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ABSTRACT

One of a series of curriculum guides prepared for the metals occupations cluster of the construction/fabrication occupational group, this guide identifies the essentials of the welding and cutting trade as recommended by successful welders. An instructional program based upon the implementation of the guide is expected to prepare a student to adequately perform entry level tasks required of a welder or to enter a post-secondary technical or apprenticeship program in welding where additional depth can be realized. Trade tasks or information are listed in chart form under such headings as safety, related information, general competencies, tools and equipment, cohesion, adhesion, adhesion processes, soldering processes, vertical and horizontal position welding, set up and operate equipment, and general operations and/or jobs. Space is provided on the charts to record for each item the date completed, teaching methods used, and teaching materials used. Also included are a list of teacher responsibilities, sources of occupational information, recommended tests and references, and a chart depicting the total construction/fabrication occupational curriculum. A typical application for employment and a sample trade and industrial education injury report are appended. (HD)

TRADE AND INDUSTRIAL EDUCATION

TRADE PREPARATORY TRAINING GUIDE

WELDING AND CUTTING

NEBRASKA DEPARTMENT OF EDUCATION
Cecil E. Stanley, Commissioner
Glen H. Strain, Assistant Commissioner

Division of Vocational Education
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Lincoln, Nebraska 68508

TABLE OF CONTENTS

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DEFINITIONS USED IN THIS GUIDE

Major Occupational Group

A grouping of similar and related occupational area clusters. These groups include occupations that have been determined to be the most relevant and pertinent for inclusion in vocational education in Nebraska.

Occupational Area Clusters

These clusters are distinguishable in terms of similar work performed, materials used, products produced, and or services rendered. They include a wide variety of common occupational skills and knowledge.

Occupation

The career or employment engaged in by an individual for remuneration. This activity includes technical competencies and related technical information often referred to as one's vocation.

Technical Competency

The specific tasks required for a vocational trade and industrial graduate to perform successfully at the entry level in an occupational area. These technical competencies apply to the psychomotor domain and include elements which emphasize motor skills such as: operate a machine; measure; etc

Related Technical Information

The information the entry level worker must know in order to make appropriate trade decisions which will allow him to adequately perform the tasks or technical competencies of his occupation. This information applies to the cognitive domain and includes elements which are intellectual outcomes such as: knowledge and understanding.

Related General Information

Information which is desirable and good for the tradesman to know but which is not necessary to do his work properly; information that is nice to know, such as the history and development of his trade.

Related Guidance Information

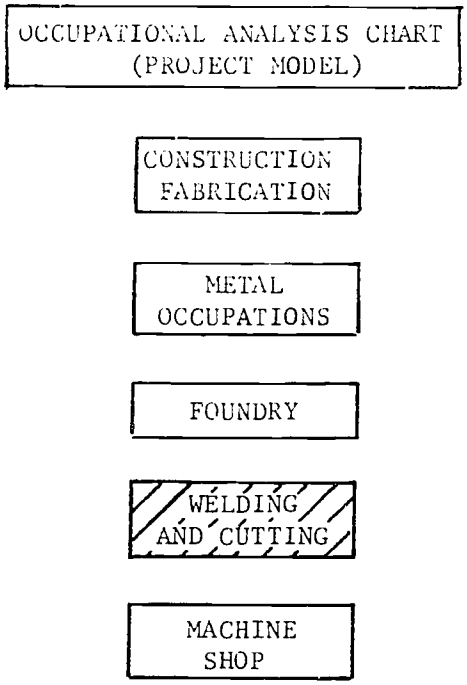
Information that helps the student choose, prepare for, secure, hold, and make progress in an occupation.

Entry Level

The technical competencies and related technical information deemed necessary by industry for obtaining and holding a job in a specific occupational area. This level of employment includes the technical competencies and related technical information that will be utilized by the employee within the first year of employment.

OCCUPATIONAL ANALYSIS CHART

The chart on this page shows Welding and Cutting as it relates to other occupations within the Metals Occupations cluster. Metal Occupations is one of two clusters which is a part of the major occupational group entitled Construction/Fabrication. This guide is concerned with Welding and Cutting only. Other guides have been prepared for each of the occupations found in this chart and are available through the Nebraska State Department of Education.



