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IDENTIFIERS Nebraska

ABSTRACT One of a series of curriculum guides prepared for the metal occupations cluster of the construction/fabrication occupational group, this guide identifies the essentials of the machinist trade as recommended by the successful machinist. An instructional program based upon the implementation of this guide is expected to prepare a student to adequately perform entry level tasks required of a machine operator or to enter a post-secondary technical or apprenticeship program in machine shop where additional depth can be realized. Trade tasks or information are listed in chart form under the headings of safety; tools and equipment; computations and estimations; operations and/or jobs; engine lathe; boring, drilling, and reaming; tap and die threading; milling; band sawing; grinding; alloy, metal, and machining characteristics; and general competencies. 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

MACHINE SHOP

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

Division of Vocational Education
233 South Tenth Street
Lincoln, Nebraska 68508
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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.
The chart on this page shows machine shop as it relates to other occupations within the Metal 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 Machine Shop 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 machine trades. The funds that made this guide a reality were provided through a federal research grant in cooperation with the Nebraska State Board for 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.

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THE MACHINE SHOP GUIDE

This guide uses the title Machine Shop 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 600.280-281 to the instructional program, Machine Shop.

The information within this guide identifies the essentials of the machinist trade as recommended by the successful machinist. An instructional program based upon the implementation of this guide will prepare a student to adequately perform entry level tasks required of a machine operator or to enter a post-secondary technical or apprenticeship program in machine shop 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 machinists. 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 school 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 machine shop. A small school district may, on the other hand, incorporate several curriculum guides to develop a course in the construction fabrication occupational cluster.

The manipulative content identified in this guide is deemed necessary for inclusion in a course that is designed to prepare entry level machinist. 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 an 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 machine shop 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*


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

3. Require students to report ALL accidents to instructor.


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.


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 bolts, 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 material

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.
MACHINE SHOP

(Identified Trade Tasks or Information)
Appendix A

One of the primary objectives of trade and industrial education is the successful placement of students completing course work in a specific occupation. The following sample application form is included in this guide with the recommendation that the preparation of such forms become a necessary activity for students in all trade and industrial education courses.

APPLICATION FOR EMPLOYMENT

PERSONAL INFORMATION

DATE

NAME

REPRESENT ADDRESS

PERMANENT ADDRESS

PHONE NO.

DATE OF BIRTH

SEX

HEIGHT

WEIGHT

COLOR

EYES

MARITAL STATUS

LIFE

MARRIED

DIVORCED

SEPARATED

NUMBER OF CHILDREN

EDUCATION

SCHOOL

GRADUATION DATE

EMPLOYMENT DESIRED

POSITION

DATE YOU CAN START

AVERAGE SALT

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### FORMER EMPLOYERS

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### REFERENCES

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### PHYSICAL RECORD

**PHYSICAL EXAMINATION**

**INJURIES:**

**DEFECTS (HEARING/VISION/SPEECH):**

**EMERGENCY CONTACT:**

**PHONE:**

**FAX:**

I understand that all statements contained in this application. I understand that misrepresentation or omission of facts may be cause for rejection. I further understand any such fact or information not true for the purpose of this application and that my employment at any time without prior written notice.

**DATE OF BIRTH:**

**INTERVIEWED BY:**

**REMARKS:**

---

**HEALTH:**

**TRAVEL:**

**NATIVITY:**

**REFERENCE:**

---

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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

MACHINE SHOP

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