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NAVAL PERSONNEL RESEARCH AND DEVELOPMENT LABORATORY



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JUNE 1973

LATERAL ENTRY RECRUITMENT

AT

ADVANCED PAYGRADES

L. H. Kernodle, Jr.

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PAYGRADES

L. H. Kernodle, Jr.

Naval Personnel Research and Development
Laboratory
Washington, D. C.

June 1973

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13. ABSTRACT

The objective of this research was to develop new methods and procedures for the lateral entry recruitment, or direct procurement, of petty officer personnel into the Navy.

These two technical questions were examined in this development:
(1) Comparison of schools curricula - specific Navy ratings Class A Schools and comparative civilian vocational/technical schools and/or junior colleges, plus appropriate apprenticeship training; and (2) Comparison of civilian training and experience and Navy advancement qualifications standards.

Comparisons were made for civilian occupations and training that are comparable to that for these ten Navy Career Re-enlistment Objective (CRO) ratings: Air Controlman (AC), Aerographer's Mate (AG), Aviation Electrician's Mate (AE), Commissaryman (CS), Dental Technician (DT), Disbursing Clerk (DK), Electrician's Mate (EM), Engineman (EN), Instrumentman (IM), and Machinery Repairman (M).

It was recommended to issue the personnel and training data for the Navy ratings and comparative civilian occupational specialties contained in the report to recruiters for their use in the lateral entry recruitment of petty officers.

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 Counterpart/Comparative Civilian Occupational
 Specialties
 Similar Occupational Specialties
 Career Re-enlistment Objective (CREO) Ratings
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 Aerographer's Mate
 Aviation Electrician's Mate
 Commissaryman
 Dental Technician
 Disbursing Clerk
 Electrician's Mate
 Engineman
 Instrumentman
 Machinery Repairman
 Vocational Training
 Technical Training
 Apprenticeship Training
 Comparative Navy Ratings/Civilian Specialties
 Training Curricula
 Curricula

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LATERAL ENTRY RECRUITMENT

AT

ADVANCED PAYGRADES

Work Unit No.
PF55. 521.010.02.04

L. H. Kernodle, Jr.

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NAVAL PERSONNEL RESEARCH AND DEVELOPMENT LABORATORY
WASHINGTON, D. C. 20374

A LABORATORY OF THE BUREAU OF NAVAL PERSONNEL

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FOREWORD

This research was accomplished under Exploratory Development Research Task Area PF55.521.010.02.04, Navy Career Structures.

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SUMMARY

Problem

A critical problem facing the Navy in achieving a balanced all-volunteer force is the prospect of degradation of quality in a draft-free environment. This degradation could result in a drastic lengthening of the average time to attain advanced paygrades and leave a gap in certain critical enlisted ratings.

There are many enlisted jobs which utilize training and experience that are comparable to civilian jobs such as aircraft mechanics, heavy equipment operators, laboratory technicians, and other such skilled people. Incentives, however, are not generally available at initial enlistment for individuals already possessing Navy required training and experience. The objective is to develop new concepts for lateral entry recruitment of skilled civilian personnel into Navy enlisted occupations at different advanced paygrades.

Background and Requirements

The initial requirement for this research was contained in a 1970 memorandum from the Chief of Naval Operations to the Chief of Naval Personnel. The memorandum expressed CNO's interest in the direct procurement of Petty Officer Second Class and Petty Officer First Class personnel, 25 to 35 years old, from civilian technical skill areas.

Historically a vertical entry organization that recruits, trains and employs young men during the earlier phases of their productive lives, the Navy has utilized horizontal, or lateral entry at advanced paygrades only in cases of critical manpower shortages or during periods of extreme national emergency. The Navy will be concerned with both vertical and lateral entry recruitment when the All-Volunteer Force becomes a reality.

Special attention will have to be devoted to lateral entry recruitment to attract and retain experienced civilian personnel in advanced phases of their productive lives, and at advanced paygrades that reflect their value to the Navy. Lateral entry recruitment for the All-Volunteer Navy will occur at a period in time when the economy is reverting to full employment, therefore without the past enlistment inducement factors of draft pressure and unemployment.

Approach

Two technical questions were considered to develop new methods and procedures for lateral entry recruitment as follows: (1) Comparison of schools curricula - specific Navy ratings Class A Schools and

appropriate civilian vocational/technical schools and/or junior colleges, plus appropriate apprenticeship training; and (2) Compare and evaluate civilian training and experience and Navy advancement qualifications standards.

The personnel and training data compiled for analysis were for civilian occupational specialties that are comparable to these ten Navy Career Reenlistment Objective (CREO) ratings: Air Controlman (AC), Aerographer's Mate (AG), Aviation Electrician's Mate (AE), Commissaryman (CS), Dental Technician (DT), Disbursing Clerk (DK), Electrician's Mate (EM), Engineman (EN), Instrumentman (IM), and Machinery Repairman (MR).

Findings

1. There are several comparative civilian occupational specialties for each Navy rating; the number of these comparative specialties varies for each Navy rating. The actual number of comparative specialties depends upon the different types of duties that are performed by a specific Navy rating.
2. There is a greater concentration of specialization in civilian occupations than is the case for Navy ratings. Therefore the duties of Navy ratings are more broad and all-encompassing than are the duties for their counterpart civilian occupational specialties.
3. The civilian occupational specialties that are most nearly comparable to most of these ten Navy ratings in this study are Machine Trades, Bench Work, Structural Work, and Professional, Technical and Managerial occupations. (These ten ratings belong to five different Navy rating groups: Precision Equipment, Administrative and Clerical, Engineering and Hull, Aviation and Dental)
4. The differences between Navy and civilian vocational training courses subject matter and length of training times are essentially the result of differences between work environments.
5. Specific petty officer paygrades training and experience criteria prerequisites for lateral entry recruitment have already been established as Bureau of Naval Personnel policy.

Conclusions

1. Lateral or horizontal entry petty officer recruits will possess more highly specialized occupational specialty knowledges and skills than their counterpart petty officers that entered the Navy and advanced by the regular vertical path.
2. The need for any further occupational training following recruitment may be determined by examination of individual lateral entry petty officer recruits training and experience data.
3. Certain civilian occupational specialties that are comparable to one Navy rating within a specific Navy rating group or category, also may be comparable to certain other ratings within the same group or category.

Recommendations

1. The personnel and training data for the Navy ratings and the comparative civilian occupational specialties that is contained in Appendices A through J should be issued to recruiters for their use in the lateral entry recruitment of petty officers.
2. Lateral entry recruitment research should be continued to compare personnel and training data for all other Navy ratings and their counterpart civilian occupational specialties.

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I. INTRODUCTION

A. Problem

A critical problem facing the Navy in achieving a balanced all-volunteer force¹ is the prospect of degradation of quality in a draft-free environment. This degradation could result in a drastic lengthening of the average time to attain advanced pay grades and leave a gap in certain critical enlisted ratings.

There are many enlisted jobs which utilize training and experience that are comparable to civilian jobs such as aircraft mechanics, heavy equipment operators, laboratory technicians and other such skilled people. Incentives, however, are not generally available at initial enlistment for individuals already possessing Navy required training and experience. The objective is to develop new concepts for lateral entry recruitment of skilled civilian personnel into Navy enlisted occupations at different advanced paygrades.

B. Purpose

This research was conducted to explore new concepts and procedures to improve lateral entry recruitment of skilled civilian personnel as petty officers of the Navy.

C. Background

The initial requirement for this research was contained in a memorandum from the Chief of Naval Operations to the Chief of Naval Personnel.² The memorandum expressed CNO's interest in the direct procurement of Petty Officer Second Class and Petty Officer First Class personnel, 25 to 35 years old, from civilian technical skill areas.

Historically the Navy has been a vertical entry organization in that recruiting efforts have been concentrated upon attracting young men, then training them in the basics of naval military and occupational specialties, and retaining these young men during the earlier phases of their productive lives. Horizontal, or lateral entry into the naval

¹This concept effectively became a reality during January 1973 when the President and the Secretary of Defense announced that there would be no further inductions into the military service. However, the present Selective Service Act will not expire until 30 June 1973.

²CNO/VCNO Action Sheet Number 603-70 dated 14 October 1970. Additional early pertinent CNO memoranda concerning Lateral Entry Recruitment (DPPO - Direct Procurement of Petty Officers) were dated: 17 December 1970, OP-09c/rjl, A/S 109/603-70; and 12 March 1971, OP-09cl/jn 603-70. Ser 707P09C.

service at higher paygrades seldom has occurred and only in cases of critical manpower shortages either in certain highly specialized occupational areas or during periods of extreme national emergency

The Navy employed Direct Procurement of Petty Officer (DPPO), or Lateral Entry Recruitment, programs extensively during World War II when it was necessary to recruit large numbers of personnel for the extensive mobilization required during that period. Other Navy uses of direct procurement/lateral entry recruitment programs were to meet the increased requirements for construction (SEABEE) personnel in the 1965-1966 period because of the Southeast Asia buildup and again in the 1960s for Data Systems Technicians (DS) and Data Processing Technicians (DP) to meet increasing personnel requirements in these skill areas resulting from increased computerization in the Navy.

However, when the All-Volunteer Force concept becomes a reality the Navy will be concerned with both vertical and lateral entry recruitment. Special attention will have to be devoted to lateral entry recruitment in order to determine ways and means to attract and retain trained and experienced civilian personnel in advanced phases of their productive lives. This will involve lateral entry recruitment of personnel into the Navy at advanced paygrades E4 through E6 that will reflect their value to the Navy.

Up until the immediate past in time, draft pressure plus a relatively high unemployment rate in the civilian sector of the economy had tended to keep most Navy occupational specialties adequately staffed. However, these enlistment inducements have largely disappeared at the present time.

The draft pressure inducement gradually disappeared with fewer draft calls, then for all practical purposes this disappeared entirely in January 1973 with the announcement by the President and the Secretary of Defense that there would be no further inductions into the military service. Should the current Selective Service Act not be re-enacted by the Congress and signed into law by the President prior to 30 June 1973, then there will remain no statutory provision for compulsory military service. This will terminate any draft pressure inducement entirely. Likewise the unemployment inducement is disappearing as the national economy gradually reverts toward full employment. Solutions to the resultant personnel problems, particularly in critical skill areas, must be found at the present time.

Therefore new concepts must be developed to improve lateral entry recruitment of skilled civilian personnel as petty officers of the Navy. A variety of methodologies must be developed to accommodate unique lateral procurement requirements of the many different Navy ratings. In addition to helping prevent personnel shortages for an All-Volunteer Force, a fully operational system of methodologies and procedures for lateral entry recruitment of skilled personnel at advanced paygrades would prove valuable for use in the event of mobilization.

II APPROACH

A. Methodology

Originally seven technical questions were to be considered in order to develop new methods and procedures for lateral entry recruitment. These were:

1. Comparison of schools curricula - specific Navy ratings Class A Schools and appropriate civilian vocational/technical schools and/or junior colleges, plus appropriate apprenticeship training.
2. Compare and evaluate civilian training and experience and Navy advancement qualifications standards.
3. Determine appropriate amount of military indoctrination.
4. Develop procedures to reinstate former Navy personnel.
5. Explore use of portions of advancement in rating examinations to determine prospective petty officer recruits skill level and appropriate paygrade eligibility.
6. Determine program impact upon advancement quotas and normal advancement patterns. and
7. Determine program impact upon ratings multiple duty concept.

However, the status of funding and research effort on this CNO requested project was precarious throughout. inasmuch as fiscal constraints permitted a more modest research effort than was originally envisaged. Therefore the extent of the research effort was revised to encompass the consideration of the first two of these above listed technical questions only.³

These two technical questions were considered in this research effort to develop new methods and procedures for lateral entry recruitment. However, detailed consideration of the second technical question, to compare and evaluate civilian training and experience and Navy advancement qualifications standards, was superseded to an appreciable extent by the newly established Bureau of Naval Personnel training and

³ Authorized by the 19 July 1972. CHNAVPERS Memorandum. Pers-A4c-jf. Ser: A4c/75. Subj: "Progress Report Lateral Entry Recruitment at Advanced Paygrades; comments on."

experience criteria to determine appropriate paygrade eligibility.⁴ This policy was dictated by the pressure of events, especially the approach of the day that the Selective Service Act is scheduled to expire.

B. Collection of Data

The personnel and training data that were compiled for analysis were for civilian occupational specialties that are comparable to the Air Controlman (AC), Aerographer's Mate (AG), Aviation Electrician's Mate (AE), Commissaryman (CS), Dental Technician (DT), Disbursing Clerk (DK), Electrician's Mate (EM), Engineman (EN), Instrumentman (IM), and Machinery Repairman (MR) Navy ratings.⁵

The personnel data compiled consisted of the occupational specialties that are comparable to each of the ten above listed Navy ratings. The U. S. Department of Labor, Dictionary of Occupational Titles, afforded the prime resource document for these occupational specialty data.

The technical training data compiled consisted of Navy Class A Schools curricula for each of the ten ratings studied; plus the curricula of accredited civilian private and state supported trade and technical schools, community and junior colleges, and vocational training courses at regular high schools. Apprenticeship training data were obtained from U. S. Department of Labor recommended schedules.

Additional contacts to discuss technical and apprenticeship training were the A. F. L. - C. I. O. and Steamfitters Unions, plus local representatives of businesses that employ people of the specified occupational specialties. Contact was made with a local representative of the Royal Typewriter Company to obtain data about factory training programs for typewriter and office machines repair technicians' for comparison with technical training for the IM rating.

It is not the intent of this research to evaluate or endorse any private school or state school system, but to compare Navy vocational training with what is considered to be similar vocational training in the civilian sector of the economy.

⁴Authorized by the 16 October 1972. CHNAVPERs Memorandum. Pers-B253-jpp, Subj: "Direct Procurement of Petty Officers (DPPO) into the Regular Navy."

⁵These ten ratings were selected because they are Career Re-enlistment Program Objective (CREO) ratings. All ten are either Group A or Group B CREO ratings with shortages of career strength; less than 75 percent manning for Group A, and between 75 and 89 percent manning for Group B. See BUPERS Instruction 1133.25 of 24 July 1972 for further CREO program information.

III. DISCUSSION

The ordinary Navy vertical progression path is from entry as an Airman, Constructionman, Dentalman, Fireman, Hospitalman or Seaman Recruit, paygrade E1, through paygrade E3, to the paygrade E4 level, at which point in time the Petty Officer Third Class has specialized in one of the 79 Navy occupational specialties or ratings.⁶ From this point, the progression path continues in the military and occupational specialties, according to prescribed criteria, until the higher petty officer rates ultimately are attained.

The lateral entry recruitment or direct procurement of petty officers program provides for direct recruitment of personnel at petty officer levels providing that certain hourly experience and/or training requirements are satisfied for each paygrade. Training/experience criteria must be satisfied as follows:⁷ (1) Possess abilities and knowledge required by the occupational standards contained in the Record of Practical Factors, NAVPERS 1414/1 for applicable rating and paygrade, and (2) Submit evidence of completion of the work/training listed below in Table 1:

TABLE 1
PAYGRADES AND REQUIREMENTS

<u>Paygrade</u>	<u>Required Months Work Experience</u>	<u>Vocational Training, or Equivalent, for $\frac{1}{2}$ of Experience</u>
E4	24	12 Mos., or 1000 Hrs.
E5	48, including 6 Mos. supervisory experience	24 Mos., or 2000 Hrs.
E6	72, including 1 Yr. supervisory experience	36 Mos., or 3000 Hrs.
E7	96, including 1 $\frac{1}{2}$ Yrs. supervisory experience	48 Mos., or 4000 Hrs.

⁶Obtained from NAVPERS 15658, Navy and Marine Corps Military Personnel Statistics, Bureau of Naval Personnel and Headquarters, U. S. Marine Corps, Washington, D. C., 30 September 1972.

⁷Authorized by the 16 October 1972 CHNAVPERS Memorandum, Pers-B253-jpp, Subj: "Direct Procurement of Petty Officers (DPPO) into the Regular Navy."

Ten Navy Career Re-enlistment Objective (CREO) ratings were selected to compare personnel and training data with counterpart civilian occupational specialties for purposes of this lateral entry recruitment study.⁸ These Navy ratings are: Air Controlman (AC), Aerographer's Mate (AG), Aviation Electrician's Mate (AE), Commissaryman (CS), Dental Technician (DT), Disbursing Clerk (DK), Electrician's Mate (EM), Engineman (EN), Instrumentman (IM), and Machinery Repairman (MR). The detailed Navy and comparative civilian occupational specialties personnel and training data are listed in Appendices A through J to this report.

The ten Navy ratings that were selected belong to five different rating categories or groups. The ratings and categories are listed in Table 2 below:⁹

TABLE 2
NAVY RATINGS AND RATING CATEGORIES

<u>Category No.</u>	<u>Category Title</u>	<u>Rating(s)</u>
IV	Precision Equipment	IM
V	Administrative and Clerical	CS DK
VII	Engineering and Hull	EM EN MR
IX	Aviation	AG AC AE
XI	Dental	DT

Civilian occupational specialties that are most nearly comparable to these ten Navy ratings are primarily in the Machine

⁸Civilian occupational data were obtained from the Dictionary of Occupational Titles, U. S. Department of Labor, Washington, D. C., 1965. Civilian training data were obtained from trade and technical schools accredited by the National Association of Trade and Technical Schools, the National Association of Business Schools, from state and territorial Departments of Vocational Education, and from U. S. Department of Labor Trades Apprenticeship Schedules.

⁹Identified in the Manual of Qualifications for Advancement, NAVPERS 18068C, with Change No. 2, August 1972.

Trades, Bench Work, Structural Work, and Professional, Technical and Managerial Occupations.¹⁰ The comparative civilian occupational groups and the counterpart Navy ratings are listed in Table 3 below:

TABLE 3

COMPARATIVE OCCUPATIONAL GROUPS AND NAVY RATINGS

<u>Civilian Occupational Group(s)</u>	<u>Navy Rating(s)</u>
Machine Trades	AE, EM, EN, IM, MR
Bench Work	AE, DT, EM, IM
Structural Work	AE, EM, IM
Professional, Technical and Managerial	AC, AG, DT
Radio Operator, Airplane Pilots and Navigators, Miscellaneous Air Transport	AC
Math and Physical Science, Meteorology, Geology, and Oceanography	AG
Food and Other Services	CS
Administrative Specializations, Clerical and Sales, Stenography, Computing and Account Recording	DK
Electric Engineering Miscellaneous Electric	EM
Processing	IM

Comparative personnel and technical/apprenticeship training data will be discussed further by each Navy rating plus its counterpart civilian occupational specialties. For purposes of this discussion, comparative and counterpart civilian occupational specialties refers to major occupational groups, and similar occupational specialties refers to jobs within major occupational groups.

¹⁰Identified in the Dictionary of Occupational Titles, U. S. Department of Labor, Washington, D. C., 1965.

A. Air Controlman Rating/Air Traffic Controller Occupational Specialty

Air Controlmen perform air traffic control duties in air control towers, radar air traffic control centers, controlled approach units, and air operations offices ashore and afloat. Additional duties are to operate radiotelephones and light systems, to direct aircraft, operate radars, operate ground and carrier controlled approach systems, assist pilots in preparing and processing flight plans and clearances, and to maintain current flight planning information and reference materials.

Counterpart civilian occupational specialties to this Navy rating are skills found in Professional, Technical and Managerial occupations: Radio Operators; Airplane Pilots and Navigators; and Miscellaneous Air Transportation occupations.

Similar specialty occupations include radio operators, airplane pilots and navigators, balloonists, air transport dispatchers and schedule analysts.

During the 10 week duration Air Controlman Class A School, trainees receive 400 clock hours of instruction in the subjects of aviation weather, basic air navigation and navigation aids, airport traffic control, air traffic rules, communications, air traffic control publications, and air traffic control radar.

No comparable civilian training curriculum was obtainable that included instruction in all these subjects in any one course of study. A limited number of schools offer the Associate of Arts Degree in Aviation Administration (Air Traffic Control). With only slight differences in curriculum at the different schools, these courses include instruction in meteorology, aeronautics and transportation, plus subjects such as speech, technical writing, accounting, history and data processing. Some of the schools have arrangements for students to receive actual air traffic control tower experience, dependent upon Federal Aviation Administration staffing limitations.

Contents of other civilian training vary, dependent upon the comparable occupational specialty. Pilot training is well prescribed by F. A. A. regulations with pre-requisite standards to attain student, private and commercial pilot licenses, plus pilots' radio operation certification. Selected colleges and universities offer major courses leading to a Bachelor's Degree in Radio, Television and Motion Pictures. Additionally there are technical schools that train people in the techniques of broadcasting.

Practical experience in a given occupational specialty, with or without prior training is of paramount importance to determine personnel qualifications, additional training needs to satisfy Navy rating

requirements, plus hourly experience requirements for specific paygrade levels.

One additional Air Traffic Controller certification requirement is to receive extensive training at the Aeronautical Center, Oklahoma City, Oklahoma.

B. Aerographer's Mate Rating/Meteorology/Oceanography Occupational Specialties

Navy Aerographer's Mate rating personnel observe, collect, record and analyze meteorological and oceanographic data for military use, make visual and instrumental weather and sea condition observations, interpret weather codes and enter data on appropriate charts, and forecast weather and sea conditions from proper charts in order to furnish advice concerning probable changes in weather and sea conditions and the effects of weather and the sea upon operations.

Counterpart civilian occupational specialties to this Navy rating are skills found in Professional, Technical and Managerial occupations; occupations in Mathematics and Physical Sciences; occupations in Meteorology; occupations in Geology and occupations in Oceanography.

Similar Meteorology/Oceanography occupations include meteorologists, hydrographers, radiosonde operators, weather chart preparers, and oceanographers.

During the 16 week duration Aerographer's Mate Class A School, trainees receive 638 clock hours of instruction in the subjects of meteorology, oceanography, surface and upper air observation, and codes.

There is no comparable civilian training to the Aerographer's Mate Class A School curriculum inasmuch as most counterpart civilian occupations are professional specialties. These specialties require college or university level education with majors in subject matter areas of meteorology, geology and oceanography.

Practical experience in working with meteorological, geological or oceanographic instrumentation is the most comparable civilian equivalent to the training afforded by the Navy Aerographer's Mate Class A School. The amount of practical experience obtained in working with these instrumentation is all important to determine personal requirements and additional training needs to satisfy Navy rating requirements, plus to satisfy hourly experience requirements for specific paygrade levels.

C. Aviation Electrician's Mate Rating/Aviation Electrician/
Aviation Instrumentman Occupational Specialty

Aviation Electrician's Mates inspect and maintain aircraft electrical and instrument systems, including: power generation, conversion, and distribution systems; interior and exterior lighting; components of aircraft controls; aircraft electrical starting systems; aircraft navigation systems; aircraft automatic flight control systems; aircraft batteries; and related electrical components; and test and adjust auxiliary airborne electrical power units and test equipment.

Counterpart civilian occupational specialties to this Navy rating are skills found in Machine Trades occupations, Bench Work occupations and Structural Work occupations.

Similar specialty occupations include metal machinery occupations; machinists; mechanics and machinery repairmen; aircraft mechanics and repairmen; occupations in fabrication and repair of scientific apparatus, clocks, and measurement instruments; occupations in assembly and repair of motors and generators; and occupations in assembly, installation and repair of electronic communication, detection and signaling equipment.

During the 22 week Aviation Electrician's Mate Class A School, trainees receive 872 clock hours of instruction in the subjects of aviation fundamentals, basic electricity and direct current theory, alternating theory fundamentals, basic electronics applicable to aircraft, electrical machinery devices and currents, aircraft instruments and flight stabilization systems, and aircraft systems and line maintenance.

Comparable civilian occupational specialty training is more extensive in length than the Navy Class A training for this rating, but all components of the Aviation Electrician's Mate Class A School curriculum are not to be found in the comparable civilian vocational training.

A number of schools specialize in aviation vocational training and these offer avionics, aviation instrumentation, powerplant and airframe mechanics courses. Additionally there are schools that offer Associate of Arts Degrees in such subjects as Electrical Instrumentation Technology and Aeronautical Maintenance Technology.

Practical experience in any one of the civilian occupational specialties comparable to this Navy rating, with or without prior formal classroom training, is very important to determine whether a prospective petty officer recruit's personal qualifications satisfy knowledge and skill requirements for this Navy rating. Also the hourly experience requirements must be satisfied to enable lateral entry recruitment at a specific paygrade.

D. Commissaryman Rating/Food Service Occupational Specialty

Commissarymen serve in the crew's food preparation and food service spaces on board ships and at shore stations; prepare menus; assist in ordering subsistence items; check deliveries for quantity, and assist Medical Department representatives in inspecting for quality; stow and breakout subsistence items; prepare food products for consumption; maintain cleanliness and sanitation of all food preparation, service, and storage areas, including refrigerated spaces and subsistence issue rooms; complete and maintain records, and submit required reports.

Counterpart civilian occupational specialties to this Navy rating are skills found in Food and Other Service occupations.

Similar service occupations include skills in food and beverage preparation and service occupations and occupations in the processing of food and related products.

During the 8 week duration Commissaryman Class A School, trainees receive 240 clock hours of instruction in the subjects of organization, formulas and sanitation, menus and equipment operation, cookery, food service management, and special messing operations.

Civilian occupational specialty training curricula that are comparable to Navy Commissaryman Class A School curricula are almost exclusively to be found in home economics courses offered at the high school and college levels. Home Economics at the college level is offered in both state supported and in private colleges. In addition there are private technical schools which offer the equivalent to this home economics vocational training, a notable example of which is the Innkeeping/Hospitality course offered by the Career Academy School(s) that are located in 13 major cities of the United States and Canada.

The amount of practical experience that a person has obtained in the food processing and preparation occupations, with or without prior formal occupational training, is very important to determine present personal qualifications, additional personal qualifications needed to satisfy Navy Commissaryman rating requirements, plus hourly experience requirements for a specific paygrade level for lateral entry recruitment.

E. Dental Technician Rating/Dental Technology Occupational Specialty

Navy Dental Technician rating personnel perform clinical and administrative duties, such as assisting dental officers in the treatment of patients, preparing and carrying out dental administrative assignments, and performing preventive procedures. Dental Technicians may be

qualified in other duties in addition to the foregoing, such as dental prosthetic laboratory techniques, and maintenance and repair of dental equipment. Dental Technicians must be prepared to assist in the treatment of casualties.

Counterpart civilian occupational specialties to this Navy rating are found among certain Professional, Technical and Managerial occupations, and skills found in certain Bench Work occupations.

Similar specialty occupations include those of dental hygienist, prosthetist, dental assistant, dental ceramist, dental laboratory technician and denture finisher.

During the 12 week duration Dental Technician Class A School, trainees receive 387 clock hours of instruction in the subjects of basic sciences, casualty care, dental administration, dental assistance, preventive dentistry and dental radiology. An additional 93 clock hours are provided for non-academic and military training.

Dental technology is a para-professional occupational specialty that requires specialized training as a pre-requisite to active employment in the specialty. Therefore civilian training in dental technology occurs at universities that have Schools of Dentistry. This dental technology training occurs in the facilities of the School of Dentistry, separate from the training for Dentists. Usually there is a prescribed 4 year training course that leads to a Bachelor of Science, or a Bachelor of Arts Degree in Dental Technology. This course of study usually consists of some liberal arts courses plus some business organization courses in addition to the basic core of courses in which there is instruction in all phases of dental technology.

Additional civilian training in the dental technology field occurs at private technical/trade schools that offer accredited courses to become a Dental Technician or Dental Assistant, plus special courses in denture construction, ceramics and porcelain dental work, and in construction of crowns and bridges.

The amount of practical experience a trained Dental Technician has obtained determines the most appropriate paygrade level for lateral entry recruitment. Navy experience may then be obtained on the job.

F. Disbursing Clerk Rating/Bookkeeping/Secretarial/Office Clerking Occupational Specialties

Disbursing Clerks open, maintain, and close military pay records; prepare payroll certification sheets and money lists; prepare public vouchers, transportation requests, and U. S. Treasury checks; prepare

and submit documents to register and stop allotments; furnish information to personnel concerning their entitlement to various types of pay and allowances, and concerning allotments, deductions, and savings deposits; prepare reports and returns covering receipts and expenditures of public monies; and may accept personal funds and valuables for safekeeping.

Counterpart civilian occupational specialties to this Navy rating are found in the Administrative Specializations, Clerical and Sales, Stenography, and Computing and Account Recording occupations.

Similar specialty occupations include, among others, those of accountant, bookkeeper, inspectors and investigators, stenographers, clerks, cashiers, tellers, and bookkeeping and computing machine operators.

During the 12 week duration Disbursing Clerk Class A School, trainees receive 360 clock hours of instruction in the subjects of naval accounting, military pay and allowances, taxes and insurance, pay records and accounts, payments, public funds, travel pay, typing, correspondence, office machines and maintenance and material management.

Comparable civilian occupational training is more specialized and comprehensive than Disbursing Clerk Class A School. Contents of courses vary, dependent upon the comparable occupational specialty.

High School Distributive Education courses in grades 10, 11 and 12 offer training to become secretaries, bookkeepers and accountants, and other office clerks. This program includes some training in data processing.

Business colleges offer courses to train junior accountants and business managers. These courses require appreciable numbers of hours instruction in accounting. These same colleges offer courses in secretarial science and to train clerk typists. Usually accounting is offered in the secretarial science courses and some records control and general office machines instruction is included in clerk typist courses. These courses frequently extend from 6 months in duration for clerk-typists to 18 months in duration for that of business administrator.

Additionally courses are offered in computer operations and management that include accounting and data processing operations as well as instruction in communication skills and executive and personality development.

Practical experience in any one of the civilian occupational specialties that is comparable to this Navy rating is very important to determine whether a prospective petty officer recruit's personal qualifications satisfy knowledge and skill requirements for this Navy

rating. Also the hourly experience requirements must be satisfied to enable lateral entry recruitment at a specific paygrade.

G. Electrician's Mate Rating/Electrician Occupational Specialty

Navy Electrician's Mate rating personnel stand watch on generators, switchboards, and control equipment; perform organizational and intermediate maintenance on power and lighting circuits, electrical fixtures, film projectors, motors, generators, voltage and frequency regulators, controllers, distribution switchboards, and other electrical equipment; test for short circuits, grounds, or other casualties; and rebuild electrical equipment, including solid state circuitry elements, and in an electrical shop.

Counterpart civilian occupational specialties to this Navy rating are skills found in Structural Work, Machine Trades, Bench Work, Miscellaneous occupations pertaining to the generation, transmission and distribution of electricity, and in Electrical Engineering occupations.

Similar Electrician specialty occupations include refrigeration and air conditioning technicians, electric motor and generator repairmen, plus the different categories of electricians such as ship and powerhouse, and some electronic service technicians.

During the 13 week duration Electrician's Mate Class A School, trainees receive 389 clock hours of instruction in the subjects of power, rotating machinery, conventional control devices, semi-conductors, transistors and logic.

Comparable civilian occupational specialty training is more extensive in subject matter and length than the Navy Class A training. Frequently electronics instruction is included along with the electricity curriculum. This civilian technical training occurs both at the high school and technical college levels.

Civilian courses usually consist of instruction in the subjects of alternating current, direct current, electric machinery, electronics, electric maintenance, electric math, circuits, physics plus some electives.

Practical experience in any one of the civilian occupational specialties comparable to this Navy rating, with or without prior formal classroom training, is very important to determine whether a prospective petty officer recruit's personal qualifications satisfy knowledge and skill requirements for this Navy rating. Also the hourly experience requirements must be satisfied to enable lateral entry recruitment at a given paygrade.

H. Engineman Rating/Engine Repair Occupational Specialty

Navy Engineman rating personnel operate, maintain, and repair fixed, mobile, and portable diesel and gasoline engines and associated equipment, including ignition, fuel, transmission, cooling, and lubrication systems, and engineering department auxiliary equipment, such as compressors, distilling plants, pumps, and hydraulic, pneumatic, refrigeration, and air conditioning systems.

Counterpart civilian occupational specialties to this Navy rating are skills found in Machine Trades occupations.

Similar Machine Trades occupations include skills in metal machining; motorized vehicle and engineering equipment mechanics and repairmen; aircraft mechanics and repairmen; rail equipment mechanics and repairmen; marine mechanics and repairmen; farm mechanics and repairmen; engine, power transmission, and related mechanics, and textile equipment repair.

Occupational specialty training for this Navy rating consists of 15 weeks, or 455 clock hours. Instruction in Basic Propulsion Engineering and the Engineman Class A School. Basic Propulsion Engineering consists of 253 clock hours instruction in the subjects of marine power plants, boilers, internal combustion engines, metallurgy, mechanical and fluid theory, electrical and heat theory, measuring devices, power and transfer equipment, pumps, and logs, blueprints and telephones. Engineman Class A School consists of 202 clock hours of instruction in the subjects of internal combustion engines and their fuel and electrical systems, engine power transmission, hydraulic steering, air compressors, diesel engines, boilers, refrigeration, distilling plants and oil purification.

Comparable civilian occupational specialty training curricula are more extensive in duration than the Basic Propulsion Engineering and Engineman Class A School curricula. The comparable civilian occupational specialty training occurs in high schools, at technical colleges, and at private technical/trade schools.

An appreciable amount of civilian training concerns automotive and truck engines. Frequently auto body technology instruction is closely related to auto mechanic technology. Diesel engine technology is taught apart from gasoline engine technology. Math, science, physics, shop practices and welding are taught in the gasoline and diesel engine technology course. Agricultural machinery courses are offered with instruction in operation and maintenance of farm machinery and equipment: small engines and tractors, electricity, buildings and structures, metal processes, tractor hydraulics and tractor selection.

Practical experience in any one of the civilian occupational specialty

areas that are comparable to this Navy rating, with or without prior formal classroom training, is very important to determine whether a prospective petty officer recruit's qualifications will satisfy knowledge and skill requirements for this Navy rating. Also, areas in which the prospective petty officer recruit will need strengthening will be identified. The hourly experience requirements must be satisfied to enable lateral entry recruitment at a given paygrade.

I. Instrumentman Rating/Instrument Repair Occupational Specialty

Instrumentmen perform organizational and intermediate maintenance on mechanical instruments, office machines and navy timepieces, and implement Navy or Mechanical Instrument Repair and Calibration (MIRCS) procedures.

Counterpart civilian occupational specialties to this Navy rating are skills found in Processing, Machine Trades, Bench Work and Structural Work occupations.

Similar occupations include, among others, such skills as tool maker, abrading, business and commercial machine repair, silversmith, jeweler, clock repair, measurement instrument repair and coppersmith occupations.

During the 17 week duration Instrumentman Class A School, trainees receive 546 clock hours of instruction in the subjects of schematics, Remington manual typewriter, Royal manual typewriter, calibration, hydraulic/pneumatic pressure instruments, measurement instruments and tachometers.

There is no comparable civilian training course that will incorporate all components of the Instrumentman Class A School. This is because the duties of the Instrumentman rating encompass four entirely different categories of duties which are: (1) typewriters and other office machines repair, (2) gauges and other measurement instruments repair, (3) precision fine products manufacture and/or repair, and (4) watch and clock repair. Therefore comparable training will be in one or another of these categories of duties only.

Typewriters and other office machines repair training, gauges and other measurement instruments repair training, precision and fine products manufacture and/or repair, such as silverware, training occur at the factories of each specific manufacturer. Jewelry manufacture training occurs at specific jewelry manufacturers, and at a limited number of schools.

Watch and clock manufacture and repair training occurs at factories of specific manufacturers and at a limited number of schools around the country. This is of less consequence for purposes of this study inasmuch as chronometer and other clock repair training is a subject that is

taught in Instrumentman Class C School. It is mentioned here for information purposes only inasmuch as clock and chronometer repair are an appreciable portion of the duties of Instrumentmen.

Clock and chronometer training excepted, practical experience following factory training is the most reliable method to become knowledgeable in any of the occupational areas comparable to the Navy Instrumentman rating. Steamfitters Union apprenticeship training largely points out the functions of the gauges while relying upon factory manufacture and repair of gauges and of other measurement instruments.

The amount of practical experience a person has in any of the comparable occupational specialty areas is necessary to satisfy the hourly experience requirements to enable lateral entry recruitment at a specific paygrade.

J. Machinery Repairman Rating/Machinery Repair Occupational Specialty

Navy Machinery Repairman rating personnel operate machine tools to make new and/or replacement parts for machinery and mechanical assemblies and to restore used or damaged parts to serviceable status; maintain machine shop drawing files; maintain stock of tools and expendable stores; operate tool issue room; and perform organizational and intermediate maintenance on assigned equipment and in support of other ships.

Counterpart civilian occupational specialties to this Navy rating are skills found in Machine Trades occupations.

Similar Machine Trades occupations include skills in machinist, tool-maker, gear machining, abrading, turning, milling and planing, boring, sawing, metal machining, fabricating, machine forming, miscellaneous metal working, metalworking machinery mechanic, textile machinery equipment mechanic and repairman, and special mechanic occupations.

During the 12 week duration Machinery Repairman Class A School, trainees receive 375 clock hours of instruction in the subjects of hand tools/measuring instruments, blueprints, shop math, metals, materials/lubricants/coolants, cutting tools, drills/drilling machines, bench/pedestal grinders, lathe operation, milling machine operation, shapers, valves/piping and planned maintenance system.

Comparable civilian occupational specialty training is more extensive in subject matter and length than Navy Class A training. Training courses contents and apprenticeship training schedules vary, dependent upon the comparable occupational specialty. Training courses contents generally include instruction in sawing, drilling, lathe, shaper, milling machines, grinders, dies construction, dies mold/design, hydraulics/pneumatics, blueprint reading, physics, electricity and welding.

Apprentice schedules differ according to trades. Machinists and Tool and Die Makers schedules include training in grinders, lathes, planes, drill presses, milling machines and jig borers. Automobile machinists schedules include instruction in these same machines in addition to instruction in rebuilding cylinder blocks, bearings, valves, oil pumps, transmissions, universal joints, brakes and crankshafts. Sheet Metal Workers schedules include instruction on machines and in construction of exhausts, roofing, guttering, skylights, residential outside jobbing, air conditioning, heating, ventilation and hotel/restaurant/fountain bar equipment.

Practical experience in any one of the civilian occupational specialties that is comparable to this Navy rating is very important to determine whether a prospective petty officer recruit's personal qualifications satisfy knowledge and skill requirements for this Navy rating. Also the hourly experience requirements must be satisfied in order to enable lateral entry recruitment at a given paygrade.

IV FINDINGS

1. There are several comparative civilian occupational specialties for each Navy rating: the number of these comparative specialties varies for each Navy rating. The actual number of comparative specialties depends upon the different types of duties that are performed by a specific Navy rating.
2. There is a greater concentration of specialization in civilian occupations than is the case for Navy ratings. Therefore the duties of a Navy rating are more broad and all-encompassing than are the duties for their counterpart civilian occupation.
3. The civilian occupational specialties that are most nearly comparable to most of these ten Navy ratings in this study are Machine Trades, Bench Work, Structural Work, and Professional, Technical and Managerial occupations. (These ten ratings belong to five different Navy rating groups or categories: Precision Equipment, Administrative and Clerical, Engineering and Hull, Aviation, and Dental).
4. The differences between Navy and civilian vocational training courses subject matter and length of training times are essentially the result of differences between respective work environments.
5. Specific petty officer paygrades training and experience criteria prerequisites for lateral entry recruitment have already been established as Bureau of Naval Personnel policy.

V. CONCLUSIONS

1. Lateral or horizontal entry petty officer recruits will possess more highly specialized occupational specialty knowledges and skills than their counterpart petty officers that entered the Navy and advanced by the regular vertical path.
2. The need for any further occupational training following recruitment may be determined by examination of individual lateral entry petty officer recruits training and experience data.
3. Certain civilian occupational specialties that are comparable to one Navy rating within a specific Navy rating group or category, also may be comparable to certain other ratings within the same group or category.

VI. RECOMMENDATIONS

1. The personnel and training data for the Navy ratings and the comparative civilian occupational specialties that is contained in Appendices A through J should be issued to recruiters for their use in the lateral entry recruitment of petty officers.
2. Lateral entry recruitment research should be continued to compare personnel and training data for all other Navy ratings and their counterpart civilian occupational specialties.

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APPENDIX A

AIR CONTROLMAN RATING
AIR CONTROLLER SPECIALTY
COMPARATIVE
OCCUPATIONAL SPECIALTY
AND
TECHNICAL TRAINING
DATA

This Appendix contains comparative Navy and civilian occupational specialty and technical/apprenticeship training data. This information in the present format may be used by recruiters as an aid to classify lateral entry petty officer recruits.

The comparative civilian occupational specialty data have been obtained from the U. S. Department of Labor, Dictionary of Occupational Titles, and are presented according to the same numeric code sequence that is contained within that classification document. Comparable civilian occupational specialty categories are listed first, followed by a list of the occupations within each specialty.

The occupational titles data that are presented in each Appendix are all inclusive, but does not provide a complete list of each different occupational title within each specific occupational specialty category. Additional occupational title information may be obtained by referring to the specified numeric code listed in the Dictionary of Occupational Titles, as the need may arise.

The comparative technical training data have been obtained from the curricula of accredited private and state supported trade and technical schools, community and junior colleges, and vocational training courses at regular high schools. The comparative apprenticeship training data were obtained from U. S. Department of Labor recommended schedules. These data are distributed as equitably as possible between private and state supported schools, and with a sufficient nationwide geographic dispersal to enable as broad as possible a comparison between civilian and Navy vocational training.

The technical and apprenticeship training data are presented to afford examples of comparative Navy and civilian vocational training for each occupational specialty that comprises the functions of each given Navy rating. These data are presented for information purposes to help the recruiter in processing pre-enlistment packages and/or appropriate service record pages. The prospective petty officer recruit's training and experience background data may be compared with the training and experience requirements for a given Navy rating. Also, these same data may be compared with other appropriate civilian occupational training data to determine the prospective recruit's background and proficiency in a specific occupational specialty area. This will help to insure the proper placement of new petty officer recruits.

COMPARATIVE
AIR CONTROLMAN RATING
AIR CONTROLLER
OCCUPATIONAL SPECIALTY
DATA

NAVY AIR CONTROLMAN RATING AND COUNTERPART CIVILIAN
OCCUPATIONAL SPECIALTIES

Air Controlmen perform air traffic control duties in air control towers, radar air traffic control centers, controlled approach units, and air operations offices ashore and afloat; operate radiotelephones, light signals and systems, and direct aircraft under VFR and IFR conditions, operate surveillance radar, height-finding radar, direction finding, and identification equipment; operate ground and carrier controlled approach systems and air surveillance radar approach equipment; assist pilots in the preparation and processing of flight plans and clearances; and maintain current flight planning information and reference materials.

Counterpart civilian occupational specialties to this Navy rating are skills found in Professional, Technical and Managerial occupations; Radio Operators; Airplane Pilots and Navigators; and Miscellaneous Air Transportation occupations.

Similar specialty occupations include radio operators, airplane pilots and navigators, balloonists, air transport dispatchers and schedule analysts.

The following is a list of these occupations with the appropriate D. O. T. codes (U. S. Department of Labor, Dictionary of Occupational Titles). Broad specialty categories are listed first, then a comprehensive list of occupations within each specialty follows.

- 0/1 Professional, Technical and Managerial Occupations
- 19 Miscellaneous Professional, Technical and Managerial Occupations
- 193 Radio Operators
- 196 Airplane Pilots and Navigators

- 9 Miscellaneous Occupations (Transport)
- 91 Transportation Occupations, Not Elsewhere Classified
- 912 Air Transportation Occupations

0/1

Professional, Technical and Managerial Occupations

This category includes occupations concerned with the theoretical or practical aspects of such fields of human endeavor as art, science, engineering, education, medicine, law, business relations, and administrative, managerial, and technical work. Most of these occupations require substantial educational preparation (usually at the university, junior college, or technical institute level).

19 Miscellaneous Professional, Technical, and Managerial Occupations

This division includes miscellaneous occupations concerned with professional, technical, and managerial work.

193

Radio Operators

This group includes occupations concerned with receiving and transmitting communications, using radiotelegraph or radiotelephone equipment, in accordance with government regulations. Must be federally licensed.

193.168

Airline Radio Operator, Chief (air trans)
Air Traffic Control Specialist, Station (gov. ser)
Air Traffic Control Specialist, Tower (gov. ser)
Air Traffic Coordinator (gov. ser)
Chief Controller (gov. ser)
Control Supervisor, Junior (radio & tv broad)
Control Supervisor, Senior (radio & tv broad)
Field Supervisor, Broadcast (radio & tv broad)
Radio Chief (air trans)
Superintendent, Radio Communications (gov. ser)

193.282

Airline-Radio Operator (air trans)
Dispatcher (gov. ser)
Radio Officer (water trans)
Radio Station Operator (aircraft mfg)
Radiotelegraph Operator (tel & tel)
Radiotelephone Operator (tel & tel)

193.382

Photoradio Operator (tel & tel)

196

Airplane Pilots and Navigators

This group includes occupations concerned with piloting airplanes for the transportation of passengers, freight and mail and other purposes, such as crop dusting and the testing of new models; and charting the courses of planes by the use of instruments, charts, celestial observation, and dead reckoning. Must be federally licensed. Includes occupations concerned with the supervision of flight operations and maintenance when

a pilot's or navigator's license is required. Includes flight instructors. Ground school instructors are included in Group 099.

- 196.168 Chief Pilot (air trans)
Flight Operations Inspector (gov ser)
Supervising Airplane Pilot (gov ser)
- 196.188 Navigator (air trans)
- 196.228 Instructor, Flying (education)
Instructor, Pilot (air trans)
- 196.248 Barnstormer (amuse & rec)
- 196.268 Check Pilot (air trans)
- 196.283 Airplane Pilot (agric)
Airplane Pilot, Commercial (air trans)
Airplane Pilot, Photogrammetry (bus ser)
Helicopter Pilot (air trans)
Executive Pilot (any ind)
Facilities Flight Check Pilot (gov ser)
Missile Control Pilot (aircraft mfg)
Test Pilot (aircraft mfg, air trans)
- 196.782 Balloonist, Hot Air (profess & kin)

9 Miscellaneous Occupations

This category includes occupations concerned with transportation services; packaging and warehousing; utilities; amusement, recreation, and motion picture services; mining and logging; graphic arts; and various miscellaneous activities.