INTRODUCTION

This curriculum guide has been prepared with the help of competent craftsmen in the metal trades. The funds that made this guide a reality were provided through a federal research grant in cooperation with the Nebraska State Board of Vocational Education and sponsored by the Nebraska Research Coordinating Unit.

Curriculum guides have been prepared for several trade and industrial occupational clusters from which high school teachers can develop appropriate occupational related experiences for their students. The major occupational groups, occupational area clusters, and occupations are shown in graphic form on pages of this guide.

Selection of trades within four major occupational groups have been made based on a three year survey by the Nebraska Research Coordinating Unit on needs of Nebraska business and industry. This study has identified the occupations with the greatest need for employees. A related set of curriculum guides have been prepared for these occupations.

Guidance Information

The U.S. Department of Labor has developed an extremely helpful book entitled, "Occupational Outlook Handbook". This annual publication provides a very complete description of the activities of the persons employed in the occupations represented in the Nebraska trade and industrial curriculum guides. Information concerning current and future opportunities is a major portion of this publication. Inexpensive reprints in booklet form that describe individual occupations are available through the Department of Labor. These booklets should be used by trade and industrial teachers and school guidance counselors for the most up-to-date guidance information about a particular occupation.

A listing of these reprints from the "Occupational Outlook Handbook" the order number, and price per copy is listed below for those occupations in the occupational area cluster of "Metal Occupations".

Number	Title	Price
1700-105	Machining Occupation - All-round Machinists, Machine Tool Operators, Tool and Die Makers, Instrument Maker, Setup Men	.15
1700-113	Welders, Oxygen and Arc Cutters	.10
1700-123	Foundries, Patternmakers, Molders Coremakers	.15

THE WELDING AND CUTTING GUIDE

This guide uses the title Welding and Cutting as the most logical descriptive term for identifying a particular related group of workers. Identification of specific job titles within this group should be determined by referring to the "Dictionary of Occupational Titles". The USOE classification system for coding instructional programs has assigned 810- and 819.887 to the instructional program, Welding and Cutting.

The information within this guide identifies the essentials of the welding and cutting trade as recommended by successful welders. An instructional program based upon the implementation of this guide will prepare a student to adequately perform entry level tasks required of a welder or to enter a post-secondary technical or apprenticeship program in welding where additional depth can be realized.

The tasks and/or competencies identified within these covers are those agreed upon by a jury of reputable Nebraska welders. A separate group of persons directly employed within this trade in Nebraska have further verified these tasks and/or competencies. Jury members, tradesmen, and educators who contributed toward the development of content for this guide are listed in the front.

Course offerings in trade and industrial education in Nebraska are to be organized within two period blocks of time each day, five days a week. Time is to be set aside for classroom instruction directly related to manipulative laboratory instruction. The remainder of the student's day is to be utilized for general education subjects.

USE OF THIS GUIDE

The use of curriculum guides for trade and industrial education in Nebraska secondary schools may vary greatly, depending upon the depth and breadth of each school district's vocational program. Large school districts, for example, may utilize one particular curriculum guide to develop a course in a trade area such as welding A small school district may, on the other hand incorporate several curriculum guides to develop a course in the metal occupations cluster.

The manipulative content identified in this guide is deemed necessary for inclusion in a course that is designed to prepare entry level welders and cutters. While not all secondary school facilities in Nebraska are equipped to expose students to all of this content through hands-on experience, it is assumed that this content will through some media become related technical information. This will insure inclusion of all content and provide at least discussion level understanding.

This guide is written with the assumption and expectation that the related technical information necessary to perform technical competencies will be a integral part of instruction. Thus, occupational decisions that must be made by an entry level worker will be developed along with each related manipulative activity.

The welding instructor who uses this guide is responsible for including the identified related technical information as well as the identified manipulative tasks. He is also responsible for the identification of competencies pertaining to general and guidance information, even though this information is not specifically identified for him.

Definitions for various terms used in this guide are presented in the front.

