C. SAFETY AND HEALTH

C1. Follow Safety Manuals, Instructions, and Requirements

C1.1. Assume responsibility for the personal safety of self and others.

Performance Objective: While in the work area, the student will be able to locate safety equipment, will wear appropriate protective equipment and report unsafe situations promptly.

KNOW LOCATION AND USE OF:	WEAR AND CARE FOR	REPORT
Fire extinguisher First aid kit Eye wash	Safety glasses or goggles Safety shoes	Physical hazards and work practices that are seen as unsafe
Emergency phone	Other appropriate protective equipment	Accidents or injuries promptly.
HazCom Handbook (MSDS)		Symptoms of chemical exposure
Emergency exits		Offer suggestions

C1.2. Maintain a clean and safe work environment.

Performance Objective: While at a work station or operating a piece of equipment, the student will be able to keep the area clean and orderly at all times.

C1.3. Develop a personal attitude towards safety.

Performance Objective: Upon receiving safety information or positive safety criticism, the student will be able to consistently respond in a pleasant, positive manner, asking questions for clarification and learning and apply the information at the earliest opportunity.

C1.4. Interpret the organization's overall safety program manual and equipment safety manual directives.

Performance Objective: Following appropriate instruction and given a machine or equipment operator's manual, the student will be able to identify all safety hazards and features of the machine and state how to protect the user and others in the shop.

C1.5. Comply with established safety practices.

Performance Objective: After reviewing and possessing a copy of the shop general safety practices, the student will be able to have no more than one notice of unsafe practices during a period of four weeks.

C1.6. Complete forms/paperwork as required.

Performance Objective: The student will be able to accurately and completely fill out a safety checklist for the work area, an accident report form (noting the people involved, the accident/injury, and the cause), and a suggestion form for safety improvement and accident prevention, using complete sentences where necessary.

C2. Demonstrate Proper Use of Protective Equipment

C2.1. Wear protective safety clothing and equipment as required.

Performance Objective: Given a particular operation or work environment, the student will be able to state in writing the conditions that require the use of the following protective equipment and consistently use the required safety clothing and equipment without being reminded.

Safety goggles	Respirator	Creams and lotions
Face shields	Appropriate gloves	Hair nets
Particle masks	Aprons and coveralls	Earplugs
Safety shoes	Appropriate clothing	Hard-hats
	Ventilation systems	

C2.2. Maintain and use protective guards and equipment on machinery.

Performance Objective: Before starting an operation, the student will be able to identify all protective guards on a machine or tool and state how they are to be maintained and how they will be used during the operation. (See C4.2)

C2.3. Locate and properly use protective equipment.

Performance Objective: Given a supply store/tool room, the student will be able to check out the correct protective equipment required for a job/machine and use the equipment, as prescribed by the manufacturer, by shop procedure, and/or in accordance with state or federal regulations.

C3. Name and Describe Fire Hazards and How to Control Them

C3.1. Handle/store flammable materials appropriately.

Performance Objective: Given a one-gallon and a five-gallon can of flammable liquids, the student will be able to demonstrate proper procedures for pouring, handling, and storage requirements, including the following:

Electrically ground the container	Lid tightly secured except while pouring	Away from sources of sparks and heat
Wear gloves and respirators	Safety goggles with splash guards and face guards	UFC prescribed cabinets
Spill protection	Aprons and coveralls	Chemical compatibility when mixing
Label consistent with contents		

Performance Objective: Given a cylinder of flammable compressed gas, the student will be able to:
1) identify sources of ignition potential,
2) demonstrate the proper procedures for blocking, bracing, and securing the cylinder, and
3) demonstrate the appropriate valve settings and shut-offs based on the manufacturer's specifications.

C3.2. Correctly use multiple energy sources (air, fluids gravity, etc.) and lock-out, tag-out procedures.

Performance Objective: Given the use of air-powered tools, the student will be able to correctly demonstrate the use of those tools, how to dissipate energy in the system, and identify the safety hazards associated with the energy source.

Performance Objective: Given the need to repair shop equipment, the student will be able to follow lock-out, tag-out procedures as prescribed by state and federal regulations.

C3.3. Recognize/identify electrical hazards (i.e., defective outlets, frayed cords, "burning" odors, etc.)