91 Transportation Occupations. Not Elsewhere Classified

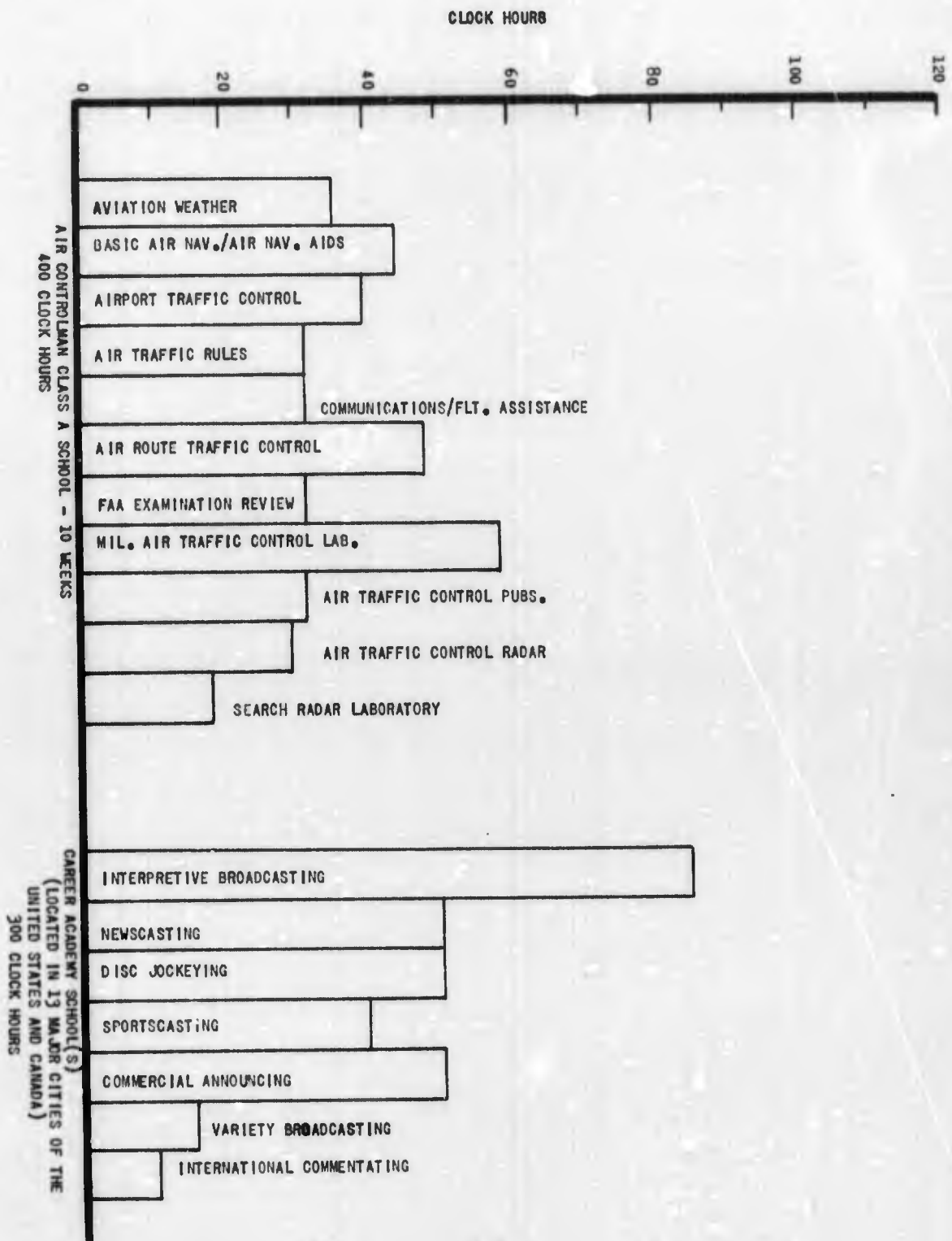
This division includes occupations, not elsewhere classified, concerned with moving people or materials by means of automotive and railway vehicles, aircraft, freshwater or seagoing vessels, pipes and pumps. Includes loading bulk materials into conveyances; ascertaining number of passengers and amount and kind of materials being conveyed; directing course of carrier; routing materials; servicing carriers; and related activities.

912 Air Transportation Occupations

This group includes occupations concerned with fueling aircraft; cooling, heating, and ventilating aircraft; repacking parachutes; and related servicing activities.

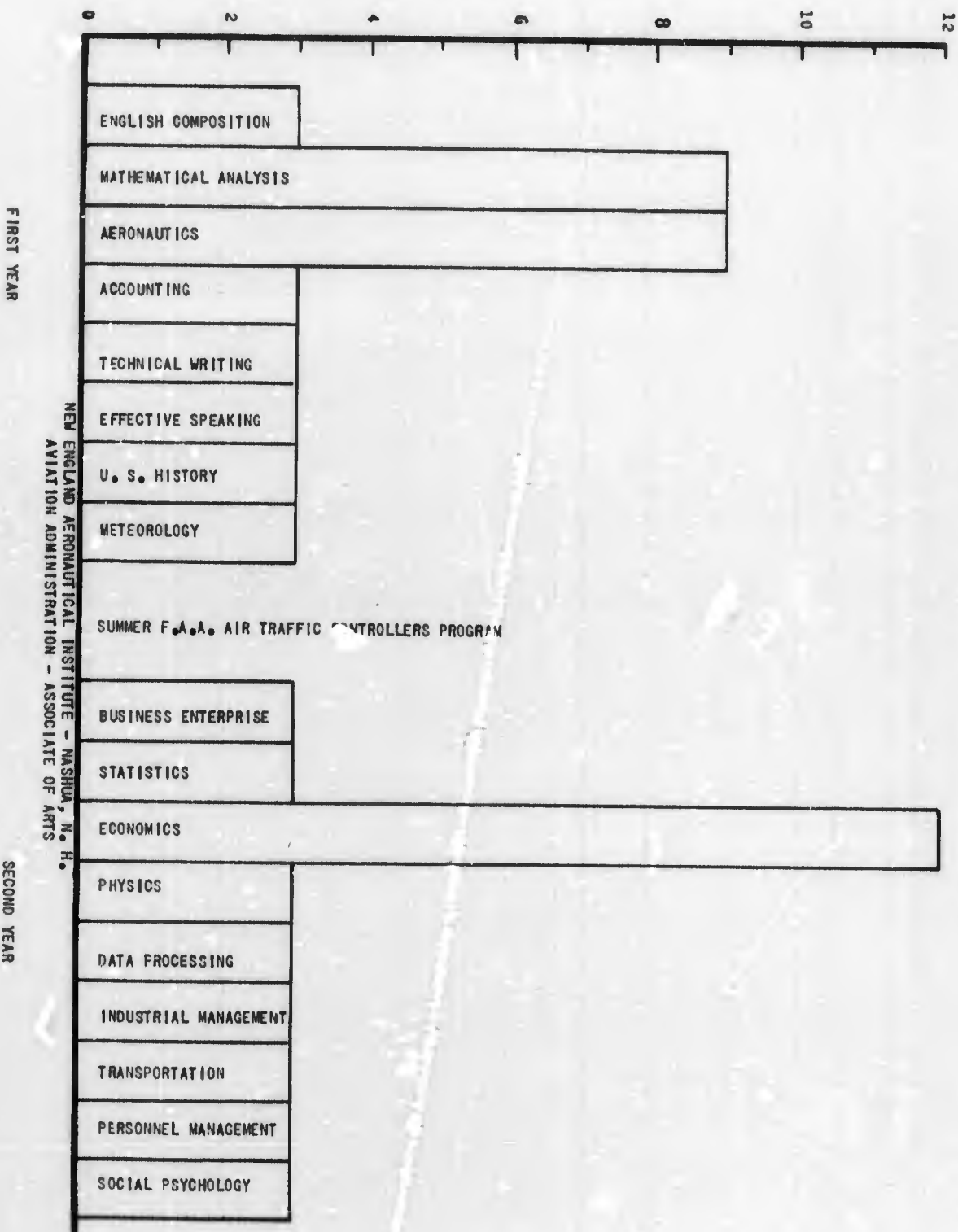
912.137 Equipment Service Supervisor (air trans)
912.138 Supervisor, Ticket Sales (air trans)
912.168 Dispatcher (air trans)
 Schedule Analyst (air trans)
912.368 Airplane-Dispatch Clerk (air trans)
 Flight Information Expediter (air trans)
 Reservations Agent (air trans)
 Transportation Agent (air trans)
 Cargo Agent (air trans)
912.384 Airport Serviceman (air trans)
912.388 Trip Follower (air trans)
912.488 Traffic Rate Clerk (air trans)

COMPARATIVE
AIR CONTROLMAN RATING
AIR CONTROLLER
TECHNICAL
TRAINING



AIR CONTROLMAN/AIR TRAFFIC CONTROLLER TECHNICAL TRAINING

CREDIT HOURS



AIR CONTROLMAN/AIR TRAFFIC CONTROLLER TECHNICAL TRAINING

NEW ENGLAND AERONAUTICAL INSTITUTE - NASHUA, N. H.
AVIATION ADMINISTRATION - ASSOCIATE OF ARTS

**AIR CONTROLMAN/AIR TRAFFIC CONTROLLER OCCUPATIONAL TECHNICAL TRAINING
DURATIONS OF TRAINING COURSES AND COMPONENTS OF COURSES**

Air Controlman Class A School - 10 Weeks

400 Clock Hours

Components

- 36 Hours - Aviation Weather
- 44 Hours - Basic Air Navigation/Air Navigation Aids
- 40 Hours - Airport Traffic Control
- 32 Hours - Air Traffic Rules
- 32 Hours - Communications/Flight Assistance Service
- 48 Hours - Air Route Traffic Control
- 32 Hours - FAA Examination Review
- 56 Hours - Military Air Traffic Control Laboratory
- 32 Hours - Air Traffic Control Publications
- 30 Hours - Air Traffic Control Radar
- 18 Hours - Search Radar Laboratory

Career Academy School(s) (located in 13 major cities of the United States and Canada)

Broadcasting

300 Clock Hours

Components

- 85 Hours - Interpretive Broadcasting
- 50 Hours - Newscasting
- 50 Hours - Disc Jockeying
- 40 Hours - Sportscasting
- 50 Hours - Commercial Announcing
- 15 Hours - Variety Broadcasting
- 10 Hours - International Commentating

NOTE: Air Traffic Controllers, as a pre-requisite to certification, must receive extensive training at the Aeronautical Center, Oklahoma City, Oklahoma

New England Aeronautical Institute - Nashua, N. H.

Aviation Administration - Associate of Arts

Components

First Year

- 3 Credit Hours - English Composition
- 9 Credit Hours - Mathematical Analysis
- 9 Credit Hours - Aeronautics
- 3 Credit Hours - Accounting
- 3 Credit Hours - Technical Writing
- 3 Credit Hours - Effective Speaking
- 3 Credit Hours - U. S. History
- 3 Credit Hours - Meteorology

Second Year

- 3 Credit Hours - Business Enterprise
- 3 Credit Hours - Statistics
- 6 Credit Hours - Economics
- 12 Credit Hours - Physics
- 3 Credit Hours - Data Processing
- 3 Credit Hours - Industrial Management
- 3 Credit Hours - Transportation
- 3 Credit Hours - Personnel Management
- 3 Credit Hours - Social Psychology

NOTE: Each school year consists of three terms, each of which is approximately 12 weeks in duration.

F. A. A. Air Traffic Controllers Program

Procedures

Successfully Complete First Year of Aviation Administration Curriculum
Pass Civil Service Examination
Pass Physical Examination
40 Hours Per Week - Summer Work at Air Route Traffic Control Center
20 Hours Per Week - Work at Air Route Traffic Control Center during
Second Year of School.

NOTE: This program is dependent upon the budgetary and staffing limitations of the Federal Aviation Administration. Up to 20 students can be employed by the F. A. A. in this program; selections made on the competitive basis outlined above.

APPENDIX B

AEROGRAPHER'S MATE RATING/
METEOROLOGY/OCEANOGRAPHY SPECIALTY
COMPARATIVE
OCCUPATIONAL SPECIALTY
AND
TECHNICAL TRAINING
DATA

This Appendix contains comparative Navy and civilian occupational specialty and technical/apprenticeship training data. This information in the present format may be used by recruiters as an aid to classify lateral entry petty officer recruits.

The comparative civilian occupational specialty data have been obtained from the U. S. Department of Labor, Dictionary of Occupational Titles, and are presented according to the same numeric code sequence that is contained within that classification document. Comparable civilian occupations are listed for each specific Navy rating. Broad civilian occupational specialty categories are listed first, followed by a list of the occupations within each specialty.

The occupational titles data that are presented in each Appendix are all inclusive, but does not provide a complete list of each different occupational title within each specific occupational specialty category. Additional occupational title information may be obtained by referring to the specified numeric code listed in the Dictionary of Occupational Titles, as the need may arise.

The comparative technical training data have been obtained from the curricula of accredited private and state supported trade and technical schools, community and junior colleges, and vocational training courses at regular high schools. The comparative apprenticeship training data were obtained from U. S. Department of Labor recommended schedules. These data are distributed as equitably as possible between private and state supported schools, and with a sufficient nationwide geographic dispersal to enable as broad as possible a comparison between civilian and Navy vocational training.

The technical and apprenticeship training data are presented to afford examples of comparative Navy and civilian vocational training for each occupational specialty that comprises the functions of each given Navy rating. These data are presented for information purposes to help the recruiter in processing pre-enlistment packages and/or appropriate service record pages. The prospective petty officer recruit's training and experience background data may be compared with the training and experience requirements for a given Navy rating. Also, these same data may be compared with other appropriate civilian occupational training data to determine the prospective recruit's background and proficiency in a specific occupational specialty area. This will help to insure the proper placement of new petty officer recruits.

COMPARATIVE
AEROGRAPHER'S RATE RATING
METEOROLOGY/OCEANOGRAPHY
OCCUPATIONAL SPECIALTIES
DATA

NAVY AEROGRAPHER'S MATE RATING AND COUNTERPART CIVILIAN
OCCUPATIONAL SPECIALTIES

Navy Aerographer's Mate rating personnel observe, collect, record, and analyze meteorological and oceanographic data for military use; make visual and instrumental weather and sea condition observations; interpret weather codes and enter data on appropriate charts; and forecast weather and sea conditions from proper charts in order to furnish advice concerning probable changes in the weather and sea conditions and the effect of the weather and the sea upon operations.

Counterpart civilian occupational specialties to this Navy rating are skills found in Professional, Technical and Managerial occupations; occupations in Mathematics and Physical Sciences; occupations in Meteorology; occupations in Geology; and occupations in Oceanography.

Similar Meteorology/Oceanography specialty occupations include meteorologists, climatologists, hydrographers, radiosonde operators, weather chart preparers, and oceanographers. (Most of these occupations are professional specialties and require college or university level education).

The following is a list of these occupations, with the appropriate D. O. T. codes (U. S. Department of Labor, Dictionary of Occupational Titles). Broad specialty categories are listed first, then a comprehensive list of occupations within each specialty follows.

- 0/1 Professional, Technical and Managerial Occupations
- 02 Occupations in Mathematics and Physical Sciences
- 024 Occupations in Geology
- 025 Occupations in Meteorology

0/1 Professional, Technical and Managerial Occupations

This category includes occupations concerned with the theoretical or practical aspects of such fields of human endeavor as art, science, engineering, education, medicine, law, business relations, and administrative, managerial and technical work. Most of these occupations require substantial educational preparation (usually at the university, junior college, or technical institute level).

02 Occupations in Mathematics and Physical Sciences

This division includes occupations concerned with research pertaining to the physical universe, and the application of established mathematical and scientific laws and principles to specific problems and situations.

024 Occupations in Geology

This group includes occupations concerned with the investigation of the composition, structure, and physical and biological history of the earth's crust and the application of this knowledge in such fields as archaeology, mining, and construction (also Oceanography). Typical specializations are economic geology, historical geology, mineralogy, mining geology, paleontology, petroleum geology, petrology, physiology, structural geology, subsurface geology, (oceanography).

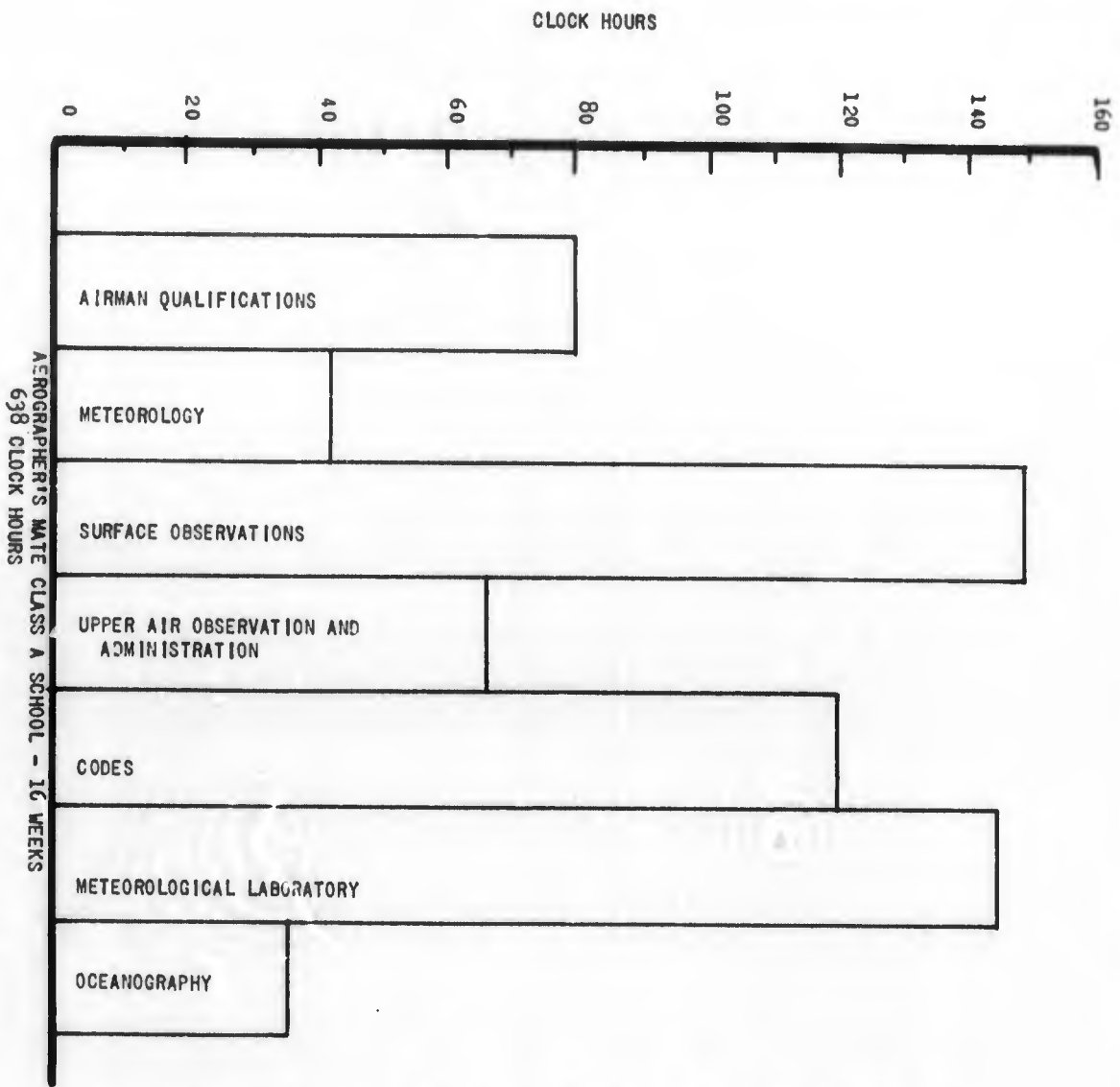
024.081 Oceanographer, Geological (profess & kin)
Oceanographer, Physical (profess & kin)

025 Occupations in Meteorology

This group includes occupations concerned with the investigation of atmospheric phenomena. Typical specializations are synoptic meteorology, climatology, dynamic meteorology, and physical meteorology.

025.088 Meteorologist (profess & kin)
Climatologist
Hydrographer (waterworks)
Radiosonde Operator (profess & kin)
Weather Observer (profess & kin)
Weather Chart Preparer

COMPARATIVE
AEROGRAPHER'S MATE RATING
METEOROLOGY/OCEANOGRAPHY
TECHNICAL
TRAINING



AEROGRAHER'S MATE/METEOROLOGY/OCEANOGRAPHY TECHNICAL TRAINING

COMPARABLE TECHNICAL TRAINING IS OBTAINABLE THROUGH THE STUDY OF COLLEGE LEVEL METEOROLOGY AND OCEANOGRAPHY COURSES AND BY PRACTICAL EXPERIENCE WORKING WITH METEOROLOGICAL INSTRUMENTS.

**AEROGRAPHER'S MATE/METEOROLOGY/OCEANOGRAPHY OCCUPATIONAL TECHNICAL TRAINING
DURATIONS OF TRAINING COURSES AND COMPONENTS OF COURSES**

Aerographer's Mate Class A School - 16 Weeks

638 Clock Hours - 232.30 Hours Class/325.30 Hours Laboratory (Practical)

Components

- 80 Hours - Airman Qualifications**
- 42 Hours - Meteorology**
- 150 Hours - Surface Observations**
- 66 Hours - Upper Air Observation and Administration**
- 120 Hours - Codes**
- 145 Hours - Meteorological Laboratory**
- 35 Hours - Oceanography**

Comparable technical training is obtainable through the study of college level Meteorology and Oceanography courses and by practical experience working with meteorological instruments.

APPENDIX C

AVIATION ELECTRICIAN'S MATE RATING/
AVIATION ELECTRICIAN/AVIATION INSTRUMENTMAN
COMPARATIVE OCCUPATIONAL SPECIALTY
AND
TECHNICAL TRAINING
DATA

This Appendix contains comparative Navy and civilian occupational specialty and technical/apprenticeship training data. This information in the present format may be used by recruiters as an aid to classify lateral entry petty officer recruits.

The comparative civilian occupational specialty data have been obtained from the U. S. Department of Labor, Dictionary of Occupational Titles, and are presented according to the same numeric code sequence that is contained within that classification document. Comparable civilian occupations are listed for each specific Navy rating. Broad civilian occupational specialty categories are listed first, followed by a list of the occupations within each specialty.

The occupational titles data that are presented in each Appendix are all inclusive, but does not provide a complete list of each different occupational title within each specific occupational specialty category. Additional occupational title information may be obtained by referring to the specified numeric code listed in the Dictionary of Occupational Titles, as the need may arise.

The comparative technical training data have been obtained from the curricula of accredited private and state supported trade and technical schools, community and junior colleges, and vocational training courses at regular high schools. The comparative apprenticeship training data were obtained from U. S. Department of Labor recommended schedules. These data are distributed as equitably as possible between private and state supported schools, and with a sufficient nationwide geographic dispersal to enable as broad as possible a comparison between civilian and Navy Vocational training.

The technical and apprenticeship training data are presented to afford examples of comparative Navy and civilian vocational training for each occupational specialty that comprises the functions of each given Navy rating. These data are presented for information purposes to help the recruiter in processing pre-enlistment packages and/or appropriate service record pages. The prospective petty officer recruit's training and experience background data may be compared with the training and experience requirements for a given Navy rating. Also, these same data may be compared with other appropriate civilian occupational training data to determine the prospective recruit's background and proficiency in a specific occupational specialty area. This will help to insure the proper placement of new petty officer recruits.

COMPARATIVE
AVIATION ELECTRICIAN'S MATE RATING
AVIATION ELECTRICIAN/AVIATION INSTRUMENTMAN
OCCUPATIONAL SPECIALTIES
DATA

NAVY AVIATION ELECTRICIAN'S MATE RATING AND COUNTERPART
CIVILIAN OCCUPATIONAL SPECIALTIES

Aviation Electrician's Mates inspect and maintain aircraft electrical and instrument systems, including: power generation, conversion, and distribution systems; interior and exterior lighting; components of aircraft controls, including airframe, engine, propeller, and utility control systems; aircraft electrical starting systems, including starters, starting controls, and ignition system components, aircraft engine, flight, and navigation instruments, instrument systems, and noninstrument-type indication and warning systems; aircraft automatic flight control systems, including inertial navigation systems, automatic pilots, automatic flight stabilization systems, aircraft compasses, and attitude reference systems; aircraft batteries; and related electrical components; and test and adjust auxiliary airborne electrical power units and test equipment.

Counterpart civilian occupational specialties to this Navy rating are skills found in Machine Trades occupations, Bench Work occupations and Structural Work occupations.

Similar specialty occupations include metal machinery occupation: machinists; mechanics and machinery repairmen; aircraft mechanics and repairmen; occupations in fabrication and repair of scientific apparatus, clocks and measurement instruments; occupations in assembly and repair of motors and generators; and occupations in assembly, installation and repair of electronic communication, detection, and signaling equipment.

The following is a list of these occupations, with the appropriate D. O. T. codes (U. S. Department of Labor, Dictionary of Occupational Titles). Broad specialty categories are listed first, then a comprehensive list of occupations within each specialty follows.

- 6 Machine Trades Occupations
- 60 Metal Machinery Occupations
- 600 Machinists and Related Occupations
- 62/63 Mechanics and Machinery Repairmen
- 621 Aircraft Mechanics and Repairmen

- 7 Bench Work Occupations
- 71 Occupations in Fabrication and Repair of Scientific and Medical Apparatus, Photographic and Optical Goods, Watches and Clocks, and Related Products
- 710 Occupations in Fabrication and Repair of Instruments for Measuring, Controlling and Indicating Physical Characteristics

- 72 Occupations in Assembly and Repair of Electrical Equipment
- 721 Occupations in Assembly and Repair of Motors, Generators,
and Related Products
- 722 Occupations in Assembly and Repair of Communications
Equipment
- 729 Occupations in Assembly and Repair of Electrical Equipment

- 8 Structural Work Occupations
- 82 Electrical Assembling, Installing, and Repairing Occupations
- 823 Occupations in Assembly, Installation, and Repair of Elec-
tronic Communication, Detection, and Signaling Equipment
- 824 Occupations in Assembly, Installation, and Repair of Light-
ing Equipment and Building Wiring, Not Elsewhere
Classified
- 825 Occupations in Assembly, Installation, and Repair of Trans-
portation and Materials Handling Equipment, Not
Elsewhere Classified

Machine Trades Occupations

This category includes occupations concerned with feeding, tending, operating, controlling, and setting up machines to cut, bore, mill, abrade, print and similarly work such materials as metal, paper, wood and stone. Throughout this category, the overall relationship of the worker to the machine is of prime importance. At the more complex level, the important aspects of the work included understanding machine functions, reading blueprints, making mathematical computations, and exercising judgment to attain conformance to specifications. Coordination of the eyes and hands is the most significant factor at the lower levels. Disassembly, repair, reassembly, installation, and maintenance of machines and mechanical equipment, and weaving, knitting, spinning, and similarly working textiles are included in this category.

60

Metal Machinery Occupations

This division includes occupations concerned with shaping metal parts or products by removing excess from stock or objects, primarily by such means as cutting, boring, milling, abrading, and planing. Includes laying out, job setting, repairing, fitting, and assembly. The machining of plastics is also included when the methods applied to the machining of metal are used.

600

Machinists and Related Occupations

This group includes occupations concerned with shaping metal parts by milling, turning, planing, abrading, boring, chipping, sawing, and shaving with a variety of metal working machines. Includes laying out, job setting, fitting, assembling, and repairing. Occupations primarily concerned with Machine Shop tools are included in Group 601 and machining gears in Group 602.

600.280

Maintenance Machinist (any ind)

600.381

Propeller Lay-Out Man (aircraft mfg)

62/

Mechanics and Machinery Repairmen

63

This division includes groups of occupations concerned with installing, inspecting, testing, repairing, rebuilding, and maintaining in efficient operating condition all types of engines and a wide variety of mechanical equipment designed for general or specific application in domestic, commercial, industrial, and agricultural activities. Occupations in this division typically require knowledge of the structural and functional characteristics of specific machines or types of machines, and include such tasks as locating and drilling holes, alining structural and moving parts, and occasionally operating machine tools to remove excess metal from semifinished or repaired parts. Occupations concerned with assembling

relatively small objects and materials, such as jewelry, phonographs, light bulbs, musical instruments, tires, footwear, pottery and garments. The work is usually performed at a set position in a mill, plant, or shop, at a bench, worktable, or conveyor. At the more complex levels, workers frequently read blueprints, follow patterns, use a variety of handtools, and assume responsibility for meeting standards. Workers at the less complex levels are required to follow standardized procedures.

- 71 Occupations in Fabrication and Repair of Scientific and Medical Apparatus, Photographic and Optical Goods, Watches and Clocks, and Related Products.

This division includes occupations concerned with assembling, fabricating, and repairing scientific, engineering, and medical equipment, photographic and optical goods, clocks and watches, and related products, using specialized handtools and bench-type machines.

- 710 Occupations in Fabrication and Repair of Instruments for Measuring, Controlling, and Indicating Physical Characteristics

This group includes occupations concerned with fabricating and repairing instruments for measuring, controlling, and indicating temperature, pressure, and vacuum, fluid flow, liquid level, mechanical motion, rotation, humidity, density, acidity, or alkalinity, and combustion, including those used to control home air-conditioning and heating systems and as components in household appliances; dial pressure gages, scales, and balances; and apparatus for testing such physical properties as hardness, tension, torsion, compression, and elasticity. Instruments for measuring, recording, and controlling electrical characteristics are included in Division 72.

- 710.281 Instrument Man (aircraft mfg. air trans)

- 72 Occupations in Assembly and Repair of Electrical Equipment

This division includes occupations concerned with assembling, fabricating, or repairing equipment, components, and parts for equipment to transmit, control, or convert electrical power; signaling and detection equipment, and home radios, television sets and phonographs.

- 721 Occupations in Assembly and Repair of Motors, Generators, and Related Products

This group includes occupations concerned with assembling and repairing electric motors, power generators, motor generator sets, railway motors and control equipment; and motors, generators, and control

equipment for gasoline-electric and oil-electric buses and trucks. Winding and assembling coils, magnets, armatures and related components are included in Group 724.

721.281 Ignition Specialist (air trans)

722 Occupations in Assembly and Repair of Communications Equipment

This group includes occupations concerned with assembling and repairing wire and wireless telephone and telegraph equipment and parts. radio and television broadcasting equipment and parts. electronic field detection apparatus, light and heat emission operating apparatus. object detection apparatus and navigational electronic equipment, aircraft and missile control systems, electronic data processing equipment, and electronic and electric communication and signaling products.

722.381 Instrument Inspector (aircraft mfg)
Inspector, Electronic Instruments (aircraft mfg)

729 Occupations in Assembly and Repair of Electrical Equipment

This group includes occupations, not elsewhere classified, concerned with assembling, fabricating, or repairing electrical equipment.

729.381 Electrical Equipment Tester (aircraft mfg)

8 Structural Work Occupations

This category includes occupations concerned with fabricating, erecting, installing, paving, painting, repairing, and similarly working on structures or structural parts. such as bridges, buildings, roads, motor vehicles, cables, airplane engines, girders, plates, and frames. The work generally occurs outside a factory or shop environment, except for factory production line occupations. Tools used are hand or portable power tools, and such materials as wood, metal, concrete, glass and clay are involved. Workers are frequently required to have a knowledge of the materials with which they work, e. g. stresses, strains, durability and resistance to weather.

82 Electrical Assembling, Installing, and Repairing Occupations

This division includes occupations concerned with assembling, installing, erecting and repairing electrical equipment and related structures designed for electric power generation, transmission, and distribution; communication, signaling and object detection; process control, fire control and data processing; transportation and materials handling;

heating, air conditioning, refrigeration, and illumination; and other industrial, commercial, and domestic electrical applications.

823 Occupations in Assembly, Installation, and
Repair of Electronic Communication, Detection
and Signaling Equipment

This group includes occupations concerned with assembling equipment components: connecting and testing circuitry: installing equipment to provide electronic communication, detection, signaling, recording, analyzing, and computing services: and making on-site repairs in buildings, ships, trains and aircraft.

823.281 Radio Mechanic, Aircraft Installations (aircraft
mfg air trans)
Radio Mechanic (any ind)

824 Occupations in Assembly, Installation, and
Repair of Lighting Equipment and Building
Wiring, Not Elsewhere Classified

This group includes occupations, not elsewhere classified, concerned with wiring buildings and adjacent yards to provide electricity for power and lighting: assembling and installing lighting equipment, conduit switches, junction and fuse boxes and related accessories and controls: and repairing wiring components.

824.781 Airport Electrician (air trans)

825 Occupations in Assembly, Installation, and
Repair of Transportation and Materials
Handling Equipment, Not Elsewhere Classified

This group includes occupations, not elsewhere classified, concerned with wiring and repairing electrical power units and controls for transportation and material handling equipment, and adjusting or repairing electrical components and circuits.

825.281 Electrical Repairman (aircraft mfg)
Electrician, Airplane (aircraft mfg)
Electrician, Field Service (aircraft mfg)
Experimental Rocket Sled Mechanic (aircraft mfg)

825.381 Aircraft Mechanic, Electrical and Radio (aircraft
mfg)
Electrical and Radio Mock Up Man (aircraft mfg)
Electrical Inspector (aircraft mfg)
Electrician, Airplane (air trans)

COMPARATIVE
AVIATION ELECTRICIAN'S MATE RATING
AVIATION ELECTRICIAN/AVIATION INSTRUMENTMAN
TECHNICAL
TRAINING

CLOCK HOURS

0 20 40 60 80 100 120 140 160 180

AVIATION ELECTRICIAN'S WAVE CLASS A SCHOOL - 22 WEEKS
872 CLOCK HOURS

AVIATION ELECTRICIAN'S WAVE/AVIATION INSTRUMENTAL OCCUPATIONAL TECHNICAL TRAINING

AVIATION FUNDAMENTALS

BASIC ELECTRICITY/DIRECT CURRENT THEORY

ALTERNATING THEORY FUNDAMENTALS

BASIC ELECTRONICS APPLICABLE TO AIRCRAFT

ELECTRICAL MACHINERY DEVICES/CURRENTS

AIRCRAFT INSTRUMENTS/FLIGHT STABILIZATION SYSTEMS

AIRCRAFT SYSTEMS/LINE MAINTENANCE

INTRODUCTION TO AVIONICS

WIRING PRACTICES

AVIONICS MAINTENANCE DOCUMENTS/PUBLICATIONS

SUPPORTING AVIONICS ELEMENTS

POWER GENERATION

ENVIRONMENTAL/AUXILIARY SYSTEMS

COMMUNICATIONS SYSTEMS

NAVIGATION SYSTEMS I

NAVIGATION SYSTEMS II

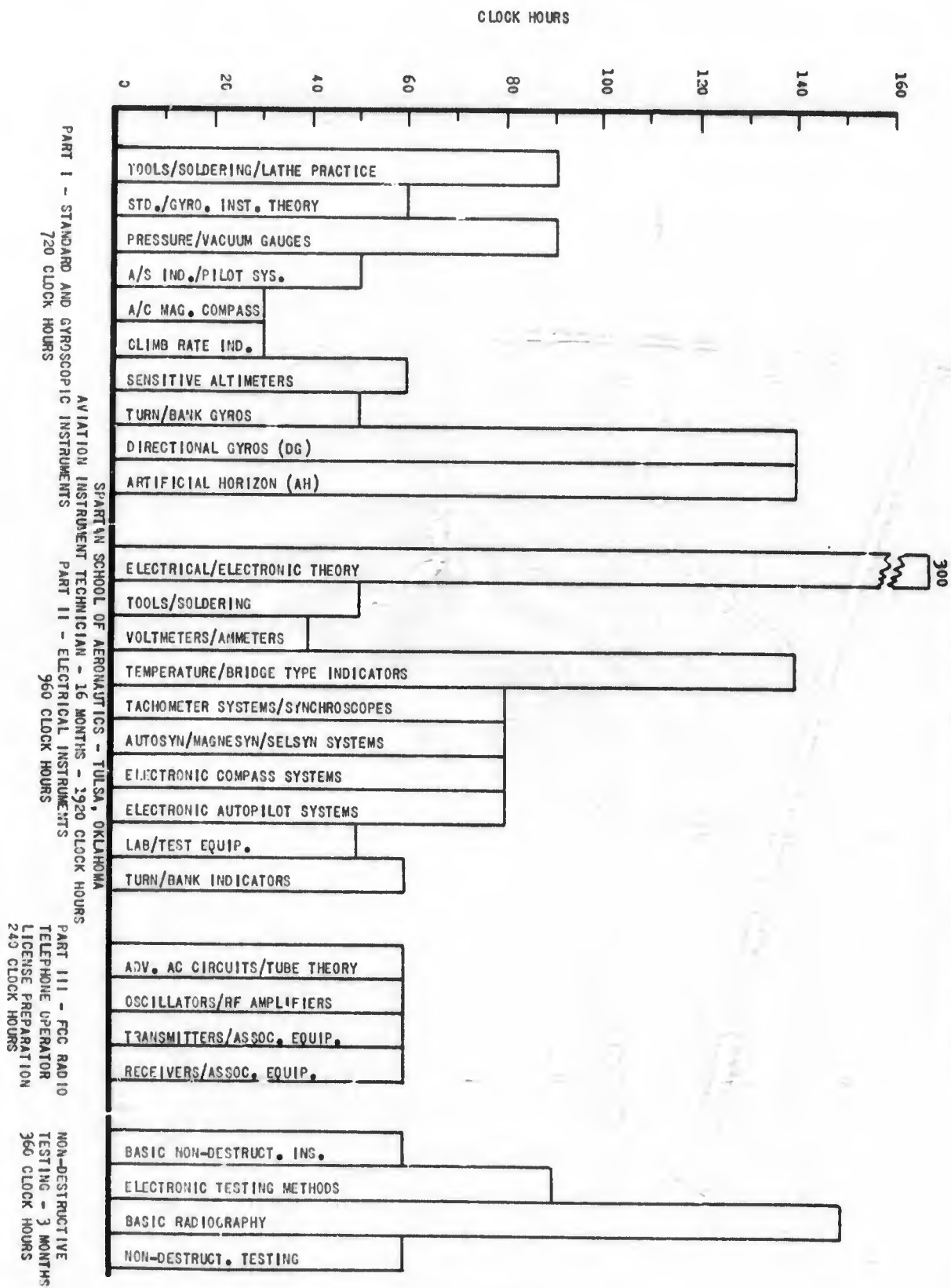
FLIGHT/CONTROL SYSTEMS

AIRBORNE RADAR SYSTEM

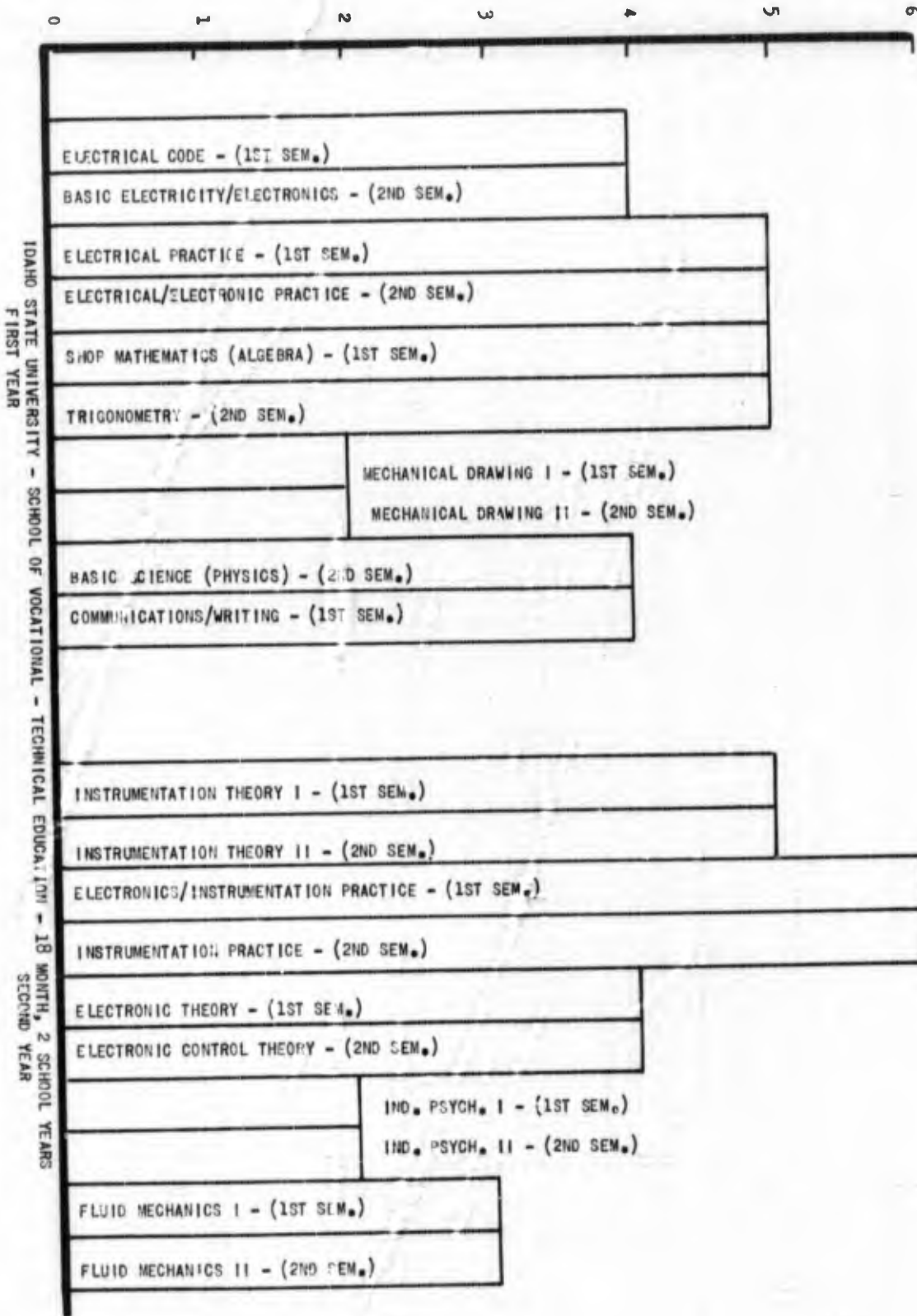
AVIONICS TEST EQUIPMENT

STARTAN SCHOOL OF AERONAUTICS - TULSA, OKLAHOMA
AVIONICS SYSTEMS TECHNICIAN - 6 MONTHS
720 CLOCK HOURS

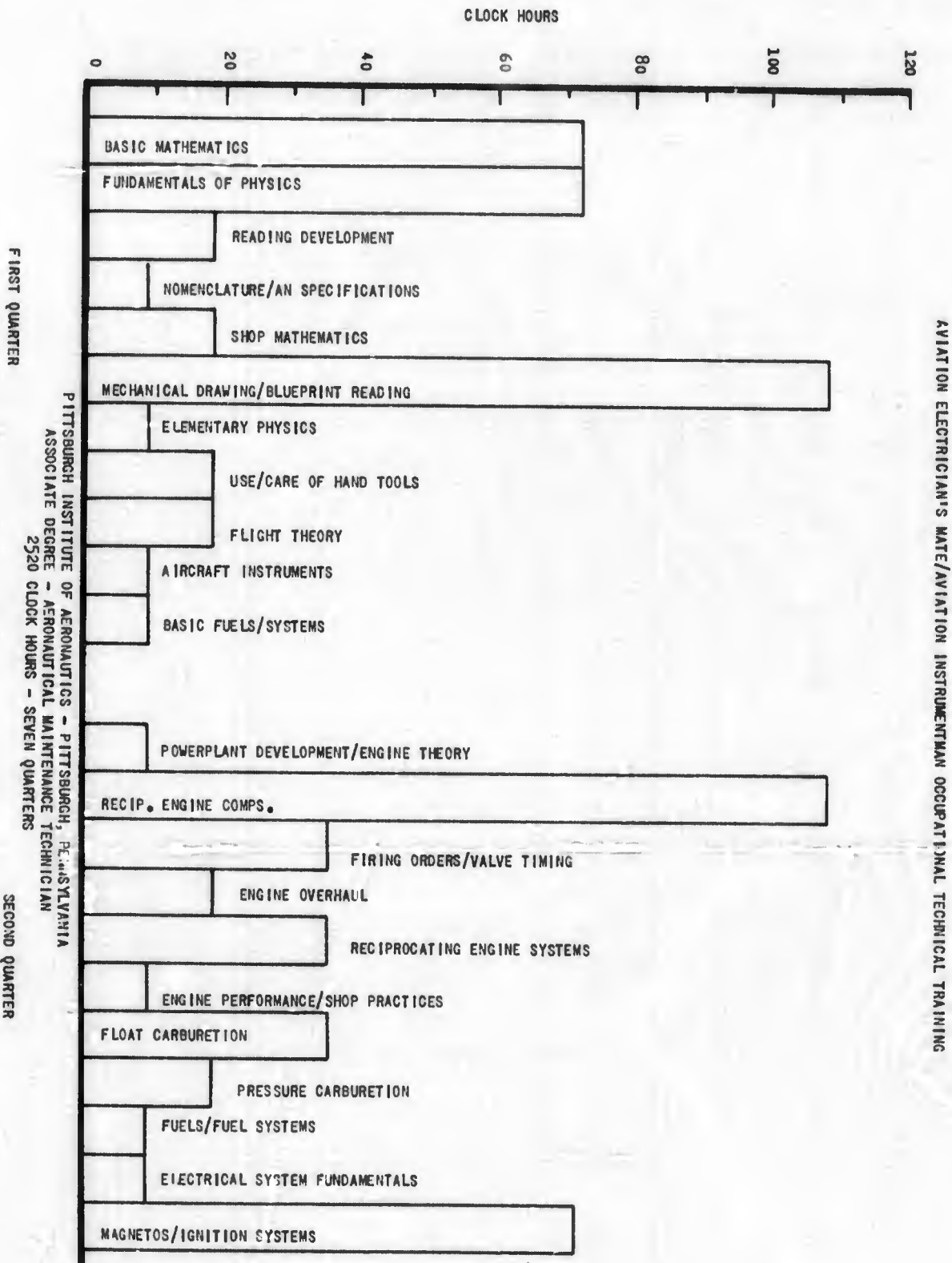
AVIATION ELECTRICIAN'S MATE/AVIATION INSTRUMENTMAN OCCUPATIONAL TECHNICAL TRAINING