TEACHER RESPONSIBILITIES*

1. Use the American Vocational Association National Safety Council's "National Standards School Shop Safety Inspection Check List" for shop safety inspections. (Available from American Vocational Association, 1510 "H" Street, N.W., Washington, D.C. 20005)

2. Use safety check list to assure safe factors exist.

3. Require students to report ALL accidents to instructor.

4. Keep complete records of ALL accidents on file.

5. Report ALL accidents to the school administrator.

6. Develop safety consciousness in the students through teacher example--always doing things in the safe way.

7. Give shop demonstrations stressing safe use of machines.

8. Give shop demonstrations stressing safe use of hand tools.

9. Provide instruction on what to do in case of an accident.

10. Develop information sheets dealing with the safe use of specific machines.

11. Give demonstrations on the proper use and care of personal protective devices.

*These responsibilities are necessary for inclusion in all trade and industry programs in the State of Nebraska.

12. Develop information sheets dealing with the general safety rules for the trade.

13. Enclose all gears, moving belts, and other power transmission devices with permanent guards.

14. Prohibit students from operating machines when instructor is not present.

15. Prohibit the removal of guards and safety devices, even for a brief period, without the approval of the instructor.

16. Prohibit more than one operator from using a machine at one time.

17. Determine personal liability factors and liability coverage afforded through your school.

18. Provide for the bulk storage of flammable materials.

19. Mark the location of fire-fighting equipment.

20. Post instructions and inform students of building evacuation procedures.

21. Require the wearing of appropriate eye protection as specified by the State of Nebraska eye safety regulations.

22. Keep tools sharp, clean and in good working condition.

23. All shop personnel should be thoroughly familiar with the location of fire extinguishers and the type fire for which each extinguisher is designed.

WELDING AND CUTTING
(Identified Trade Tasks or Information)

Illustrate and explain the proper way to prepare a cast iron plate for braze welding a butt joint.

Illustrate and explain the proper way to prepare a butt joint for brazing.

Complete satisfactorily a manipulative practical examination consisting of at least one braze welded joint and one brazed joint.

ADHESION PROCESSES

Brazing and Braze Welding

Define and identify the principles and results of the following:

block brazing

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
brazing			
braze welding			
capillary attraction			
flux			
hardsurfacing			
Explain the difference between brazing and soldering according to the definitions given by the American Welding Society.			
Explain the difference between brazing and braze welding according to the definitions given by the American Welding Society.			

List the advantages and disadvantages of adhesion processes as compared to cohesion processes in reference to effects upon base metal, strength, etc.

List at least six of the common brazing and braze welding filler metal alloys.

List and identify the two common compounds used in brazing and braze welding fluxes.

Explain the reasons for the need of close fits when joining pieces by the brazing process.

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
Explain and discuss the methods used to apply brazing and braze welding fluxes.			
List and discuss basic brazing and braze welding procedures commonly used in industry.			
Discuss uses and advantages of silver brazing.			
List the procedures, methods techniques, and materials which are unique to brazing and braze welding of aluminum.			
Discuss procedures used in brazing and braze welding cast and maleable iron.			

List the procedures for brazing with silver alloys.

SOLDERING PROCESS

Discuss reasons for using different solder alloys.

List and discuss common solder fluxes and their specific uses.

List and discuss operational procedures which must be performed in order to produce successful soldering.

Discuss the unique advantages and procedures involved in each of the following soldering techniques:

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIAL USED
dip bath method			
stainless steel soldering			
die cast soldering			
soldering coper method			
torch soldering method			
VERTICAL AND HORIZONTAL POSITION WELDING (GAS)			
Perform the correct procedure in completing a forehand butt weld in the vertical position.			

Perform the correct procedure in completing an inside corner weld in the vertical position.

Perform the correct procedure in completing a lap weld in the vertical position.

Perform the correct procedure in completing a forehand butt weld in the horizontal position.

Perform the correct procedure in completing an inside corner weld in the horizontal position.