Performance Objective: Having been shown sample defective electrical cords and outlets, the student will be able to point to the defects with 100% accuracy, state the potential hazards of each, and recommend corrective action, including how and to whom to report hazards.

C3.4. Prevent spontaneous ignition by practicing proper waste disposal habits (i.e., fire-rated containers, appropriate storage areas, etc.)

Performance Objective: Having been given six different photographs of fire-rated and nonfire-rated containers and appropriate and inappropriate storage locations, the student will be able to identify the fire-rated containers and appropriate storage areas with 100% accuracy and state why these are necessary.

C3.5. Keep marked aisles clear of equipment and materials.

Performance Objective: The student will be able to give five reasons for marking and maintaining clear aisles in the workplace and in storage areas.

Safe movement of:	Ready access to:	See clearly:
People	Fire extinguisher	Leaks and spills
Equipment	Absorbent material	Warning labels
Emergency response	Eye wash and showers	Phone numbers
	First Aid equipment	
	Electrical disconnects and other energy sources	

C3.6. Interpret/display MSDS sheets as required.

Performance Objective: Using an MSDS for a hazardous material, the student will be able to explain the importance of each section; record the flash point, explosive limits, specific gravity, and evaporation rate; and state in writing how each of these can contribute to a fire/explosion hazard.

C3.7. Identify fire exits and fire-fighting equipment.

Performance Objective: Given a map of the shop facilities, the student will be able to note the locations of all fire extinguishers, fire exits, phone for emergency calls, evacuation procedures, location of handicapped personnel, alternative safe gathering locations outside the facilities, and know fire and other emergency reporting policies and procedures.

C4. Recognize Unsafe Practices in Forming, Separating, and Combining Processes

C4.1. Report unsafe practices to appropriate personnel.

Performance Objective: The student will be able to describe safe practices in forming, separating, and combining processes (e.g. water/acid).

Performance Objective: After observing an unsafe practice or operation, the student will be able to **immediately** report the problem as prescribed by shop guidelines.

C4.2. Operate equipment in a safe, prescribed manner.

Performance Objective: Given the operation of a particular piece of equipment, the student will be able to state and demonstrate both the manufacturer's safety procedures and the shop's safety procedures with 100% accuracy and be able to describe why procedures are needed.

C4.3. Locate power shutoff controls for all machinery/equipment.

Performance Objective: The student will be able to locate and demonstrate the use of the power shutoff controls of all shop equipment and demonstrate how to shut off in proper sequence, and dissipate energy from all other energy sources.

C4.4. Maintain strict quality control standards throughout the forming, separating, and combining processes.

Performance Objective: During the processes of forming, separating, and combining, the student will be able to always conduct a quality control first part check and first mating check with a tolerance of $\pm$.001 inch as measured by a caliper or micrometer as referenced to the technical drawings.

C5. Evaluate Safety and Fitness of Tools, Materials, Fixtures, and Jigs

C5.1. Inspect material/equipment/fixtures for defects and report malfunctions to appropriate personnel.

Performance Objective: Before starting a machining operation and using a provided checklist, the student will be able to determine the safety and fitness of tools, materials, fixtures and jigs and report defects and malfunctions to appropriate personnel.

DEFECTS AND MALFUNCTION CHECKLIST			
Tools	Materials	Fixtures	Jigs
Electric cord	Hardness	Clean fit	Master check
Operating guides	Grain	Easy Movement	First part check
Sharp	Size (rough cut)	Adjustments secure	Clean
Clean	Deburred	Clean	
Speed and feeds	Clean		
Lighting			
Lubrication			

C5.2. Determine weight/operating limits of equipment.

Performance Objective: Using the manufacturer's specifications and/or written shop procedures, the student will be able to state the weight and operation limits of the equipment being used with 100% accuracy, work within those limits at all times, and explain why those limits are important to operational safety.

C5.3. Perform periodic checks during operation to assure proper function.

Performance Objective: Using the manufacturer's specifications and/or written shop procedures/checklists, the student will be able to establish periodic function checks in writing, follow these checks during the process of using the equipment over a given period of time, and maintain Statistical Process Control (SPC) data.

C6. Apply American Red Cross CPR and First Aid Procedures

C6.1. Possess valid first aid card.

Performance Objective: After taking a first aid course taught by a certified instructor, the student will be able to pass all tests and receive a valid first aid card.