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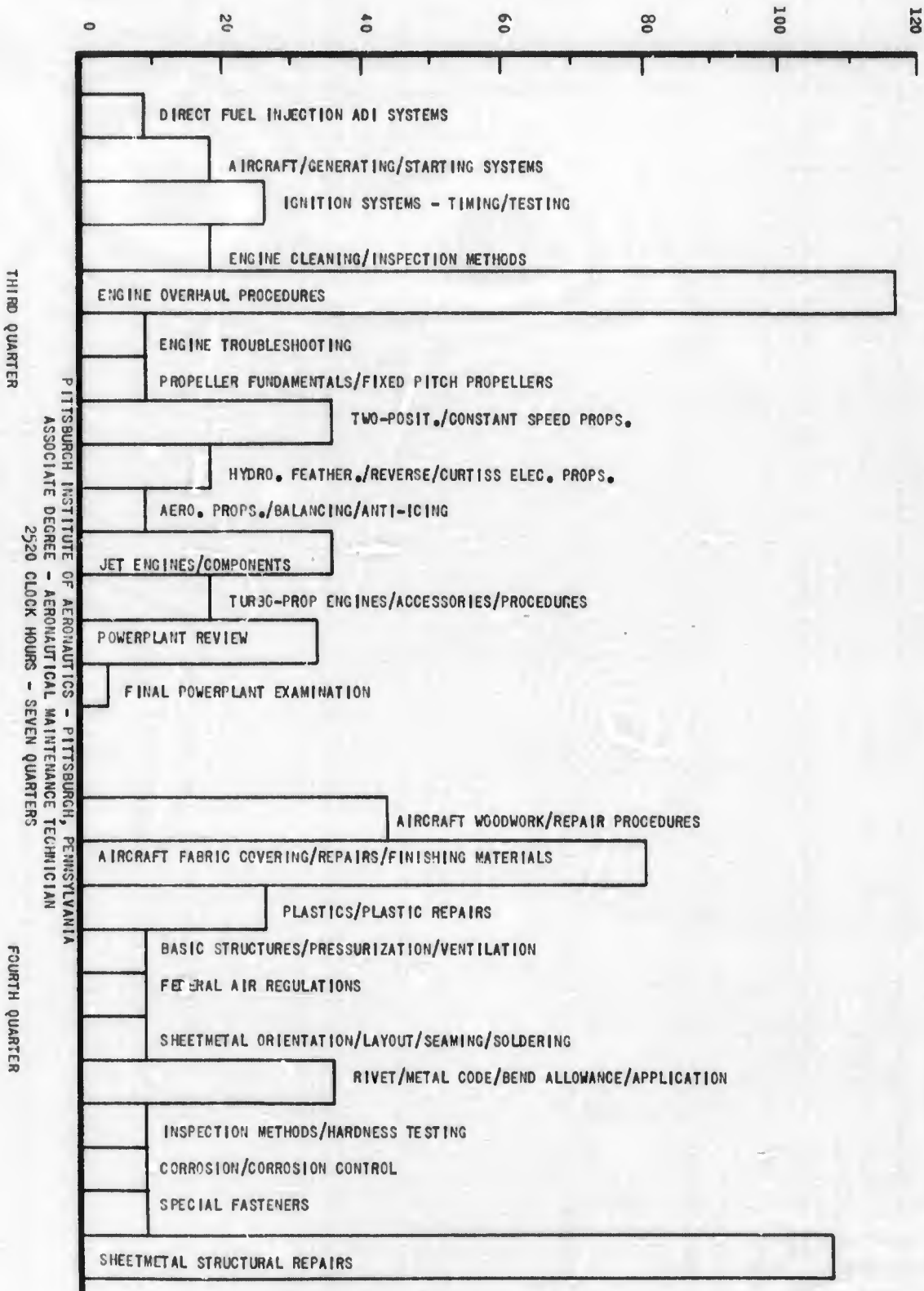


AVIATION ELECTRICIAN'S MATE/AVIATION INSTRUMENTMAN OCCUPATIONAL TECHNICAL TRAINING

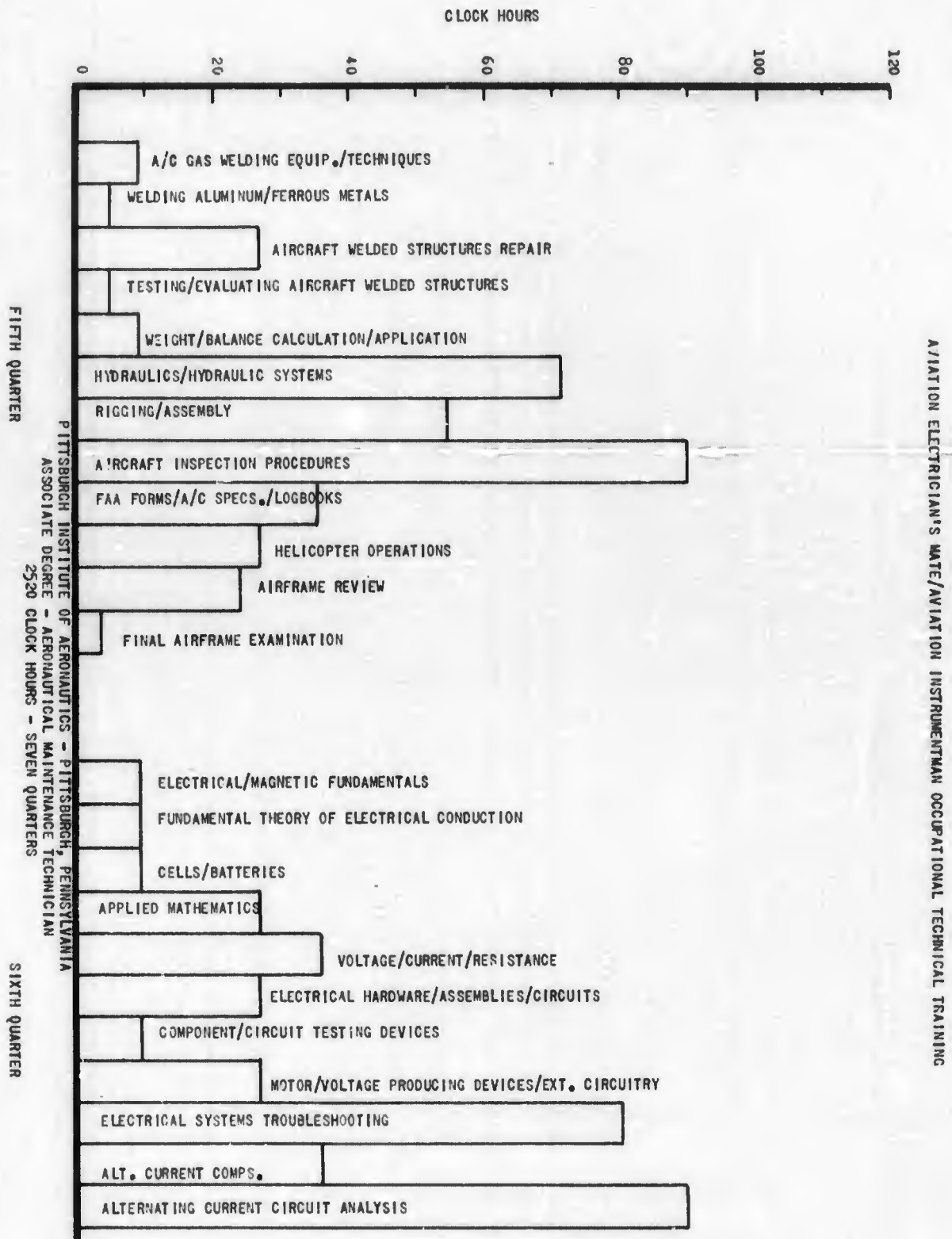


AVIATION ELECTRICIAN'S MATE/AVIATION INSTRUMENTMAN OCCUPATIONAL TECHNICAL TRAINING

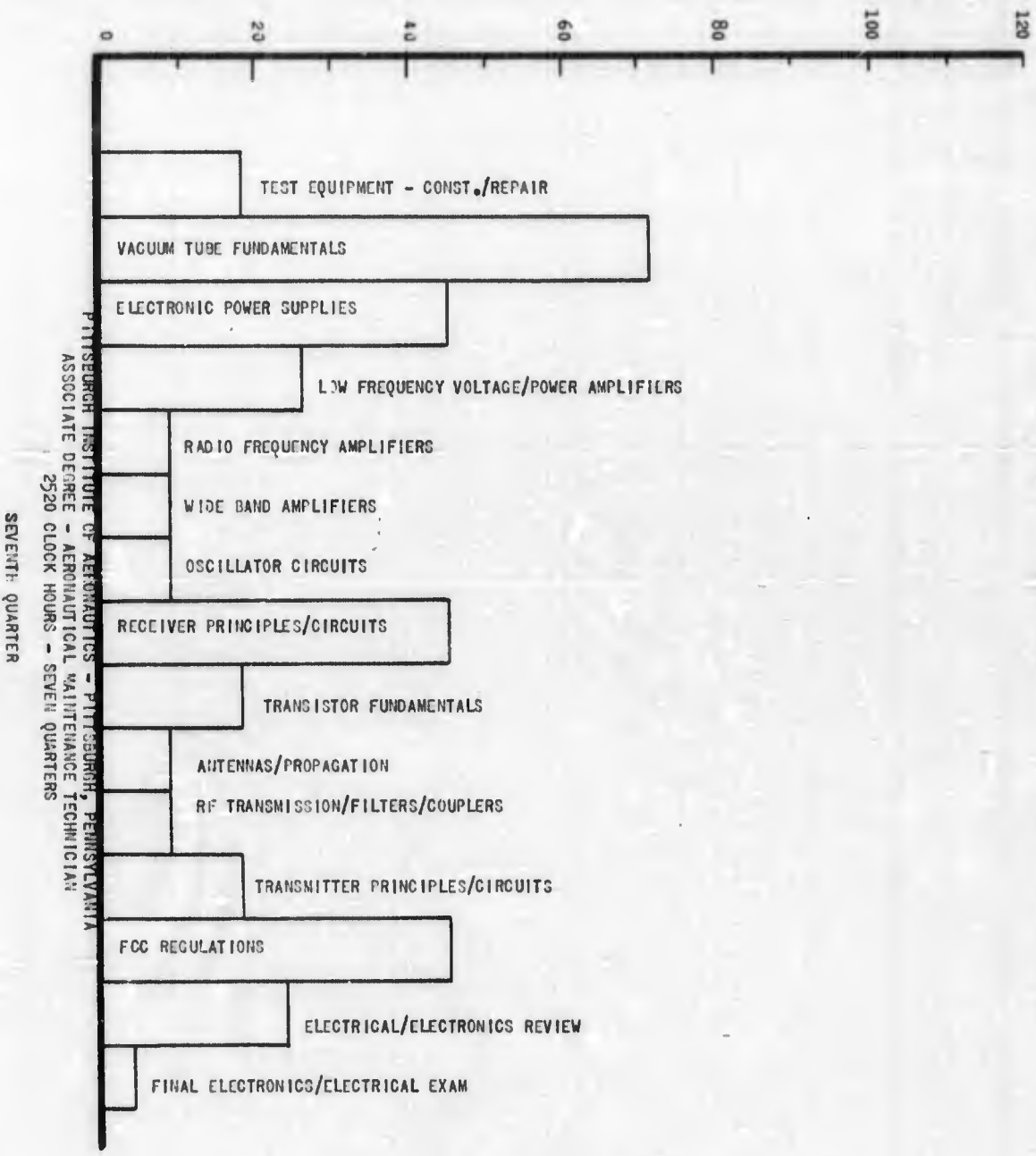
CLOCK HOURS



AVIATION ELECTRICIAN'S MAINTENANCE/AVIATION INSTRUMENTMAN OCCUPATIONAL TECHNICAL TRAINING



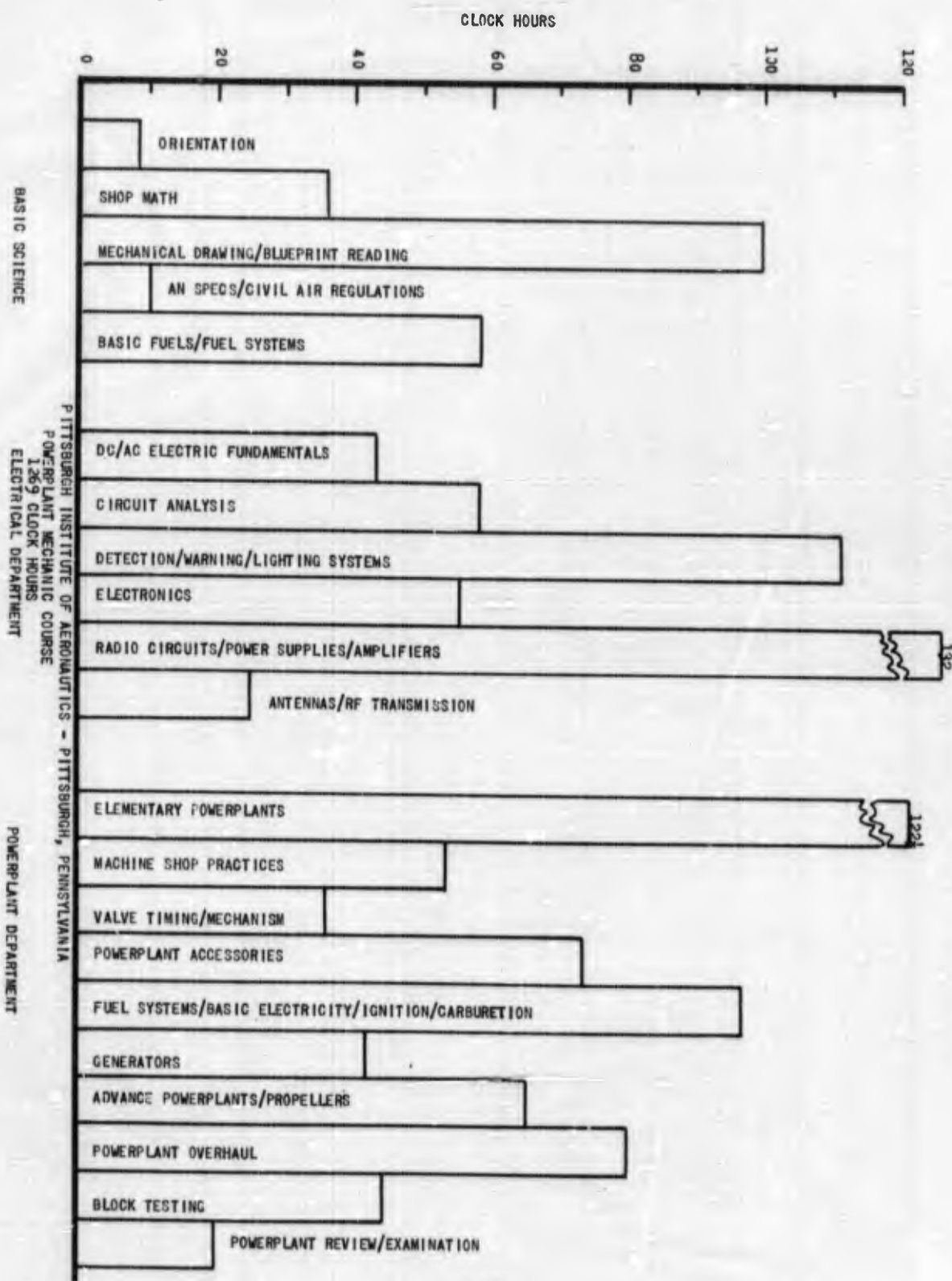
CLOCK HOURS



AVIATION ELECTRICIAN'S MATE/AVIATION INSTRUMENTMAN OCCUPATIONAL TECHNICAL TRAINING

PITTSBURGH INSTITUTE OF AERONAUTICS - PITTSBURGH, PENNSYLVANIA
ASSOCIATE DEGREE - AERONAUTICAL MAINTENANCE TECHNICIAN
2520 CLOCK HOURS - SEVEN QUARTERS
SEVENTH QUARTER

AVIATION ELECTRICIAN'S MATE/AVIATION INSTRUMENTMAN OCCUPATIONAL TECHNICAL TRAINING



CLOCK HOURS

0 20 40 60 80 100 120

BASIC SCIENCE

ORIENTATION

SHOP MATHEMATICS

MECHANICAL DRAWING/BLEUPRINT READING

AIR SPECS/CIVIL AIR REGULATIONS

BASIC FUELS/FUEL SYSTEMS

DC/AC ELECTRICAL FUNDAMENTALS

CIRCUIT ANALYSIS

DETECTION/WARNING/LIGHTING SYSTEMS

ELECTRONICS

RADIO CIRCUITS/POWER SUPPLIES/AMPLIFIERS

ANTENNAS/RF TRANSMISSION

ELEMENTARY AIRFRAME

WOODWORK/PRESSURIZATION/APPLIANCES

FABRIC COVERING/FINISHING

SHEETMETAL/WELDING

STANDARDS/TESTING OF METALS

WELDING-QUALITY CONTROL/PRODUCTION

ADVANCED AIRFRAME

HYDRAULIC SYSTEMS/CIVIL AIR REGULATIONS

VACUUM SYSTEMS FIELD PROBLEMS

AIRFRAME REVIEW/EXAMINATION

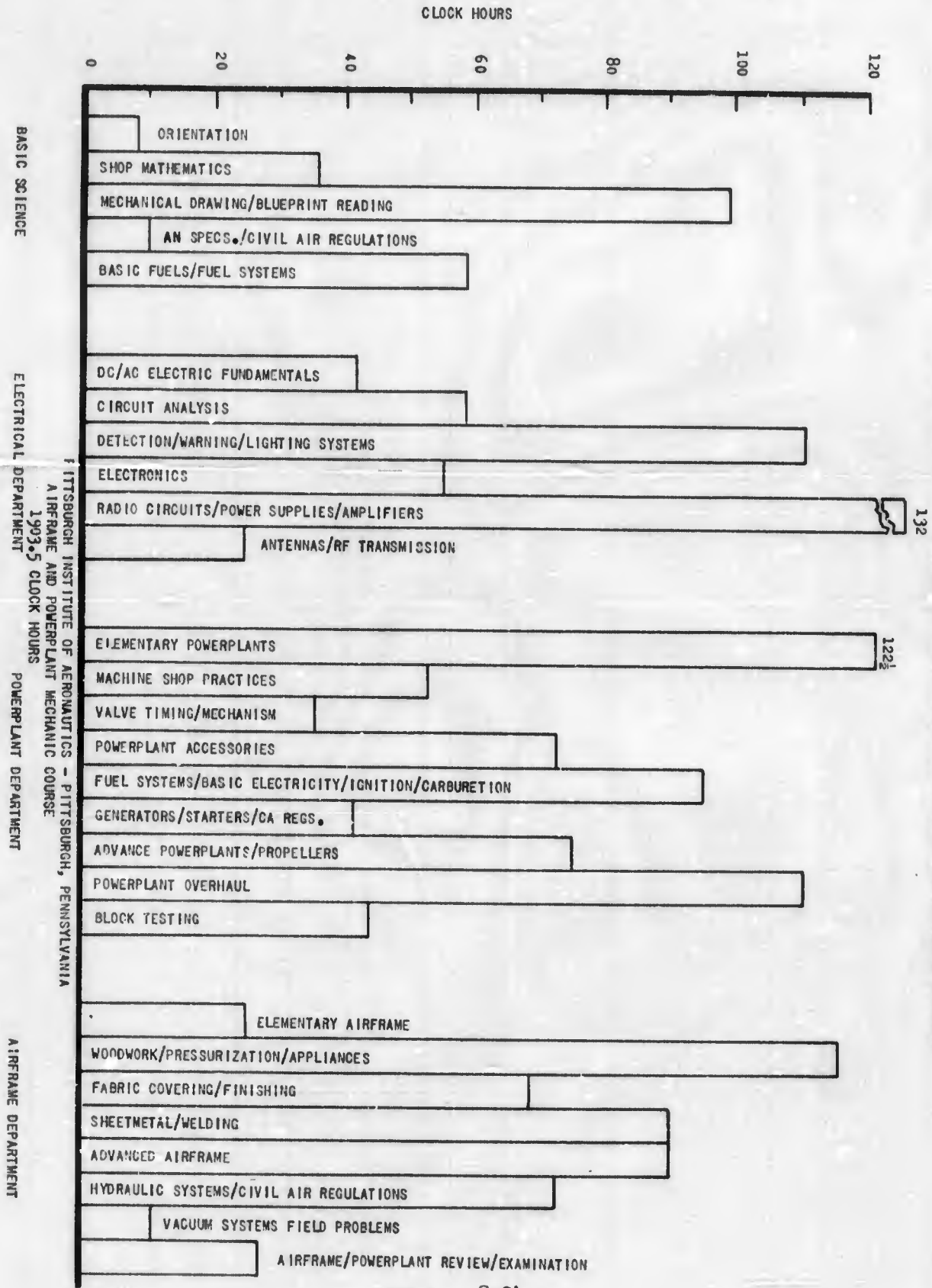
AVIATION ELECTRICIAN'S MATE/AVIATION INSTRUMENTMAN OCCUPATIONAL TECHNICAL TRAINING

132

PITTSBURGH INSTITUTE OF AERONAUTICS - PITTSBURGH, PENNSYLVANIA
AIRFRAME MECHANIC COURSE
1269 CLOCK HOURS
ELECTRICAL DEPARTMENT

AIRFRAME DEPARTMENT

AVIATION ELECTRICIAN'S MATE/AVIATION INSTRUMENTMAN OCCUPATIONAL TECHNICAL TRAINING



AVIATION ELECTRICIAN'S MATE/AVIATION ELECTRICIAN/AVIATION INSTRUMENTMAN
OCCUPATIONAL TECHNICAL TRAINING - DURATIONS OF TRAINING COURSES AND
COMPONENTS OF COURSES

Aviation Electrician's Mate Class A School - 22 Weeks

872 Clock Hours

Components

- 80 Hours - Aviation Fundamentals
- 168 Hours - Basic Electricity and Direct Current Theory
- 94 Hours - Alternating Theory Fundamentals
- 160 Hours - Basic Electronics Applicable to Aircraft
- 120 Hours - Electrical Machinery Devices and Currents
- 136 Hours - Aircraft Instruments and Flight Stabilization Systems
- 114 Hours - Aircraft Systems and Line Maintenance

Idaho State University - School of Vocational-Technical Education

Electrical Instrumentation Technology - 18 Month. 2 School Years

Components

First Year

- 4 Credits - Electrical Code - 1st Semester
- 4 Credits - Basic Electricity and Electronics - 2nd Semester
- 5 Credits - Electrical Practice - 1st Semester
- 5 Credits - Electrical and Electronic Practice - 2nd Semester
- 5 Credits - Shop Mathematics (Algebra) - 1st Semester
- 5 Credits - Trigonometry - 2nd Semester
- 2 Credits - Mechanical Drawing I - 1st Semester
- 2 Credits - Mechanical Drawing II (Schematics) - 2nd Semester
- 4 Credits - Basic Science (Physics) - 2nd Semester
- 4 Credits - Communications and Writing - 1st Semester

Second Year

- 5 Credits - Instrumentation Theory I - 1st Semester
- 5 Credits - Instrumentation Theory II - 2nd Semester
- 6 Credits - Electronics and Instrumentation Practice - 1st Semester
- 6 Credits - Instrumentation Practice - 2nd Semester
- 4 Credits - Electronic Theory - 1st Semester
- 4 Credits - Electronic Control Theory - 2nd Semester
- 2 Credits - Industrial Psychology I - 1st Semester
- 2 Credits - Industrial Psychology II - 2nd Semester

- 3 Credits - Fluid Mechanics I - 1st Semester
- 3 Credits - Fluid Mechanics II - 2nd Semester

NOTE: Classes are 6 hours per day, five days per week. 1 hour of Theory is followed by 1-2 hours of related subjects, and 3-4 hours of lab practice daily. Length of training is 18 months, 4 school semesters.

Spartan School of Aeronautics - Tulsa, Oklahoma

Avionics Systems Technician - 6 Months

720 Clock Hours

Components

- 30 Hours - Introduction to Avionics
- 60 Hours - Wiring Practices
- 30 Hours - Avionics Maintenance Documents/Publications
- 60 Hours - Supporting Avionics Elements
- 30 Hours - Power Generation
- 30 Hours - Environmental and Auxiliary Systems
- 60 Hours - Communications Systems
- 120 Hours - Navigation Systems I
- 120 Hours - Navigation Systems II
- 90 Hours - Flight and Control Systems
- 60 Hours - Airborne Radar System
- 30 Hours - Avionics Test Equipment

Aviation Instrument Technician - 16 Months

1920 Clock Hours

Components

Part I - Standard and Gyroscopic Instruments - 720 Clock Hours

- 90 Hours - Tools, Soldering, Lathe Practice
- 60 Hours - Standard and Gyroscopic Instrument Theory
- 90 Hours - Pressure and Vacuum Gauges
- 50 Hours - Airspeed Indicators and Pilot Systems
- 30 Hours - Aircraft Magnetic Compasses
- 30 Hours - Rate of Climb Indicators
- 60 Hours - Sensitive Altimeters
- 50 Hours - Turn and Bank Gyros
- 140 Hours - Directional Gyros (DG)
- 140 Hours - Artificial Horizon (AH)

Part II - Electrical Instruments - 960 Clock Hours

- 300 Hours - Electrical and Electronic Theory
- 50 Hours - Tools. Movement Project and Soldering
- 40 Hours - Voltmeters. Ammeters
- 140 Hours - Temperature and Bridge Type Indicators
- 80 Hours - Tachometer Systems. Synchrosopes
- 80 Hours - Autosyn Systems. Magnesyn Systems. Selsyn Systems
- 80 Hours - Electronic Compass Systems
- 80 Hours - Electronic Autopilot Systems
- 50 Hours - Laboratory and Test Equipment. Special Projects
- 60 Hours - Electrical Turn and Bank Indicators

Part III - FCC Radio Telephone Operator License Preparation - 240 Hours

- 60 Hours - Advanced AC Circuits. Tube Theory. Power Supplies
- 60 Hours - Oscillators. RF Amplifiers. Advanced Meters and Transistors
- 60 Hours - Transmitters and Associated Equipment
- 60 Hours - Receivers and Associated Equipment

Non-Destructive Testing - 3 Months

360 Clock Hours

Components

- 60 Hours - Basic Non-Destructive Inspection
- 90 Hours - Electronic Testing Methods
- 150 Hours - Basic Radiography
- 60 Hours - Non-Destructive Testing Application

Pittsburgh Institute of Aeronautics - Pittsburgh Pennsylvania

Associate Degree - Aeronautical Maintenance Technician - 7 Quarters

2520 Clock Hours

Components

First Quarter

- 72 Hours - Basic Mathematics
- 72 Hours - Fundamentals of Physics
- 18 Hours - Reading Development
- 9 Hours - Nomenclature/AN Specifications
- 18 Hours - Shop Mathematics

- 108 Hours - Mechanical Drawing/Blueprint Reading
- 9 Hours - Elementary Physics
- 18 Hours - Use and Care of Hand Tools
- 18 Hours - Flight Theory
- 9 Hours - Aircraft Instruments - Introduction
- 9 Hours - Basic Fuels/Systems

Second Quarter

- 9 Hours - Powerplant Development/Engine Theory - Introduction
- 108 Hours - Reciprocating Engine Components - Overhaul
- 36 Hours - Firing Orders/Valve Timing
- 18 Hours - Engine Overhaul Methods
- 36 Hours - Reciprocating Engine Systems
- 9 Hours - Engine Performance/Shop Practices
- 36 Hours - Float Carburetion
- 18 Hours - Pressure Carburetion
- 9 Hours - Fuels/Fuel Systems
- 9 Hours - Electrical System Fundamentals
- 72 Hours - Magnetos/Ignition Systems

Third Quarter

- 9 Hours - Direct Fuel Injection ADI Systems
- 18 Hours - Aircraft Generating/Starting Systems
- 27 Hours - Ignition Systems - Timing/Testing
- 18 Hours - Engine Cleaning/Inspection Methods
- 117 Hours - Engine Overhaul Procedures
- 9 Hours - Engine Troubleshooting
- 9 Hours - Propeller Fundamentals/Fixed Pitch Propellers
- 36 Hours - Two - Position/Constant Speed Propellers
- 18 Hours - Hydromatic Feathering & Reversing/Curtiss Electric Propellers
- 9 Hours - Aeroproducts Propellers, Balancing, Anti-Icing, Weight/Balance
- 36 Hours - Jet Engine Fundamentals/Components/Inspection Procedures
- 18 Hours - Turbo-Prop Engines/Accessories/Procedures/Instrumentation
- 33 Hours - Powerplant Review
- 3 Hours - Final Powerplant Examination

Fourth Quarter

- 54 Hours - Aircraft Woodwork/Repair Procedures
- 81 Hours - Aircraft Fabric Covering/Repairs/Finishing Materials
- 27 Hours - Plastics/Plastic Repairs
- 9 Hours - Basic Structures/Pressurization/Ventilation
- 9 Hours - Federal Air Regulations
- 9 Hours - Sheetmetal Orientation/Layout/Seaming/Soldering
- 36 Hours - Rivet and Metal Code/Bend Allowance/Application
- 9 Hours - Inspection Methods/Hardness Testing
- 9 Hours - Corrosion/Corrosion Control

- 9 Hours - Special Fasteners
- 108 Hours - Sheetmetal Structural Repairs

Fifth Quarter

- 9 Hours - Aircraft Gas Welding Equipment/Techniques
- 4½ Hours - Welding Aluminum/Ferrous Metals
- 27 Hours - Aircraft Welded Structures Repair
- 4½ Hours - Testing/Evaluating Aircraft Welded Structures
- 9 Hours - Weight and Balance Calculation/Application
- 72 Hours - Hydraulics/Hydraulic Systems
- 54 Hours - Rigging/Assembly
- 90 Hours - Aircraft Inspection Procedures
- 36 Hours - Use of FAA Forms/Aircraft Specifications/Logbook Entries
- 27 Hours - Helicopter Operation Principles
- 24 Hours - Airframe Review
- 3 Hours - Final Airframe Examination

Sixth Quarter

- 9 Hours - Electrical/Magnetic Fundamentals
- 9 Hours - Fundamental Theory of Electrical Conduction
- 9 Hours - Cells/Batteries
- 27 Hours - Applied Mathematics
- 36 Hours - Relationship of Voltage/Current/Resistance
- 27 Hours - Electrical Hardware/Assemblies/Circuit Components
- 9 Hours - Components/Circuit Testing Devices
- 27 Hours - Motor/Voltage Producing Devices & External Circuitry
- 81 Hours - Electrical Systems Troubleshooting
- 36 Hours - Alternating Current Components
- 90 Hours - Alternating Current Circuit Analysis

Seventh Quarter

- 16 Hours - Test Equipment - Construction/Repair
- 72 Hours - Vacuum Tube Fundamentals/Characteristics of Application
- 45 Hours - Various Electronic Power Supplies
- 27 Hours - Low Frequency Voltage/Power Amplifiers
- 9 Hours - Radio Frequency Amplifiers
- 9 Hours - Wide Band Amplifiers
- 9 Hours - Oscillator Circuits
- 45 Hours - Receiver Principles/Circuits
- 18 Hours - Transistor Fundamentals
- 9 Hours - Antennas/Propagation
- 9 Hours - RF Transmission Lines/Filters/Couplers
- 18 Hours - Transmitter Principles/Circuits
- 45 Hours - FCC Regulations
- 24 Hours - Electrical/Electronics Review
- 3 Hours - Final Electronics/Electrical Exam

Powerplant Mechanic Course

1269 Clock Hours

Components

Basic Science

- 8 Hours - Orientation
- 36 Hours - Shop Mathematics
- 99½ Hours - Mechanical Drawing/Blueprint Reading
- 10 Hours - AN Specs/Civil Air Regulations
- 58 Hours - Basic Fuels/Fuel Systems

Electrical Department

- 42½ Hours - DC-AC Electrical Fundamentals
- 58 Hours - Circuit Analysis
- 111 Hours - Detection/Warning/Lighting Systems
- 55 Hours - Electronics
- 132 Hours - Radio Circuits/Power Supplies/Amplifiers
- 24½ Hours - Antennas/RF Transmission

Powerplant Department

- 122½ Hours - Elementary Powerplants
- 53 Hours - Machine Shop Practices
- 36 Hours - Valve Timing/Mechanism
- 73½ Hours - Powerplant Accessories
- 96 Hours - Fuel Systems/Basic Electricity/Ignition/Carburetion
- 42 Hours - Generators
- 66 Hours - Advance Powerplants/Propellers
- 81 Hours - Powerplant Overhaul
- 44 Hours - Block Testing
- 20 Hours - Powerplant Review/Examination

Airframe Mechanic Course

1269 Clock Hours

Components

Basic Science

- 8 Hours - Orientation
- 36 Hours - Shop Mathematics
- 99½ Hours - Mechanical Drawing/Blueprint Reading

- 10 Hours - AN Specs/Civil Air Regulations
- 58 Hours - Basic Fuels/Fuel Systems

Electrical Department

- 42½ Hours - DC-AC Electrical Fundamentals
- 58 Hours - Circuit Analysis
- 111 Hours - Detection/Warning/Lighting Systems
- 55 Hours - Electronics
- 132 Hours - Radio Circuits/Power Supplies/Amplifiers
- 24½ Hours - Antennas/RF Transmission

Airframe Department

- 26 Hours - Elementary Airframe
- 116 Hours - Woodwork/Pressurization/Appliances
- 69½ Hours - Fabric Covering/Finishing
- 120½ Hours - Sheetmetal/Welding
- 26 Hours - Standards/Testing of Metals
- 65 Hours - Welding - Quality Control/Production
- 91 Hours - Advanced Airframe
- 89½ Hours - Hydraulic Systems/Civil Air Regulations
- 11 Hours - Vacuum Systems Field Problems
- 20 Hours - Airframe Review/Examination

Airframe and Powerplant Mechanic Course

1903.5 Clock Hours

Components

Basic Science

- 8 Hours - Orientation
- 36 Hours - Shop Mathematics
- 99½ Hours - Mechanical Drawing/Blueprint Reading
- 10 Hours - AN Specs/Civil Air Regulations
- 58 Hours - Basic Fuels/Fuel Systems

Electrical Department

- 42½ Hours - DC-AC Electrical Fundamentals
- 58 Hours - Circuit Analysis
- 111 Hours - Detection/Warning/Lighting Systems
- 55 Hours - Electronics
- 132 Hours - Radio Circuits/Power Supplies/Amplifiers
- 24½ Hours - Antennas/RF Transmission

Powerplant Department

- 122½ Hours - Elementary Powerplants
- 53 Hours - Machine Shop Practices
- 36 Hours - Valve Timing/Mechanism
- 73½ Hours - Powerplant Accessories
- 96 Hours - Fuel Systems/Basic Electricity/Ignition/Carburetion
- 42 Hours - Generators-Starters/Civil Air Regulations
- 76½ Hours - Advance Powerplants/Propellers
- 91 Hours - Powerplant Overhaul
- 44 Hours - Block Testing

Airframe Department

- 26 Hours - Elementary Airframe
- 116 Hours - Woodwork/Pressurization/Appliances
- 69½ Hours - Fabric Covering/Finishing
- 91 Hours - Sheetmetal/Welding
- 91 Hours - Advanced Airframe
- 82½ Hours - Hydraulic Systems/Civil Air Regulations
- 11 Hours - Vacuum Systems Field Problems
- 27 Hours - Airframe/Powerplant Review/Examination

APPENDIX D

COMMISSARYMAN RATING/
FOOD SERVICE SPECIALTY
COMPARATIVE
OCCUPATIONAL SPECIALTY
AND
TECHNICAL TRAINING
DATA

This Appendix contains comparative Navy and civilian occupational specialty and technical/apprenticeship training data. This information in the present format may be used by recruiters as an aid to classify lateral entry petty officer recruits.

The comparative civilian occupational specialty data have been obtained from the U. S. Department of Labor. Dictionary of Occupational Titles, and are presented according to the same numeric code sequence that is contained within that classification document. Comparable civilian occupations are listed for each specific Navy rating. Broad civilian occupational specialty categories are listed first, followed by a list of the occupations within each specialty.

The occupational titles data that are presented in each Appendix are all inclusive, but does not provide a complete list of each different occupational title within each specific occupational specialty category. Additional occupational title information may be obtained by referring to the specified numeric code listed in the Dictionary of Occupational Titles, as the need may arise.

The comparative technical training data have been obtained from the curricula of accredited private and state supported trade and technical schools, community and junior colleges, and vocational training courses at regular high schools. The comparative apprenticeship training data were obtained from U. S. Department of Labor recommended schedules. These data are distributed as equitably as possible between private and state supported schools, and with a sufficient nationwide geographic dispersal to enable as broad as possible a comparison between civilian and Navy vocational training.

The technical and apprenticeship training data are presented to afford examples of comparative Navy and civilian vocational training for each occupational specialty that comprises the functions of each given Navy rating. These data are presented for information purposes to help the recruiter in processing pre-enlistment packages and/or appropriate service record pages. The prospective petty officer recruit's training and experience background data may be compared with the training and experience requirements for a given Navy rating. Also, these same data may be compared with other appropriate civilian occupational training data to determine the prospective recruit's background and proficiency in a specific occupational specialty area. This will help to insure the proper placement of new petty officer recruits.

COMPARATIVE
COMMISSARYMAN RATING/
FOOD SERVICE OCCUPATIONAL
SPECIALTIES DATA

**NAVY COMMISSARYMAN RATING AND COUNTERPART CIVILIAN
OCCUPATIONAL SPECIALTIES**

Commissarymen serve in the crew's food preparation and food service spaces on ships and at shore stations; prepare menus; assist in ordering subsistence items; check deliveries for quantity, and assist Medical Department representatives in inspecting for quality; stow and breakout subsistence items; prepare food products for consumption; maintain cleanliness and sanitation of all food preparation, service, and storage areas, including refrigerated spaces and subsistence issue rooms; complete and maintain records, and submit required reports.

Counterpart civilian occupational specialties to this Navy rating are skills found in Food and other Service Occupations.

Similar Service Occupations include skills in Food and Beverage Preparation and Service Occupations and Occupations in the Processing of Food and Related Products.

The following is a list of these occupations, with the appropriate D.O.T. Codes (U. S. Department of Labor, Dictionary of Occupational Titles). Broad specialty categories are listed first, then a comprehensive list of occupations within each specialty follows.

- 3 Service Occupations
 - 30 Domestic Service Occupations
 - 303 Housekeepers, Private Family
 - 305 Cooks, Domestic
 - 306 Maids, Domestic
 - 309 Domestic Service Occupations

 - 31 Food and Beverage Preparation and Service Occupations
 - 310 Hostesses and Stewards, Food and Beverage Service, Except Ship Stewards
 - 311 Waiters, Waitresses, and Related Food Serving Occupations
 - 312 Bartenders
 - 313 Chefs and Cooks, Large Hotels and Restaurants
 - 314 Chefs and Cooks, Small Hotels and Restaurants
 - 315 Miscellaneous Cooks, Except Domestic
 - 316 Meatcutters, Except in Slaughtering and Packing Houses
 - 317 Miscellaneous Food and Beverage Preparation Occupations
 - 318 Kitchen Workers
 - 319 Food and Beverage Preparation and Service Occupations, Not Elsewhere Classified

- 5 Processing Occupations
 - 52 Occupations in Processing of Food, Tobacco, and Related Products
 - 520 Mixing, Compounding, Blending, Kneading, Shaping and Related Occupations
 - 524 Coating, Icing, Decorating, and Related Occupations

- 525 Slaughtering, Breaking, Curing, and Related Occupations
- 526 Cooking and Baking Occupations, Not Elsewhere Classified
- 529 Occupations in Processing of Food, Tobacco, and Related Products, Not Elsewhere Classified

3 Service Occupations

This category includes occupations concerned with performing tasks in and around private households; serving individuals in institutions and other establishments; and protecting the public against crime, fire, accidents, and acts of war.

30 Domestic Service Occupations

This division includes occupations concerned with tasks in and around a private household.

303 Housekeepers, Private Family

This group includes occupations concerned with managing private household, doing housework, planning meals, marketing, cooking, caring for children and sewing; or directing activities of laundress, cook, maids, or other workers performing these tasks.

303.138 Housekeeper, Home (dom. ser.)

303.878 Farm Housekeeper (dom. ser.)
Farm Housemaid (dom. ser.)

305 Cooks, Domestic

This group includes occupations concerned with preparing and cooking food, including special diets, for private household.

305.281 Cook (dom. ser.)

306 Maids, Domestic

This group includes occupations concerned with performing a variety of domestic tasks, such as cleaning, dusting, making beds, caring for children, washing, ironing, and cooking.

306.878 Maid, General (dom. ser.)
Homemaker
Housekeeper, working

309 Domestic Service Occupations

This group includes occupations, not elsewhere classified, concerned with tasks in and around a private household.

309.138 Butler (dom. ser.)

31 Food and Beverage Preparation and Service Occupations

This division includes occupations concerned with preparing food and beverages and serving them to patrons of such establishments as hotels, clubs, restaurants, and cocktail lounges.

310 Hostesses and Stewards, Food and Beverage Service, Except Ship Stewards

This group includes occupations concerned with greeting and seating customers of establishment; and supervising activities of waiters, waitresses, bus boys, storeroom workers, and kitchen and pantry workers, except those actually engaged in food preparation.

310.137 Wine Steward (hotel & rest.)

310.138 Kitchen Supervisor (hotel & rest.)
Steward (hotel & rest.)
Steward, Banquet (hotel & rest.)
Steward, Railroad Dining Car (r.r. trans.)
Steward, Club Car (r.r. trans.)

310.287 Analyst, Food and Beverage (hotel & rest.)

310.868 Hostess, Restaurant, Coffee Shop, Cocktail Lounge (hotel & rest.)
Floor Attendant, Cafeteria (hotel & rest.)
Host, Restaurant, Coffee Shop, Cocktail Lounge (hotel & rest.)

311 Waiters, Waitresses, and Related Food Serving Occupations

This group includes occupations concerned with setting places at dining tables or counters, taking orders for and serving food and drink, answering inquiries relative to items on the menu, and otherwise attending to the wishes of customers.

311.138 Counter Supervisor (hotel & rest.)
Waiter Captain (hotel & rest.)
Waiter, Head (hotel & rest.)
Captain, Room Service (hotel & rest.)

311.878 Bus Boy (hotel & rest.)
Bus Girl (hotel & rest.)
Car Hop (hotel & rest.)
Cook, Steam Table (r.r. trans.)
Counterman, Cafeteria (hotel & rest.)
Countergirl, Cafeteria (hotel & rest.)
Counterman, Lunchroom or Coffee Shop (hotel & rest.)
Countergirl (hotel & rest.)
Crib Operator (hotel & rest.)
Floor Girl, Cafeteria (hotel & rest.)
Raw-Bar Man (hotel & rest.)
Waiter, Buffet (hotel & rest.)

- 311.878 Waiter, Dining Car (r.r. trans.)
- Waiter, Formal (hotel & rest.)
- Waiter, Room Service (hotel & rest.)
- Waiter, Informal (hotel & rest.)
- Waitress (hotel & rest.)
- Waiter, Bar (hotel & rest.)
- Waitress, Cocktail (hotel & rest.)
- Waitress, Take Out (hotel & rest.)
- Waiter, Outside Delivery (hotel & rest.)
- Waitress, Camp (any ind.)
- Waiter, Camp (any ind.)

312 Bartenders

This group includes occupations concerned with mixing and dispensing alcoholic drinks.

- 312.878 Bar Attendant (hotel & rest.)
- Bartender (hotel & rest.)

- 312.887 Bar Boy (hotel & rest.)
- Tapman (hotel & rest.)

313 Chefs and Cooks, Large Hotels and Restaurants

This group includes occupations concerned with planning menus, estimating consumption, and/or cooking food in large hotels or restaurants. Workers usually specialize in a particular area.

- 313.131 Chef (hotel & rest.)
- Pastry Chef (hotel & rest.)
- Sous Chef (hotel & rest.)

- 313.138 Baker, Head (hotel & rest.)
- Cook, Head, School Cafeteria (hotel & rest.)

- 313.168 Executive Chef (hotel & rest.)

- 313.281 Chef De Froid (hotel & rest.)

- 313.381 Baker, Pizza (hotel & rest.)
- Baker, Second (hotel & rest.)
- Cook (hotel & rest.)
- Cook, Barbecue (hotel & rest.)
- Cook, Pastry (hotel & rest.)
- Cook, Specialty, Foreign Food (hotel & rest.)

- 313.781 Baker (hotel & rest.)
- Garde Manger (hotel & rest.)
- Ice-Cream Man (hotel & rest.)
- Pie Maker (hotel & rest.) I

313.884 Baker Helper (hotel & rest.)

313.887 Cook Helper, Pastry (hotel & rest.)

314 Chefs and Cooks, Small Hotels and Restaurants

This group includes occupations concerned with planning menus, estimating consumption, ordering supplies, and cooking food in small hotels or restaurants.

314.381 Cook, Short Order (hotel & rest.)

314.781 Cook, Specialty (hotel & rest.)

314.878 Combination Man (hotel & rest.)

315 Miscellaneous Cooks, Except Domestic

This group includes occupations concerned with preparing and cooking food in places other than private houses, hotels, or restaurants.

315.131 Cook, Chief (water trans.)
Pastry Chef (water trans.)

315.138 Chef, Passenger Vessel (water trans.)
Sous Chef (water trans.)

315.381 Cook (any ind.)

316 Meatcutters, Except in Slaughtering and Packing Houses

This group includes occupations concerned with cutting and otherwise preparing meat for cooking in hotels and restaurants, or for sale in wholesale or retail trade. Meatcutter occupations in slaughtering and packing houses are included in Group 525.

316.781 Butcher, Meat (hotel & rest.)
Carver (hotel & rest.)

316.884 Butcher, Chicken and Fish (hotel & rest.)
Deli Cutter-Slicer (ret. tr.)
Meat Cutter (ret. tr.; whole tr.)
Meat Inspector (ret. tr.; whole tr.)
Meat-Cutter Apprentice (ret. tr.; whole tr.)

317 Miscellaneous Food and Beverage Preparation Occupations

This group includes occupations, concerned with preparing food and beverages.

317.884 Coffee Man (hotel & rest.)
Coffee Girl (hotel & rest.)

- 317.884 Pantryman (hotel & rest.)
Pantrygirl (hotel & rest.)
Pantryman (water trans.)
Sandwich Man (hotel & rest.)
Sandwich Girl (hotel & rest.)
- 317.887 Cook Helper (hotel & rest.) I
Formula-Room Worker (medical ser.)
Packer (hotel & rest.)
- 318 Kitchen Workers, n.e.c.

This group includes occupations, not elsewhere classified, concerned with performing such duties as washing and drying dishes; polishing silverware; and disposing of garbage and trash.