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
Perform the correct procedure in completing a lap weld in the horizontal position.			
Perform the correct procedure in completing a backhand butt weld in the horizontal and vertical position.			
Demonstrate and explain the recommended torch and welding rod positions for welding in the vertical and horizontal position.			

Illustrate and describe the appearance of a good weld in reference to each of the basic joints welded in the vertical and horizontal position, using both the forehand and backhand techniques.

Complete satisfactorily a manipulative practical examination consisting of at least one of the common welding joints welded in the vertical and horizontal positions.

RELATED INFORMATION (GAS)

Present knowledge and understanding of the principles of the equal pressure type welding torch

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
Explain the principle of oxygen as an aid to combustion and not a flamable gas.			
State the PSIG pressures for full cylinders of oxygen and acetylene at room temperature.			
Describe a typical acetylene generator and discuss its uses, advantages, and disadvantages.			
Distinguish the difference between a line station regulator and a master service regulator.			

Explain how each of the three oxyacetylene flame adjustments affect the welding puddle and base metal.

List the variables to be considered in the selection of various torch tip sizes.

List the steps involved in lighting an injector-type welding torch.

List reasons for purging valves, regulators, lines, and torches before assembly and use.

Describe the conditions which cause or result in a torch backfire.

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
Describe the conditions which cause or result in an oxyacetylene system flashback.			
Explain the basic concept and principles of the gas welding process.			
GENERAL COMPETENCIES (GAS)			
Demonstrate or illustrate the proper angle of the torch tip in relation to the base metal when welding in the flat position.			
List and describe the tools which can be used to keep torch tips in good operational condition.			

List the six basic items which make up a basic oxyacetylene welding outfit.

Arc Welding

SAFETY

Discuss and describe harmful effects of ultra-violet and infra-red rays on an individual.

List hazards to be avoided in arc welding.

Identify safety items of the welding operator and station before starting to weld.

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
Check all electrical connections on an inert gas-arc welding machine for correct location before turning the machine on.			
TOOLS AND EQUIPMENT (ARC)			
Use and maintain:			
transformers (ac current)			
helmet			
goggles			
gloves			
protective clothing and apron			

E ETED	TEACHING METHODS USED	TEACHING MATERIALS USED

Perform the correct procedure for breaking an arc and controlling the gas shield in TIG welding.

Perform the correct procedure for welding aluminum in the flat position in TIG welding.

Perform the correct procedure for welding stainless steel in the flat position in TIG welding.

Perform the correct procedures for welding mild steel in the flat position in TIG welding.

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
SET UP AND OPERATE EQUIPMENT (MIG)			
List and discuss three kinds of arc welding that can be done on a MIG welding machine.			
List and discuss the operation involved in setting up the motor and wire spool for a MIG welding machine.			
Identify and discuss the procedure for welding by the spray arc method.			
Identify and discuss the procedure for welding by the short circuiting method (drip transfer).			

List and describe the equipment needed for a complete gas metal-arc welding station.

Identify the procedures for setting up a gas metal-arc welding station.

List and discuss the steps in gas metal pulse arc welding.

Identify and discuss the three methods that flux may be used in the gas metal-arc welding.

Discuss and explain the characteristics of consumable electrode wire for inert gas welding.

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
WELDING OPERATIONS (MIG)			
Demonstrate the steps needed to be checked by the welding operator before welding begins.			
Select the correct amperage to be used for welding with a MIG welder according to the metal to be welded.			
Select the correct electrode speed according to the metal to be welded in MIG welding.			
Select the correct inert gas flow according to the metal to be welded in MIG welding.			

Perform correctly the procedures for welding mild steel in all positions with a MIG welding machine.

GENERAL INFORMATION
(MIG AND TIG)

List three inert gases used in gas-arc welding.

List and explain the advantages of inert gas-arc welding over arc welding.

List and explain the three types of current flow used in inert gas-arc welding.

List and discuss the characteristics of helium as it pertains to use in inert gas welding.

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
List and discuss the characteristics of argon as it applies to use in inert gas welding.			
List and discuss the characteristics of carbon dioxide as it applies to use in inert gas welding.			
List and discuss the advantages of mixing two or more gases together for use in shielded gas-arc welding.			
List and identify the component parts of a complete inert gas outfit for shielded arc welding.			