Performance Objective: **T**he student will be able to identify the necessary contents of the shop First Aid Kit with 100% accuracy.

C6.2. Notify appropriate personnel of injury.

Performance Objective: In the case of an emergency, the student will be able to identify the nearest phone, state emergency numbers, and name appropriate personnel to be contacted.

C6.3. Check and evaluate life-endangering conditions.

Performance Objective: The student will be able to state the human and environmental conditions that are life endangering, how they are observed or determined, and how they are treated.

CONDITIONS		
No breathing	Spurting blood	Unconsciousness
No heart beat	Convulsions	Shock
Overheating	Dehydration	Hazardous gas, chemicals
Live wires		

C6.4. Determine need for CPR.

Performance Objective: When no breathing and/or no heart beat are observed, the student will be able to apply CPR or notify persons appropriately trained.

C6.5. Apply appropriate first aid techniques.

Performance Objective: Given the materials in the shop First Aid Kit, the student will be able to demonstrate when and how each is to be used.

C7. Identify and Classify Hazardous Waste and Proper Collection Methods

C7.1. Define the types of hazards (chemical, biological and physical).

Performance Objective: Given the three types of hazards (chemical, biological and physical), the student will be able to give three examples of each.

C7.2. Interpret MSDS sheets.

Performance Objective: Given three MSDS, the student will be able to identify the 8 to 10 sections/headings/information on each.

MSDS CONTENTS	
1. Product name	6. Fire and explosive hazards
2. Name and address of manufacturer.	7. Reactive data
3. Emergency phone number	8. Health hazards and first aid
4. Hazardous ingredients	9. Precautions, leaks and spills
5. Physical and chemical properties	10. Protections and controls

C7.3. Discuss requirements of the Hazard Communication Standard (29 CFR 1910.1200, WAC 296-62-054).

Performance Objective: After completing a required Hazard Communication training, the student will be able to locate and read MSDSs and state the material's hazards, distinguish between physical and health hazards and give examples of each, distinguish between acute and chronic exposures, identify different types of warning labels (DOT & OSHA), and identify and wear necessary protective equipment when working with these materials.

C7.4. Describe the proper collection methods for a variety of hazardous waste.

Performance Objective: Given a list of twelve materials to be disposed of, the student will be able to categorize them according to shared hazardous characteristics, incompatible chemical characteristics, and disposal techniques (recycling, incineration and landfill).

C7.5. Evaluate and determine hazards.

Performance Objective: Given three different scenarios, the students will be able to use the following skills and knowledge, their physical senses, signs and symbols, labels and placards, and MSDS information to determine the degree of hazard presented in each scenario and recommend appropriate and immediate as well as corrective action.

C8. Define Ergonomics and Discuss the Impact on Design, Productivity, and Safety

C8.1. Define ergonomics

Performance Objective: The student will be able to define ergonomics as the science of studying human processes and activities and designing or adapting the tools, equipment and the workplace to fit the worker.

C8.2. Explain the characteristics and potential impact of ergonomics on design, productivity, and safety.

Performance Objective: When asked what contributions ergonomics can make to the workplace, the student will be able to identify three areas of impact and give two examples in each area.

ERGONOMICS CONTRIBUTIONS TO:		
DESIGN	PRODUCTIVITY	SAFETY
Increase quality; more user friendly	More efficient work; more effective work	Fewer sprains and strains
Better lighting	More comfortable, easier work	Less injury
Better heating/cooling	Increase employee morale	Less absence; better posture
Adjustable furniture for fit, reach, and movement	Job variety vs. repetitive movement	Trauma

C9. Demonstrate Awareness of State and Federal EPA Regulations

C9.1. Meet health, safety, and legal requirements with regard to process, product and people.

Performance Objective: The student will be able to identify six different state and federal agencies that influence safety and material handling in the workplace.

FEDERAL		STATE
OSHA - Occupational Safety and Health Administration	EPA - Environmental Protection Agency	WISHA - Washington Industrial and Safety and Health
OSHA-SARA - Superfund Amendments and Reauthorization Act	EPA-TSCA - Toxic Substance Control Act	Washington Worker and Community Right To Know
DOT - Department of Transportation	EPA-CWA - Clean Water Act	State Department of Ecology