- 318.138 Kitchen Steward (hotel & rest.)
Pantry Steward (hotel & rest.)
- 318.887 Kitchen Helper (hotel & rest.)
Silverman (hotel & rest.)
Scullion (water trans.)
Silverman (water trans.)
Silver Wrapper (hotel & rest.)

319 Food and Beverage Preparation and Service Occupations, n.e.c.

This group includes occupations, not elsewhere classified, concerned with food and beverage preparation and service.

- 319.137 Supervisor, Kosher Dietary Service (hotel & rest.)
- 319.138 Food-Service Supervisor (hotel & rest.)
Manager, Flight Kitchen (hotel & rest.)
Manager, Industrial Cafeteria (hotel & rest.)
- 319.468 Order Clerk, Food and Beverage (hotel & rest.)
Wheelman (hotel & rest.)
- 319.864 Automat-Car Attendant (r.r. trans.)
- 319.874 Caterer Helper (per. ser.)
- 319.878 Fountain Man (hotel & rest.)
Fountain Girl (hotel & rest.)
- 319.884 Food Assembler, Commissary Kitchen (hotel & rest.)
- 319.887 Counter-Supply Man (hotel & rest.)
- 319.999 Camp Couple (logging)

5 Processing Occupations

This category includes occupations concerned with refining, mixing, compounding, chemically treating, heat treating, or similarly working materials and products. Knowledge of a process and adherence to formulas or other specifications are required in some degree. Vats, stills, ovens, furnaces, mixing machines, crushers, grinders, and related equipment or machines are usually involved.

52 Occupations in Processing of Food, Tobacco, and Related Products

This division includes occupations concerned with preparing food, tobacco, and related products for commercial use. Includes manufacturing phases after harvesting and prior to marketing. Such activities as slaughtering livestock, blending cheeses, fermenting alcohol, and smoking hams are included in this division. Marking and packaging occupations are included here when they occur at the end of a production process.

520 Mixing, Compounding, Blending, Kneading, Shaping, and Related Occupations

This group includes occupations concerned with combining and mingling various materials to produce a single mass or compound and working an object or material by pressure and configuration to shape it or effect its texture and consistency.

- 520.132 Foreman, Compressed Yeast (food prep., n.e.c.)
- 520.381 Honey Grader-and-Blender (food prep. n.e.c.)
- 520.487 Cheese Blender (dairy prod.)
Pantrygirl (confection)
- 520.587 Scrapman (macaroni & rel. prod.)
- 520.782 Blending-Plant Operator (oils & fats)
Bulk-Plant Operator (sugar)
Center-Machine Operator (confection)
Cracker-and-Cooky Machine Operator (bake. prod.)
Cubelet Station Operator (sugar)
Dough Mixer (bake. prod.)
Dough-Mixer Operator (bake. prod.)
Extruder Operator (cereal)
Molding-Machine Operator (confection)
Noodle Pressman (macaroni & rel. prod.)
Spinner (confection)
Whipped-Topping Finisher (oils & fats)
- 520.884 Almond-Paste Molder (confection)
Bench Hand (bake. prod.)
Roller (confection)

520.885 Batter Mixer (bake. prod.)
Batter Mixer (food prep., n.e.c.)
Blender (bake. prod.)
Blender-Machine Operator (oils & fats)
Blending-Tank Tender (flav. ext. & sirup)
Brine-Mixer Operator, Automatic (can. & preserv.)
Broth Mixer (bake. prod.)
Cake Former (oils & fats)
Cake Stripper (oils & fats)
Candy-Maker Helper (confection)
Candy Puller (confection)
Casting-Machine Operator (confection)
Casting-Machine Operator (dairy prod.)
Tray-Casting-Machine Operator (dairy prod.)
Chopping-Machine Operator (slaught. & meat pack)
Churn-and-Milk Man (oils & fats)
Shortening Man (oils & fats)
Churner (oils & fats)
Cocoa-Powder-Mixer Operator (choc. & cocoa)
Confectionery-Drops-Machine Operator (choc. & cocoa; confection)
Cooker, Casing (tobacco)
Cooler Man (sugar)
Dividing-Machine Operator (bake. prod.)
Dough-Brake-Machine Operator (bake. prod.)
Feed Blender (corn prod.)
Feed Mixer (grain & feed mill.)
Liner (grain & feed mill.)
Feeder Operator, Automatic (grain & feed mill.)
Flaking-Roll Operator (cereal)
Flour Blender (grain & feed mill.)
Flour Mixer (grain & feed mill.)
Grain Mixer (grain & feed mill.)
Green-Coffee Blender (food prep., n.e.c.)
Icing Mixer (bake. prod.)
Cooker, Pie Filling (bake. prod.)
Lozenge-Dough Mixer (confection)
Mash Grinder (dairy prod.)
Mill Feeder (grain & feed mill.)
Mingier Operator (sugar)
Mixer (food prep., n.e.c.)
Mixer-and-Blender (food prep., n.e.c.)
Mixer, Chili Powder (food prep., n.e.c.)
Mixer, Dry-Food Products (food prep., n.e.c.)
Mixer Operator (choc. & cocoa)
Mixer Operator (flav. ext. & sirup)
Mixer Operator (salt production)
Mixer, Whipped Topping (food prep., n.e.c.)
Mixing-Machine Operator (can. & preserv.)
Mixing-Machine Operator (food prep., n.e.c.)
Mixing-Tank Operator (oils & fats)
Pellet-Mill Operator (grain & feed mill.)
Presser (corn prod.)
Pressman (macaroni & rel. prod.)

520.885 Press Operator, Meat (slaught. & meat pack.)
Con. Pretzel-Twisting-Machine Operator (bake. prod.)
Rolling-Machine Operator (confection)
Sausage Maker (slaught. & meat pack.)
Sausage Mixer (slaught. & meat pack.)
Sirup Maker (flav. ext. & sirup)
Spice Mixer (food prep., n.e.c.)
Tea Blender (food prep., n.e.c.)
Starchmaker (corn prod.)
Starch-Treating Assistant (corn prod.)
Stuffer (slaught. & meat pack.)
Bulk-Sausage-Stuffing-Machine Operator (slaught. & meat pack.)
Molder, Meat (slaught. & meat pack.)
Sweet-Goods-Machine Operator (bake. prod.)
Tumbler Tender (food prep., n.e.c.)
Yeast Cutter (food prep., n.e.c.)

520.886 Ball-Machine Operator (confection)
Coffee Dumper (food prep., n.e.c.)
Dessert-Cup-Machine Feeder (bake. prod.)
Feed-Mixer Helper (grain & feed mill.)
Flour-Blender Helper (grain & feed mill.)
Molding-Machine-Operator Helper (confection)

520.887 Blintze Roller (food prep., n.e.c.)
Burrito Maker (food prep., n.e.c.)
Candy Molder, Hand (confection)
Candy Spreader (confection)
Collector (food prep., n.e.c.)
Food Mixer (grain & feed mill.)
Mincemeat Maker (can. & preserv.)
Pretzel Twister (bake. prod.)
Seasoning Mixer (slaught. & meat pack.)
Sirup-Mixer Assistant (corn prod.)
Spice Mixer (can. & preserv.)

524 Coating, Icing, Decorating, and Related Occupations

This group includes occupations concerned with applying coverings, fillings, sprays, and decoration to products or components to complete assembly, affect flavor and appearance, improve baking and keeping qualities, and serve as identification.

524.381 Cake Decorator (bake. prod.)
Decorator (dairy prod.)

524.782 Depositing-Machine Operator (bake. prod.)
Enrobing-Machine Operator (confection)
Chocolate-Machine Operator (confection)
Panman (confection)

- 524.884 Decorator (bake. prod.; confection.)
Dipper, Hand (confection.)
Enrobing-Machine Corder (confection.)
Icer, Hand (bake. prod.)
- 524.885 Cheese Sprayer (confection.)
Coating Operator (cereal)
Cracker Sprayer (bake. prod.)
Enrobing-Machine Operator (bake. prod.)
Icer, Machine (bake. prod.)
Sanding-Machine Operator (confection.)
Trolley Operator (bake. prod.)
- 524.886 Enrobing-Machine Feeder (confection.)
Novelty Worker (dairy prod.)
- 524.887 Cherry Cutter (can. & preserv.)
Fruit Stuffer (confection.)
Sticker (bake. prod.)

525 Slaughtering, Breaking, Curing, and Related Occupations

This group includes occupations concerned with killing animals for use as food or byproducts, cutting up carcasses, and preserving and flavoring food, and related products by salting or smoking them.

- 525.130 Foreman, Cured-Meat Packing (slaught. & meat pack.)
Foreman, Cured Meats (slaught. & meat pack.)
Foreman, Tank House (slaught. & meat pack.)
- 525.381 Butcher, All-Round (slaught. & meat pack.)
- 525.781 Shactor (slaught. & meat pack.)
- 525.884 Boner, Meat (slaught. & meat pack.)
Butcher, Fish (can. & preserv.)
Crab Butcher (can. & preserv.)
Fish Cleaner (can. & preserv.; fish.)
Meat Dresser (agric.)
Turkey-Roll Maker (slaught. & meat pack.)
- 525.887 Animal Eviscerator (slaught. & meat pack.)
Poultry Dresser (agric.; slaught. & meat pack.)
Shactor Helper (slaught. & meat pack.)
Smoked Meat Preparer (slaught. & meat pack.)
- 526 Cooking and Baking Occupations, n.e.c.

This group includes occupations, not elsewhere classified, concerned with treating components or products with heat to affect such characteristics as flavor, color, edibility, consistency, and texture.

526.130 Bakery Foreman (bake. prod.)
 526.134 Cook, Mexican Food (food prep., n.e.c.)
 526.137 Potato-Chip-Processing Foreman (food prep., n.e.c.)
 526.381 Baker (grain & feed mill.)
 Cake Tester (grain & feed mill.)
 526.687 Potato-Chip Sorter (food prep., n.e.c.)
 526.781 Baker (bake. prod.)
 Baker Apprentice (bake. prod.)
 526.782 Batter Scaler (bake. prod.)
 Conche Operator (choc. & cocoa)
 Confectionery Cooker (chew. gum; confection.)
 Converter Man (corn prod.)
 Cook, Dog-and-Cat Food (slaught. & meat pack.)
 Cook, Kettle (can. & preserv.; cereal; flav. ext. & sirup)
 Doughnut-Machine Operator (bake. prod.)
 Molasses and Caramel Operator (corn prod.)
 Ovenman (bake. prod.; cereal)
 Retort Operator (can. & preserv.)
 Steam-Oven Operator (can. & preserv.)
 526.884 Doughnut Maker (bake. prod.)
 Potato-Pancake Frier (food prep., n.e.c.)
 526.885 Cook (slaught. & meat pack.)
 Cooker (cereal)
 Cooker, Process Cheese (dairy prod.)
 Cook, Fry, Deep Fat (can. & preserv.; hotel & rest.)
 Cook, Vacuum Kettle (can. & preserv.)
 Ovenman (bake. prod.)
 Oven Operator (cereal)
 Pan Greaser, Machine (bake. prod.)
 Pie Maker, Machine (bake. prod.)
 Popcorn-Candy Maker (confection.)
 Popper (confection.)
 Potato-Chip Frier (food prep., n.e.c.)
 Pretzel Cooker (bake. prod.)
 Relish Maker (can. & preserv.)
 Thermoscrew Operator (can. & preserv.)
 Tripe Cooker (slaught. & meat pack.)
 Wafer-Machine Operator (bake. prod.)
 Wort Extractor (dairy prod.)
 526.886 Baker Helper (bake. prod.)
 526.887 Starchmaker (confection.)

529 Occupations in Processing of Food, Tobacco, and Related
Products, n.e.c.

This group includes occupations, not elsewhere classified, concerned with processing food, tobacco, and related products.

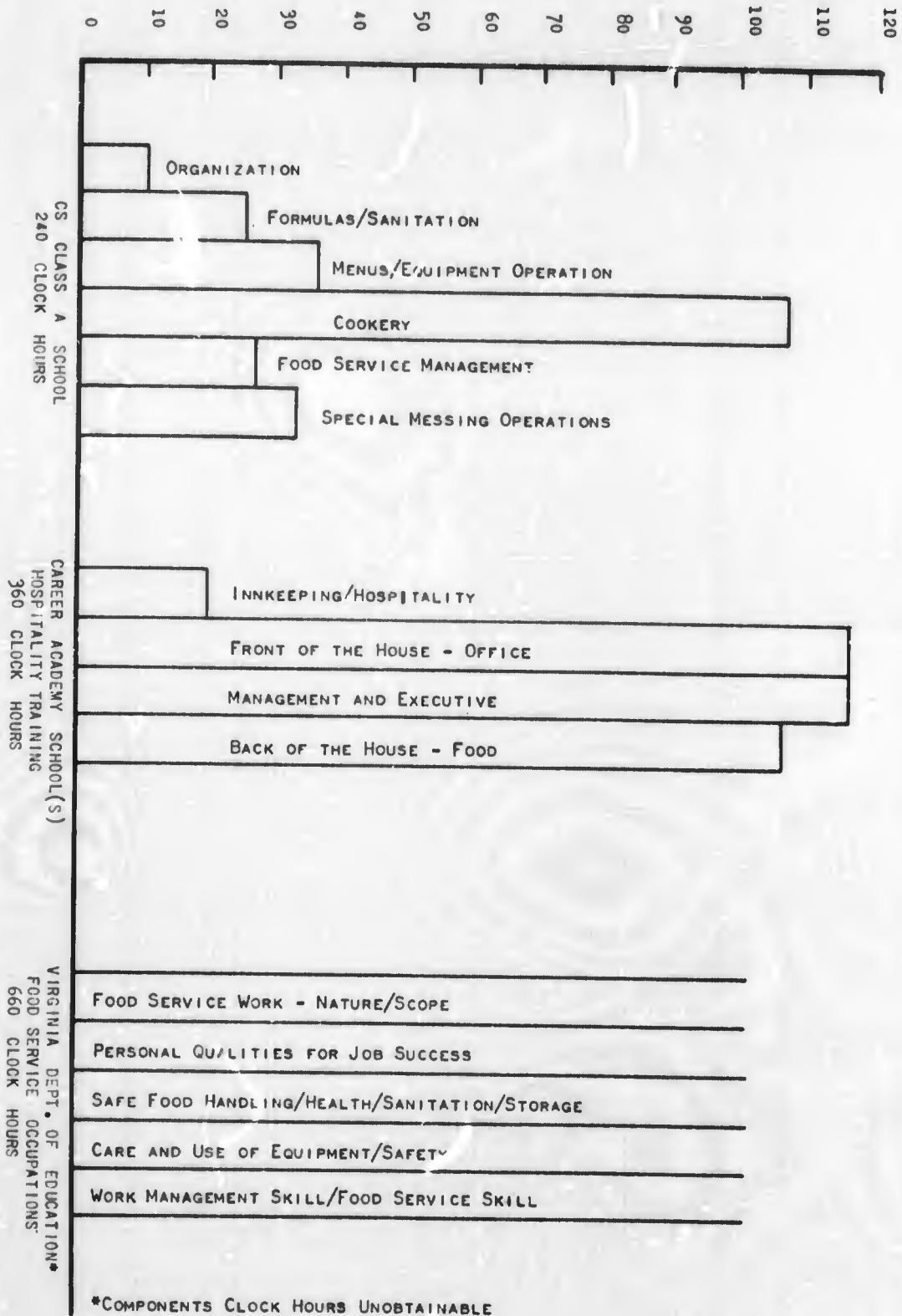
- 529.130 Foreman (choc. & cocoa)
Foreman (nut process.)
Foreman, Candy (confection.)
Foreman, Coffee (food prep., n.e.c.)
Foreman, Filtration (sugar)
Foreman, Pulp House (sugar)
Foreman, Refining (sugar)
Foreman, Soft Sugar (sugar)
Foreman, White Sugar (sugar)
- 529.131 Processing Foreman (dairy prod.)
- 529.132 Foreman, Beet End (sugar)
Foreman, Cleaning (dairy prod.)
Foreman, Cook Room (can. & preserv.)
Foreman, Dried Yeast (food prep., n.e.c.)
Foreman, Dry-Starch (corn prod.)
Foreman, Feed House (corn prod.)
Foreman, Feed Mill (grain & feed mill.)
Custom Feed Mill Operator (grain & feed mill.)
Foreman, Liquid Yeast (food prep., n.e.c.)
Foreman, Mill-House (corn prod.)
Foreman, Nutritional Yeast (food prep., n.e.c.)
Foreman, Steffen House (sugar)
Foreman, Sugar House (corn prod.)
Foreman, Sugar Refinery (corn prod.)
Foreman, Tea and Spice (food prep., n.e.c.)
Plant Foreman (whole. tr.)
- 529.137 Foreman (oils & fats)
Foreman, Egg Room (can. & preserv.)
Foreman, Whipped Topping (dairy prod.)
Grading Foreman (whole. tr.)
- 529.138 Foreman, Malted Milk (dairy prod.)
Foreman, Maple Products (food prep., n.e.c.)
Foreman, Sanitation (bake. prod.; dairy prod.)
Sugar-Reprocess Operator, Head (sugar)
Superintendent, Grain Elevator (corn prod.; grain & feed mill.)
Supervisor, Specialty Food Products (slaught. & meat pack.)
- 529.168 Fruit Coordinator (can. & preserv.)
- 529.281 Taster (food prep., n.e.c.)
- 529.381 Candy Maker (confection.)
Cheesemaker (dairy prod.)

- 529.387 Fruit-Buying Grader (can. & preserv.; whole. tr.)
 Grader (dairy prod.)
 Inspector, Grain Mill Products (grain & feed mill.)
 Quality-Control Girl (bake. prod.)
 Quality-Control Technician (food prep., n.e.c.)
 Rough-Rice Grader (grain & feed mill.)
 Sampler (oils & fats)
 Yield-Loss Inspector (corn prod.)
- 529.587 Frankfurter Inspector (slaught. & meat pack.)
- 529.684 Expansion Man (slaught. & meat pack.)
- 529.688 Kosher Inspector (dairy prod.)
- 529.782 Buttermaker (dairy prod.)
 Carbonation Man (sugar)
 Cheesemaker Helper (dairy prod.)
 Chocolate-Production-Machine Operator (choc. & cocoa)
 Dairy-Processing-Equipment Operator (dairy prod.)
 Depositing-Machine Operator (confection.)
 Drier Operator (choc. & cocoa)
 Dry-Starch Operator, Automatic (corn prod.)
 Flash-Drier Operator (corn prod.)
 Freezer Man (dairy prod.)
 Novelty Maker (dairy prod.)
 Lozenge Maker (confection.)
 Sirup Maker (choc. & cocoa)
 Sirup Mixer (corn prod.)
- 529.884 Frozen Pie Maker (any ind.)
 Ingredient Scaler (bake. prod.; dairy prod.)
 Sieve Man (grain & feed mill.)
 Steak Sauce Girl (can. & preserv.)
- 529.885 Cheese Cutter (dairy prod.)
 Chocolate Molder, Machine (choc. & cocoa)
 Cutter (macaroni & rel. prod.)
 Deoiling-Machine and Pasteurizing-Machine Operator (flav. ext. sirup)
 Fish-Cake Maker (food prep., n.e.c.)
 Flavor Man (cereal)
 Flavor-Room Man (dairy prod.)
 Freezer-Man Helper (dairy prod.)
 Ham-Rolling-Machine Operator (slaught. & meat pack.)
 Horseradish Maker (can. & preserv.)
 Ice Cutter (ice)
 Iron-Chink Man (can. & preserv.)
 Laborer, Starch Factory (grain & feed mill.)
 Lard Refiner (oils & fats;slaught. & meat pack.)
 Noodle Maker (macaroni & rel. prod.)
 Nut Roaster (nut process.)

- 529.885 Peanut-Butter Maker (can. & preserv.; food prep., n.e.c.)
Con. Sandwich-Machine Operator (dairy prod.)
Shellfish - Processing - Machine Tender (can. & preserv.)
Sucker-Machine Operator (confection.)
Tablet-Machine Operator (dairy prod.)
Tankman (sugar)
Tenderometer Operator (can. & preserv.)
Washer, Agricultural Produce (agric.; can. & preserv.;
whole. tr.)
Washerman (sugar)
Wheat Cleaner (cereal)
Yeast Washer (food prep., n.e.c.)
- 529.886 Cannery Worker (can. & preserv.)
Dairy Helper (dairy prod.)
Factory Helper (confection.)
General Helper (choc. & cocoa)
Laborer, Cheesemaking (dairy prod.)
Laborer, Pie Bakery (bake. prod.)
Laborer, Shellfish Processing (can. & preserv.)
Long-Goods Helper, Machine (macaroni & rel. prod.)
Production Helper (food prep., n.e.c.)
Raw-Cheese Worker (dairy prod.)
Steak-Tenderizer, Machine (slaught. & meat pack.)
- 529.887 Basket Filler (can. & preserv.)
Bulk Filler (can. & preserv.)
Cooker Cleaner (can. & preserv.)
Cook Helper (can. & preserv.)
Die Cleaner (macaroni & rel. prod.)

COMPARATIVE
COMMISSARYMAN RATING/
FOOD SERVICE SPECIALTY
TECHNICAL TRAINING
DATA

CLOCK HOURS



COMMISSARY/FOOD SERVICE TECHNICAL TRAINING

COMMISSARYMAN RATING/FOOD SERVICE OCCUPATIONAL TECHNICAL TRAINING
DURATIONS OF TRAINING COURSES AND COMPONENTS OF COURSES

Commissaryman Class A School - 8 Weeks

240 Clock Hours - 165 Clock Hours Class, 75 Clock Hours Lab

Components

- 10 Hours - Organization
- 26 Hours - Formulas/Sanitation
- 36 Hours - Menus/Equipment Operation
- 108 Hours - Cookery
- 27 Hours - Food Service Management
- 33 Hours - Special Messing Operations

Career Academy School(s) (located in 13 major cities of the United States and Canada)

360 Clock Hours - 324 Clock Hours Class, 36 Clock Hours Lab

Components

- 20 Hours - Innkeeping/Hospitality
- 117 Hours - Front of the House - Office/Guest Service
- 117 Hours - Management and Executive - Sales/Management/Law
- 106 Hours - Back of the House - Food Purchase/Preparation/Serving

Virginia State Department of Education

Food Service Occupations-Home Economics Education

High School, 11th and 12th Grades - 2 periods daily; Total of
Approx. 660 Clock Hours Class, Practical and Visits
(Assume 55 minute class periods, 180 school day year)

Components

(Exact clock hour durations for components of the overall Food Service course were not obtainable)

- Nature and Scope of Food Service Work
- Personal Qualities for Job Success
- Safe Food Handling, Health Practices, Sanitation, Storage of Food
- Care and Use of Equipment/Safety Requirements
- Work Management Skill/Skill in Preparation and Service of Food

APPENDIX E

DENTAL TECHNICIAN RATING/
DENTAL TECHNOLOGY SPECIALTY
COMPARATIVE
OCCUPATIONAL SPECIALTY
AND
TECHNICAL TRAINING
DATA

This Appendix contains comparative Navy and civilian occupational specialty and technical/apprenticeship training data. This information in the present format may be used by recruiters as an aid to classify lateral entry petty officer recruits.

The comparative civilian occupational specialty data have been obtained from the U. S. Department of Labor, Dictionary of Occupational Titles, and are presented according to the same numeric code sequence that is contained within that classification document. Comparable civilian occupations are listed for each specific Navy rating. Broad civilian occupational specialty categories are listed first, followed by a list of the occupations within each specialty.

The occupational titles data that are presented in each Appendix are all inclusive, but does not provide a complete list of each different occupational title within each specific occupational specialty category. Additional occupational title information may be obtained by referring to the specified numeric code listed in the Dictionary of Occupational Titles, as the need may arise.

The comparative technical training data have been obtained from the curricula of accredited private and state supported trade and technical schools, community and junior colleges, and vocational training courses at regular high schools. The comparative apprenticeship training data were obtained from U. S. Department of Labor recommended schedules. These data are distributed as equitably as possible between private and state supported schools, and with a sufficient nationwide geographic dispersal to enable as broad as possible a comparison between civilian and Navy vocational training.

The technical and apprenticeship training data are presented to afford examples of comparative Navy and civilian vocational training for each occupational specialty that comprises the functions of each given Navy rating. These data are presented for information purposes to help the recruiter in processing pre-enlistment packages and/or appropriate service record pages. The prospective petty officer recruit's training and experience background data may be compared with the training and experience requirements for a given Navy rating. Also, these same data may be compared with other appropriate civilian occupational training data to determine the prospective recruit's background and proficiency in a specific occupational specialty area. This will help to insure the proper placement of new petty officer recruits.

COMPARATIVE
DENTAL TECHNICIAN RATING/
DENTAL TECHNOLOGY
OCCUPATIONAL SPECIALTIES DATA

NAVY DENTAL TECHNICIAN RATING AND COUNTERPART CIVILIAN
OCCUPATIONAL SPECIALTIES

Navy Dental Technician rating personnel perform clinical and administrative duties, such as assisting dental officers in the treatment of patients, preparing and carrying out dental administrative assignments, and performing preventive procedures. Dental Technicians may be qualified in other duties in addition to the foregoing, such as dental prosthetic laboratory techniques and maintenance and repair of dental equipment. Dental Technicians must be prepared to assist in the treatment of casualties.

Counterpart civilian occupational specialties to this Navy rating are found among certain Professional, Technical and Managerial occupations, and skills found in certain Bench Work occupations.

These occupations include those of dental hygienist, prosthetist, dental assistant, dental ceramist, dental laboratory technician and denture finisher.

The following is a list of these occupations, with the appropriate D. O. T. codes (U. S. Department of Labor, Dictionary of Occupational Titles). Broad specialty categories are listed first, then a comprehensive list of occupations within each specialty follows.

- 0&1 Professional, Technical and Managerial Occupations
- 07 Occupations in Medicine and Health
- 078 Occupations in Medical and Dental Technology
- 079 Occupations in Medicine and Health, Not Elsewhere Classified

- 7 Bench Work Occupations
- 71 Occupations in Fabrication and Repair of Scientific and Medical Apparatus, Photographic and Optical Goods, Watches and Clocks, and Related Products
- 712 Occupations in Fabrication and Repair of Surgical, Medical, and Dental Instruments and Supplies

0 & 1

Professional, Technical and Managerial Occupations

This category includes occupations concerned with the theoretical or practical aspects of such fields of human endeavor as art, science, engineering, education, medicine, law, business relations, and administrative, managerial, and technical work. Most of these occupations require substantial educational preparation (usually at the university, junior college, or technical institute level).

07

Occupations in Medicine and Health

This division includes occupations concerned with the health care of humans or animals in the fields of medicine, surgery, and dentistry; and in related patient care areas, such as nursing, therapy, dietetics, prosthetics, rehabilitation and pharmacy. Also included are occupations in sanitation, environmental and public health, and in laboratories and other health facilities. Many occupations in this category require licensing or registration to practice and/or use a specific title.

078

Occupations in Medical and Dental Technology

This group includes occupations concerned with the application of technical knowledge in fields of medicine or dentistry for examination and treatment of patients or for research. Occupations occur in a doctor's or dentist's office, hospital, or laboratory.

078.368

Dental Hygienist (medical ser)
Prosthetist (surgical appl)

079

Occupations in Medicine and Health, Not Elsewhere
Classified

This group includes occupations, not elsewhere classified, concerned with the health care of humans or animals.

079.378

Dental Assistant (medical service)

7

Bench Work Occupations

This category includes occupations concerned with the use of body members, handtools, and bench machines to fit, grind, carve, mold, paint, sew, assemble, inspect, repair, and similarly work relatively small objects and materials, such as jewelry, phonographs, light bulbs, musical instruments, tires, footwear, pottery, and garments. The work is usually performed in a set position at a mill, plant, or shop, at a bench, worktable, or conveyor. At the more complex levels, workers frequently read blueprints, follow patterns, use a variety of handtools,

and assume responsibility for meeting standards. Workers at the less complex levels are required to follow standardized procedures.

71 Occupations in Fabrication and Repair of
 Scientific and Medical Apparatus, Photographic
 and Optical Goods, Watches and Clocks, and
 Related Products

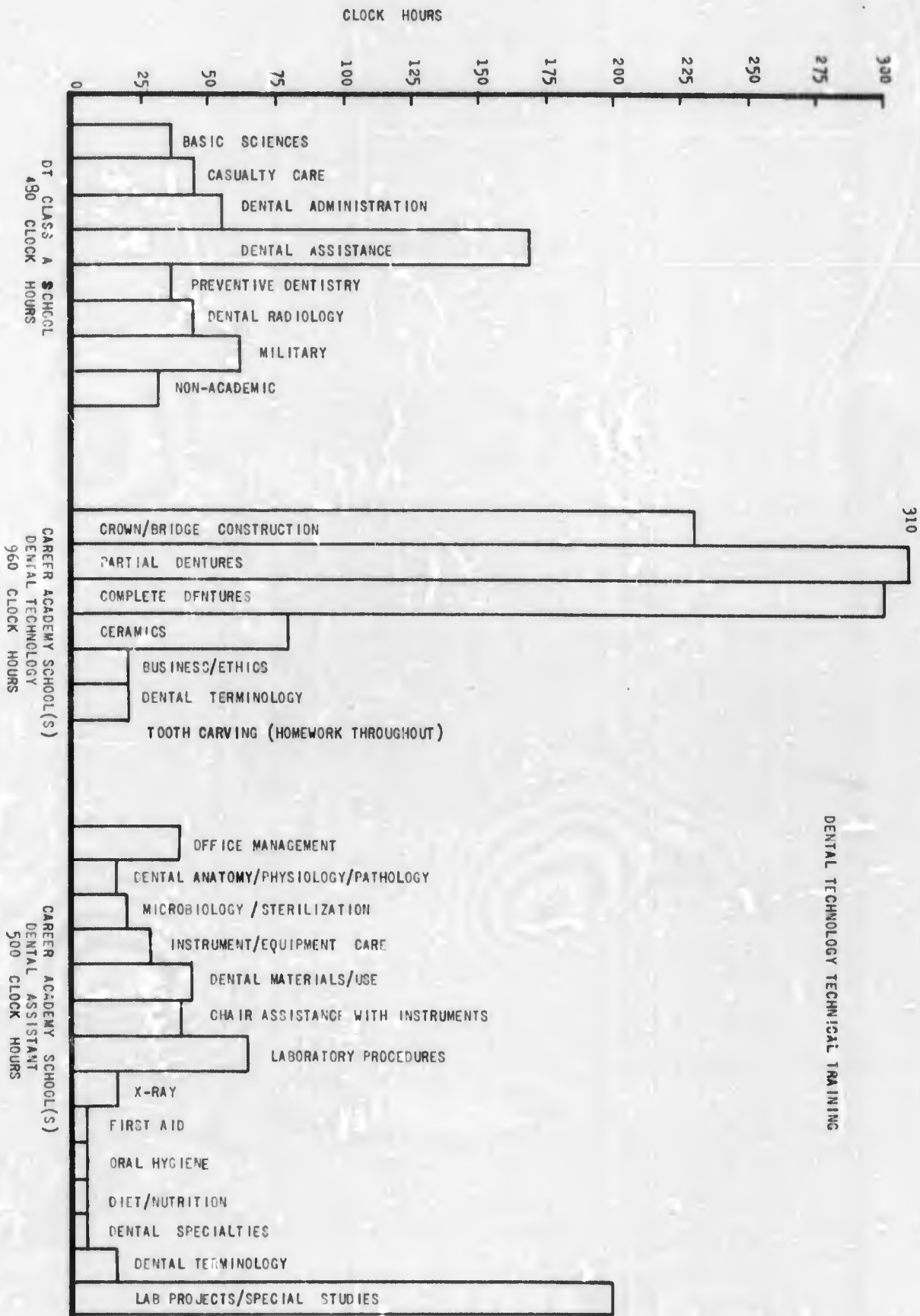
This division includes occupations concerned with assembling, fabricating, and repairing scientific, engineering, and medical equipment, photographic and optical goods, clocks and watches, and related products, using specialized handtools and bench-type machines.

712 Occupations in Fabrication and Repair of Surgical,
 Medical, and Dental Instruments and Supplies

This group includes occupations concerned with fabricating and repairing dental, medical, surgical, ophthalmic, and veterinary instruments, apparatus, and supplies, other than electrical, used by those in the professions, laboratories, and schools; orthopedic, prosthetic, and surgical appliances and supplies, such as arch supports and other foot appliances, fracture appliances, elastic hosiery, abdominal supporters, braces, trusses, bandages, surgical gauze and dressings, adhesive tapes and medicated plasters, and personal safety appliances and equipment; artificial teeth and dental metals, alloys, and amalgams. Fabrication and repair of artificial dentures, bridges, inlays, and other dental restoration is included in Group 078.

- 712.281 Dental Ceramist (medical ser)
- 712.381 Contour Wire Specialist, Denture (medical ser)
Dental Laboratory Technician (medical ser)
Dental Technician, Crown and Bridge
Dental Technician, Metal
Orthodontic Technician
Dental Laboratory Technician Apprentice (medical ser)
Molder, Bench (dental equip)
Set Up Man, Denture (medical ser)
- 712.781 Dental Ceramist Assistant (medical ser)
Orthodontic Gold Band Maker (medical ser)
- 712.884 Bite Block Man (medical ser)
Coiler (dental equip)
Denture Waxer (medical ser)
Finisher, Denture (medical ser)
Packer, Denture (medical ser)
Waxer, Metal, Partial Denture (medical ser)
- 712.887 Tooth Inspector (dental equip)

COMPARATIVE
DENTAL TECHNICIAN RATING/
DENTAL TECHNOLOGY
TECHNICAL TRAINING



DENTAL TECHNOLOGY TECHNICAL TRAINING

DENTAL TECHNOLOGY TECHNICAL TRAINING

BAY CITY COLLEGE SAN FRANCISCO, CALIF.

DENTAL ASSISTANT COURSE - 4 MONTHS*

OFFICE PROCEDURES
LABORATORY METHODS
CHAIR
X-RAY
ORAL SURGERY

DENTURE CONSTRUCTION COURSE (BEGINNERS) - 6 MONTHS*

ANATOMY/TERMINOLOGY
PROSTHODONTIC APPLIANCES
DENTURE CONSTRUCTION REPAIR
LABORATORY MANAGEMENT
ETHICS

CERAMICS AND PORCELAIN COURSE - 6 MONTHS*

PORCELAIN CHARACTERISTICS
DENTAL ANATOMY
CROWNS FABRICATION
LABORATORY MANAGEMENT
ETHICS

DENTAL TECHNICIAN COURSE - 12 MONTHS*

DENTAL ANATOMY
CUSPAL COORDINATION
DENTAL MATERIALS
DENTURES - CONSTRUCTION/REPAIR
ORTHODONTIC RETAINER
CUSTOM IMPRESSION TRAYS CONSTRUCTION

CROWN AND BRIDGE COURSE - 6 MONTHS*

INLAYS WAXING/CARVING
CASTING
INVESTING
FINISHING
TOOTH GRINDING
MODEL POURING
TOOTH ANATOMY
SOLDERING
ASSEMBLY/FINISHING
ETHICS/LABORATORY MANAGEMENT
DENTAL NOMENCLATURE

* COMPONENTS CLOCK HOURS
UNOBTAINABLE

DENTAL TECHNICIAN RATING/DENTAL TECHNOLOGY SPECIALTY
TECHNICAL TRAINING
DURATIONS OF TRAINING COURSES AND COMPONENTS OF COURSES

Dental Technician Class A School - 12 weeks

480 Clock Hours - 387 Clock Hours Occupational training
146 Clock Hours Lecture, 200 Clock Hours Practical, 41 Clock Hours
Testing, 93 Clock Hours Military and Non-Academic

Components

37 Hours - Basic Sciences
45 Hours - Casualty Care
56 Hours - Dental Administration
169 Hours - Dental Assistance
36 Hours - Preventive Dentistry
44 Hours - Dental Radiology
62 Hours - Military
31 Hours - Non-Academic

Career Academy School(s) (located in 13 major cities of the United
States and Canada)

Dental Technology Course - 4 Hour Day for 12 Month Period

960 Clock Hours - 768 Clock Hours Laboratory, 192 Clock Hours Lecture

Components

230 Hours - Crown/Bridge Construction
310 Hours - Partial Dentures
300 Hours - Complete Dentures
80 Hours - Ceramics
20 Hours - Business/Ethics
20 Hours - Dental Terminology
Tooth Carving (Homework Throughout)

Dental Assistant Course - 4 Hour Day for 4 Month Period

500 Clock Hours - 300 Clock Hours Laboratory, 200 Clock Hours Lecture

Components

40 Hours - Office Management
16 Hours - Dental Anatomy/Physiology/Pathology
20 Hours - Microbiology/Sterilization

- 28 Hours - Instrument Equipment Care
- 44 Hours - Dental Materials/Use
- 40 Hours - Chair Assistance with Instruments
- 64 Hours - Laboratory Procedures
- 16 Hours - X-Ray
- 4 Hours - First Aid
- 4 Hours - Oral Hygiene
- 4 Hours - Diet/Nutrition
- 4 Hours - Dental Specialties
- 16 Hours - Dental Terminology
- 200 Hours - Lab Projects/Special Studies

Bay City College, San Francisco, Calif.

(Exact clock hour durations for components of the courses offered at this school were not obtainable)

Dental Assistant Course - 4 Months

Components

- Office Procedures
- Laboratory Methods
- Chair
- X-Ray
- Oral Surgery

Denture Construction Course (Beginners) - 6 Months

Components

- Dental Anatomy/Terminology
- Prosthetic Appliances
- Denture Construction/Repair/Technique
- Laboratory Management
- Ethics

Ceramics and Porcelain Course - 6 Months

Components

- Porcelain Characteristics
- Dental Anatomy
- Crowns Fabrication
- Laboratory Management
- Ethics

Dental Technician Course - 12 Months

Components

Dental Anatomy
Cuspal Coordination
Dental Materials
Dentures - Construction/Repair
Orthodontic Retainer
Custom Impression Trays Construction

Crown and Bridge Course - 6 Months

Components

Inlays Waxing/Carving
Casting
Investing
Finishing
Tooth Grinding
Model Pouring
Tooth Anatomy
Soldering
Assembly/Finishing
Ethics/Laboratory Management
Dental Nomenclature

APPENDIX F

DISBURSING CLERK RATING/
BOOKKEEPING/SECRETARIAL/OFFICE CLERKING
SPECIALTIES
COMPARATIVE
OCCUPATIONAL SPECIALTY
AND
TECHNICAL TRAINING
DATA

This Appendix contains comparative Navy and civilian occupational specialty and technical/apprenticeship training data. This information in the present format may be used by recruiters as an aid to classify lateral entry petty officer recruits.

The comparative civilian occupational specialty data have been obtained from the U. S. Department of Labor, Dictionary of Occupational Titles, and are presented according to the same numeric code sequence that is contained within that classification document. Comparable civilian occupations are listed for each specific Navy rating. Broad civilian occupational specialty categories are listed first, followed by a list of the occupations within each specialty.

The occupational titles data that are presented in each Appendix are all inclusive, but does not provide a complete list of each different occupational title within each specific occupational specialty category. Additional occupational title information may be obtained by referring to the specified numeric code listed in the Dictionary of Occupational Titles, as the need may arise.

The comparative technical training data have been obtained from the curricula of accredited private and state supported trade and technical schools, community and junior colleges, and vocational training courses at regular high schools. The comparative apprenticeship training data were obtained from U. S. Department of Labor recommended schedules. These data are distributed as equitably as possible between private and state supported schools, and with a sufficient nationwide geographic dispersal to enable as broad as possible a comparison between civilian and Navy vocational training.

The technical and apprenticeship training data are presented to afford examples of comparative Navy and civilian vocational training for each occupational specialty that comprises the functions of each given Navy rating. These data are presented for information purposes to help the recruiter in processing pre-enlistment packages and/or appropriate service record pages. The prospective petty officer recruit's training and experience background data may be compared with the training and experience requirements for a given Navy rating. Also, these same data may be compared with other appropriate civilian occupational training data to determine the prospective recruit's background and proficiency in a specific occupational specialty area. This will help to insure the proper placement of new petty officer recruits.

COMPARATIVE
DISBURSING CLERK RATING/
BOOKKEEPING/SECRETARIAL/OFFICE CLERKING
OCCUPATIONAL SPECIALTIES
DATA

NAVY DISBURSING CLERK RATING AND COUNTERPART CIVILIAN
OCCUPATIONAL SPECIALTIES

Disbursing Clerks open, maintain and close military pay records; prepare payroll certification sheets and money lists; prepare public vouchers, transportation requests, and U. S. Treasury checks; prepare and submit documents to register and stop allotments; furnish information to personnel concerning their entitlement to various types of pay and allowances, and concerning allotments, deductions, and savings deposits; prepare reports and returns covering receipts and expenditures of public monies; and may accept personal funds and valuables for safekeeping.

Counterpart civilian occupational specialties to this Navy rating are found in the Administrative Specializations, Clerical and Sales, Stenography, and Computing and Account Recording occupations.

Similar occupations include, among others, those of accountant, bookkeeper, inspectors and investigators, stenographers, clerks, cashiers, tellers, and bookkeeping and computing machine operators.

The following is a list of these occupations with the appropriate D. O. T. codes (U. S. Department of Labor, Dictionary of Occupational Titles). Broad specialty categories are listed first, then a comprehensive list of occupations within each specialty follows.

- 081 Professional, Technical, and Managerial Occupations
- 16 Administrative Specializations Occupations
- 160 Accountants and Auditors
- 168 Inspectors and Investigators, Managerial and Public Service
- 169 Administrative Specializations Occupations, Not Elsewhere Classified

- 2 Clerical and Sales Occupations
- 20 Stenography, Typing, Filing, and Related Occupations
- 205 Personnel Clerks
- 209 Stenography, Typing, Filing, and Related Occupations, Not Elsewhere Classified
- 21 Computing and Account Recording Occupations
- 210 Bookkeepers
- 211 Cashiers
- 212 Tellers
- 214 Billing Machine Operators
- 215 Bookkeeping Machine Operators
- 216 Computing Machine Operators
- 217 Account Recording Machine Operators, Not Elsewhere Classified
- 219 Computing and Account Recording Occupations, Not Elsewhere Classified

This category includes occupations concerned with the theoretical or practical aspects of such fields of human endeavor as art, science, engineering, education, medicine, law, business relations, and administrative, managerial, and technical work. Most of these occupations require substantial educational preparation (usually at the university, junior college, or technical institute level).

16

Occupations in Administrative Specializations

This division includes occupations concerned with specialized administrative and managerial functions which are common to many types of organizations. (Managerial occupations which are peculiar to one or a few related types of organizations are included in Division 18. Division 18 is entitled Managers and Officials. Not Elsewhere Classified, and includes Agriculture, Forestry, Fishing, Mining, Construction and Manufacturing officials). In general, Division 16 occupations included in the group listed below demand a knowledge of a particular function rather than a knowledge of the occupations of an organization included in Division 18. Includes occupations which involve the more routine nonclerical duties or a combination of clerical and administrative work. Occupations involving clerical work exclusively in these fields are not included.

160

Accountants and Auditors

This group includes occupations concerned with examining, analyzing, and interpreting accounting records for the purpose of giving advice or preparing statements and installing or advising on systems of recording costs or other financial and budgetary data.

- 160.168 Auditor, City or County (gov ser)
Chief Examiner (gov ser)
- 160.188 Accountant (profess & kin)
Auditor (profess & kin)
Bursar (education)
- 160.288 Credit Analyst, Chief (banking)
Director, Utility Accounts (gov ser)
Estimator (profess & kin)
- 168 Inspectors and Investigators, Managerial and Public Service

This group includes occupations concerned with examining people, animals, plantlife, products, and establishments, in the capacity of city, county, Federal, or private inspector or investigator, for enforcement of health, safety, and other regulatory laws.

168.168 Manager, Credit and Collection (any ind)

169 Occupations in Administrative Specializations, Not
 Elsewhere Classified

This group includes occupations, not elsewhere classified, concerned with administrative specializations.

169.118 Salary and Wage Administrator (profess & kin)

169.168 Chief Clerk (any ind)
 Manager, Office (any ind)

18 Managers and Officials, Not Elsewhere Classified

This division includes managerial occupations which require a knowledge of the management and operations of an organization, rather than a scientific, technical, or administrative specialty. Generally speaking, these are "line management" occupations in contrast to the "staff" and "specialist" occupations included in Division 16. Also includes such occupations as officers and executives of government, corporations, and nonprofit organizations; general managers; general foremen; and department heads and their assistants in industrial establishments. Many general administrators and managers are former scientific, professional, and administrative specialists. Care must be taken to classify occupations according to duties and requirements rather than an incumbent's education or experience. Occupations in the administration of a scientific, technical, or professional activity must be carefully scrutinized to determine whether they are concerned primarily with technical supervision or with general management or specialized administrative work.

186 Finance, Insurance and Real Estate Managers and
 Officials

This group includes managerial occupations concerned with banks and trust companies, credit agencies other than banks, investment companies, brokers and dealers in securities and commodity contracts, and security and commodity exchanges; all types of insurance, and insurance agents and brokers; owners, lessors, lessees, buyers, sellers, agents and developers of real estate.

186.138 Manager, Safe Deposits

186.168 Bank Cashier (banking)
 Foreign Exchange Trader (banking)

2 Clerical and Sales Occupations

This category includes occupations concerned with preparing, transcribing, transferring, systematizing, and preserving written communications

and records; collecting accounts; distributing information; and influencing customers in favor of a commodity or service. Includes occupations closely identified with sales transactions even though they do not involve actual participation.

20 Stenography, Typing, Filing, and Related Occupations

This division includes occupations concerned with making, classifying, and filing records, including written communications.

205 Personnel Clerks

This group includes occupations concerned with assisting job seekers to fill out employment application forms; supplying information regarding company hiring policies or requirements; investigating applicant's work history to determine suitability for employment; and compiling and keeping current employment records, such as recruitment, training, promotion, attendance, retirement and discharge of employees.

205.168 Travel Clerk (gov ser)

205.288 Agent-Contract Clerk (insurance)

205.368 Personnel Clerk (clerical)
Social Security Clerk (clerical)
Records Custodian (banking)

209 Stenography, Typing, Filing, and Related Occupations,
Not Elsewhere Classified

This group includes occupations, not elsewhere classified, concerned with making, classifying, and filing records.