Know the advantages of the four types of power supplies for inert gas-arc welding.

List, discuss and demonstrate the correct maintenance of metalic arc welding equipment.

Sketch and explain the operations of a flow meter.

TOOLS AND EQUIPMENT (TIG)

Use and maintain:

an AC arc welding machine (with high frequency generator)

DC arc welding machine

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
TIG welding machine			
electrode holder (torch)			
gas cups			
shielding gas supply (inert)			
protective equipment (apron, gloves, goggles)			
filler rod			
pressure reducing regulator			
flow meter			

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
TOOLS AND EQUIPMENT (MIG)			
Use and maintain:			
rectifier (DC current)			
motor generator (DC current)			
wire feeding mechanism (automatic)			
welding gun			
shielding gas			
protective clothing			
clamps			
welding table			

vise

vise grips

pliers

Flame Cutting

SAFETY

List all of the equipment needed to set up a basic manual oxygen cutting station.

List and demonstrate the steps involved in set-up and operation of a basic equal pressure oxy-acetlene cutting torch.

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
Adjust the oxygen and acetylene regulators properly according to the tip size of the cutting torch.			
Adjust the oxyacetylene cutting torch flame to cut steel.			
Explain the concept and principles of oxyacetylene cutting.			
Define terms as given by the American Welding Society and demonstrate knowledge of an ability to correctly apply or identify the principles and/or results of each.			

List the six variables to be considered when oxyacetylene cutting.

List and discuss the advantages of automatic cutting operations used in industry.

Sketch five of the most common cutting torch tips and explain their unique advantages and uses.

List some of the torch guides (example: straight edge) available for manual oxyacetylene cutting.

Identify hazards which are present due to sparking and flying of sparks and molten globules of metal produced by the oxyacetylene cutting process.

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
State precautions in cutting tanks and containers.			
List fire protection equipment which should be available at all times in the oxyacetylene cutting area.			
Identify and list special safety clothing and equipment which should be available to protect the operator from molten spatter.			
Identify certain metals which should never be cut with the oxyacetylene cutting process. (example: magnesium)			

Discuss the differences between carbon steel and alloy steel.

List the percentage of carbon content from .003 (wrought iron) through the range of low carbon steel, medium carbon steel, high carbon steel, very high carbon steel, and cast iron, according to the iron-carbon equilibrium diagram.

Interpret, explain, demonstrate a working knowledge of the iron-carbon equalibrium diagram. Relate this knowledge to what happens to carbon steels during the welding process.

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
Interpret the SAE-AISI carbon steel composition numbers chart.			
Explain the concept of how carbon content varies depending on the use of the steel. (Example: axles-40 point carbon, cold chisels-80 point carbon, nails-10 point carbon, etc.). Relate this concept to terms such as ductility, harden ability, etc.			
HEAT TREATMENT OF METALS			
Explain what welding does to the heat treatment of metal and discuss the effect it has upon the physical properties.			

List and explain the purposes of heat treatment.

List and discuss the three following factors which are of great importance when heat treating:

the temperature to which the metal is heated

the length of time that the metal is held at that temperature and the speed of cooling time. (time factor)

the materials surrounding the metal when it is heated.

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
Explain the term "temperature gradient" and illustrate.			
List and explain methods used in heating metal during heat treating processes.			
List and explain methods used in cooling metals during heat treating processes.			
List and discuss advantages and disadvantages of cooling mediums used in hardening.			
Define and discuss the following heat treating processes:			

flame hardening

casehardening

induction hardening

nitriding

Explain, discuss, and perform standard heat treating processes upon the foll ing metals:

carbon steels

alloy steels

cast iron

Set-up, operate, and properly adjust a gas forge or furnace.

