you like inventory control, working with people and like a variety of tasks then consider warehouse work.

A Warehouse Person stores and issues supplies, maintains supply levels and keeps a running inventory of all supplies on a computer. In addition you would perform inventory audits, operate light equipment and maintain a clean work environment. Some physical work (lifting and moving) is required. You will need to be able to understand and follow both oral and written instructions.

To be a warehouse employee a high school diploma or equivalent and one year experience in store keeping and inventory work is required.

Helpful high school courses: Math, English, Computer Science, Accounting, Speech, Inventory Control.



WELDER

Do you enjoy working with your hands? Does the idea that you can fix heavy mobile and stationary equipment appeal to you? If this is your interest and you want a skilled career then consider becoming a Welder.

As a Welder in the Minerals Industry you could work on many types of equipment from light vehicles to large crushers. You will generally work in either Mobile Maintenance or Crusher Maintenance. In either department you will be required to identify and document the majority of welding related problems, communicate the problems through channels and solve the problem. You must be able to perform the majority of required welding repair jobs and use all tools and equipment properly. You may have the opportunity to be task trained in operating the equipment as well.

To be a mine welder you will need a High School diploma and about one to two years experience with welding. You must be able to communicate effectively both written and verbal.

Helpful high school courses: Math, English, Auto Shop, Welding and Computer science. You might consider a trade school to learn this skill.