209.388 Cancellation Clerk (insurance)
Mortgage Clerk (banking)
Mortgage Processing Clerk (clerical)
Special Certificate Dictator (insurance)
Statement Clerk (banking)

209.488 Coupon Clerk (banking)
Invoice Control Clerk (clerical)

21 Computing and Account Recording Occupations

This division includes occupations concerned with systematizing information about transactions and activities into accounts and quantitative records, and paying and receiving money.

210 Bookkeepers

This group includes occupations concerned with computing, classifying, and recording numerical data to keep sets of financial records complete.

Occupations concerned primarily with bookkeeping machines, computing machines, and account recording machines are included in Groups 215, 216 and 217 respectively.

- 210.368 Account Information Clerk (light, heat & power)
Insurance Clerk (medical ser)
- 210.388 Audit Clerk (clerical)
(includes charge accounts clerks)
Billing Control Clerk (light, heat & power)
Bookkeeper (clerical)
Night Auditor (hotel & rest)
Account Classification Clerk (clerical)
Classification Control Clerk (clerical)
Commodity Loan Clerk (banking)
Fixed Capital Clerk (light, heat & power)
Medical Voucher Clerk (insurance)
- 210.488 Chart Calculator (light, heat & power)
Dividend Deposit Voucher Quoter (insurance)
- 210.588 Insurance Clerk (clerical)
- 211 Cashiers

This group includes occupations concerned with receiving and disbursing money in establishments other than banks. Most occupations involve use of adding machines, cash registers, and change makers. Occupations concerned with receiving and disbursing money in banks are included in Group 212.

- 211.138 Money Room Man, Head (amuse & rec)
Supervisor, Cashiers (light, heat & power)
- 211.368 Cashier (clerical)
- 211.468 Cashier (clerical)
Cafeteria Cashier (hotel & rest)
Cashier, Credit (clerical)
Cashier, Payments Received (clerical)
Dining Room Cashier (hotel & rest)
Floor Cashier (clerical)
Store Cashier (clerical)
Tube Room Cashier (ret tr)
Desk Clerk (per ser)
Drivers-Cash Clerk (motor trans)
Toll Collector (gov ser)
Toll Bridge Attendant (gov ser)
Turnstile Collector (water trans)
Vehicle Fare Collector (water trans)

Cashier, Courtesy Booth (ret tr)
Cashier, Gambling (amuse & rec)
Cashier, Currency Exchange (bus ser)
Cashier Wrapper (ret tr)
Change Booth Man (amuse & rec)
Parimutuel Ticket Cashier (amuse & rec)
Parimutuel Ticket Seller (amuse & rec)
Sheet Writer (amuse & rec)
Station Agent (r r trans)
Teller (light, heat & power)
Ticket Seller (clerical)

211.488 Money Counter (amuse & rec)
Money Counter (ret tr; whole tr)

212 Tellers

This group includes occupations concerned with disbursing and receiving money in a bank and recording transactions.

212.138 Teller, Head (banking)

212.368 Teller (banking)

214 Billing Machine Operators

This group includes occupations concerned with operating billing machines with or without computing devices to keep accounts and prepare statements, bills, and invoices.

214.488 Billing Machine Operator (clerical)
Delinquent Notice Machine Operator

215 Bookkeeping Machine Operators

This group includes occupations concerned with operating bookkeeping machines to copy and post data, make computations, and/or compile records of transactions.

215.388 Bookkeeping Machine Operator (clerical)

215.488 Pay-Roll Clerk (clerical)

216 Computing Machine Operators

This group includes occupations concerned with operating adding or calculating machines to perform arithmetic operations. Occupations concerned with computing by automatic data processing equipment are included in Group 213.

- 216.388 Balance Clerk (clerical)
- 216.488 Adding Machine Operator (clerical)
 Audit Machine Operator (clerical)
 Calculating Machine Operator (clerical)
 Comptometer Operator
 Extension Clerk
 Formula Figurer (paint & varn)
 Payroll Machine Operator
 Premium Note Interest Calculator Clerk (insurance)
 Toll Adding Clerk (tel & tel)
 Weight Calculator (ship & boat bldg & rep)
 Policy Value Calculator (insurance)
 Cash Surrender Calculator (insurance)
 Extended Insurance Clerk (insurance)
 Policy Loan Calculator (insurance)
 Tester, Recording and Checking (non-fer metal alloy)
 Food Checker (hotel & rest)
 Beverage Checker
 Food Controller (hotel & rest)
 Food and Beverage Control Clerk
 Liquor Controller
 Interline Clerk (r r trans)
- 216.588 Food Tabulator, Cafeteria (hotel & rest)
 Integrator Operator (clerical)
- 217 Account Recording Machine Operators, Not Elsewhere
 Classified
- This group includes occupations, not elsewhere classified, concerned
 with operating machines to keep quantitative records and accounts.
- 217.388 Proof Machine Operator (banking)
 Transit Clerk (banking)
- 217.885 Bursting Machine Operator (clerical)
- 219 Computing and Account Recording Occupations, Not
 Elsewhere Classified
- This group includes occupations, not elsewhere classified, concerned
 with systematizing information about transactions and activities into
 accounts and quantitative records, and paying and receiving money.
- 219.138 Cost and Sales Record Supervisor (light, heat & power)
 Crew Scheduler, Chief (air trans)
 Field Cashier (const)
 Manager, Statement Clerks (banking)
 Pay-Roll Clerk, Chief (clerical)

Statistician, Electric Power (light, heat & power)
Superintendent, Pay Roll Division (light, heat &
power)
Supervisor, Accounts Receivable (light, heat & power)
Timekeeper, Chief (clerical)

219.368

Brokerage Clerk (finan inst)
Floorman (motor trans)

219.388

Account Analyst (banking)
Actuarial Clerk (insurance)
Aircraft-Log Clerk (air trans)
Billing Clerk (clerical)
Bill of Lading Clerk (clerical)
Invoice Clerk (clerical)
Mail Order Biller (ret tr; whole tr)
Toll Billing Clerk (tel & tel)
Bond Clerk (banking)
Coupon Collection Clerk (banking)
Box Estimator, Paperboard Products (paper goods)
Budget Clerk (clerical)
Checker (amuse & rec)
City Collection Clerk (banking)
Clearing House Clerk (banking)
Clerk, Cable Transfer (tel & tel)
Clerk, General Office (clerical)
Contract Clerk, Automobile (ret tr)
Manifest Clerk (water trans)
Settlement Clerk (ore dress, smelt, & refin)
Tax Clerk (clerical)
Ward Clerk (med ser)
Clerk, Telegraph Service (tel & tel)
C. O. D. Clerk (clerical)
Coding Clerk (clerical)
Collateral and Safekeeping Clerk (banking)
Control Clerk, Auditing (insurance)
Control Clerk, Data Processing (clerical)
Country Collection Clerk (banking)
Crew Scheduler (air trans)
Demurrage Clerk (r r trans)
Estimator (pring & pub)
Exchange Clerk (banking)
Film Rental Clerk (ret tr)
Foreign Collection Clerk (banking)
Insurance Clerk (clerical)
Insurance Clerk (banking)
Interest Clerk (banking)
Letter of Credit Clerk (banking)
Load Control Agent (air trans)
Main Extension Clerk (light, heat & power)
Margin Clerk (banking)

Margin Clerk (finan inst)
 Media Clerk (bus ser)
 Mortgage Accounting Clerk (clerical)
 Paper Control Clerk (water trans)
 Planimeter Operator (gov ser)
 Chart Clerk (petrol refin)
 Policy Change Clerk (insurance)
 Probate Clerk (banking)
 Programer, Detail (clerical)
 Rate Clerk, Freight (motor trans)
 Rater (insurance)
 Rate Reviewer (light, heat & power)
 Real Estate Clerk (clerical)
 Reserves Clerk (banking)
 Returned Item Clerk (banking)
 Revival Clerk (insurance)
 Sales Development Clerk (tel & tel)
 Services Clerk (water trans)
 Sorting Clerk (banking)
 Statistical Clerk (clerical)
 Timekeeper (clerical)
 Dispatcher Clerk (r r trans)
 Flight Crew Time Clerk (air trans)
 Traffic Rate Clerk (clerical)
 Trust Vault Clerk (banking)
 Worksheet Clerk (insurance)

219.485 Currency Sorter (banking)

219.487 Measurer (agric)

219.488 Accounting Clerk (clerical)
 Advertising Space Measurer (clerical)
 Booking Prizer (tobacco)
 Brokerage Clerk (finan inst)
 Collection Sheet Clerk (motor trans)
 Cost Clerk (clerical)
 Deposit Refund Clerk (light, heat & power)
 Fabric and Accessories Estimator (garment)
 Foreign Clerk (clerical)
 Grading Clerk (education)
 Insurance Checker (insurance)
 Rate Clerk (motor trans)
 Reinsurance Clerk (insurance)
 Toll Rating Clerk (tel & tel)

219.585 Coin Machine Operator (banking)
 Posting Clerk (clerical)
 Bookman (whole tr)

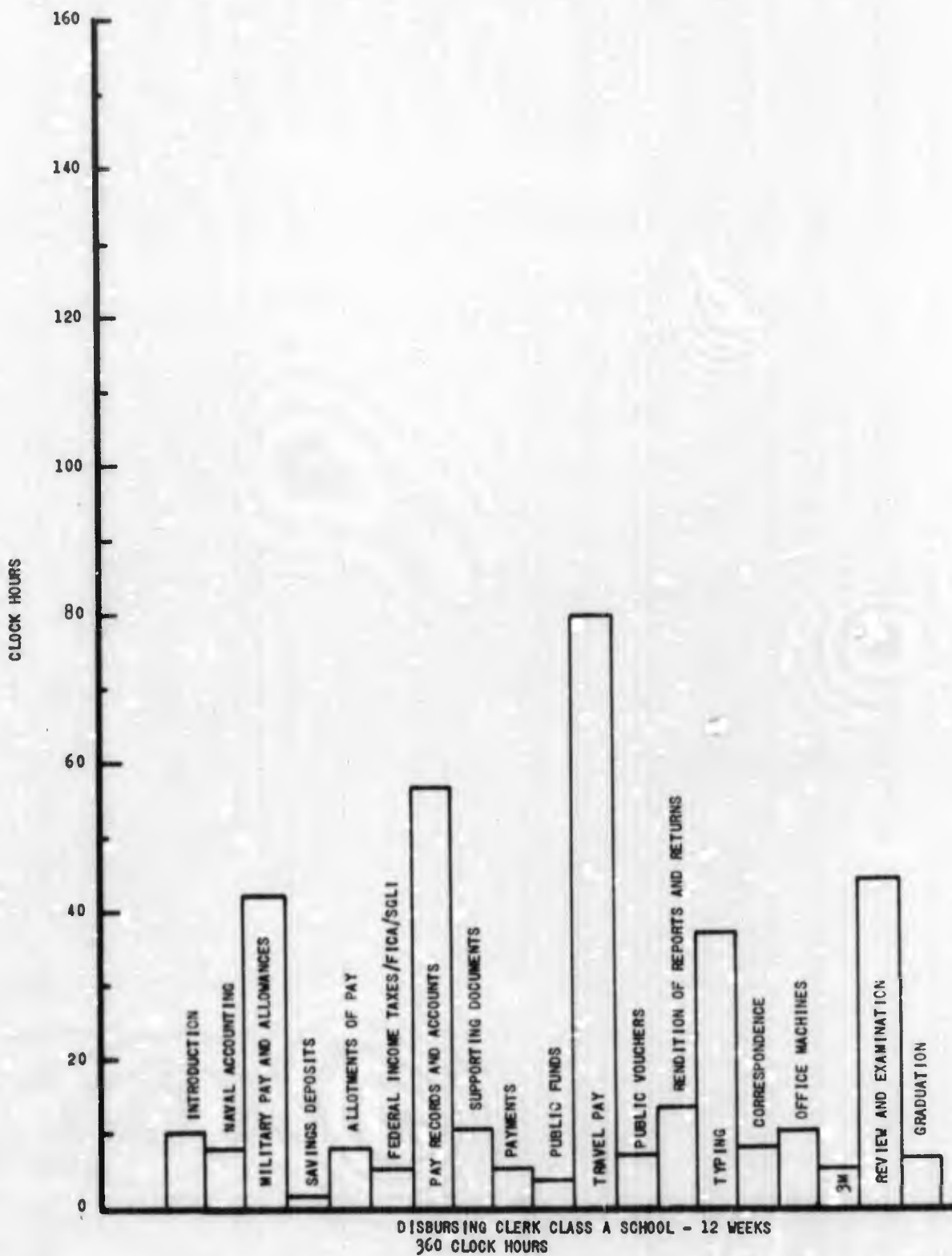
Charge Refer Clerk (clerical)
Data Change Clerk (insurance)
Error Ledger Clerk (clerical)
Kardex Clerk (clerical)
Meter Order Clerk (light, heat & power)
Remittance Clerk (insurance)
Suspense Clerk (light, heat & power)
Ledger Clerk (light, heat & power)
Telegraph Service Rater (tel & tel)

219.688

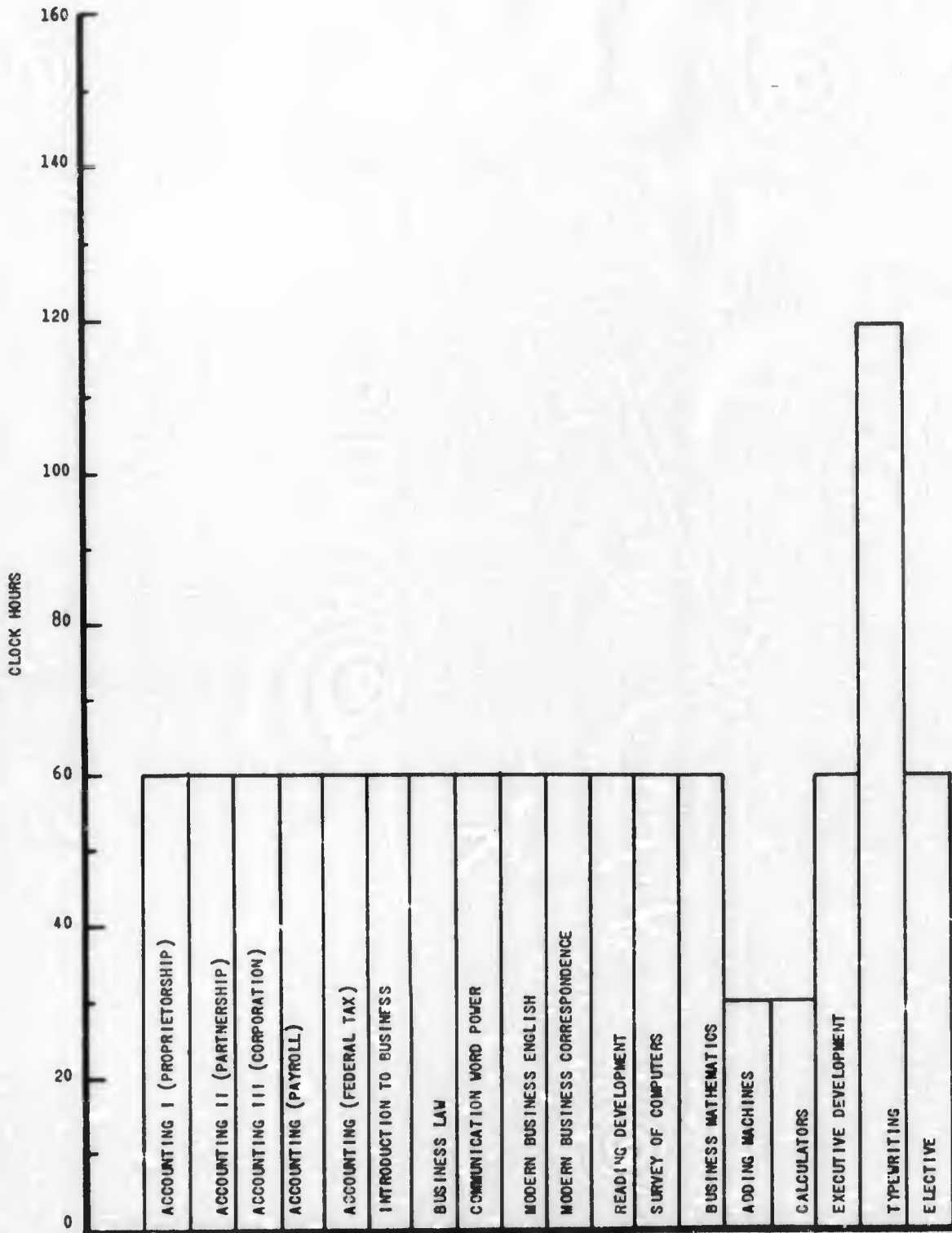
Control Clerk, Data Processing (clerical)
Tallyman. Fish (gov ser)

DISBURSING CLERK RATING/
BOOKKEEPING/SECRETARIAL/OFFICE CLERKING
OCCUPATIONAL
TECHNICAL
TRAINING

DISBURSING CLERK/BOOKKEEPER/OFFICE CLERK OCCUPATIONAL TECHNICAL TRAINING

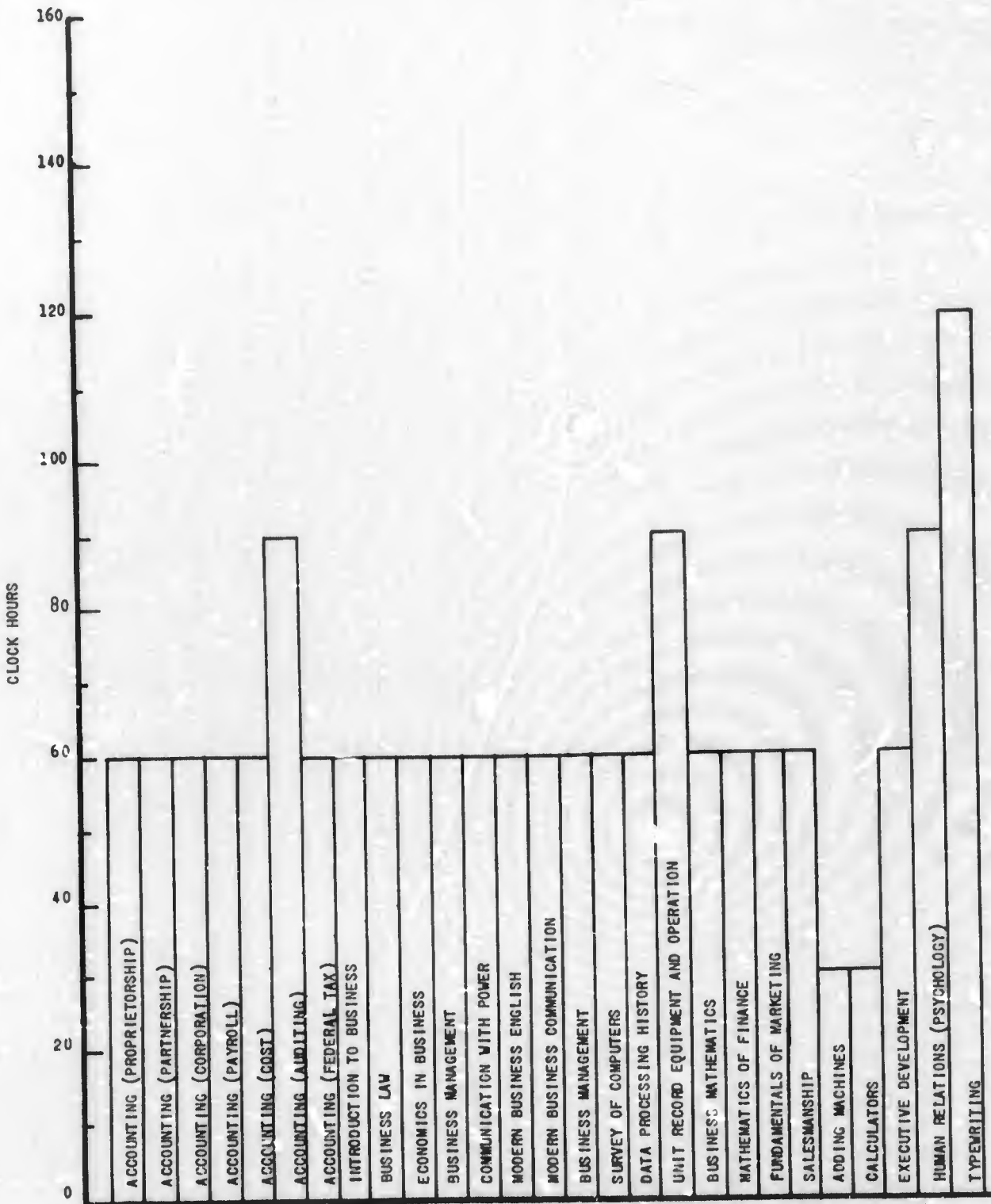


DISBURSING CLERK/BOOKKEEPER/OFFICE CLERK OCCUPATIONAL TECHNICAL TRAINING



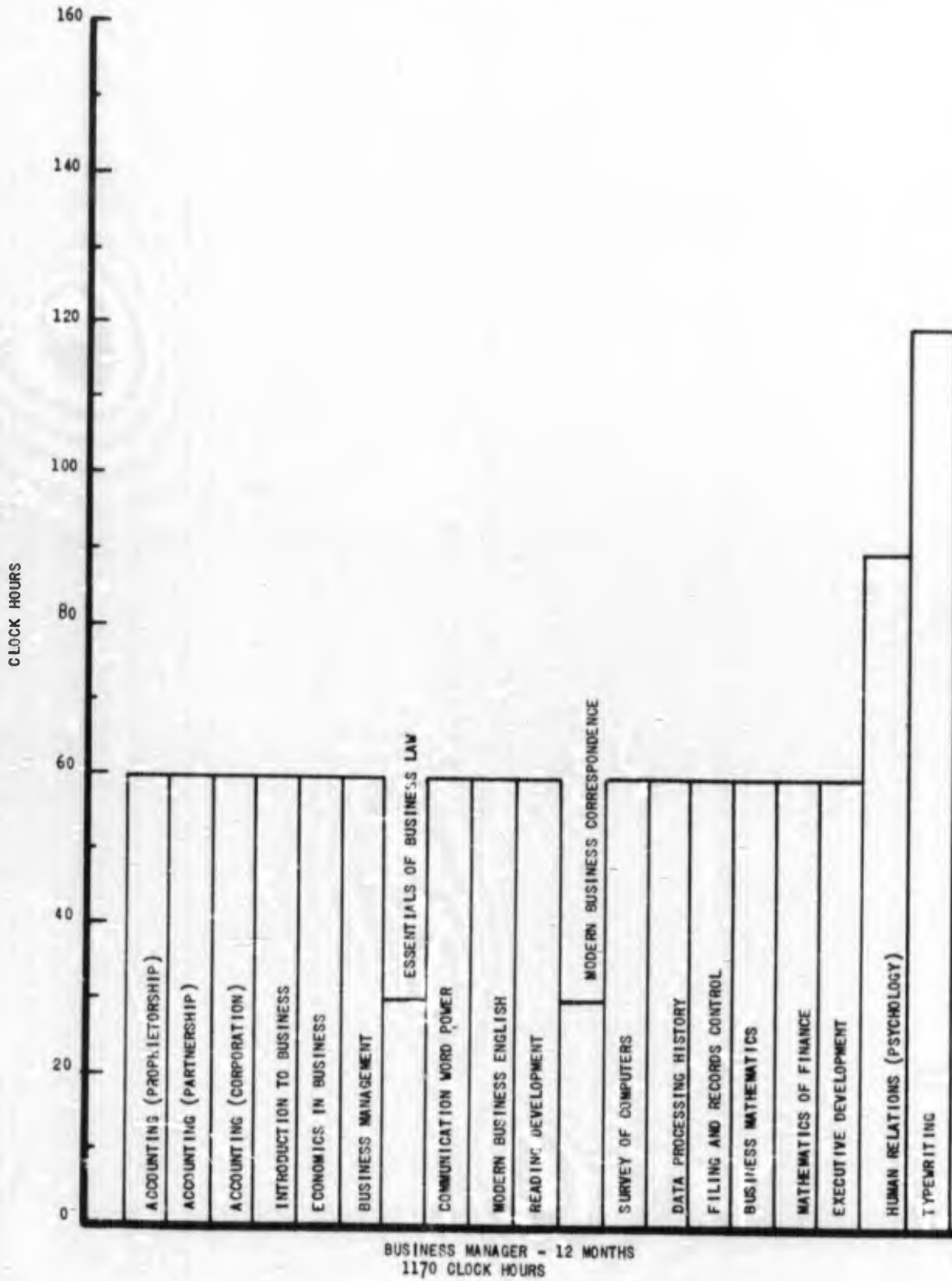
MARSH-DRAUGHON BUSINESS COLLEGE, ATLANTA, GEORGIA
 JUNIOR ACCOUNTANT - 10 MONTHS
 1080 CLOCK HOURS

DISBURSING CLERK/BOOKKEEPER/OFFICE CLERK OCCUPATIONAL TECHNICAL TRAINING

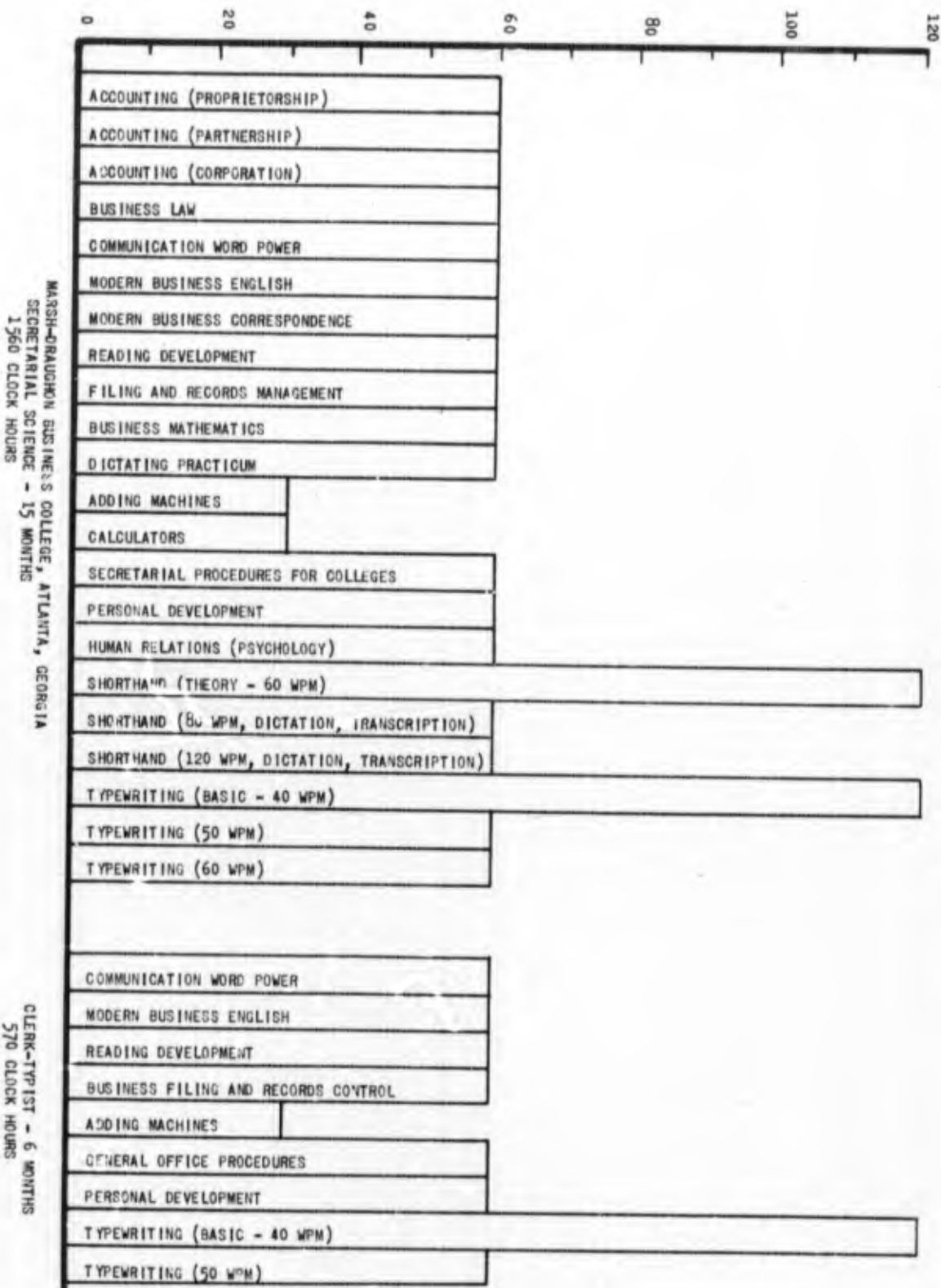


MARSH-DRAUGHON BUSINESS COLLEGE, ATLANTA, GEORGIA
 BUSINESS ADMINISTRATION - 18 MONTHS
 1710 CLOCK HOURS

DISBURSING CLERK/BOOKKEEPER/OFFICE CLERK OCCUPATIONAL TECHNICAL TRAINING



CLOCK HOURS

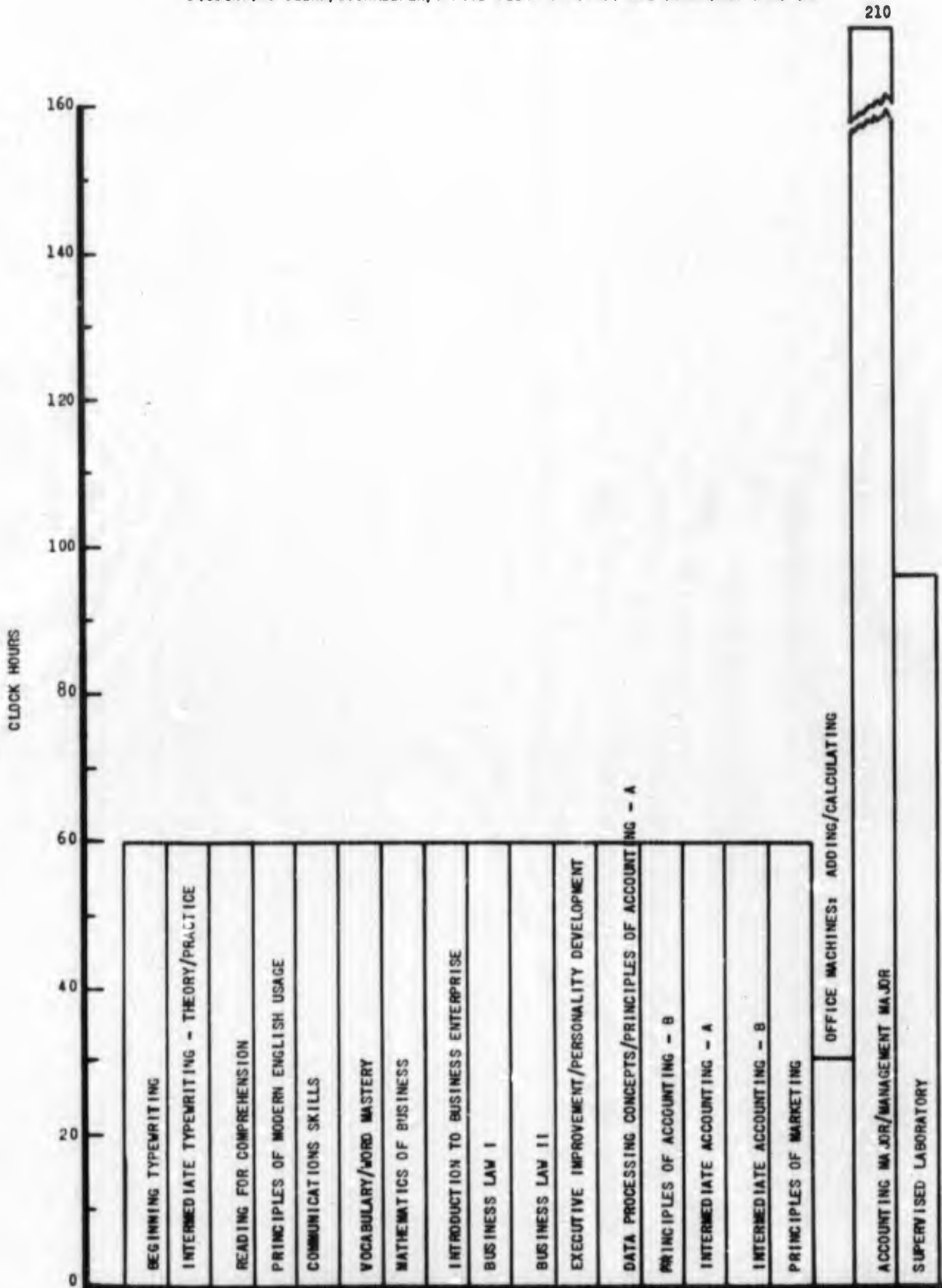


MARSH-DRAUGHON BUSINESS COLLEGE, ATLANTA, GEORGIA
 SECRETARIAL SCIENCE - 15 MONTHS
 1560 CLOCK HOURS

CLERK-TYPIST - 6 MONTHS
 570 CLOCK HOURS

DISBURSING CLERK/BOOKKEEPER/OFFICE CLERK OCCUPATIONAL TECHNICAL TRAINING

DISBURSING CLERK/BOOKKEEPER/OFFICE CLERK OCCUPATIONAL TECHNICAL TRAINING



SPENCER BUSINESS COLLEGE, NEW ORLEANS, LOUISIANA
 BUSINESS ADMINISTRATION - 12 MONTHS
 1296 - 1356 CLOCK HOURS

CLOCK HOURS

100

120

20

40

60

80

PRINCIPLES OF ACCOUNTING A
PRINCIPLES OF ACCOUNTING B
INTERMEDIATE ACCOUNTING A
INTERMEDIATE ACCOUNTING B
MATHEMATICS OF BUSINESS
INTRODUCTION TO BUSINESS ENTERPRISE
BUSINESS LAW I
EXECUTIVE IMPROVEMENT/PERSONALITY DEVELOPMENT
DATA PROCESSING CONCEPTS
READING FOR COMPREHENSION
PRINCIPLES OF MODERN ENGLISH USAGE
COMMUNICATION SKILLS

SENIOR BUSINESS COLLEGE, NEW ORLEANS, LOUISIANA
 GENERAL ACCOUNTING - 9 MONTHS
 972 CLOCK HOURS

OFFICE MACHINES/CALCULATING
BEGINNING TYPEWRITING/INTERMEDIATE TYPEWRITING, THEORY/PRACTICE
SCHOOL ELECTIVES
SUPERVISED LABORATORY

DATA PROCESSING CONCEPTS
UNIT RECORD EQUIPMENT
OPERATING SYSTEMS I
EDP MACHINES OPERATIONS
REPORT PROGRAM GENERATOR ELEMENTARY
REPORT PROGRAM GENERATOR
REPORT PROGRAM GENERATOR
READING FOR COMPREHENSION/COMMUNICATION SKILLS
PRINCIPLES OF ACCOUNTING A
PRINCIPLES OF ACCOUNTING B
INTERMEDIATE ACCOUNTING A

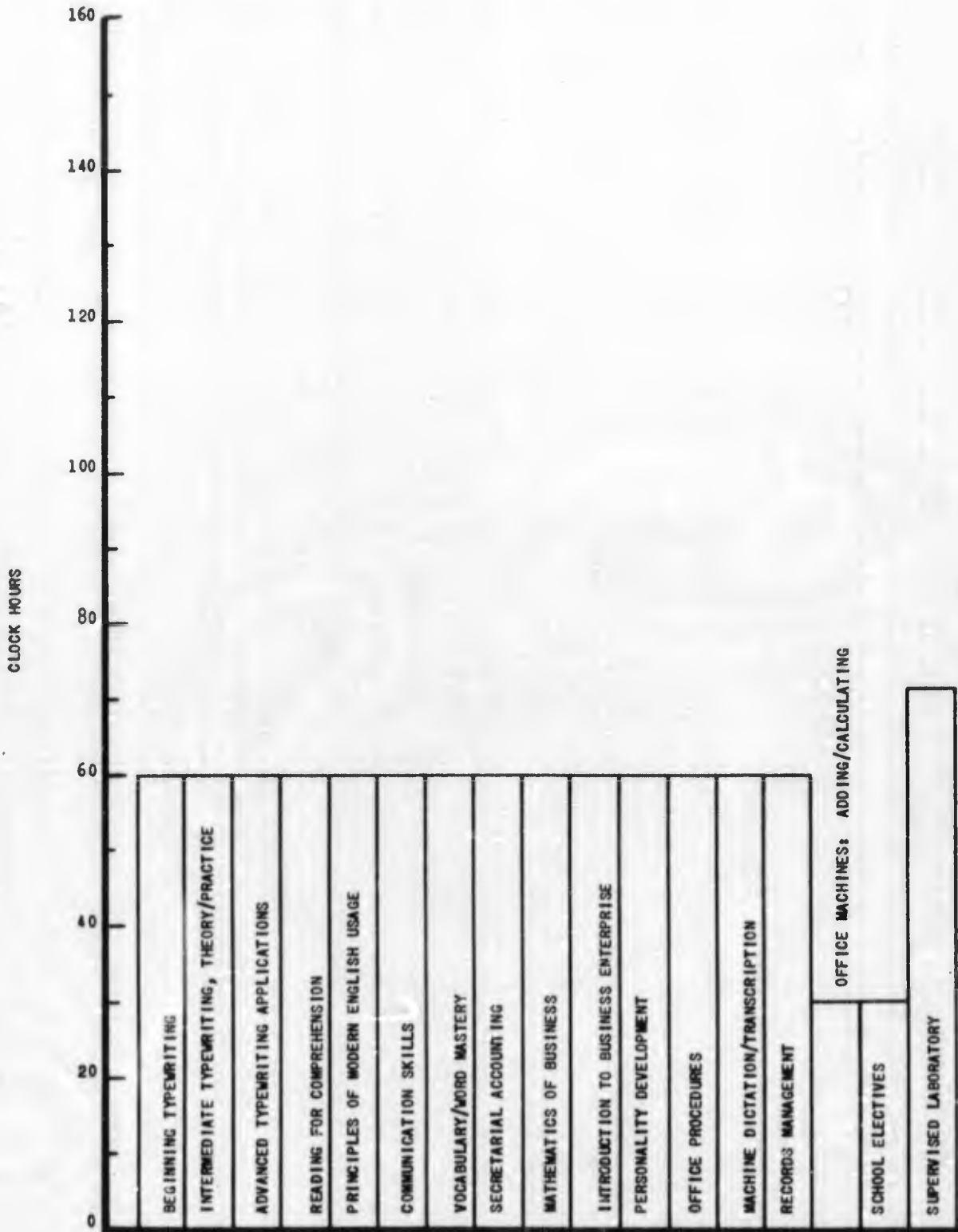
COMPUTER OPERATIONS AND MANAGEMENT - 12 MONTHS
 1296 CLOCK HOURS

PAYROLL ACCOUNTING
MATHEMATICS OF BUSINESS ENTERPRISE
EXECUTIVE DEVELOPMENT/PERSONALITY DEVELOPMENT
BEGINNING TYPEWRITING/INTERMEDIATE TYPEWRITING, THEORY/PRACTICE
SCHOOL ELECTIVES
SUPERVISED LABORATORY

DISPENSING CLERK/BOOKKEEPER/OFFICE CLERK OCCUPATIONAL TECHNICAL TRAINING

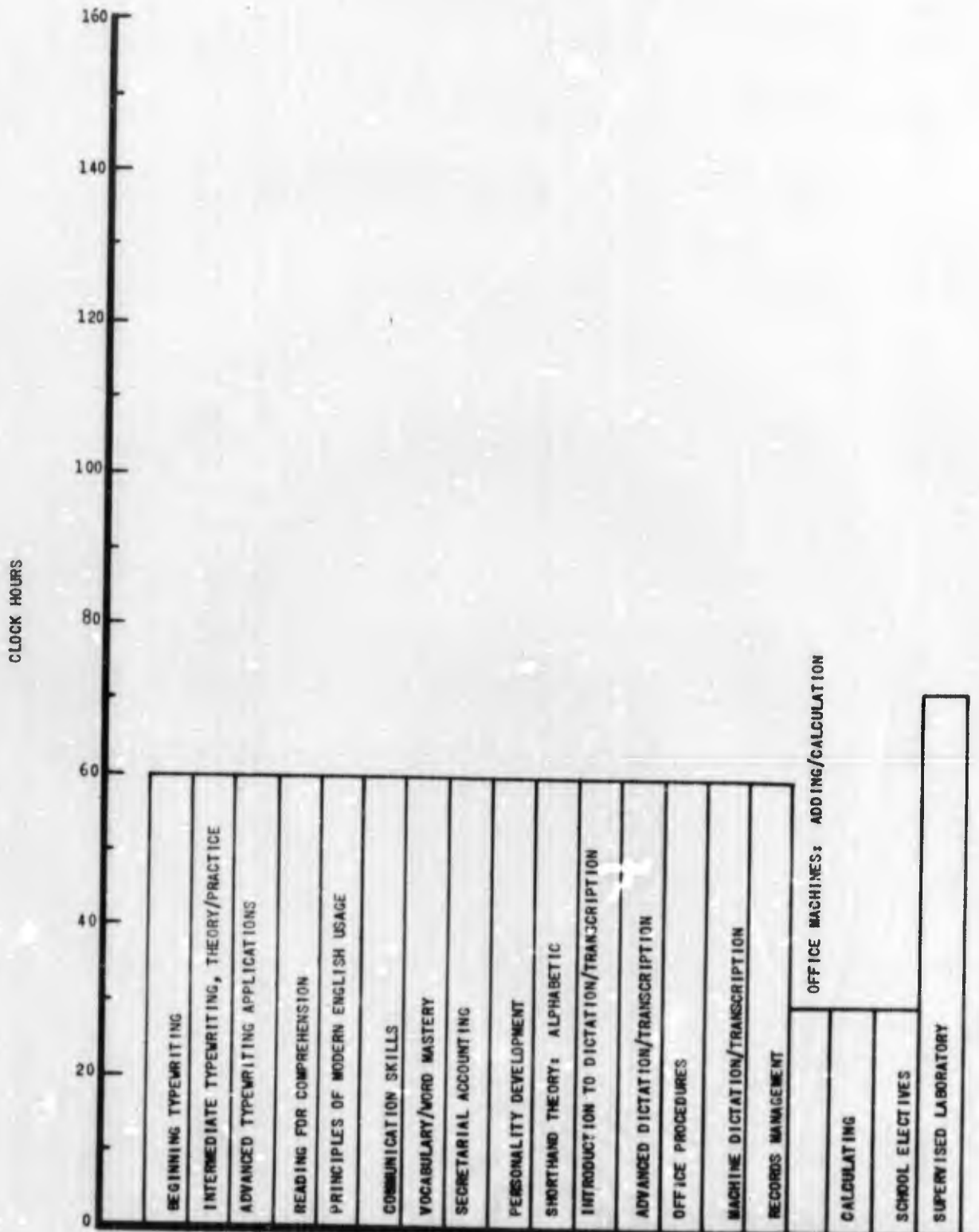
330

DISBURSING CLERK/BOOKKEEPER/OFFICE CLERK OCCUPATIONAL TECHNICAL TRAINING



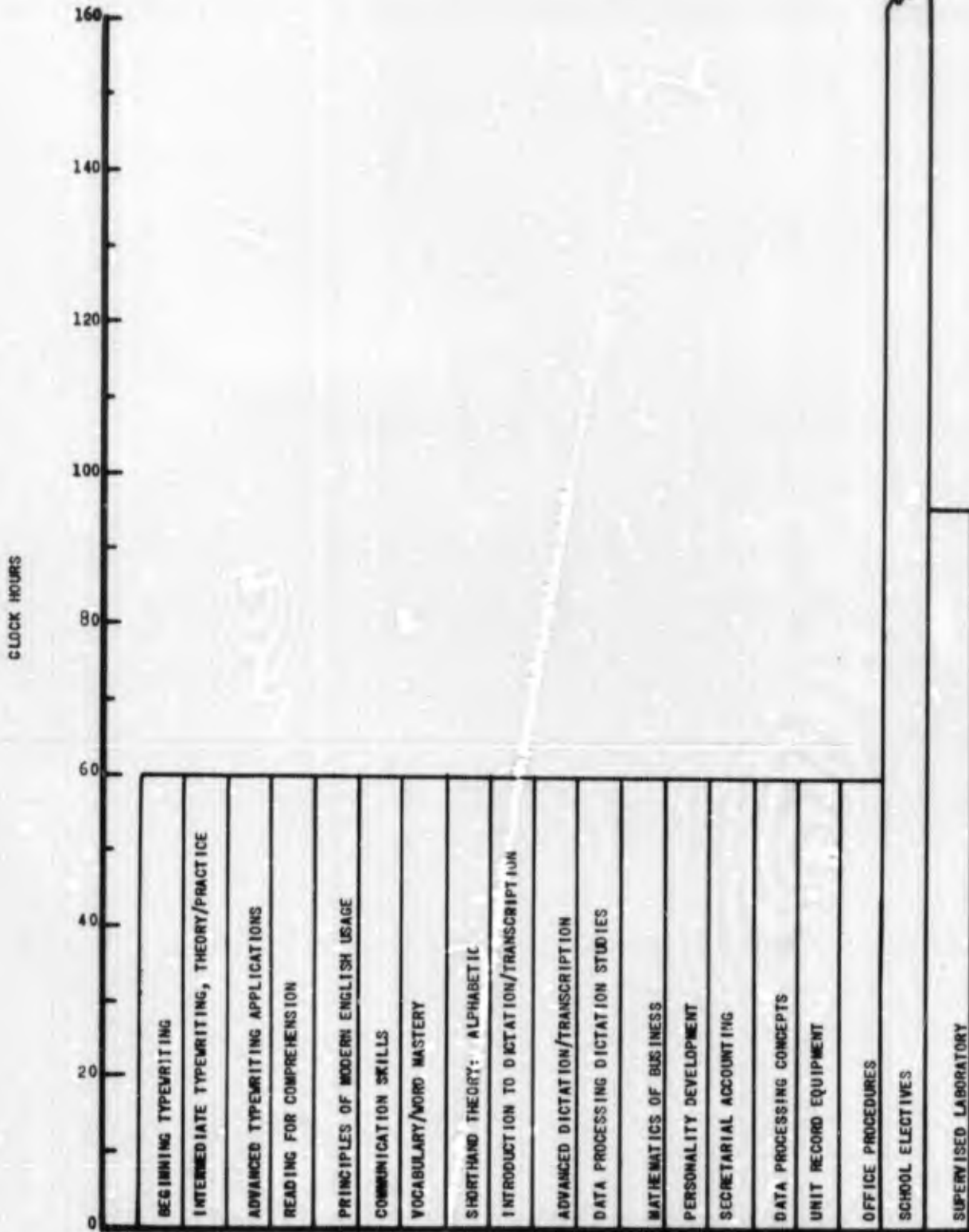
SPENCER BUSINESS COLLEGE, NEW ORLEANS, LOUISIANA
 OFFICE SPECIALIST - 9 MONTHS
 972 CLOCK HOURS