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
Explain the term "temperature gradient" and illustrate.			
List and explain methods used in heating metal during heat treating processes.			
List and explain methods used in cooling metals during heat treating processes.			
List and discuss advantages and disadvantages of cooling mediums used in hardening steels.			
Define and discuss the following heat treating processes:			

flame hardening

casehardening

induction hardening

nitriding

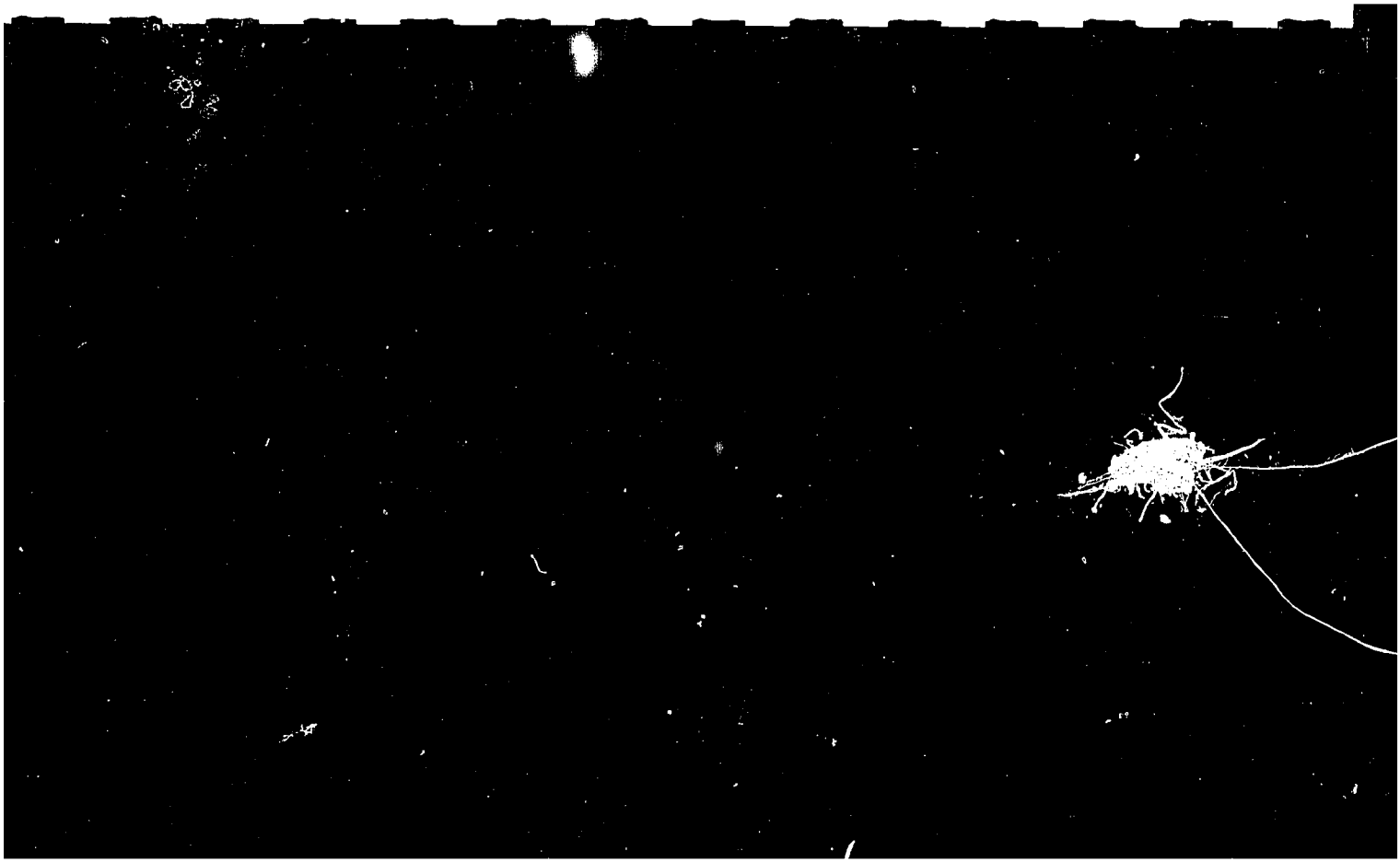
Explain, discuss, and perform standard heat treating processes upon the following metals:

carbon steels

alloy steels

cast iron

Set-up, operate, and properly adjust a gas forge or furnace.