DISBURSING CLERK/BOOKKEEPER/OFFICE CLERK OCCUPATIONAL TECHNICAL TRAINING



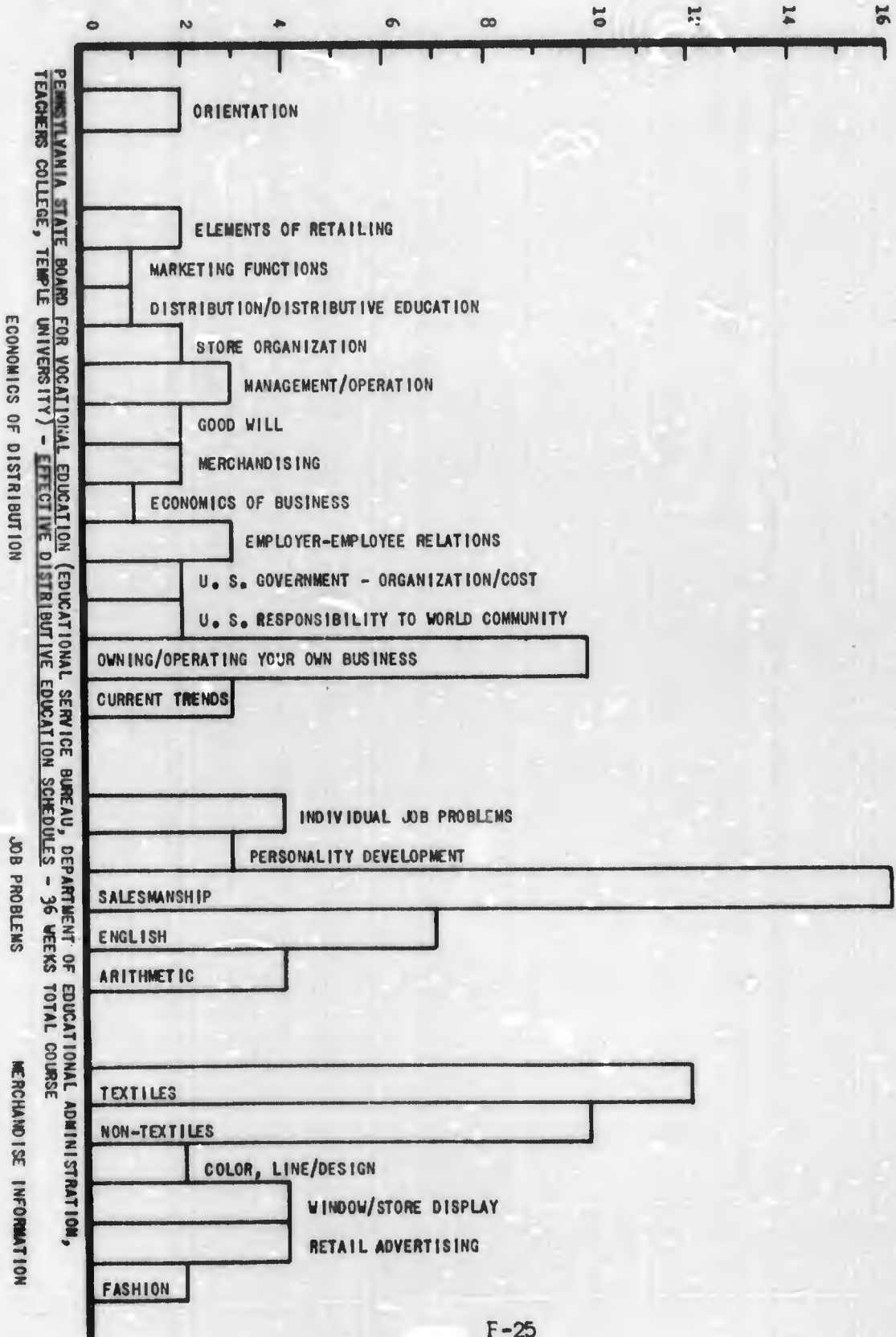
SPENCER BUSINESS COLLEGE, NEW ORLEANS, LOUISIANA
 STENOGRAPHIC - 9 MONTHS
 972 - 1032 CLOCK HOURS

DISBURSING CLERK/BOOKKEEPER/OFFICE CLERK OCCUPATIONAL TECHNICAL TRAINING



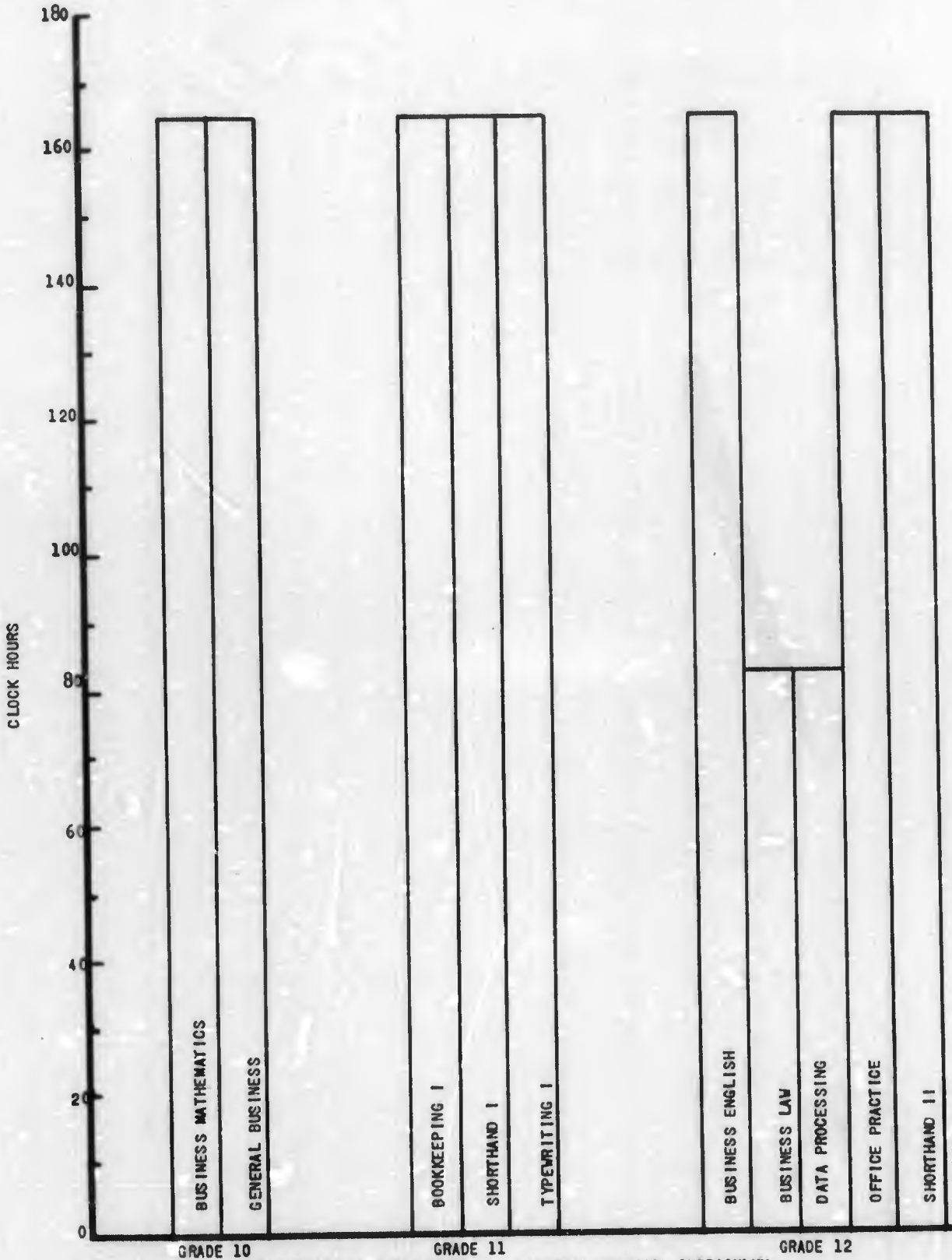
SPENCER BUSINESS COLLEGE, NEW ORLEANS, LOUISIANA
 AUTOMATION SECRETARIAL - 12 MONTHS
 1296 CLOCK HOURS

WEEKS OF TRAINING



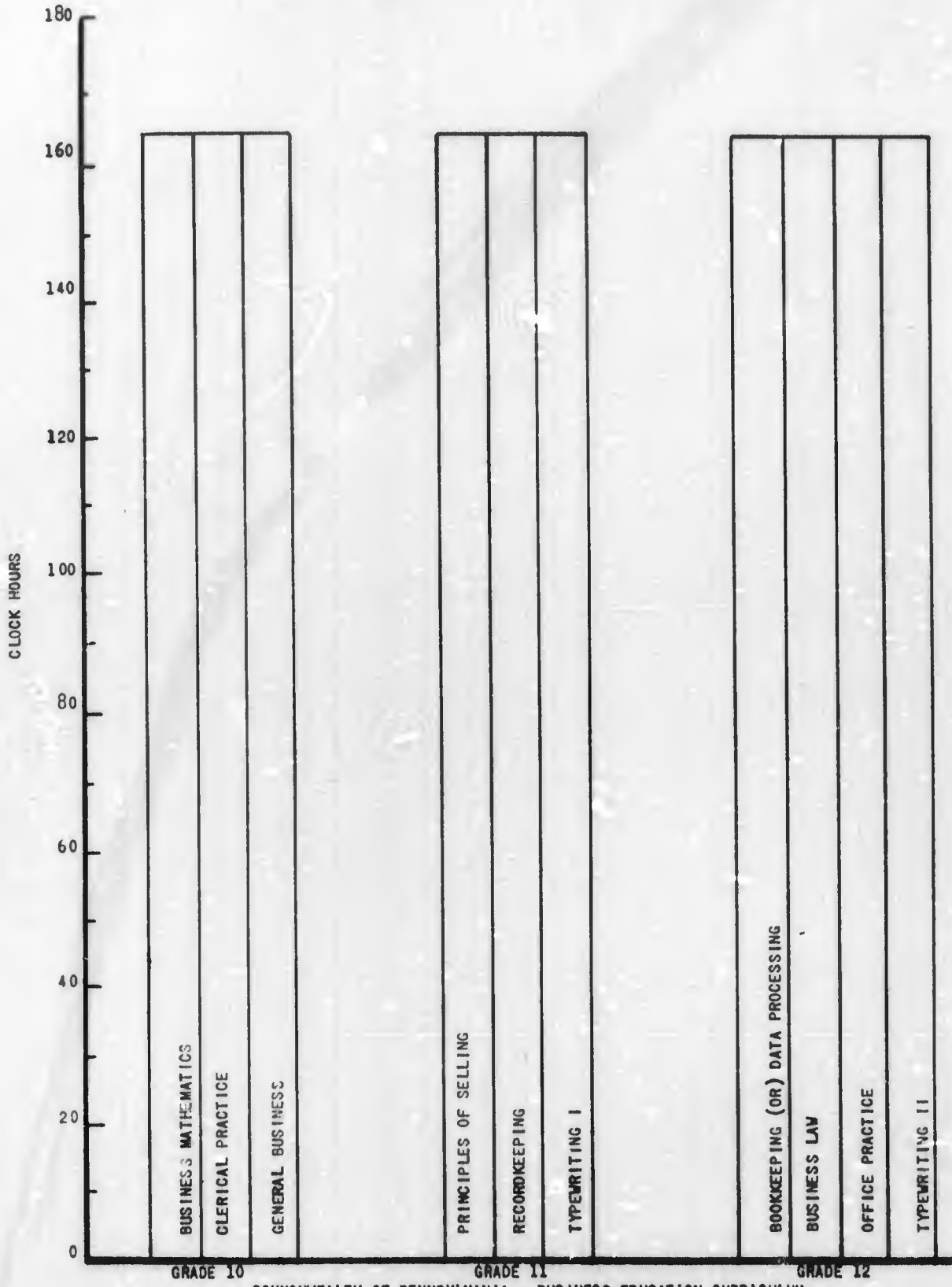
DISBURSING CLERK/BOOKKEEPER/OFFICE CLERK OCCUPATIONAL TECHNICAL TRAINING

DISBURSING CLERK/BOOKKEEPER/OFFICE CLERK OCCUPATIONAL TECHNICAL TRAINING



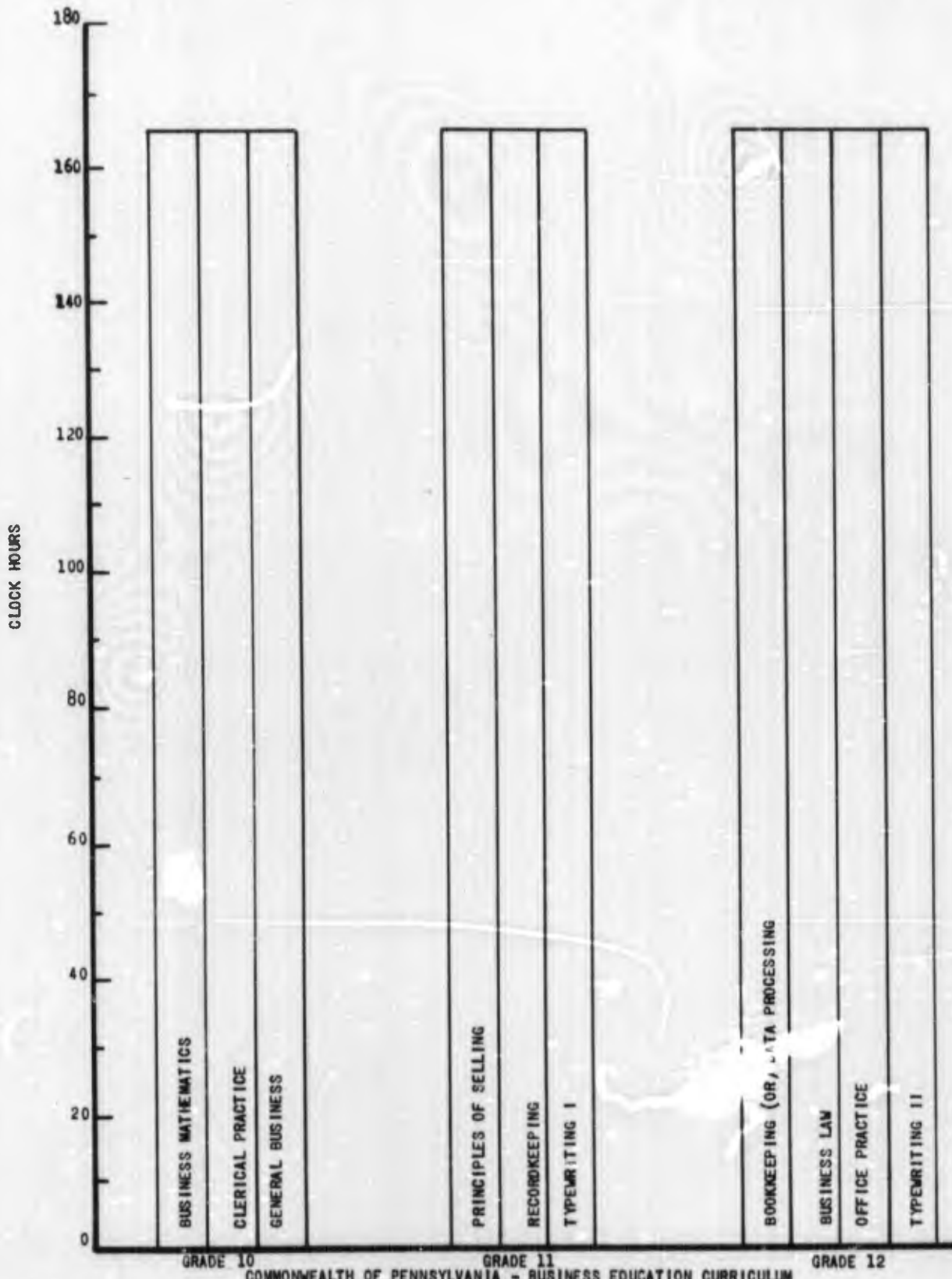
COMMONWEALTH OF PENNSYLVANIA - BUSINESS EDUCATION CURRICULUM
 SECRETARIAL SEQUENCE - GRADES 10, 11 and 12
 1485 CLOCK HOURS

DISBURSING CLERK/BOOKKEEPER/OFFICE CLERK OCCUPATIONAL TECHNICAL TRAINING



COMMONWEALTH OF PENNSYLVANIA - BUSINESS EDUCATION CURRICULUM
 BOOKKEEPING AND ACCOUNTING SEQUENCE - GRADES 10, 11 and 12
 1650 CLOCK HOURS

DISBURSING CLERK/BOOKKEEPER/OFFICE CLERK OCCUPATIONAL TECHNICAL TRAINING

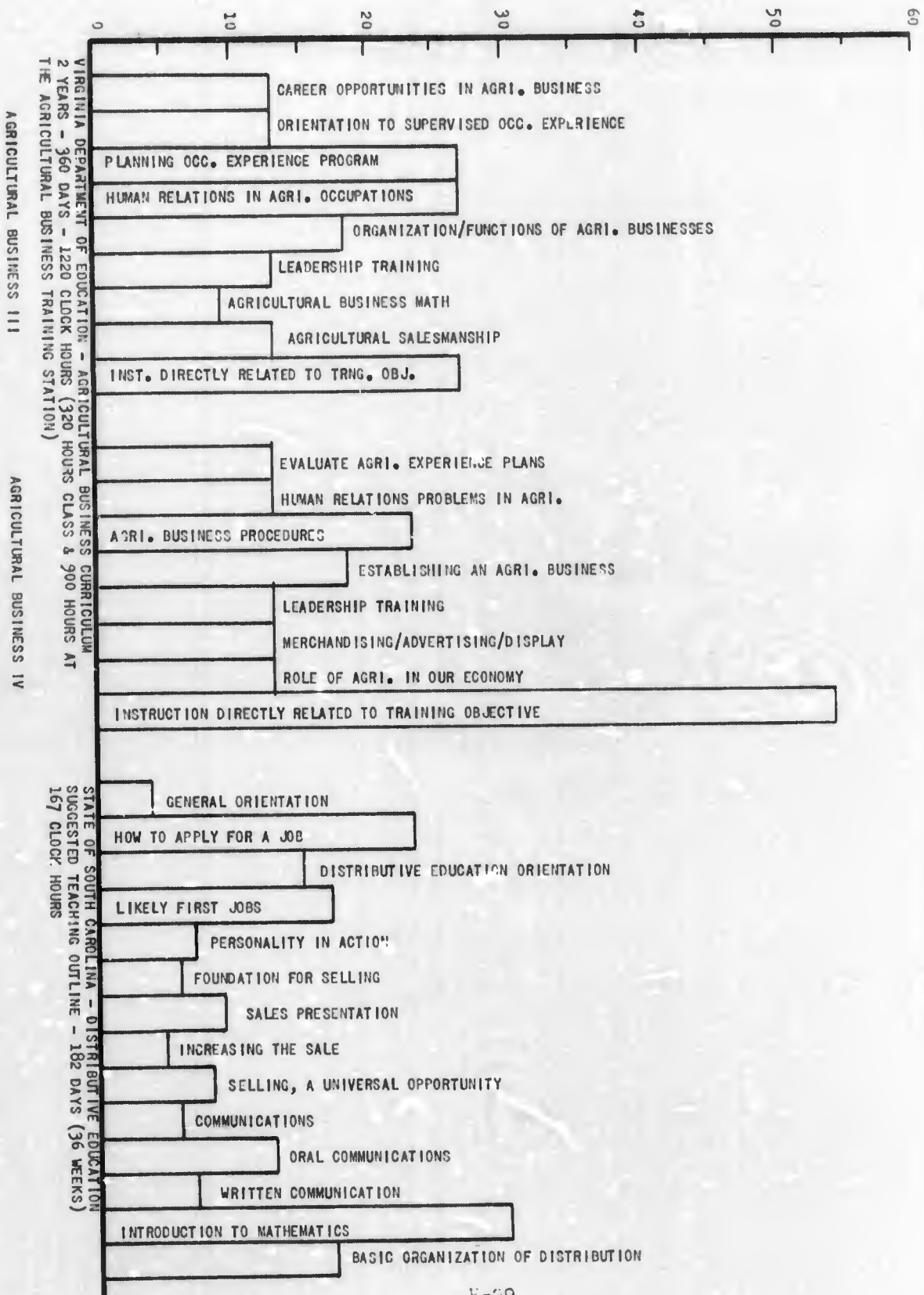


COMMONWEALTH OF PENNSYLVANIA - BUSINESS EDUCATION CURRICULUM

CLERICAL SEQUENCE - GRADES 10, 11 and 12

1650 CLOCK HOURS

CLOCK HOURS



DISBURSING CLERK/BOOKKEEPER/OFFICE CLERK OCCUPATIONAL TECHNICAL TRAINING

DISBURSING CLERK RATING/BOOKKEEPER/OFFICE CLERK TECHNICAL TRAINING
DURATIONS OF TRAINING COURSES AND COMPONENTS OF COURSES

Disbursing Clerk Class A School - 12 Weeks

360 Clock Hours

Components

- 10 Hours - Introduction
- 8 Hours - Naval Accounting
- 42 Hours - Military Pay and Allowances
- 1 Hour - Savings Deposits
- 8 Hours - Allotments of Pay
- 5 Hours - Federal Income Taxes/Fed. Ins. Contributions Act Taxes/SGLI
- 57 Hours - Pay Records and Accounts
- 11 Hours - Supporting Documents
- 5 Hours - Payments
- 3 Hours - Public Funds
- 20 Hours - Travel Pay
- 7 Hours - Public Vouchers
- 13 Hours - Rendition of Reports and Returns
- 37 Hours - Typing
- 8 Hours - Correspondence
- 10 Hours - Office Machines
- 5 Hours - Maintenance and Material Management
- 44 Hours - Review and Examination
- 6 Hours - Graduation

Marsh-Draughon Business College, Atlanta, Georgia

Junior Accountant - 10 Months

1080 Clock Hours

Components

- 60 Hours - Accounting I (Proprietorship)
- 60 Hours - Accounting II (Partnership)
- 60 Hours - Accounting III (Corporation)
- 60 Hours - Accounting (Payroll)
- 60 Hours - Accounting (Federal Tax)
- 60 Hours - Introduction to Business
- 60 Hours - Business Law
- 60 Hours - Communication Word Power
- 60 Hours - Modern Business English
- 60 Hours - Modern Business Correspondence
- 60 Hours - Reading Development

DISBURSING CLERK RATING/BOOKKEEPER/OFFICE CLERK TECHNICAL TRAINING
DURATIONS OF TRAINING COURSES AND COMPONENTS OF COURSES

Disbursing Clerk Class A School - 12 Weeks

360 Clock Hours

Components

- 10 Hours - Introduction
- 8 Hours - Naval Accounting
- 42 Hours - Military Pay and Allowances
 - 1 Hour - Savings Deposits
 - 8 Hours - Allotments of Pay
 - 5 Hours - Federal Income Taxes/Fed. Ins. Contributions Act Taxes/SGLI
- 57 Hours - Pay Records and Accounts
- 11 Hours - Supporting Documents
 - 5 Hours - Payments
 - 3 Hours - Public Funds
- 80 Hours - Travel Pay
 - 7 Hours - Public Vouchers
- 13 Hours - Rendition of Reports and Returns
- 37 Hours - Typing
 - 8 Hours - Correspondence
- 10 Hours - Office Machines
- 5 Hours - Maintenance and Material Management
- 44 Hours - Review and Examination
- 6 Hours - Graduation

Marsh-Draughon Business College, Atlanta, Georgia

Junior Accountant - 10 Months

1080 Clock Hours

Components

- 60 Hours - Accounting I (Proprietorship)
- 60 Hours - Accounting II (Partnership)
- 60 Hours - Accounting III (Corporation)
- 60 Hours - Accounting (Payroll)
- 60 Hours - Accounting (Federal Tax)
- 60 Hours - Introduction to Business
- 60 Hours - Business Law
- 60 Hours - Communication Word Power
- 60 Hours - Modern Business English
- 60 Hours - Modern Business Correspondence
- 60 Hours - Reading Development

- 60 Hours - Survey of Computers
- 60 Hours - Business Mathematics
- 30 Hours - Adding Machines
- 30 Hours - Calculators
- 60 Hours - Executive Development
- 120 Hours - Typewriting
- 60 Hours - Elective

Business Administration - 18 Months

1710 Clock Hours

Components

- 60 Hours - Accounting (Proprietorship)
- 60 Hours - Accounting (Partnership)
- 60 Hours - Accounting (Corporation)
- 60 Hours - Accounting (Payroll)
- 60 Hours - Accounting (Cost)
- 90 Hours - Accounting (Auditing)
- 60 Hours - Accounting (Federal Tax)
- 60 Hours - Introduction to Business
- 60 Hours - Business Law
- 60 Hours - Economics in Business
- 60 Hours - Business Management
- 60 Hours - Communication with Power
- 60 Hours - Modern Business English
- 60 Hours - Modern Business Communication
- 60 Hours - Business Management
- 60 Hours - Survey of Computers
- 60 Hours - Data Processing History
- 90 Hours - Unit Record Equipment and Operation
- 60 Hours - Business Mathematics
- 60 Hours - Mathematics of Finance
- 60 Hours - Fundamentals of Marketing
- 60 Hours - Salesmanship
- 30 Hours - Adding Machines
- 30 Hours - Calculators
- 60 Hours - Executive Development
- 90 Hours - Human Relations (Psychology)
- 120 Hours - Typewriting

Business Manager - 12 Months

1170 Clock Hours

Components

- 60 Hours - Accounting (Proprietorship)
- 60 Hours - Accounting (Partnership)
- 60 Hours - Accounting (Corporation)

- 60 Hours - Introduction to Business
- 60 Hours - Economics in Business
- 60 Hours - Business Management
- 30 Hours - Essentials of Business Law
- 60 Hours - Communication Word Power
- 60 Hours - Modern Business English
- 60 Hours - Reading Development
- 30 Hours - Modern Business Correspondence
- 60 Hours - Survey of Computers
- 60 Hours - Data Processing History
- 60 Hours - Filing and Records Control
- 60 Hours - Business Mathematics
- 60 Hours - Mathematics of Finance
- 60 Hours - Executive Development
- 90 Hours - Human Relations (Psychology)
- 120 Hours - Typewriting

Secretarial Science - 12 Months

1560 Clock Hours

Components

- 60 Hours - Accounting (Proprietorship)
- 60 Hours - Accounting (Partnership)
- 60 Hours - Accounting (Corporation)
- 60 Hours - Business Law
- 60 Hours - Communication Word Power
- 60 Hours - Modern Business English
- 60 Hours - Modern Business Correspondence
- 60 Hours - Reading Development
- 60 Hours - Filing and Records Management
- 60 Hours - Business Mathematics
- 60 Hours - Dictating Practicum
- 30 Hours - Adding Machines
- 30 Hours - Calculators
- 60 Hours - Secretarial Procedures for Colleges
- 60 Hours - Personal Development
- 60 Hours - Human Relations (Psychology)
- 120 Hours - Shorthand (Theory-60 WPM)
- 60 Hours - Shorthand (80 WPM, Dictation, Transcription)
- 60 Hours - Shorthand (120 WPM, Dictation, Transcription)
- 120 Hours - Typewriting (Basic - 40 WPM)
- 60 Hours - Typewriting (50 WPM)
- 60 Hours - Typewriting (60 WPM)

Clerk-Typist - 6 Months

570 Clock Hours

Components

- 60 Hours - Communication Word Power
- 60 Hours - Modern Business English

- 60 Hours - Reading Development
- 60 Hours - Business Filing and Records Control
- 30 Hours - Adding Machines
- 60 Hours - General Office Procedures
- 60 Hours - Personal Development
- 120 Hours - Typewriting (Basic-40 WPM)
- 60 Hours - Typewriting (50 WPM)

Spencer Business College, New Orleans, Louisiana

Business Administration - 12 Months

1296-1356 Clock Hours

Components

- 60 Hours - Beginning Typewriting
- 60 Hours - Intermediate Typewriting - Theory and Practice
- 60 Hours - Reading for Comprehension
- 60 Hours - Principles of Modern English Usage
- 60 Hours - Communications Skills
- 60 Hours - Vocabulary and Word Mastery
- 60 Hours - Mathematics of Business
- 60 Hours - Introduction to Business Enterprise
- 60 Hours - Business Law I
- 60 Hours - Business Law II
- 60 Hours - Executive Improvement or Personality Development
- 60 Hours - Data Processing Concepts or Principles of Accounting - A
- 60 Hours - Principles of Accounting - B
- 60 Hours - Intermediate Accounting - A
- 60 Hours - Intermediate Accounting - B
- 60 Hours - Principles of Marketing
- 30 Hours - Office Machines: Adding and Calculating
- 210 Hours - Accounting Major or Management Major
- 96 Hours - Supervised Laboratory

Accounting Major

- 30 Hours - Payroll Accounting
- 60 Hours - Cost Accounting
- 60 Hours - Income Tax Procedures
- 60 Hours - Governmental Accounting
- 60 Hours - Principles of Economics

Management Major

- 60 Hours - Business Organization and Management
- 60 Hours - Administrative Management
- 60 Hours - Personnel Management
- 60 Hours - Human Relations in Business and Industry
- 60 Hours - Principles of Economics

General Accounting - 9 Months

972 Clock Hours

Components

- 60 Hours - Principles of Accounting - A
- 60 Hours - Principles of Accounting - B
- 60 Hours - Intermediate Accounting - A
- 60 Hours - Intermediate Accounting - B
- 60 Hours - Mathematics of Business
- 60 Hours - Introduction to Business Enterprise
- 60 Hours - Business Law I
- 60 Hours - Executive Improvement or Personality Development
- 60 Hours - Data Processing Concepts
- 60 Hours - Reading for Comprehension
- 60 Hours - Principles of Modern English Usage
- 60 Hours - Communication Skills
- 30 Hours - Office Machines and Calculating
- 60 Hours - Beginning Typewriting or Intermediate Typewriting, Theory and Practice
- 90 Hours - School Electives
- 72 Hours - Supervised Laboratory

Suggested Electives

- 30 Hours - Payroll Accounting
- 60 Hours - Income Tax Procedures
- 60 Hours - Records Management

Computer Operations and Management - 12 Months

1296 Clock Hours

Components

- 60 Hours - Data Processing Concepts
- 60 Hours - Unit Record Equipment
- 60 Hours - Operating Systems I
- 60 Hours - EDP Machines Operations
- 60 Hours - Report Program Generator Elementary
- 60 Hours - Report Program Generator
- 60 Hours - Report Program Generator
- 60 Hours - Reading for Comprehension or Communication Skills
- 60 Hours - Principles of Accounting - A
- 60 Hours - Principles of Accounting - B
- 60 Hours - Intermediate Accounting - A
- 30 Hours - Payroll Accounting
- 60 Hours - Mathematics of Business Enterprise
- 60 Hours - Executive Development or Personality Development

- 60 Hours - Beginning Typewriting or Intermediate Typewriting, Theory and Practice
- 330 Hours - School Electives
- 96 Hours - Supervised Laboratory

Suggested Electives

- 60 Hours - Business Organization and Management
- 60 Hours - Administrative Management
- 60 Hours - Introduction to IBM System/3
- 60 Hours - Introduction to Psychology
- 60 Hours - Income Tax Procedures
- 60 Hours - Business Law I
- 60 Hours - IBM System/360 Computer Operations

Office Specialist - 9 Months

972 Clock Hours

Components

- 60 Hours - Beginning Typewriting
- 60 Hours - Advanced Typewriting, Theory and Practice
- 60 Hours - Advanced Typewriting, Applications
- 60 Hours - Reading for Comprehension
- 60 Hours - Principles of Modern English Usage
- 60 Hours - Communication Skills
- 60 Hours - Vocabulary and Word Mastery
- 60 Hours - Secretarial Accounting
- 60 Hours - Mathematics of Business
- 60 Hours - Introduction to Business Enterprise
- 60 Hours - Personality Development
- 60 Hours - Office Procedures
- 60 Hours - Machine Dictation and Transcription
- 60 Hours - Records Management
- 30 Hours - Office Machines: Adding and Calculating
- 30 Hours - School Electives
- 72 Hours - Supervised Laboratory

Stenographic - 9 Months

972-1032 Clock Hours

Components

- 60 Hours - Beginning Typewriting
- 60 Hours - Intermediate Typewriting, Theory and Practice
- 60 Hours - Advanced Typewriting Applications
- 60 Hours - Reading for Comprehension

- 60 Hours - Principles of Modern English Usage
- 60 Hours - Communication Skills
- 60 Hours - Vocabulary and Word Mastery
- 60 Hours - Secretarial Accounting
- 60 Hours - Personality Development
- 60 Hours - Shorthand Theory: Alphabetic
- 60 Hours - Introduction to Dictation and Transcription
- 60 Hours - Advanced Dictation and Transcription
- 60 Hours - Office Procedures
- 60 Hours - Machine Dictation and Transcription
- 60 Hours - Records Management
- 30 Hours - Office Machines: Adding and Calculation
- 30 Hours - Calculating
- 30 Hours - School Electives
- 72 Hours - Supervised Laboratory

Automation Secretarial - 12 Months

1296 Clock Hours

Components

- 60 Hours - Beginning Typewriting
- 60 Hours - Intermediate Typewriting, Theory and Practice
- 60 Hours - Advanced Typewriting Applications
- 60 Hours - Reading for Comprehension
- 60 Hours - Principles of Modern English Usage
- 60 Hours - Communication Skills
- 60 Hours - Vocabulary and Word Mastery
- 60 Hours - Shorthand Theory: Alphabetic
- 60 Hours - Introduction to Dictation and Transcription
- 60 Hours - Advanced Dictation and Transcription
- 60 Hours - Data Processing Dictation Studies
- 60 Hours - Mathematics of Business
- 60 Hours - Personality Development
- 60 Hours - Secretarial Accounting
- 60 Hours - Data Processing Concepts
- 60 Hours - Unit Record Equipment
- 60 Hours - Office Procedures
- 180 Hours - School Electives
- 96 Hours - Supervised Laboratory

Suggested Electives

- 60 Hours - Machine Dictation and Transcription
- 60 Hours - Records Management
- 30 Hours - Office Machines: Adding and Calculation
- 60 Hours - Introduction to Business Enterprise

Pennsylvania State Board for Vocational Education

Educational Service Bureau, Department of Educational Administration,
Teachers College, Temple University

Effective Distributive Education Schedules - 36 Weeks Total Course

Components

2 Weeks - Orientation (First two weeks of school) (Total)

34 Weeks - Economics of Distribution (Total)

2 Weeks - Elements of Retailing

1 Week - Marketing Functions

1 Week - Distribution and Distributive Education

2 Weeks - Store Organization

3 Weeks - Management and Operation

2 Weeks - Good Will

2 Weeks - Merchandising

1 Week - Economics of Business

3 Weeks - Employer-Employee Relations

2 Weeks - United States Government - Its Organization and Its Cost

2 Weeks - United States Responsibility to a World Community

10 Weeks - Owning and Operating Your Own Business (A Unit Project)

3 Weeks - Current Trends

or

34 Weeks - Job Problems (Total)

4 Weeks - Individual Job Problems

3 Weeks - Personality Development

16 Weeks - Salesmanship

7 Weeks - English

4 Weeks - Arithmetic

or

34 Weeks - Merchandise Information (Total)

12 Weeks - Textiles

10 Weeks - Non-Textiles

2 Weeks - Color, Line and Design

4 Weeks - Window and Store Display

4 Weeks - Retail Advertising

2 Weeks - Fashion

NOTE: English can be used for the formal teaching of English. However, English should be integrated with all units of the Distributive Education program.

Commonwealth of Pennsylvania - Business Education Curriculum

Secretarial Sequence - Grades 10, 11 and 12

1485 Clock Hours

Components

Grade 10

165 Hours - Business Mathematics

165 Hours - General Business

Grade 11

165 Hours - Bookkeeping I

165 Hours - Shorthand I

165 Hours - Typewriting I

Grade 12

165 Hours - Business English

82½ Hours - Business Law

82½ Hours - Data Processing

165 Hours - Office Practice

165 Hours - Shorthand II

NOTE: Assume classes meet for 55 minutes daily, 180 days per year for a yearly total of 165 Clock Hours per course.

Bookkeeping and Accounting Sequence - Grades 10, 11 and 12

1650 Clock Hours

Components

Grade 10

165 Hours - Business Mathematics

165 Hours - Clerical Practice

165 Hours - General Business

Grade 11

165 Hours - Principles of Selling

165 Hours - Recordkeeping

165 Hours - Typewriting I

Grade 12

- 165 Hours - Bookkeeping or Data Processing (Elect one)
- 165 Hours - Business Law
- 165 Hours - Office Practice
- 165 Hours - Typewriting II

NOTE: Assume classes meet for 55 minutes daily, 180 days per year for a yearly total of 165 Clock Hours per course.

Clerical Sequence - Grades 10, 11 and 12

1650 Clock Hours

Components

Grade 10

- 165 Hours - Business Mathematics
- 165 Hours - Clerical Practice
- 165 Hours - General Business

Grade 11

- 165 Hours - Principles of Selling
- 165 Hours - Recordkeeping
- 165 Hours - Typewriting I

Grade 12

- 165 Hours - Bookkeeping or Data Processing (Elect one)
- 165 Hours - Business Law
- 165 Hours - Office Practice
- 165 Hours - Typewriting II

NOTE: Assume classes meet for 55 minutes daily, 180 days per year for a yearly total of 165 Clock Hours per course.

Virginia Department of Education - Agricultural Business Curriculum

2 Years or 360 Days - 1220 Clock Hours (320 Clock Hours Class and 900 Clock Hours at the Agricultural Business Training Station)

Agricultural Business III

Components

- 13 Hours - Career Opportunities in Agricultural Business (15 Days)
- 13 Hours - Orientation to Supervised Occupational Experience (15 Days)
- 27 Hours - Planning the Occupational Experience Program (90 Days)

- 27 Hours - Human Relations in Agricultural Occupations (30 Days)
- 18 Hours - Organization and Functions of Agricultural Businesses (20 Days)
- 13 Hours - Leadership Training (15 Days)
- 9 Hours - Agricultural Business Math (10 Days)
- 13 Hours - Agricultural Salesmanship (15 Days)
- 27 Hours - Instruction Directly Related to Training Objective (30 Days)

Agricultural Business IV

Components

- 13 Hours - Evaluation of Agricultural Experience Program Plans and Occupational Experience Programs (15 Days)
- 13 Hours - Human Relations Problems in Agricultural Occupations (15 Days)
- 23 Hours - Agricultural Business Procedures (25 Days)
- 18 Hours - Establishing an Agricultural Business (20 Days)
- 13 Hours - Leadership Training (15 Days)
- 13 Hours - Merchandising, Advertising and Display (15 Days)
- 13 Hours - The Role of Agriculture in Our Economy (15 Days)
- 54 Hours - Instruction Directly Related to Training Objective (60 Days)

NOTE: Assume classes meet for 55 minutes daily, 180 days per year. The total of 160 clock hours for components of Agricultural Business III and Agricultural Business IV is adjusted from the 165 yearly clock hours per course to correspond with the annual minimum clock hour requirement of 160 hours for agricultural business vocational training.

State of South Carolina - Distributive Education

Suggested Teaching Outline - 182 Days (36 Weeks) - 167 Clock Hours

Components

- 4 Hours - General Orientation (4 Days)
- 23 Hours - How to Apply for a Job (25 Days)
- 15 Hours - Distributive Education Orientation (16 Days)
- 17 Hours - Likely First Jobs (18 Days)
- 7 Hours - Personality in Action (8 Days)
- 6 Hours - Foundation for Selling (7 Days)
- 9 Hours - Sales Presentation (10 Days)
- 5 Hours - Increasing the Sale (5 Days)
- 8 Hours - Selling, A Universal Opportunity (9 Days)
- 6 Hours - Communications (7 Days)
- 13 Hours - Oral Communications (14 Days)
- 7 Hours - Written Communication (8 Days)
- 30 Hours - Introduction to Mathematics (33 Days)
- 17 Hours - Basic Organization of Distribution (18 Days)

NOTE: Assume classes meet for 55 minutes daily, 182 days per year, for an annual total of 167 Clock Hours.

APPENDIX G

ELECTRICIAN'S MATE RATING/
ELECTRICIAN SPECIALTY
COMPARATIVE
OCCUPATIONAL SPECIALTY
AND
TECHNICAL/APPRENTICESHIP TRAINING
DATA

This Appendix contains comparative Navy and civilian occupational specialty and technical/apprenticeship training data. This information in the present format may be used by recruiters as an aid to classify lateral entry petty officer recruits.

The comparative civilian occupational specialty data have been obtained from the U. S. Department of Labor, Dictionary of Occupational Titles, and are presented according to the same numeric code sequence that is contained within that classification document. Comparable civilian occupations are listed for each specific Navy rating. Broad civilian occupational specialty categories are listed first, followed by a list of the occupations within each specialty.

The occupational titles data that are presented in each Appendix are all inclusive, but does not provide a complete list of each different occupational title within each specific occupational specialty category. Additional occupational title information may be obtained by referring to the specified numeric code listed in the Dictionary of Occupational Titles, as the need may arise.

The comparative technical training data have been obtained from the curricula of accredited private and state supported trade and technical schools, community and junior colleges, and vocational training courses at regular high schools. The comparative apprenticeship training data were obtained from U. S. Department of Labor recommended schedules. These data are distributed as equitably as possible between private and state supported schools, and with a sufficient nationwide geographic dispersal to enable as broad as possible a comparison between civilian and Navy vocational training.

The technical and apprenticeship training data are presented to afford examples of comparative Navy and civilian vocational training for each occupational specialty that comprises the functions of each given Navy rating. These data are presented for information purposes to help the recruiter in processing pre-enlistment packages and/or appropriate service record pages. The prospective petty officer recruit's training and experience background data may be compared with the training and experience requirements for a given Navy rating. Also, these same data may be compared with other appropriate civilian occupational training data to determine the prospective recruit's background and proficiency in a specific occupational specialty area. This will help to insure the proper placement of new petty officer recruits.

COMPARATIVE
ELECTRICIAN'S MATE RATING/
ELECTRICIAN
OCCUPATIONAL SPECIALTIES
DATA

NAVY ELECTRICIAN'S MATE RATING AND COUNTERPART CIVILIAN
OCCUPATIONAL SPECIALTIES

Navy Electrician's Mate rating personnel stand watch on generators, switchboards, and control equipment; operate electrical equipment; perform organizational and intermediate maintenance on power and lighting circuits, electrical fixtures, film projectors, motors, generators, voltage and frequency regulators, controllers, distribution switchboards, and other electrical equipment; test for short circuits, grounds, or other casualties; and rebuild electrical equipment, including solid state circuitry elements, in an electrical shop.

Counterpart civilian occupational specialties to this Navy rating are skills found in Structural Work; Machine Trades; Bench Work; Miscellaneous occupations pertaining to the generation, transmission and distribution of electricity; and in Electrical Engineering occupations.

Similar Electrician specialty occupations include refrigeration and air conditioning technicians; electric motor and generator repairmen; plus the different categories of electricians such as ship and powerhouse, and some electronic service technicians.

The following is a list of these occupations, with the appropriate D. O. T. codes (U. S. Department of Labor, Dictionary of Occupational Titles). Broad specialty categories are listed first, then a comprehensive list of occupations within each specialty follows.

- 6 Machine Trades Occupations
 - 62/63 Mechanics and Machinery Repairmen
 - 637 Utilities Service Mechanics and Repairmen
- 7 Bench Work Occupations
 - 71 Fabrication, Repair of Scientific, Medical Apparatus, Photographic, Optical Goods, Watches, Clocks, Related Products
 - 710 Fabrication, Repair of Instruments for Measuring, Controlling, Indicating Physical Characteristics
 - 72 Assembly, Repair Electrical Equipment
 - 720 Assembly, Repair, Radio, Television Sets, Phonographs
 - 721 Assembly, Repair Motors, Generators, and Related Products
 - 722 Assembly, Repair Communications Equipment
 - 723 Assembly, Repair Electrical Appliances, Fixtures
 - 724 Winding, Assembling Coils, Magnets, Armatures, Related Products
 - 725 Assembly of Light Bulbs, Electronic Tubes
 - 727 Assembly of Storage Batteries
 - 728 Fabrication of Electrical Wire, Cable
 - 729 Assembly, Repair of Electrical Equipment, Not Elsewhere Classified

- 8 Structural Work Occupations
- 82 Electrical Assembly, Installation, Repair
- 920 Assembly, Installation, Repair of Generators, Motors
Accessories
- 821 Assembly, Installation, Repair of Transmission, Distribution
Lines, Circuits
- 822 Assembly, Installation, Repair of Wire Communication, Detection,
Signal Equipment
- 823 Assembly, Installation, Repair of Electronic Communication,
Detection, Signal Equipment
- 824 Assembly, Installation, Repair of Lighting Equipment,
Building Wiring
- 825 Assembly, Installation, Repair of Transportation and
Materials
- 826 Assembly, Installation, Repair of Industrial Apparatus. Not
Elsewhere Classified
- 827 Assembly, Installation, Repair of Large Household Appliances,
Similar Commercial/Industrial Equipment
- 828 Fabrication, Installation, Repair of Electrical/Electronics
Products
- 829 Installation, Repair of Electrical Products
- 86 Construction Occupations, Not Elsewhere Classified
- 869 Miscellaneous Construction, Not Elsewhere Classified

- 9 Miscellaneous Occupations
- 95 Production, Distribution of Utilities
- 952 Generation, Transmission, Distribution of Electric Lights
Power

Machine Trades Occupations

This category includes occupations concerned with feeding, tending, operating, controlling, and setting up machines to cut, bore, mill, abrade, print and similarly work such materials as metal, paper, wood and stone. Throughout this category, the overall relationship of the worker to the machine is of prime importance. At the more complex levels, the important aspects of the work include understanding machine functions, reading blueprints, making mathematical computations, and exercising judgments to attain conformance to specifications. Coordination of the eyes and hands is the most significant factor at the lower levels. Disassembly, repair, reassembly, installation and maintenance of machines and mechanical equipment, and weaving, knitting, spinning and similarly working textiles are included in this category.

62/63

Mechanics and Machinery Repairmen

This division includes groups of occupations concerned with installing, inspecting, testing, repairing, rebuilding, and maintaining in efficient operating condition all types of engines and a wide variety of mechanical equipment designed for general or specific application in domestic, commercial, industrial, and agricultural activities. Occupations in this division typically require knowledges of the structural and functional characteristics of specific machines or types of machines, and include such tasks as locating and drilling holes, alining structural and moving parts, and occasionally operating machine tools to remove excess metal from semifinished or repaired parts. Occupations concerned with assembling new or rebuilt heavy machines, such as turbines and presses in the machine shop or erection shop; involving close tolerance machining and hand finishing of castings and other machine parts are included in Division 60 (Metal Machining Occupations). Occupations concerned with machine setup and adjustment only are included in groups covering operation of the same machines.

637

Utilities Service Mechanics and Repairmen

This group includes occupations concerned with installing, maintaining, and repairing mechanical equipment and appliances used to supply heat, conditioned air, refrigeration, water, and related utilities in homes and commercial or industrial establishments.

637.281

Air Conditioning Mechanic, Commercial (any ind)
 Air Conditioning Mechanic, Domestic (any ind)
 Gas Appliance Serviceman (any ind)
 Gas Equipment and Control Man (light, heat & power)
 Gas Serviceman (light, heat & power)
 Pump Erector (const)
 Refrigeration Mechanic
 Stoker Erector and Serviceman

637.381

Evaporative Cooler Installer (any ind)
 Refrigeration Unit Repairman (refrig equip)

- 637.884 Quality Control Technician (coin mach)
- 637.884 Air Conditioning Mechanic Helper, Commercial (any ind)
 Gas Appliance Serviceman Helper (any ind)
 Pump Erector Helper (const)
- 637.887 Air Conditioning Mechanic Helper, Domestic (any ind)
 Refrigeration Mechanic Helper (any ind)

7 Bench Work Occupations

This category includes occupations concerned with the use of body members, handtools, and bench machines to fit, grind, carve, mold, paint, sew, assemble, inspect, repair, and similarly work relatively small objects and materials such as jewelry, phonographs, light bulbs, music instruments, tires, footwear, pottery, and garments. The work is usually performed at a set position in a mill, plant, or shop, at a bench, worktable, or conveyor. At the more complex levels, workers frequently read blueprints, follow patterns, use a variety of handtools, and assume responsibility for meeting standards. Workers at the less complex levels are required to follow standardized procedures.

72 Occupations in Fabrication and Repair of Scientific
 and Medical Apparatus, Photographic and Optical
 Goods, Watches and Clocks, and Related Products

This division includes occupations concerned with assembling, fabricating, and repairing scientific, engineering, and medical equipment, photographic and optical goods, clocks and watches, and related products, using specialized handtools and bench-type machines.

710 Occupations in Fabrication and Repair of
 Instruments for Measuring, Controlling, and
 Indicating Physical Characteristics

This group includes occupations concerned with fabricating and repairing instruments for measuring, controlling, and indicating temperature, pressure and vacuum, fluid flow, liquid level, mechanical motion, rotation, humidity, density, acidity or alkalinity, and combustion, including those used to control home air-conditioning and heating systems and as components in household appliances; dial pressure gages; scales and balances; and apparatus for testing such physical properties as hardness, tension, torsion, compression, and elasticity. Instruments for measuring, recording, and controlling electrical characteristics are included in Division 72.

- 710.131 Gas Meter Repairman Foreman (light, heat & power)
 Instrument-Mechanic Foreman (light, heat & power)
 Instrument Repairman Foreman (any ind)
 Meter and Regulator Shop Foreman (light, heat & power:
 petrol refin)

Meter Repair Shop Foreman (light, heat & power)
Meter Shop Foreman (waterworks)
Shop Foreman (petrol production)

710.281

Electrical Inspector (inst & app)
Electromechanical Technician (inst & app)
Gas Meter Prover (light, heat & power)
Gas Meter Repairman (light, heat & power)
Hydrometer Calibrator (inst & app)
Industrial Gas Serviceman (light, heat & power)
Instrument Mechanic (light, heat & power)
Instrument Man (aircraft mfg; air trans)
Instrument Repairman (any ind)
Meter Repairman (any ind)
Taximeter Repairman (auto ser)
Tin Case Meter Repairman (light, heat & power)

710.381

Electromechanical Inspector (inst & app)
Electronic Assembler and Tester (bal & scales)
Gas Meter Inspector (light, heat & power)
Instrument Man Helper (aircraft mfg; air trans)
Meter Mechanic (light, heat & power)
Register Repairman (r r trans)

710.384

Inspector, Mechanical and Electrical (elec equip)
Meter Inspector (light, heat & power)

710.684

Dip and Slow Light Tester (light, heat & power)

72

Occupations in Assembly and Repair of Electrical
Equipment

This division includes occupations concerned with assembling, fabricating, or repairing equipment, components and parts for equipment to transmit, control, or convert electrical power; signaling and detection equipment, and home radios, television sets, and phonographs.

720

Occupations in Assembly and Repair of Radio and
Television Sets and Phonographs

This group includes occupations concerned with assembling and repairing radio and television receivers, recorders, phonographs, and related items. Occupations concerned with sound recording and transcription are included in Group 194.

720.281

Radio Repairman (any ind)
Tape Recorder Repairman (any ind)
Television Service and Repairman (any ind)

- 720.387 Gager, Hand (electronics)
Quality Control Inspector (phonograph)
Record Tester (phonograph)
- 720.684 Tester, Television Picture Tubes (electronics)
- 720.687 Inspector, Marked Reels (electronics)
Record Changer Tester (phonograph)
Television Chassis Inspector (electronics)
- 720.884 Aliner (electronics)
Assembly Adjuster (phonograph)
Cabinet Mounter (electronics)
Phonograph Cartridge Assembler (phonograph)
Picture Tube Installer (electronics)
- 720.887 Matrix Groove Roller (phonograph)
Record Changer Assembler (phonograph)
- 721 Occupations in Assembly and Repair of Motors,
Generators, and Related Products

This group includes occupations concerned with assembling and repairing electric motors, power generators, motor generator sets, railway motors and control equipment; and motors, generators, and control equipment for gasoline-electric and oil-electric buses and trucks. Winding and assembling coils, magnets, armatures, and related components are contained in 724.

- 721.131 Electric Motor Repairing Foreman (any ind)
Foreman, Electric Motor Testing (elec equip)
- 721.281 Electric Motor Analyst (any ind)
Electric Motor Assembler and Tester (any ind)
Electric Motor Repairman (any ind)
Propulsion Motor and Generator Repairman (auto ser)
Electric Motor Repairman (elec equip)
Ignition Specialist (air trans)
Magneto Repairman (any ind)
Tester, Motors and Controls (elec equip)
- 721.381 Electric Motor and Generator Assembler
Electric Motor Control Assembler (elec equip)
Electric Motor Fitter (loco & car bldg & rep)
Final Tester (elec equip)
Governor Assembler, Hydraulic (elec equip)
Inspector, Motors and Generators (elec equip)
- 721.384 Vibrometer-Block Tester (elec equip)

721.884 Armature Winder Helper, Repair (any ind)
 Assembler, Carbon Brushes (elec equip)
 Coil Connector (elec equip)
 Commutator Assembler (elec equip)
 Electric Motor Assembler (elec equip)
 Electric Motor Winder (elec equip)
 Field Ring Assembler (elec equip)
 Skein Winder (elec equip)
 Spider Assembler (elec equip)
 Insulation Cutter and Former (elec equip)

721.887 Cleaner and Preparer (elec equip)
 Motor Assembler (agric equip)

722 Occupations in Assembly and Repair of Communications
 Equipment

This group includes occupations concerned with assembling and repairing wire and wireless telephone and telegraph equipment and parts, radio and television broadcasting equipment and parts, electronic field detection apparatus, light and heat emission operating apparatus, object detection apparatus and navigational electronic equipment, aircraft and missile control systems, electronic data processing equipment, and electronic and electric communication and signaling products.

722.131 Instrument Shop Supervisor (tel & tel)

722.281 Inspector, Systems (electronics)
 Instrument Shopman (tel & tel)

722.381 Assembler (tel & tel)
 Instrument Inspector (aircraft mfg)

722.884 Wireman (office mach)

722.887 Switchbox Assembler

723 Occupations in Assembly and Repair of Electrical
 Appliances and Fixtures

This group includes occupations concerned with small appliances, such as toasters, grills, mixers, and coffee makers; lighting fixtures; and cord sets, switches, sockets and related products.

723.131 Foreman, Appliance Assembly (elec equip)

723.132 Foreman, Fabrication Department (light fix)

723.381 Electrical Appliance Repairman (any ind)
 Model Maker, Fluorescent Lighting (light fix)
 Vacuum Cleaner Repairman (any ind)

- 723.387 Refrigerator Inspector (refrig equip)
- 723.687 Checker, Hair Driers (elec equip)
Tester and Inspector, Lamps (light fix)
Toaster Tester (elec equip)
- 723.884 Appliance Repairman (elec equip)
Assembler (elec equip)
Assembler (light fix)
Assembler Line (elec equip)
Flasher Adjuster (light fix)
- 723.887 Heating Element Winder (elec equip)
Patcher (elec equip)
Wiper (light fix)
Wire Cutter (light fix)
- 724 Occupations in Winding and Assembling Coils,
Magnets, Armatures and Related Products

This group includes occupations concerned with cutting, winding, taping, forming, stripping, connecting, and soldering wire to fabricate, assemble, and repair coils, magnets, armatures, and related products.

- 724.130 Winding Foreman (electronics)
- 724.131 Foreman, Coil and Armature Inspection (elec equip)
Transformer Shop Foreman (any ind)
- 724.134 Foreman, Laminating (electronics)
- 724.281 Transformer, Tester (light, heat & power)
- 724.381 Adjuster, Electrical Contacts (elec equip)
Coil Unit Builder, Experimental (electronics)
Transformer Repairman (any ind)
- 724.384 Armature Tester (elec equip)
Winding Inspector and Tester (elec equip)
- 724.685 Weld Inspector (elec equip)
- 724.781 Coil Winder (elec equip)
Coil Winder, Repair (any ind)
Transformer Coil Winder (light, heat & power)
Transformer Man (elec equip)
Wire Coiler (elec equip)
- 724.884 Armature Bander (any ind)
Armature Connector (elec equip)
Armature Straightener (elec equip)

Armature Winder, Repair (any ind)
 Coil Former, Template (elec equip)
 Coil Shaper (any ind)
 Coil Taper, Hand (elec equip)
 Coil Taper, Machine (elec equip)
 Coil Winder (elec equip)
 Coil Winder, Hand (electronics)
 Coil Winder, Automatic (elec equip)
 Coil Winder, Strap (elec equip)
 Element Winder (inst & app)
 Field Coil Repairman (elec equip)
 Header and Chopper Assembler (electronics)
 Laminator (electronics)
 Magnet Valve Assembler (elec equip)
 Motor and Generator Brush Maker (elec equip)
 Static Balancer (any ind)
 Transformer Assembler, Specialty (elec equip)
 Universal Winding Machine Operator (elec equip;
 electronics)

724.887

Burner (elec equip)
 Coil Finisher (elec equip; electronics)
 Coil Former and Presser (elec equip)
 Commutator V Ring Assembler (elec equip)
 Die Caster (electronics)
 Insulator (elec equip)
 Lacer and Tier (elec equip)
 Resistor Lead Wire Assembler (electronics)
 Slot Wedger (elec equip)

725

Occupations in Assembly of Light Bulbs and
 Electronic Tubes

This group includes occupations concerned with fabricating and assembling filaments, grids, plates, masks, guns and other parts and inserting them into bulbs to complete electron tubes and light bulbs.

725.131 Foreman, Transmitting Tubes (electronics)

725.484 Grid Inspector (electronics)
 Tube Tester (electronics)

725.487 Quality Control Inspector (elec. equip)

725.584 Mask Inserter and Inspector (electronics)

725.587 Leak Detector (electronics)

725.684 Coiled-Coil Inspector (elec equip)
 Quality Inspector (electronics)

- 725.687 Brad Inspector (elec equip)
Coiler (elec equip)
- 725.884 Ager (electronics)
Bulb Punch Out Machine Operator (electronics)
Exhaust Operator (electronics)
Grid Operator (electronics)
Mounter, Hand (elec equip)
Stem Mounting Machine Operator (elec equip)
- 727 Occupations in Assembly of Storage Batteries
- This group includes occupations concerned with assembly of grids, plates, separators, and connectors to form wet-and dry-cell batteries, and filling with electrolyte.
- 727.130 Foreman, Burning, Forming and Assembly (elec equip)
- 727.137 Foreman, Dry Cell Assembly (elec equip)
- 727.381 Battery Repairman (any ind)
Dry Cell Tester (elec equip)
Laboratory Man, Storage Battery (elec equip)
- 727.384 Battery Tester (elec equip)
- 727.585 Plate Slitter and Inspector (elec equip)
- 727.687 Aluminum Container Tester (elec equip)
Electric Container Tester (elec equip)
Final Inspector (elec equip)
Inspector (elec equip)
Inspector, Container, Finishing (elec equip)
Molded Parts Inspector (elec equip)
Spark Tester (elec equip)
- 727.781 Battery Recharger (elec equip)
- 727.884 Acid Adjuster (elec equip)
Battery Assembler, Plastic (elec equip)
Battery Assembler, Motorcycle (elec equip)
Cell Repairman (elec equip)
Lead Burner (elec equip)
Plate Assembler, Small Battery (elec equip)
Sealer (elec equip)
- 727.887 Acid Dumper (elec equip)
Acid Filler (elec equip)
Assembler, Dry Cell and Battery (elec equip)
Battery Charger (elec equip)

Battery Charger, Conveyor Line (elec equip)
 Battery Container Finishing Hand (elec equip)
 Battery Parts Assembler (elec equip)
 Battery Stacker (elec equip)
 Box Salvage Man (elec equip)
 Cell Cover Placer (elec equip)
 Cell Tuber, Hand (elec equip)
 Forming Process Line Worker (elec equip)
 Lead Burner Helper (elec equip)
 Lead Caster Helper (elec equip)
 Take Off Man (elec equip)
 Wafer Line Worker (elec equip)

728 Occupations in Fabrication of Electrical Wire and Cable

This group includes occupations concerned with fabrication of bare, insulated, shielded, enameled, or waxed electrical conductors made from purchased wire.

728.281 Cable Lay Out Man (elec equip)

728.884 Assembler, Electrical Wire Group (aircraft mfg)
 Electrical Line Splicer (petrol prod)
 Spark Tester (elec equip; insulated wire)

728.887 Wireworker (electronics)

729 Occupations in Assembly and Repair of Electrical Equipment, Not Elsewhere Classified

This group includes occupations, not elsewhere classified, concerned with assembling, fabricating, or repairing electrical equipment.

729.131 Inspector, Chief (elec equip)
 Relay Shop Foreman (light, heat & power)
 Salvage Supervisor (light, heat & power)

729.138 Assembly Line Foreman (any ind)

729.281 Audio Video Repairman (any ind)
 Electrical Instrument Repairman (any ind)
 Electric Meter Repairman (light, heat & power)
 Electric Meter Repairman Apprentice (light, heat & power)
 Electric Tool Repairman (any ind)
 Electromedical Equipment Repairman (any ind)
 Diathermy Equipment Repairman
 Electrocardiograph Repairman
 Inside Meterman (light, heat & power)
 Instrument Maker (elec equip; electronics)

Electromechanical Assembler (electronics)
 Relay Tester (light, heat & power)
 Salvage Repairman (light, heat & power)
 Wireman (office mach)
 X-Ray Equipment Tester (any ind)

729.381
 Electrical Equipment Tester (aircraft mfg)
 Pin Game Machine Inspector (coin machine)
 Printed Circuit Technician (electronics)
 Production Repairman (electronics)
 Radio Repairman
 Street Light Repairman (light, heat & power)
 Tester, Systems (electronics)
 Wireman, Cable (elec equip)

729.384
 Winding Inspector (elec equip)

729.387
 De-Icer Inspector, Electric (rubber goods)
 De-Icer Tester (rubber goods)
 Finishing Inspector (elec equip)
 Inspector (elec equip)
 Insulator, Tester (light, heat & power)

729.684
 Battery Charger Tester, High Rate (elec equip)
 Tester, Electrical Continuity (elec equip)

729.884
 Assembler, Electrical Accessories (elec equip)
 Capacitor Assembler (elec equip)
 Chassis Assembler (electronics)
 Dial Marker (elec equip)
 Electrical Control Assembler (elec equip)
 Electrician Helper, Automotive (auto ser)
 Electric Sign Assembler (signs)
 Fare Register Repairman (motor trans)
 Lamination Stacker (elec equip)
 Mold Operator (elec equip)
 Repairman, Switchgear (elec equip)
 Salvage Repairman (light, heat & power)
 Spark Plug Assembler (elec equip)
 Test Department Helper (elec equip)

729.887
 Assembler, Electrical Accessories (elec equip)
 Built Up Washer Man (minerals & earths)
 Electrode Cleaner (elec equip)
 Lamination Spinner (elec equip)
 Plate Stacker, Hand (elec equip)
 Salvage Man (light, heat & power)

Structural Work Occupations

This category includes occupations concerned with fabricating, erecting, installing, paving, painting, repairing, and similarly working structures or structural parts, such as bridges, buildings, roads, motor vehicles, cables, airplane engines, girders, plates and frames. The work generally occurs outside a factory or shop environment, except for factory production line occupations. Tools used are hand or portable power tools, and such materials as wood, metal, concrete, glass and clay are involved. Workers are frequently required to have a knowledge of the materials with which they work, e. g., stresses, strains, durability, and resistance to weather.

82 Electrical Assembling, Installing, and Repairing Occupations

This division includes occupations concerned with assembling, installing, erecting, and repairing electrical equipment and related structures designed for electric power generation, transmission, and distribution; communication, signaling, and object detection; process control, fire control and data processing; transportation and materials handling; heating, air conditioning, refrigeration, and illumination; and other industrial, commercial, and domestic electrical applications.

820 Occupations in Assembly, Installation, and Repair of Generators, Motors, Accessories and Related Powerplant Equipment

This group includes occupations concerned with assembling components and premachined parts; connecting electrical circuits; testing circuitry and operation of generators, motors, accessories, controls, and related equipment; and making on-site repairs to operating equipment.

820.131 Circuit Breaker Foreman (light, heat & power)
Electrician Foreman, Substation (light, heat & power)

820.138 Transformer Assembly Foreman (elec equip)

820.281 Circuit-Breaker Mechanic (light, heat & power)
Electrician, Powerhouse (light, heat & power)
Electrician, Rectifier Maintenance
Electrician, Substation
Motor Room Control Man
Engine Assembly Foreman (engine & turbine)

820.381 Batteryman, Large Emergency Storage
Corrosion Control Filter
Electric Motor Generator Set Assembler
Engine Generator Set Assembler (elec equip)
Transformer Assembler (elec equip)

- 820.781 Dynamo Man (light, heat & power)
 Regulator Inspector (light, heat & power)
- 921 Occupations in Assembly, Installation, and Repair
 of Transmission and Distribution Lines and Circuits

This group includes occupations concerned with erecting and repairing powerlines and circuits for transmission and distribution of electricity, and assembling and erecting related equipment and structures.

- 821.131 Electrical Installation Inspectors (light, heat &
 power)
 Electric Meterman Foreman (light, heat & power)
 Line Foreman (light, heat & power)
 Service Foreman (light, heat & power)
 Steel Post Installer Foreman (light, heat & power)
 Wireman Foreman (light, heat & power)
- 821.281 Lineman (any ind)
 Radio Investigator (light, heat & power)
 Relay Technician Journeyman (light, heat & power)
 Trouble Man (light, heat & power)
- 821.381 Cable Man (light, heat & power)
 Electric Meter Installer (light, heat & power)
 Cut In and Cut Out Man (light, heat & power)
 Meterman, Outside (light, heat & power)
 Electric Meter Tester (light, heat & power)
 Demand Meter Inspector (light, heat & power)
 Electrolysis Tester (r r trans)
 Lineman (const; light, heat & power)
 Towerman (const; light, heat & power)
 Lineman, Repair (light, heat & power)
 Lineman, Street Railway (r r trans)
 Power Transformer Repairman (light, heat & power)
 Voltage Tester (light, heat & power)
- 821.384 Tampering Inspector (light, heat & power)
- 821.387 Construction Checker (light, heat & power)
 Primary Meterman (light, heat & power)
 Safety Inspector (light, heat & power)
- 821.884 Electric Meter Installer (light, heat & power)
 Laboratory Helper (light, heat & power)
 Wireman, Street Light (light, heat & power)
- 821.887 Groundman (light, heat & power; tel & tel)
 Helper, Electrical (light, heat & power)
 Steel Post Installer (light, heat & power)

Stone Unloader (const)

822 Occupations in Assembly, Installation and
Repair of Wire Communication, Detection and
Signaling Equipment

This group includes occupations concerned with erecting, installing,
or repairing overhead and underground telephone and telegraph lines and
equipment; and installing or repairing wiring and equipment within
buildings to provide communication, detection, and signaling services.

822.131 Central Office Repairman Supervisor (tel & tel)
Line Foreman (tel & tel)
Repairman Foreman (tel & tel)
Signal Foreman (r r trans)
Test Desk Supervisor

822.138 Protective Signal Superintendent (bus ser)

822.281 Automotive Equipment Technician (tel & tel)
Central Office Repairman (tel & tel)
Combination Man (tel & tel)
Installer Repairman (tel & tel)
Communications Engineer (light, heat & power)
Communications Man (any ind)
Electrician, Office (tel & tel)
Equipment Inspector (tel & tel)
Maintenance Inspector (tel & tel)
Mechanician, Submarine Cable Equipment (tel & tel)
Private Branch Exchange Repairman (tel & tel)
Signal Maintainer (r r trans)
Station Repairman (tel & tel)
Test and Regulating Technician (tel & tel)
Telegraph Repeater Technician
Submarine Cable Station Technician (tel & tel)

822.287 Line Inspector (tel & tel)

822.381 Cable Repairman (tel & tel)
Cable Tester (tel & tel)
Central Office Installer (tel & tel)
Equipment Installer (tel & tel)
Lineman (tel & tel)
Private Branch Exchange Installer (tel & tel)
Radioman (tel & tel)
Telephoto Man
Teleprinter Man
Video Man
Protective Signal Installer (bus ser)
Protective Signal Repairman (bus ser)

- Station Installer (tel & tel)
 - Telegraph Plant Maintainer (tel & tel)
 - Telephone Inspector (tel & tel)
 - Test Deskman (tel & tel)
 - Transmission Man (tel & tel)
- 822.884 Frameman (tel & tel)
- Protective Signal Installer Helper (bus ser)
 - Protective Signal Repairman Helper (bus ser)
 - Signalman Helper (r r trans)
- 823 Occupations in Assembly, Installation and Repair of
Electronic Communication, Detection and Signaling
Equipment

This group includes occupations concerned with assembling equipment components; connecting and testing circuitry; installing equipment to provide electronic communication, detection, signaling, recording, analyzing, and computing services; and making on-site repairs in buildings, ships, trains and aircraft.

- 823.138 Rigger Foreman (radio and tv broad; tel & tel)

- 823.281 Alarm Trouble Man (bus ser)
- Electrician, Radio (any ind)
 - Radio Communications Equipment Installer
Serviceman (tel & tel)
 - Marine Radio Installer Serviceman (tel & tel)
 - Radio Telegraph Operator Serviceman (tel & tel)
 - Meteorological Equipment Repairer (any ind)
 - Public Address Serviceman (any ind)
 - Radio Mechanic (any ind)
 - Rigger (radio and tv broad; tel & tel)

- 823.781 Television Installation Man (any ind)

- 823.884 Radio Mechanic Helper (any ind)

- 824 Occupations in Assembly, Installation, and Repair
of Lighting Equipment and Building Wiring

This group includes occupations, not elsewhere classified, concerned with wiring buildings and adjacent yards to provide electricity for power and lighting; assembling and installing lighting equipment, conduit switches, junction and fuse boxes, and related accessories and controls; and repairing wiring and components.

- 824.138 Electrician, Chief (motion pic)
- Street Light Serviceman Foreman (light, heat & power)

- 824.281 Electric Distribution Checker (const; light, heat & power)
Electrician (any ind)
Neon Sign Serviceman (signs)
- 824.381 Electrician, Stage (amuse & rec)
Street Light Serviceman (light, heat & power)
- 824.683 Night Patrol Inspector (signs)
- 824.781 Airport Electrician (air trans)
- 824.884 Electrician, Studio (motion pic)
Motor Vehicle Light Assembler (light fix)
Pumpman (signs)
Street Light Repairman Helper (light, heat & power)
- 825 Occupations in Assembly, Installation and Repair of
Transportation and Materials Handling Equipment

This group includes occupations, not elsewhere classified, concerned with wiring and repairing electrical power units and controls for transportation and material handling equipment, and adjusting or repairing electrical components and circuits.

- 825.131 Electrician Foreman (ship & boat bldg & rep)
Elevator Constructor Foreman (const)
Foreman, Electrical (loco & car bldg & rep)
- 825.138 Supervisor, Line Department (r r trans)
- 825.281 Electrical Repairman (aircraft mfg)
Electrician (water trans)
Electrician, Airplane (aircraft mfg)
Electrician, Automotive (auto ser)
Electrician, Locomotive (loco & car bldg & rep)
Electric Track Switch Maintenance (r r trans)
Elevator Examiner and Adjuster (any ind)
Experimental Rocket Sled Mechanic (aircraft mfg)
- 825.381 Aircraft Mechanic, Electrical and Radio (aircraft mfg)
Automatic Window Seat and Top Lift Repairman (auto ser)
Controller Repairman (loco & car bldg & rep)
Electrical and Radio Mock Up Man (aircraft mfg)
Electrical Inspector (aircraft mfg)
Electrician (ship & boat bldg & rep)
Electrician, Airplane (air trans)
Elevator Constructor (const)
- 825.781 Third Railman (r r trans)
- 825.884 Elevator-Construction Helper (const)

826 Occupations in Assembly, Installation and Repair
of Industrial Apparatus, Not Elsewhere Classified

This group includes occupations, not elsewhere classified, concerned with assembling, installing, and repairing industrial apparatus involving electrical circuitry.

- 826.131 Electrical Foreman (petrol prod)
- 826.281 Field Service Engineer (photo apparatus)
- 826.381 Assembler, Electronic Heater (elec equip)
Control Cabinet Assembler (elec equip)
Welding Machine Assembler (elec equip)
- 826.384 Anode Builder (chem)
Cell Renewal Man (chem)
Mercury Cell Cleaner (chem)
Cell Repairman (chem)
Pot Builder (chem)
Resistor Assembler (elec equip)

827 Occupations in Assembly, Installation and Repair
of Large Household Appliances and Similar
Commercial and Industrial Equipment

This group includes occupations concerned with installing service lines, connecting leads, and assembling components and accessories to install or repair large household electrical appliances and equivalent commercial and industrial installations, such as refrigerators, freezers, air conditioners, heaters, washers, driers and their related controls.

- 827.131 Electrical Appliance Serviceman Foreman (any ind)
Shop Foreman (light, heat & power)
- 827.281 Coffeemaker Serviceman (any ind)
Electrical Appliance Serviceman (any ind)
Household Appliance Repairman (any ind)
- 827.381 Air Conditioning Unit Tester (refrig equip)
Control Panel Assembler (elec equip)
Household Appliance Installation Man (any ind)
Refrigeration Mechanic (refrig equip)
Vibrator Equipment Tester (mach mfg)
Wind Tunnel Maintenance Man (aircraft mfg)
- 827.387 Refrigerator Tester (refrig equip)
- 827.584 Gas Leak Tester (refrig equip)

827.884 Air Conditioning Installer, Domestic (any ind)
Air Conditioning Unit Installer (refrig equip)
Assembler, Coolers (refrig equip)
Assembler, Electrical (elec equip)
Automobile Air Conditioner Assembler (refrig equip)
Electrical Appliance Set Up Man (any ind)

827.885 Gas Charger (refrig equip)

827.887 Electrical Appliance Serviceman Helper (any ind)
Snowman (any ind)

828 Occupations in Fabrication, Installation and
Repair of Electrical and Electronics Products

This group includes occupations, not elsewhere classified, concerned with assembling, installing, erecting, and repairing electrical and electronic products.

828.251 Electronic Sales and Service Technician (profess & kin)

828.281 Electronics Mechanic (any ind)
Component Inspection Technician (electronics)
Customer Engineering Specialist (office mach)
Electric Organ Technician (any ind)
Radioactivity Instrument Maintenance Technician
(petrol prod)
Electronics Mechanic Apprentice (any ind)

829 Occupations in Installation and Repair of
Electrical Products

This group includes occupations, not elsewhere classified, concerned with assembling, installing, erecting, and repairing electrical equipment and related structures.

829.131 Cable Foreman (const; light, heat & power; tel & tel)
Electrician Foreman (any ind)
Foreman, Electrical Repair and Telephone Line
Maintenance (light, heat & power)

829.134 Underground Foreman (light, heat & power)

829.281 Automatic Door Serviceman (const)
Complaint Inspector (light, heat & power)
Dental Equipment Installer and Serviceman (whole tr)
Electrical Repairman (any ind)
Elevator Repairman (any ind)
Field Engineer (electronics)
Pinsetter Mechanic, Automatic (any ind)
Sound Technician (any ind)

829.381 Cable Splicer (const; light, heat & power; tel & tel)
Circulating Process Inspector (elec equip)
Equipment Installer (any ind)
Organ Tuner, Electronic (any ind)
Precision Assembler (aircraft mfg; electronics)

829.684 Battery Inspector (loco & car bldg & rep)
Body Wireman (auto mfg; trans equip)

829.884 Cable Puller (const; light, heat & power; tel & tel)
Electrician Helper (ship & boat bldg & rep)
Elevator Repairman Helper (any ind)

829.887 Cable Splicer Helper (const; light, heat & power;
tel & tel)
Electrician Helper (any ind)

86 Construction Occupations, Not Elsewhere Classified

This division includes craft and noncraft occupations, not elsewhere classified, concerned with building and repairing structures.

869 Miscellaneous Construction Occupations, Not Elsewhere Classified

This group includes occupations, not elsewhere classified, concerned with building and repairing structures. (Electrical occupations only)

869.137 Traffic Maintenance Supervisor (gov ser)

869.138 Foreman, Maintenance and Construction (petrol prod)

869.281 Furnace Installer and Repairman, Hot Air (any ind)
Yard Inspector (ship & boat bodg & rep)

869.287 Bridge Inspector (r r trans)

869.381 Conduit Mechanic (const; light, heat & power)
House Repairman (const)
Sign Erector (signs)

869.387 Pole Inspector (light, heat & power)

869.781 Pipeman (light, heat & power)

869.887 Furnace Installer and Repairman Helper, Hot Air
(any ind)

Miscellaneous Occupation

This category includes occupations concerned with transportation services; packaging and warehousing; utilities; amusement, recreation, and motion picture services; mining and logging; graphic arts; and various miscellaneous activities.

95 Occupations in Production and Distribution
of Utilities

This division includes occupations concerned with generation, transmission, and distribution of electricity; generation and distribution of steam for heat and power, including marine propulsion; generation of utility gas, and storage and distribution of natural and manufactured gas for power, illumination, or heating purposes; filtration, purification, and distribution of water for domestic, commercial or industrial consumption; and collection, treatment and disposal of sewage and refuse.

952 Occupations in Generation, Transmission, and
Distribution of Electric Light and Power

This group includes occupations concerned with controlling equipment in powerplants utilizing fossil fuels, hydraulic power, and atomic energy; monitoring and controlling equipment in manned or remote-controlled substations and standby generating plants; and related activities concerned with generation, transmission, and distribution of electricity for utilization by domestic, commercial, and industrial consumers.

- 952.131 Rectifier Shift Leader (light, heat & power)
Substation Operator, Chief (light, heat & power)
- 952.133 Chief Load Dispatcher (light, heat & power)
Hydroelectric Station Operator, Chief (light, heat
& power)
Superintendent, Local (light, heat & power)
Turbine Operator, Head (light, heat & power)
- 952.168 Dispatcher, Service or Work (light, heat & power)
- 952.281 Substation Inspector (light, heat & power)
- 952.380 Power Reactor Operator (light, heat & power)
- 952.387 Load Checker (light, heat & power)
Powerhouse Runner (light, heat & power)
- 952.388 Field Recorder (light, heat & power)
- 952.588 Turbine Attendant (light, heat & power)
- 952.781 Switch Inspector (light, heat & power)

952.782

Auxiliary Equipment Operator (light, heat & power)
Diesel Plant Operator (light, heat & power)
Feeder Switchboard Operator (light, heat & power)
Hydroelectric Station Operator (light, heat & power)
Powerman (tel & tel)
Power-Plant Attendant (radio & tv broad)
Power Plant Operator (any ind)
Rectifier Operator (light, heat & power)
Substation Operator (light, heat & power)
Substation Operator Apprentice (light, heat & power)
Switchboard Operator (chem)
Motor Generator Set Operator
Rectifier Operator
Switchboard Operator (light, heat & power)
Switchboard Operator, Engine Test (engine & turbine)
Turbine Operator (light, heat & power)

952.884

Cable Maintenance Man (light, heat & power)
Trouble Man (light, heat & power)

952.885

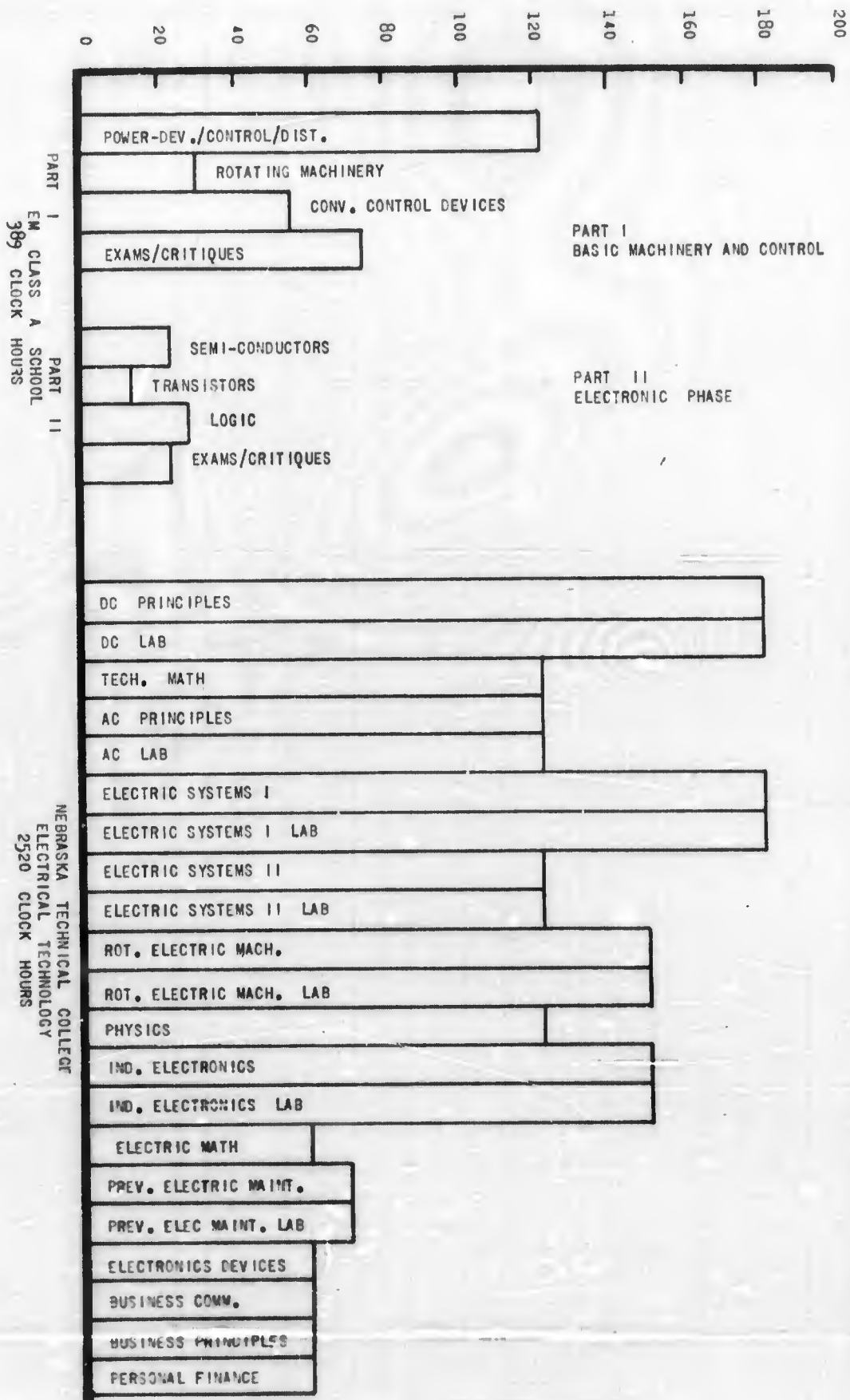
Laborer, Powerhouse (light, heat & power)

952.887

Cool Sampler (light, heat & power)
Floorman, Distribution Substation (light, heat & power)
Hydroelectric Plant Maintenance Man (light, heat & power)
Laborer, Electric Power and Transmission Line (const; light, heat & power)
Street Light Man (light, heat & power)

COMPARATIVE
ELECTRICIAN'S MATE RATING/
ELECTRICIAN SPECIALTY
TECHNICAL TRAINING

CLOCK HOURS



PART I
EM CLASS A SCHOOL
389 CLOCK HOURS

PART II

PART I
BASIC MACHINERY AND CONTROL

PART II
ELECTRONIC PHASE

NEBRASKA TECHNICAL COLLEGE
ELECTRICAL TECHNOLOGY
2520 CLOCK HOURS

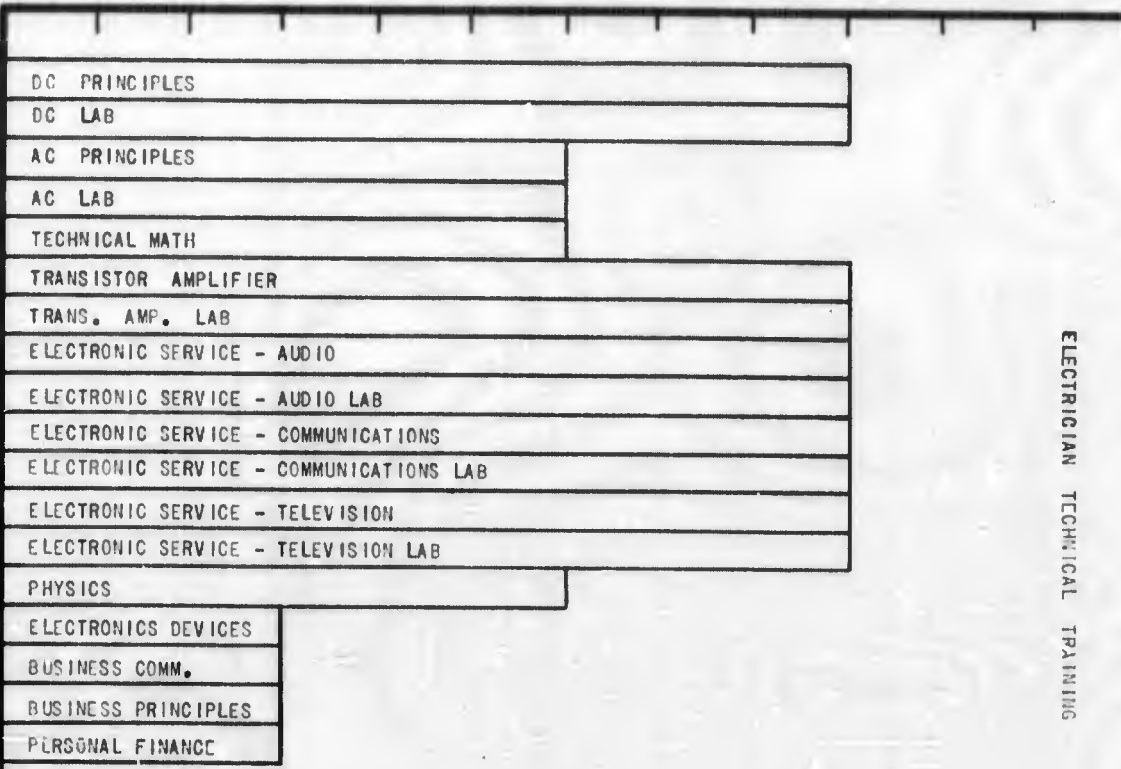
ELECTRICIAN TECHNICAL TRAINING

CLOCK HOURS

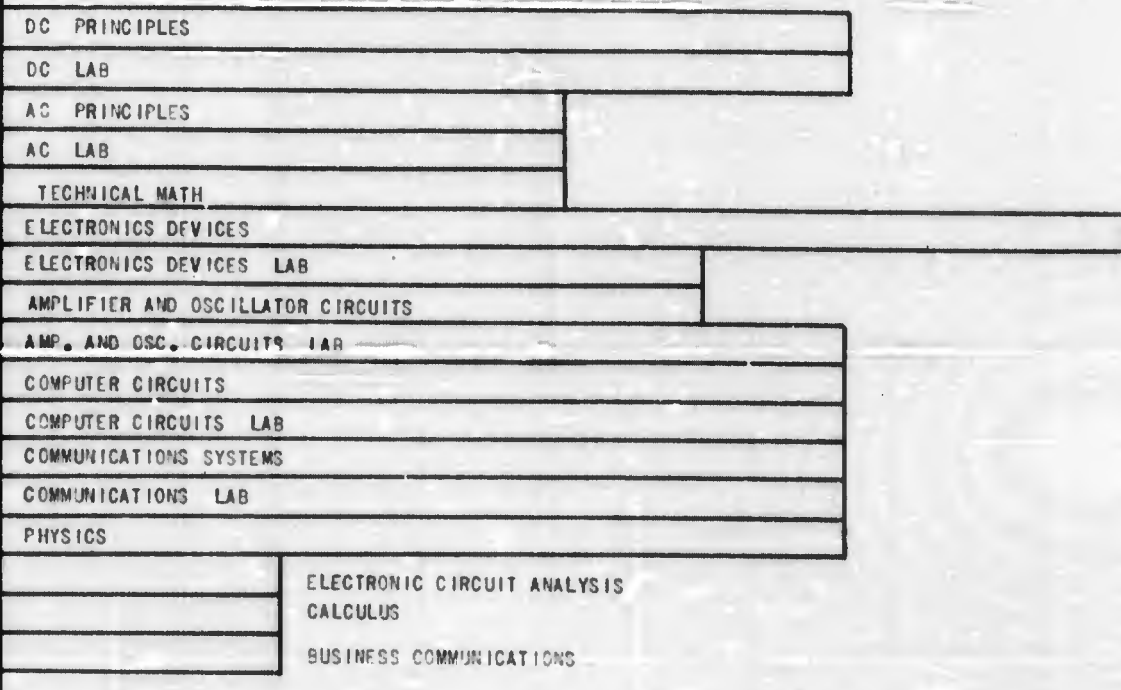
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NEBRASKA TECHNICAL COLLEGE
ELECTRONIC SERVICE TECHNICIAN
2520 CLOCK HOURS