elongation

malloability

toughness

grain size

Define and demonstrate a working knowledge of the following types of stresses or loads imposed on metal structures:

compression

tension

shear

torsion

bending (flexure)

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
fatique (vibration)			
Discuss the phenomenon which occurs whenever an "alloying metal" is added to a "pure metal". This change will be illustrated by constructing and explaining a cooling curve for a simple alloy. (example: lead-tin diagram)			
Determine the nature of common metals used in industry by demonstrating a working knowledge of the following common metal tests:			

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
Identify nonferrous metals by the following tests:			
color test			
spark test			
magnetic test			
Identify by sight, the following forms of cast iron:			
gray			
white			
nodular (ductile iron)			

The student will also be able to explain the procedures used to obtain these differences.

List and discuss, and perform some of the following nondestructive methods used to determine the quality of a weld:

nondestructive tests

visual inspection

magnetic particle inspections

liquid

ultrasonic inspection

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
X-ray inspection			
edy current inspection			
mass spectrometer detection			
air pressure leak tests			
halogen gas leak tests			
destructive tests			
tensil test			
bend test			
microscopic test			

hardness test

hydrostatic test to destruction

List and discuss the following items to be determined in laboratory tests of metals and welds:

tensil strength

ductility

hardness

microstructure

macrostructure

chemical constituents

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
Interpret a table showing comparisons of hardness numbers in Rockwell, Brinell, and Schleroscope scales.			
Set-up, operate, and interpret the readings on a hydraulic tensil tester.			
Detect surface flaws in metals by using liquid penetrant dyes or fluorescent penetrant method of inspection.			

Define, discuss, and graphically present information concerning the following terms as they directly relate to one another:

tensil strength of metal

yield point of metal

ductility of metal

Define and demonstrate knowledge of and ability to correctly apply or identify the principles and/or results of:

cooling curve

iron-carbon diagram

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
physical properties			
weldability and machinability			
phosphorus and sulfur			
castiron (white) and cast iron (gray)			
iron carbide			
electric furnace			
alloy			
nonferrous metals			
ferrous metals			

List the primary elements present in each of the following alloys:

carbon steel

brass

bronze

alloy steels

stellite

solder

Discuss the effects of phosphorus and sulphur in steels as they relate to weldability, machinability, etc.

TRADE TASK OR INFORMATION	DATE COMPLETED	TEACHING METHODS USED	TEACHING MATERIALS USED
Define the following terms as they relate to steels and elaborate upon the processes and/or procedures used to perform each:			
annealing			
hardening			
tempering (drawing)			
normalizing			

BIRTH HEIGHT WEIGHT COLOR OF HAIR COLOR OF EYES

SINGLE WIDOWED DIVORCED SEPARATED

OF CHILDREN DEPENDENTS OTHER THAN WIFE OR CHILDREN CITIZEN OF U.S.A. YES NO

TO ANYONE IN OUR EMPLOYINE AND DEPARTMENT REFERRED BY

OYMENT DESIRED

DATE YOU CAN START SALARY DESIRED

EMPLOYED NOW? MAY WE INQUIRE OF YOUR PRESENT EMPLOYER

LIED TO THIS PLANT BEFORE? WHERE WHEN

ICATION

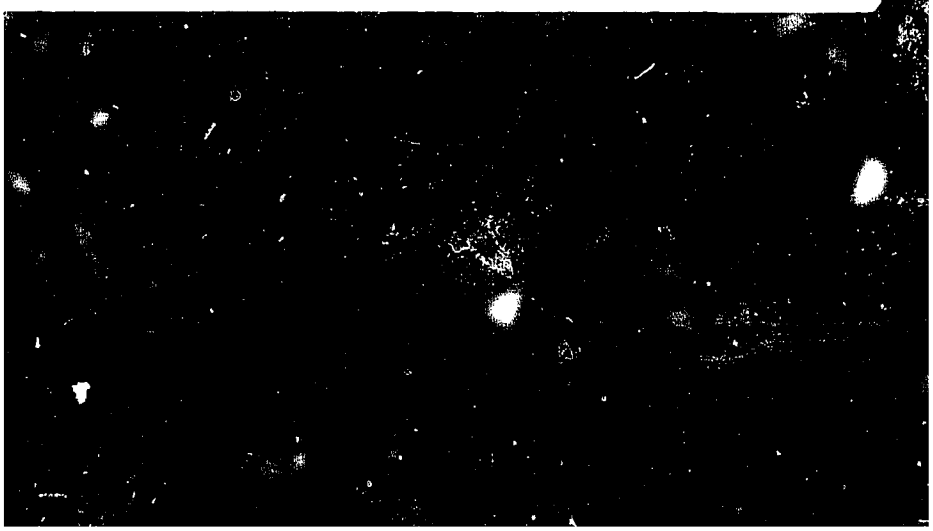
	NAME AND LOCATION OF SCHOOL	YEARS ATTENDED	DATE GRADUATED	SUBJECTS STUDIED
AR SCHOOL				
E SCHOOL				
LLEGE				
BUSINESS OR SPONDENCE SCHOOL				

OF SPECIAL STUDY OR RESEARCH WORK

REIGN LANGUAGES DO SPEAK FLUENTLY? READ WRITE

MILITARY EXPERIENCE RANK BRANCH OF SERVICE

CONTINUED ON OTHER SIDE



FORMER EMPLOYERS (LIST BELOW LAST FOUR EMPLOYERS STARTING WITH LAST ONE FIRST)

DATE MONTH AND YEAR	NAME AND ADDRESS OF EMPLOYER	SALARY	POSITION	REASON FOR LEAVING
FROM				
TO				
FROM				
TO				
FROM				
TO				
FROM				
TO				

REFERENCES: GIVE BELOW THE NAMES OF THREE PERSONS NOT RELATED TO YOU WHOM YOU HAVE KNOWN AT LEAST ONE YEAR

	NAME	ADDRESS	BUSINESS	YEARS ACQUAINTED
1				
2				
3				

PHYSICAL RECORD:

LIST ANY PHYSICAL DEFECTS

WERE YOU EVER INJURED? GIVE DETAILS

HAVE YOU ANY DEFECTS IN HEARING? IN VISION? IN SPEECH?

IN CASE OF EMERGENCY NOTIFY NAME ADDRESS PHONE NO.

I AUTHORIZE INVESTIGATION OF ALL STATEMENTS CONTAINED IN THIS APPLICATION. I UNDERSTAND THAT MISREPRESENTATION OR OMISSION OF FACTS CALLED FOR IS CAUSE FOR DISMISSAL. FURTHER I UNDERSTAND AND AGREE THAT MY EMPLOYMENT IS FOR NO DEFINITE PERIOD AND MAY, REGARDLESS OF THE DATE OF PAYMENT OF MY WAGES AND SALARY BE TERMINATED AT ANY TIME WITHOUT ANY PREVIOUS NOTICE.

DATE SIGNATURE

DO NOT WRITE BELOW THIS LINE

INTERVIEWED BY DATE

REMARKS:

NEATNESS		CHARACTER	
PERSONALITY		ABILITY	

HIRED DEPT. POSITION WILL REPORT SALARY WAGES

APPROVED 1 EMPLOYMENT MANAGER 2 DEPT. HEAD 3 GENERAL MANAGER

Appendix B

One of the most important parts of any trade and industrial education course is a safety program. The following form is recommended for use in courses of this type.

SAMPLE
TRADE AND INDUSTRIAL EDUCATION
INJURY REPORT* **

Student injured _____ Date _____

Shop in which accident occurred _____ Time _____

Instructor in charge _____

Nature of injury _____

_____

First aid administered _____

_____ By whom? _____

Cause of injury _____

_____

Could injury have been prevented? _____ How? _____

_____

Action taken or recommendations made to prevent recurrence _____

Remarks: _____

_____

_____

Signed _____
(Person making report)

Witnesses: _____

Names and Addresses _____

*Complete in Duplicate
**File one copy in office

RECOMMENDED TEXTS AND REFERENCES
Welding and Cutting
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92