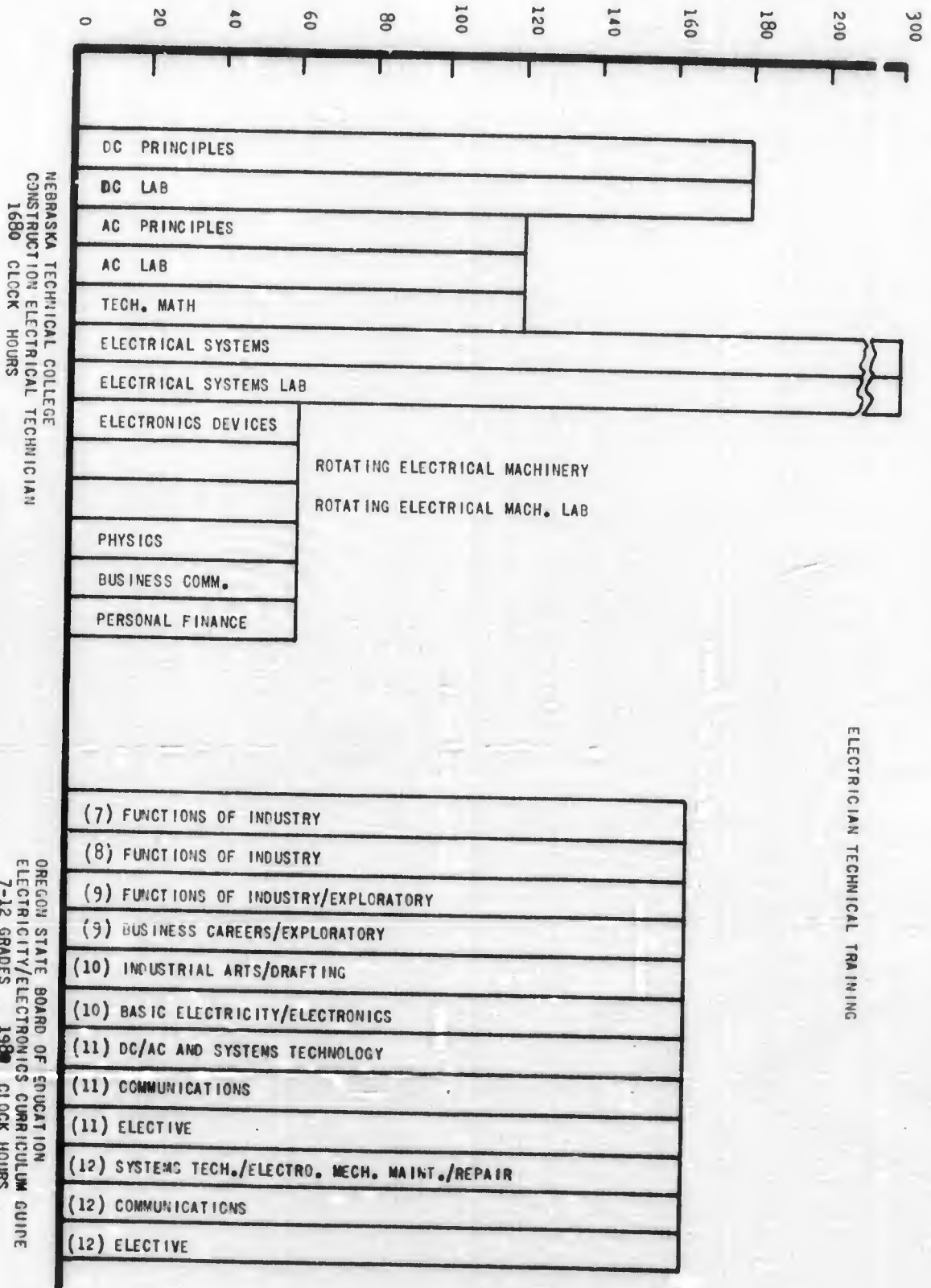
ELECTRICIAN TECHNICAL TRAINING



NEBRASKA TECHNICAL COLLEGE
ELECTRONIC ENGINEERING TECHNICIAN
2520 CLOCK HOURS

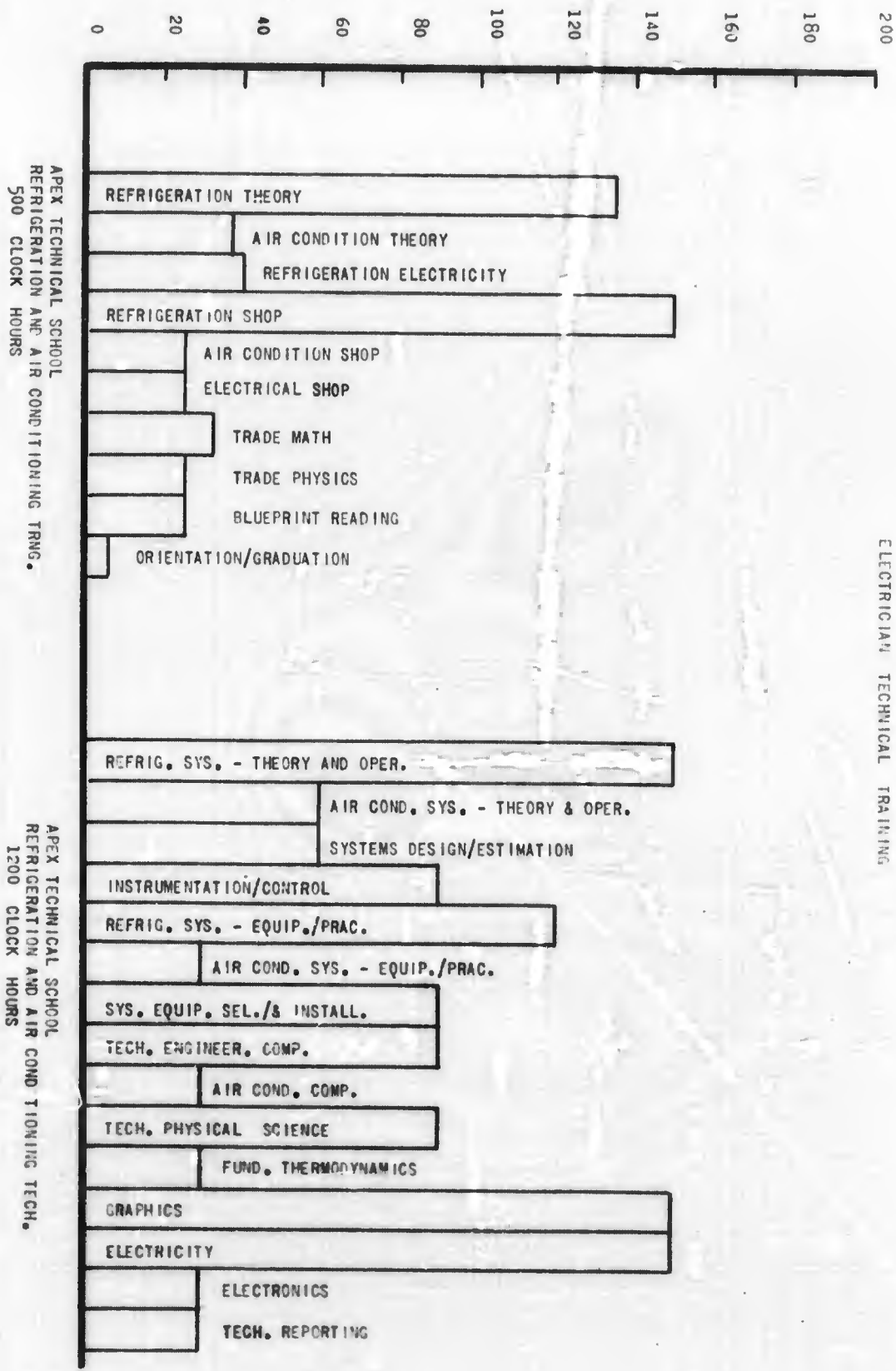


CLOCK HOURS



ELECTRICIAN TECHNICAL TRAINING

CLOCK HOURS



APEX TECHNICAL SCHOOL
REFRIGERATION AND AIR CONDITIONING TRNG.
500 CLOCK HOURS

APEX TECHNICAL SCHOOL
REFRIGERATION AND AIR COND TIONING TECH.
1200 CLOCK HOURS

ELECTRICIAN TECHNICAL TRAINING

ELECTRICIAN'S MATE RATING/ELECTRICIAN TECHNICAL TRAINING
DURATIONS OF TRAINING COURSES AND COMPONENTS OF COURSES

Electrician's Mate Class A School - 13 Weeks

389 Clock Hours - 203 Clock Hours Class, 89 Clock Hours Lab, 77 Clock Hours Exams

Components

- Part I - Basic Machinery and Control
142 Hours - Power, Development/Control/Distribution
30 Hours - Rotating Machinery
55 Hours - Conventional Control Devices
73 Hours - Quizzes, Exams, Critiques
- Part II - Electronic Phase
24 Hours - Semi-Conductors
12 Hours - Transistors
29 Hours - Logic
24 Hours - Quizzes, Exams, Critiques

Nebraska Technical College

Electrical Technology Course - 6 Quarters

2520 Clock Hours Class, Lab, Shop

Components

- 180 Hours - DC Principles
180 Hours - DC Lab
120 Hours - Tech. Math
120 Hours - AC Principles
120 Hours - AC Lab
180 Hours - Electric Systems I
180 Hours - Electric Systems I Lab
120 Hours - Electric Systems II
120 Hours - Electric Systems II Lab
150 Hours - Rot. Electric Mach.
150 Hours - Rot. Electric Mach. Lab.
120 Hours - Physics
150 Hours - Ind. Electronics
150 Hours - Ind. Electronics Lab
60 Hours - Electric Math
90 Hours - Prev. Electric Maint.
90 Hours - Prev. Electric Maint. Lab

- 60 Hours - Electronics Devices
- 60 Hours - Business Communication
- 60 Hours - Business Principles
- 60 Hours - Personal Finance

Electronic Service Technician Course - 6 Quarters

2520 Clock Hours Class, Lab and Shop

Components

- 180 Hours - DC Principles
- 180 Hours - DC Lab
- 120 Hours - AC Principles
- 120 Hours - AC Lab
- 120 Hours - Technical Math
- 180 Hours - Transistor Amplifier
- 180 Hours - Trans. Amp. Lab
- 180 Hours - Electronic Service - Audio
- 180 Hours - Electronic Service - Audio Lab
- 180 Hours - Electronic Service - Communications
- 180 Hours - Electronic Service - Communications Lab
- 180 Hours - Electronic Service - Television
- 180 Hours - Electronic Service - Television Lab
- 120 Hours - Physics
- 60 Hours - Electronics Devices
- 60 Hours - Business Communications
- 60 Hours - Business Principles
- 60 Hours - Personal Finance

Electronic Engineering Technician - 6 Quarters

2520 Clock Hours Class, Lab and Shop

Components

- 180 Hours - DC Principles
- 180 Hours - DC Lab
- 120 Hours - AC Principles
- 120 Hours - AC Lab
- 120 Hours - Technical Math
- 240 Hours - Electronics Devices
- 150 Hours - Amplifier and Oscillator Circuits
- 180 Hours - Amp. and Osc. Circuits Lab
- 180 Hours - Computer Circuits
- 180 Hours - Computer Circuits Lab
- 180 Hours - Communications Systems
- 180 Hours - Communications Lab
- 180 Hours - Physics
- 60 Hours - Electronic Circuit Analysis
- 60 Hours - Calculus
- 60 Hours - Business Communications

Construction Electrician Technician - 4 Quarters

1680 Clock Hours Class, Lab, Shop

Components

180 Hours - DC Principles
180 Hours - DC Lab
120 Hours - AC Principles
120 Hours - AC Lab
120 Hours - Tech. Math
300 Hours - Electrical Systems
300 Hours - Electrical Systems Lab
60 Hours - Electronics Devices
60 Hours - Rot. Electrical Machinery
60 Hours - Rot. Electrical Mach. Lab
60 Hours - Physics
60 Hours - Business Communications
60 Hours - Personal Finance

Oregon State Board of Education

Suggested Electricity/Electronics Curriculum Guide 7th through 12th
Grades of School

Approximately 1980 Clock Hours - Class and Lab
(Assume 55 minute class periods - 180 days per school year)

Components

165 Hours - 7th Grade - Functions of Industry*
165 Hours - 8th Grade - Functions of Industry*
165 Hours - 9th Grade - Functions of Industry/Exploratory
165 Hours - 9th Grade - Business Careers/Exploratory
165 Hours - 10th Grade - Industrial Arts/Drafting
165 Hours - 10th Grade - Basic Electricity/Electronics
165 Hours - 11th Grade - DC/AC and Systems Technology
165 Hours - 11th Grade - Communications
165 Hours - 11th Grade - Allied Supporting Elective**
165 Hours - 12th Grade - Systems Technology/Electro. Mech. Maint./Repair
165 Hours - 12th Grade - Communications
165 Hours - 12th Grade - Allied Supporting Elective**

*Includes Materials and Processes, Power and Mechanics, Electricity/
Electronics, Graphics/Communications.

**Courses such as Basic Economics, Speech, Technical Writing, General
Science, Math through Trigonometry

Apex Technical School, New York, N. Y.

Refrigeration and Air Conditioning Training

500 Clock Hours - Class and Shop

Components

- 135 Hours - Refrigeration Theory
- 37½ Hours - Air Condition Theory
- 40 Hours - Refrigeration Electricity
- 150 Hours - Refrigeration Shop
- 25 Hours - Air Condition Shop
- 25 Hours - Electrical Shop
- 32½ Hours - Trade Math
- 25 Hours - Trade Physics
- 25 Hours - Blueprint Reading
- 5 Hours - Orientation/Graduation

Refrigeration and Air Conditioning Technician

1200 Clock Hours - Class and Shop

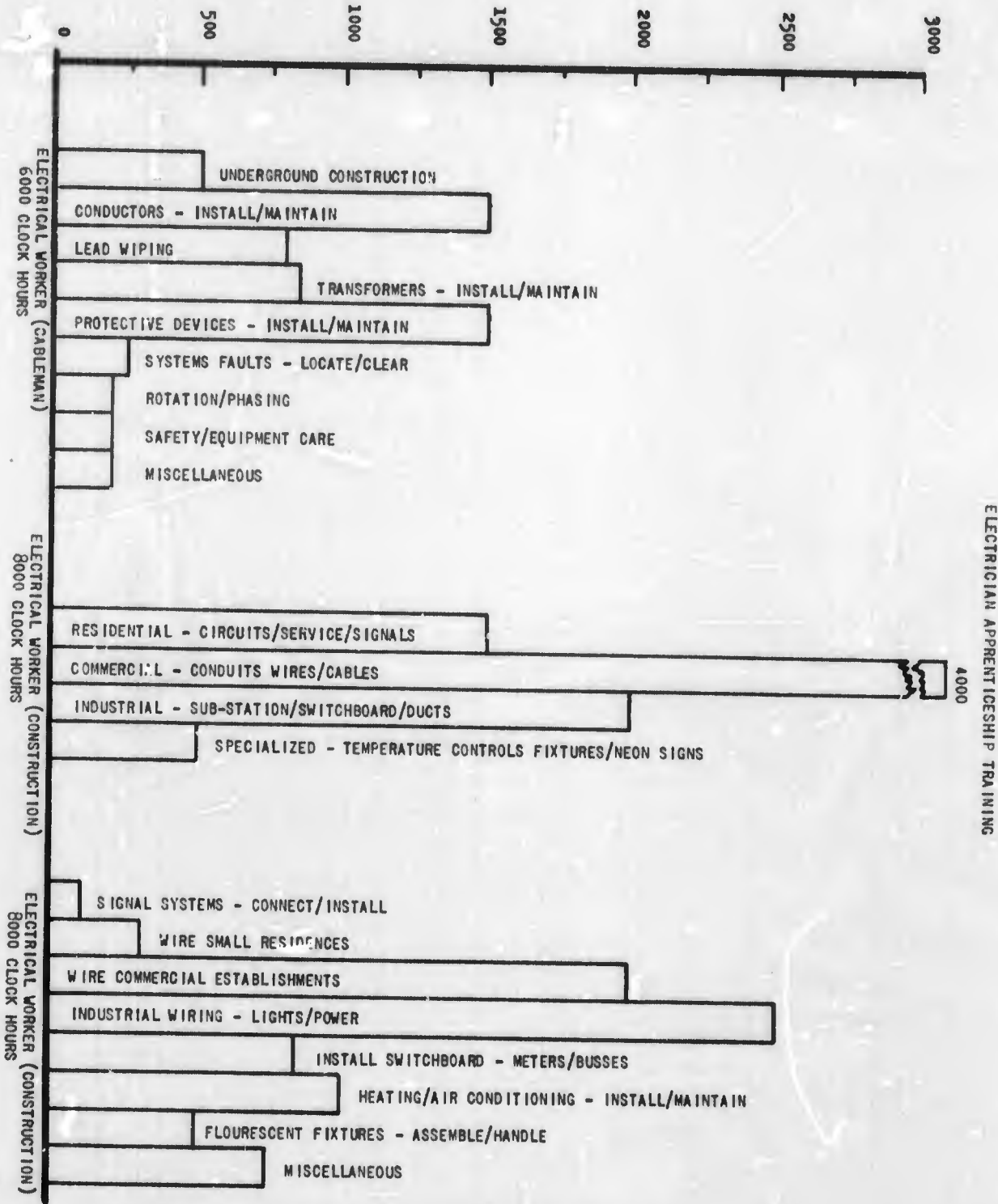
Components

- 150 Hours - Refrigeration Systems - Theory & Opn.
- 60 Hours - Air Condition Systems - Theory & Opn.
- 60 Hours - Systems Design & Estimation
- 90 Hours - Instrumentation/Control
- 120 Hours - Refrigeration Systems - Equipment/Practices
- 30 Hours - Air Condition Systems - Equipment/Practices
- 90 Hours - Systems Equipment Selection & Installation
- 90 Hours - Technical Engineering Computations
- 30 Hours - Air Condition Computations
- 90 Hours - Technical Physical Science
- 30 Hours - Fundamental Thermodynamics
- 150 Hours - Graphics
- 150 Hours - Electricity
- 30 Hours - Electronics
- 30 Hours - Technical Reporting

COMPARATIVE
ELECTRICIAN'S MATE RATING/
ELECTRICIAN SPECIALTY
APPRENTICESHIP TRAINING

G-35

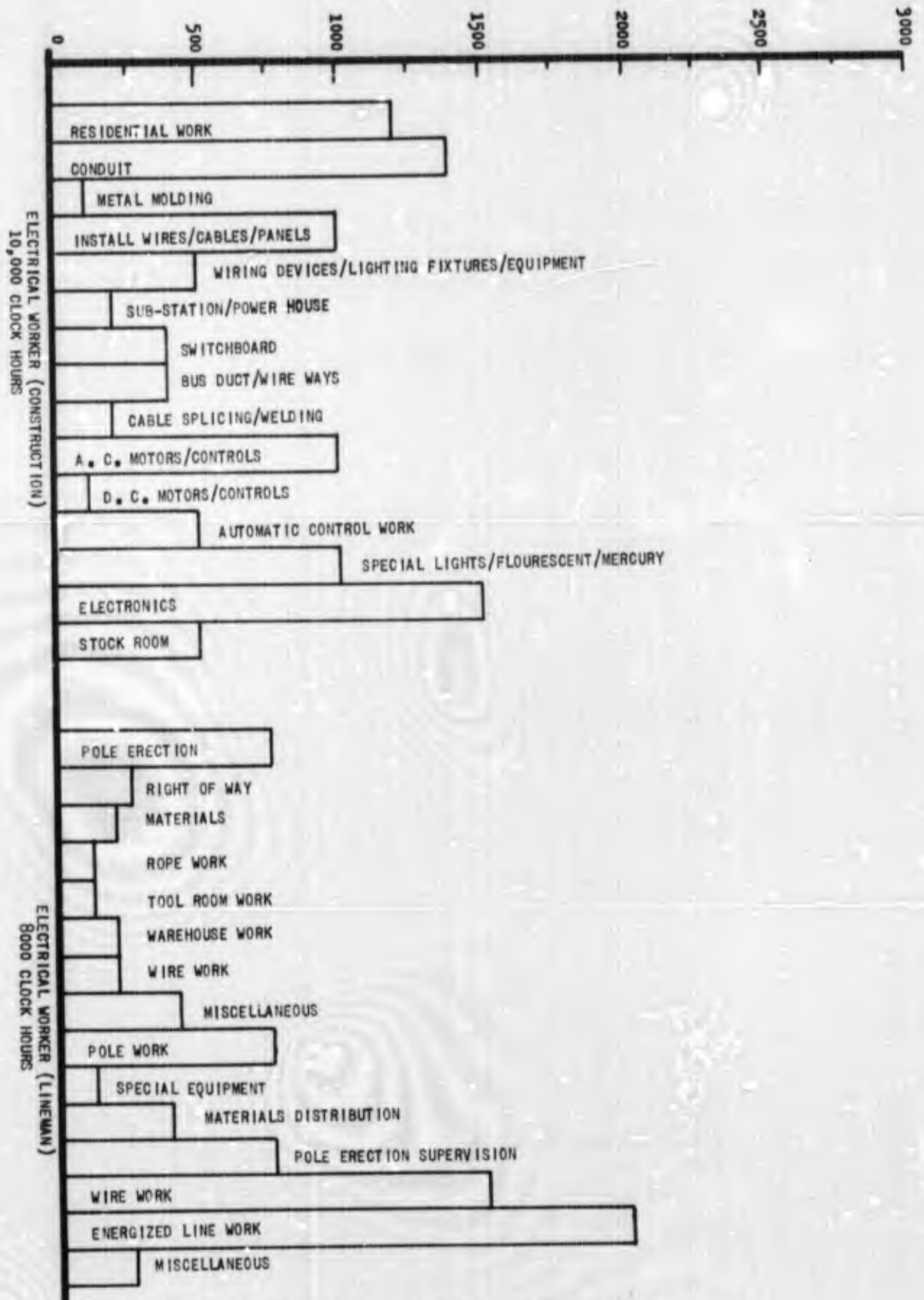
CLOCK HOURS



ELECTRICIAN APPRENTICESHIP TRAINING

NOTE: 2000 CLOCK HOURS EQUALS 1 YEAR OF APPRENTICESHIP TRAINING.

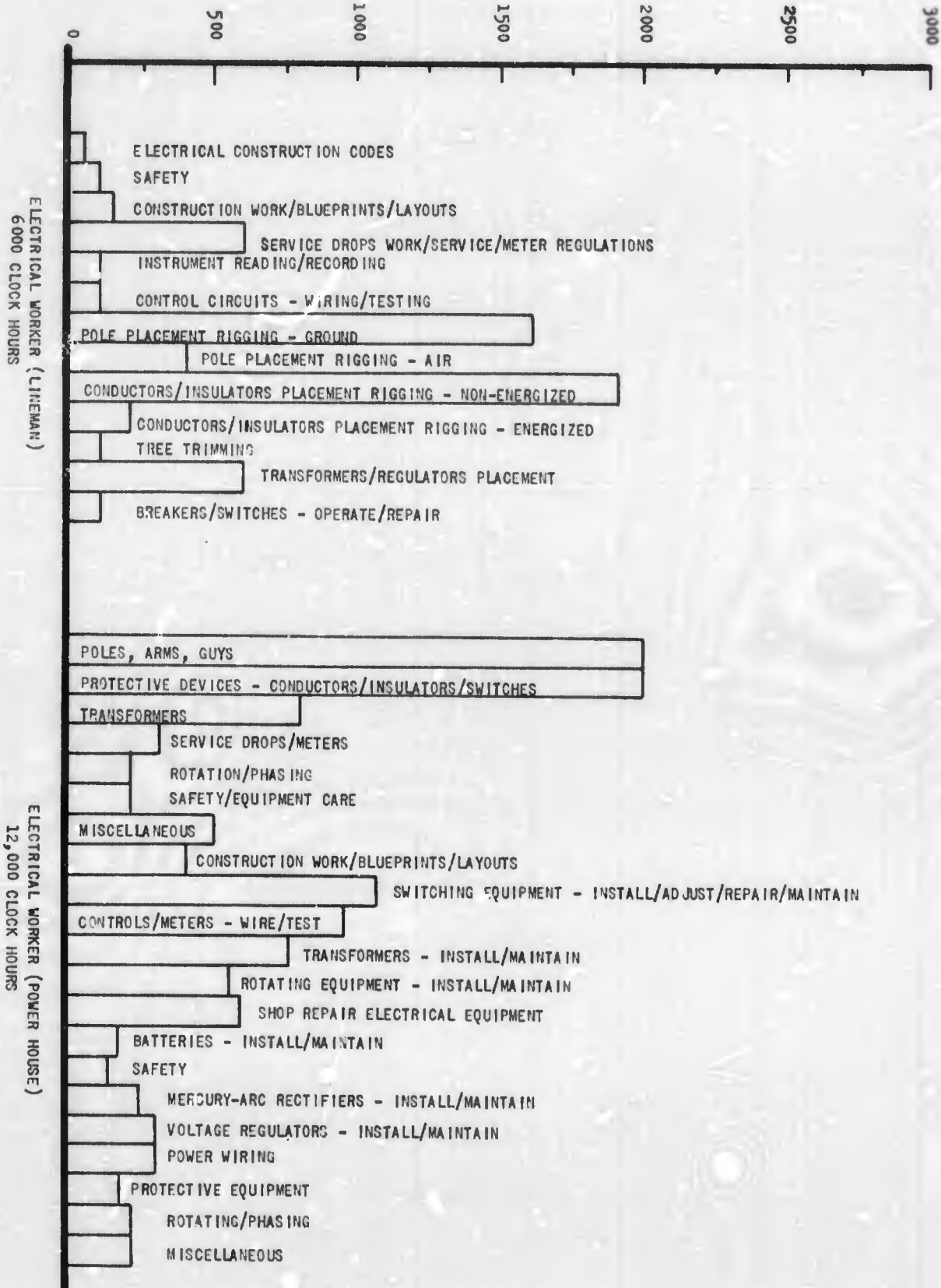
CLOCK HOURS



ELECTRICIAN APPRENTICESHIP TRAINING

NOTE: 2000 CLOCK HOURS EQUALS 1 YEAR OF APPRENTICESHIP TRAINING.

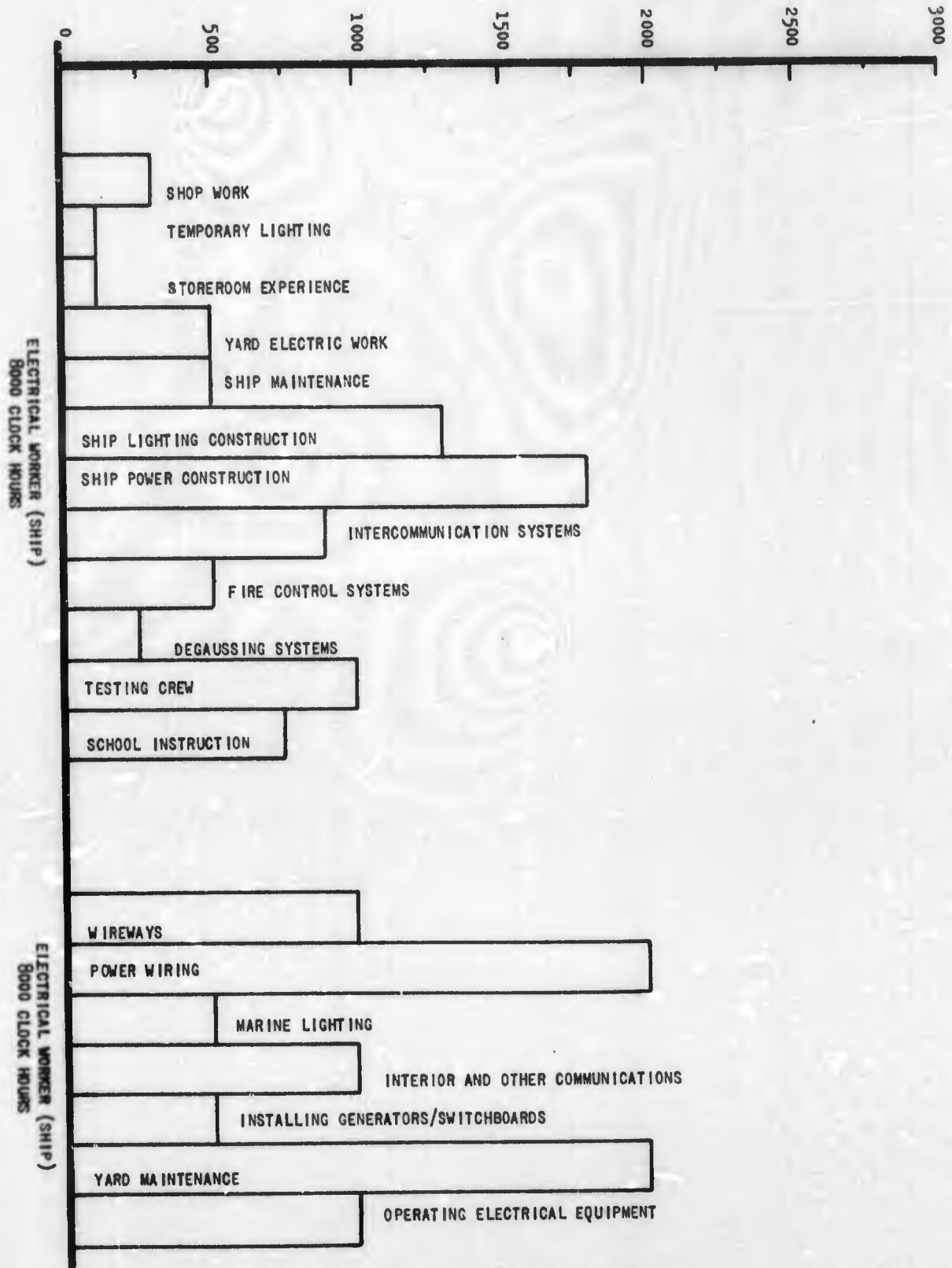
CLOCK HOURS



ELECTRICIAN APPRENTICESHIP TRAINING

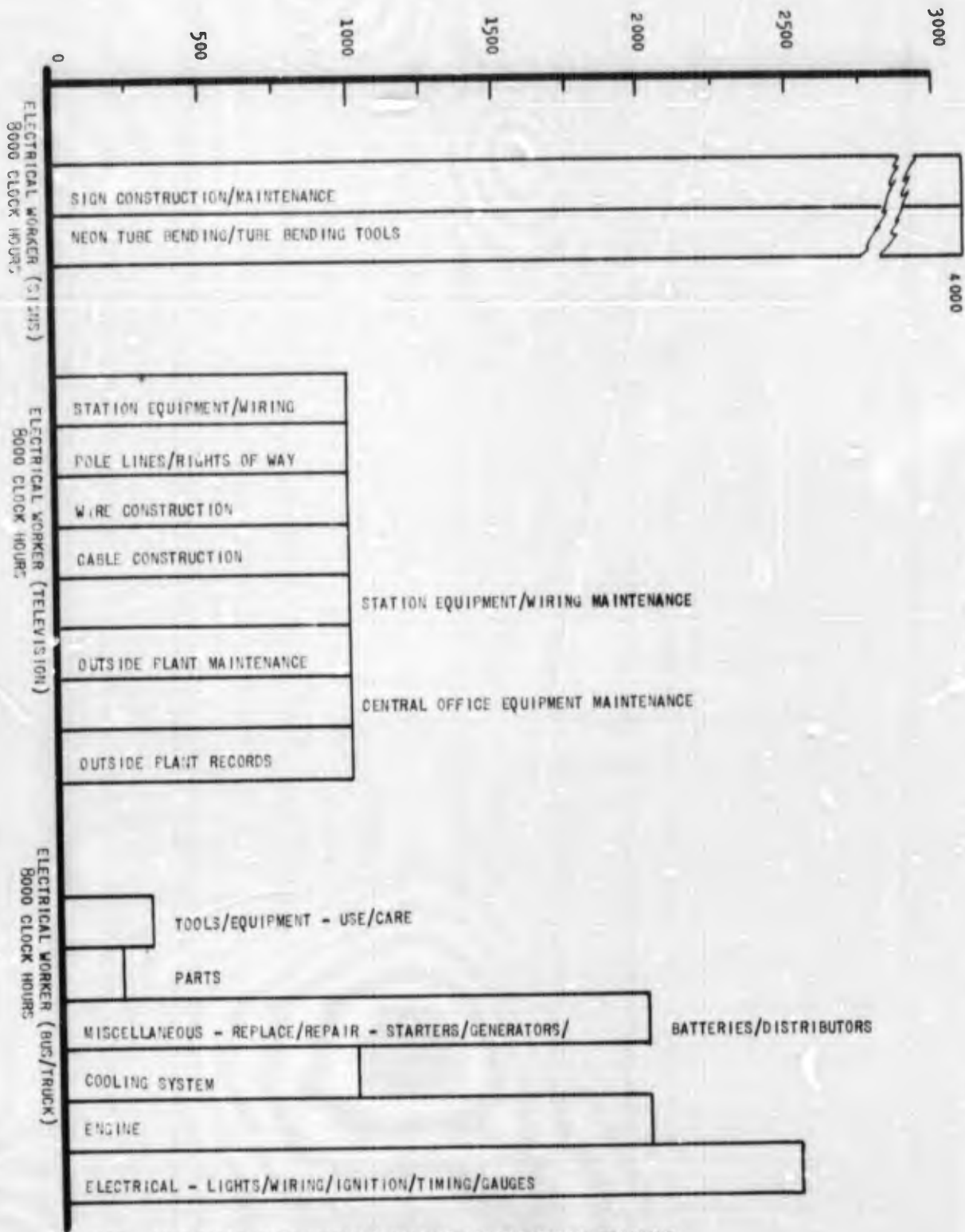
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CLOCK HOURS



NOTE: 2000 CLOCK HOURS EQUALS 1 YEAR OF APPRENTICESHIP TRAINING.

CLOCK HOURS



ELECTRICIAN APPRENTICESHIP TRAINING

NOTE: 2000 CLOCK HOURS EQUALS 1 YEAR OF APPRENTICESHIP TRAINING.

ELECTRICIAN OCCUPATIONAL APPRENTICESHIP TRAINING
U. S. DEPARTMENT OF LABOR APPRENTICESHIP SCHEDULES

Electrical Worker (Cableman) - 6000 Clock Hours*

Components

- 500 Hours - Underground Construction
- 1500 Hours - Conductors - Install/Maintain
- 800 Hours - Lead Wiping
- 850 Hours - Transformers - Install/Maintain
- 1500 Hours - Protective Devices - Install/Maintain
- 250 Hours - Systems Faults - Locate/Clear
- 200 Hours - Rotation/Phasing
- 200 Hours - Safety/Equipment
- 200 Hours - Miscellaneous

Electrical Worker (Construction Electrician) - 8000 Clock Hours

Components

- 1500 Hours - Residential - Branch Circuit/Service/Distribution/Signals
- 4000 Hours - Commercial - Conduit Walls/Metal Molding/Install Wires/
Install Cables/Wiring Devices
- 2000 Hours - Industrial - Sub-Station/Switchboard/Ducts/Cable Splicing/
Welding/Auto Control
- 500 Hours - Specialized - Temperature Controls/Refrigeration Controls/
Fabricate and Assemble Wire Fixtures/
Neon Signs/Special Lights

Electrical Worker (Construction Electrician) - 8000 Clock Hours

Components

- 100 Hours - Signal Systems - Connect/Install
- 300 Hours - Wire Small Residences
- 2000 Hours - Wire Commercial Establishments
- 2500 Hours - Industrial Wiring - Lights/Power
- 850 Hours - Install Switchboard - Meters/Busses
- 1000 Hours - Heating/Air Conditioning/Control Systems - Install/Maintain
- 500 Hours - Fluorescent Fixtures - Assemble/Handle
- 750 Hours - Miscellaneous

*2000 Clock Hours is equal to 1 Year of Apprenticeship Training

Electrical Worker (Construction Electrician) - 10,000 Clock Hours

Components

Residential

1200 Hours - Residential Work

Commercial

1400 Hours - Conduit

100 Hours - Metal Molding

1000 Hours - Install Wires/Cables/Panel Boards

500 Hours - Wiring Devices/Lighting Fixtures/Equipment

Industrial

200 Hours - Sub-Station/Power House

400 Hours - Switchboard

400 Hours - Bus Duct/Wire Ways

200 Hours - Cable Splicing/Welding

1000 Hours - A. C. Motors/Controls

100 Hours - D. C. Motors/Controls

500 Hours - Automatic Control Work

Specialized

1000 Hours - Special Lights/Flourescent/Mercury

1500 Hours - Electronics

500 Hours - Stock Room

Electrical Worker (Lineman) - 8000 Clock Hours

Components

Ground Work

750 Hours - Pole Erection

250 Hours - Right of Way

195 Hours - Materials

120 Hours - Rope Work

120 Hours - Tool Room Work

200 Hours - Warehouse Work

200 Hours - Wire Work

420 Hours - Miscellaneous

Line Work

750 Hours - Pole Work

120 Hours - Special Equipment

375 Hours - Materials Distribution

750 Hours - Pole Erection Supervision

- 1500 Hours - Wire Work
- 2000 Hours - Energized Line Work
- 250 Hours - Miscellaneous

Electrical Worker (Lineman) - 6000 Clock Hours

Components

- 50 Hours - Electrical Construction Codes
- 100 Hours - Safety
- 150 Hours - Construction Work Blueprints/Layouts
- 600 Hours - Service Drops Work/Service/Meter Regulations
- 100 Hours - Instrument Reading/Recording
- 100 Hours - Control Circuits - Wiring/Testing
- 1600 Hours - Pole Placement Rigging - Ground Framing
- 400 Hours - Pole Placement Rigging - Air Framing
- 1900 Hours - Conductors/Insulators Placement Rigging - Non-Energized Circuits
- 200 Hours - Conductors/Insulators Placement Rigging - Energized Circuits
- 100 Hours - Tree Trimming
- 600 Hours - Transformers/Regulators Placement
- 100 Hours - Breakers/Switches - Operate/Repair

Electrical Worker (Power House Electrician) - 12,000 Clock Hours

Components

Linemen

- 2000 Hours - Poles/Arms/Guys
- 2000 Hours - Protective Devices - Conductors/Insulators/Switches
- 800 Hours - Transformers
- 300 Hours - Service Drops/Meters
- 200 Hours - Rotation/Phasing
- 200 Hours - Safety/Equipment Care
- 500 Hours - Miscellaneous

Electrical Mechanics(Power House Transformer)

- 400 Hours - Construction Work Blueprints/Layouts
- 1060 Hours - Switching Equipment - Install/Adjust/Repair/Maintain
- 960 Hours - Controls/Meters - Wire/Test
- 750 Hours - Transformers - Install/Maintain
- 550 Hours - Rotating Equipment - Install/Maintain
- 600 Hours - Shop Repair Electrical Equipment
- 160 Hours - Batteries - Install/Maintain
- 120 Hours - Safety
- 240 Hours - Mercury-Arc Rectifiers - Install/Maintain
- 300 Hours - Voltage Regulators - Install/Maintain
- 300 Hours - Power Wiring
- 160 Hours - Protective Equipment
- 200 Hours - Rotating/Phasing
- 200 Hours - Miscellaneous

Electrical Worker (Ship Electrician) - 8000 Clock Hours

Components

- 300 Hours - Shop Work
- 100 Hours - Temporary Lighting
- 100 Hours - Storeroom Experience
- 500 Hours - Yard Electric Work
- 500 Hours - Ship Maintenance
- 1300 Hours - Ship Lighting Construction
- 1900 Hours - Ship Power Construction
- 900 Hours - Intercommunication Systems
- 500 Hours - Fire Control Systems
- 250 Hours - Degaussing Systems
- 1000 Hours - Testing Crew
- 750 Hours - School Instruction

Electrical Worker (Ship Electrician) - 8000 Clock Hours

Components

- 1000 Hours - Wireways
- 2000 Hours - Power Wiring
 - 500 Hours - Marine Lighting
- 1000 Hours - Interior and Other Communications
 - 500 Hours - Installing Generators/Switchboards
- 2000 Hours - Yard Maintenance
- 1000 Hours - Operating Electrical Equipment

Electrical Worker (Sign Electrician) - 8000 Clock Hours

Components

- 4000 Hours - Sign Construction and Maintenance
(Includes Rigging, Installing Supports, Hoisting/Wiring,
High Tension Installation/Transformers)
- 4000 Hours - Neon Tube Bending
(Includes Cleaning Tubes/Acid Mixtures, Welds/Bends,
Block/Script Letters, Glass Fisibility, Hydrogen Gas/
Tube Bending Tools)

Electrical Worker (Television Electrician-Lineman, Broadcast-Telecast -
8000 Clock Hours

Components

- 1000 Hours - Station Equipment and Wiring
- 1000 Hours - Pole Lines/Rights of Way
- 1000 Hours - Wire Construction
- 1000 Hours - Cable Construction

- 1000 Hours - Station Equipment/Wiring Maintenance
- 1000 Hours - Outside Plant Maintenance
- 1000 Hours - Central Office Equipment Maintenance
- 1000 Hours - Outside Plant Records

Electrical Worker (Bus and Truck Electrician) - 8000 Clock Hours

Components

- 300 Hours - Tools and Equipment - Use/Care
- 200 Hours - Parts
- 2000 Hours - Miscellaneous - Replace/Repair - Starters/Generators/Fuel
Pumps/Carburetors/Batteries/Windshield
Wiper Motors/Distributors
- 1000 Hours - Cooling System
- 2000 Hours - Engine
- 2500 Hours - Electrical - Lights/Wiring/Ignition/Timing/Ammeters/Gauges/
Electric Fuel Pump/Tune Motor

APPENDIX H

ENGINEMAN RATING/
ENGINE REPAIR SPECIALTY
COMPARATIVE
OCCUPATIONAL SPECIALTY
AND
TECHNICAL/APPRENTICESHIP TRAINING
DATA

This Appendix contains comparative Navy and civilian occupational specialty and technical/apprenticeship training data. This information in the present format may be used by recruiters as an aid to classify lateral entry petty officer recruits.

The comparative civilian occupational specialty data have been obtained from the U. S. Department of Labor, Dictionary of Occupational Titles, and are presented according to the same numeric code sequence that is contained within that classification document. Comparable civilian occupations are listed for each specific Navy rating. Broad civilian occupational specialty categories are listed first, followed by a list of the occupations within each specialty.

The occupational titles data that are presented in each Appendix are all inclusive, but does not provide a complete list of each different occupational title within each specific occupational specialty category. Additional occupational title information may be obtained by referring to the specified numeric code listed in the Dictionary of Occupational Titles, as the need may arise.

The comparative technical training data have been obtained from the curricula of accredited private and state supported trade and technical schools, community and junior colleges, and vocational training courses at regular high schools. The comparative apprenticeship training data were obtained from U. S. Department of Labor recommended schedules. These data are distributed as equitably as possible between private and state supported schools, and with a sufficient nationwide geographic dispersal to enable as broad as possible a comparison between civilian and Navy vocational training.

The technical and apprenticeship training data are presented to afford examples of comparative Navy and civilian vocational training for each occupational specialty that comprises the functions of each given Navy rating. These data are presented for information purposes to help the recruiter in processing pre-enlistment packages and/or appropriate service record pages. The prospective petty officer recruit's training and experience background data may be compared with the training and experience requirements for a given Navy rating. Also, these same data may be compared with other appropriate civilian occupational training data to determine the prospective recruit's background and proficiency in a specific occupational specialty area. This will help to insure the proper placement of new petty officer recruits.

COMPARATIVE
ENGINEMAN RATING/
ENGINE REPAIR OCCUPATIONAL
SPECIALTIES DATA

NAVY ENGINEMAN RATING AND COUNTERPART CIVILIAN
OCCUPATIONAL SPECIALTIES

Navy Engineman rating personnel operate, maintain, and repair fixed, mobile, and portable diesel and gasoline engines and associated equipment, including ignition, fuel, transmission, cooling, and lubrication systems, and engineering department auxiliary equipment, such as compressors, distilling plants, pumps, and hydraulic, pneumatic, refrigeration, and air conditioning systems.

Counterpart civilian occupational specialties to this Navy rating are skills found in Machine Trades occupations.

Similar Machine Trades occupations include skills in metal machining; motorized vehicle and engineering equipment mechanics and repairmen; aircraft mechanics and repairmen; rail equipment mechanics and repairmen; marine mechanics and repairmen; farm mechanics and repairmen, engine, power transmission, and related mechanics; and textile equipment repair.

The following is a list of these occupations, with the appropriate D. O. T. codes (U. S. Department of Labor, Dictionary of Occupational Titles). Broad specialty categories are listed first, then a comprehensive list of occupations within each specialty follows.

- 6 Machine Trades Occupations
- 60 Metal Machinery Occupations
- 600 Machinists and Related Occupations
- 62/63 Mechanics and Machinery Repairmen
- 620 Motorized Vehicle and Engineering Equipment Mechanics and Repairmen
- 621 Aircraft Mechanics and Repairmen
- 622 Rail Equipment Mechanics and Repairmen
- 623 Marine Mechanics and Repairmen
- 624 Farm Mechanics and Repairmen
- 625 Engine, Power Transmission, and Related Mechanics
- 631 Powerplant Mechanics and Repairmen

- 8 Structural Work Occupations
- 82 Electrical Assembling, Installing, and Repairing Occupations
- 820 Occupations in Assembly, Installation, and Repair of Generators, Motors, Accessories, and Related Powerplant Equipment

This category includes occupations concerned with feeding, tending, operating, controlling, and setting up machines to cut, bore, mill, abrade, print and similarly work such materials as metal, paper, wood and stone. Throughout this category, the overall relationship of the worker to the machine is of prime importance. At the more complex levels, the important aspects of the work include understanding machine functions, reading blueprints, making mathematical computations, and exercising judgment to attain conformance to specifications. Coordination of the eyes and hands is the most significant factor at the lower levels. Disassembly, repair, reassembly, installation, and maintenance of machines and mechanical equipment, and weaving, knitting, spinning, and similarly working textiles are included in this category.

60

Metal Machinery Occupations

This division includes occupations concerned with shaping metal parts or products by removing excess from stock or objects, primarily by such means as cutting, boring, milling, abrading, and planing. Includes laying out, job setting, repairing, fitting, and assembly. The machining of plastics is also included when the methods applied to the machining of metal are used.

600

Machinists and Related Occupations

This group includes occupations concerned with shaping metal parts by milling, turning, planing, abrading, boring, chipping, sawing, and shaving with a variety of metal working machines. Includes laying out, job setting, fitting, assembling, and repairing. Occupations primarily concerned with Machine Shop tools are included in Group 601 and machining gears in Group 602.

600.280

Experimental Mechanic (motor and bicycles)
Machinist, Automotive (auto ser)
Maintenance Machinist (any ind)
Machinist, Construction Equipment (any ind)

62/63

Mechanics and Machinery Repairmen

This division includes groups of occupations concerned with installing, inspecting, testing, repairing, rebuilding, and maintaining in efficient operating condition all types of engines and a wide variety of mechanical equipment designed for general or specific application in domestic, commercial, industrial, and agricultural activities. Occupations in this division typically require knowledge of the structural and functional characteristics of specific machines or types of machines, and include such tasks as locating and drilling holes, aligning structural and moving parts, and occasionally operating machine tools to remove excess metal from semifinished or repaired parts. Occupations concerned with assembling new or rebuilt heavy machines, such as turbines and presses in the machine

shop or erection shop, involving close tolerance machining and hand finishing of castings and other machine parts are included in Division 60. Occupations concerned with machine setup and adjustment only are included in groups covering operation of the same machines.

620 Motorized Vehicle and Engineering Equipment
Mechanics and Repairmen

This group includes occupations concerned with repairing engines and accessories, power trains, suspension systems, and other mechanical units of automobiles, trucks, tractors, buses, and trackless trolleys; graders, bulldozers, cranes, power shovels, portable air-compressors, and other gasoline or diesel-powered engineering equipment; motorized materials handling equipment, such as forklifts and lumber carriers, and wheeled or tracked military vehicles, including personnel carriers, self-propelled guns, mobile rocket launchers, and tanks. (Ordnance mechanics concerned with military armament are included in Group 632).

620.281 Air-Conditioning Mechanic (auto ser)
Automotive Air-Conditioner Installer (auto ser)
Automobile Mechanic (auto ser)
Automobile Mechanic, Motor (auto ser)
Compressor Mechanic, Bus (auto ser)
Differential Repairman (auto ser)
Drive Shaft and Steering Part Repairman (auto ser)
Engine Head Repairman (auto ser)
Engine Repair Mechanic, Bus (auto ser)
Foreign Car Mechanic (auto ser)
Motor Assembler (auto ser)
Truck Mechanic (auto ser)
Trolley Coach Mechanic (motor trans)
Automobile Repair Service Salesman (auto ser)
Truck Repair Serviceman (auto ser)
Automobile Tester (auto ser)
Automotive Maintenance Equipment Serviceman (any ind)
Brakeman Automobile (auto ser)
Brakeman Air (auto ser)
Brakeman Hydraulic (auto ser)
Brake Repairman, Bus (auto ser)
Bus Inspector (auto ser)
Carburetor Man (auto ser)
Construction Equipment Mechanic (const)
Crane Inspector (any ind)
Engineering Equipment Mechanic (const)
Engineer Inspector (const)
Front End Man (auto ser)
Logging Equipment Mechanic (logging)
Mechanical Maintenance Man (any ind)
Mechanic, Industrial Truck (any ind)
Mine Machinery Mechanic (mining and quarrying)
Motor and Chassis Inspector (auto mfg)
Test Driver (auto mfg)
Motorcycle Repairman (auto ser)

Tractor Mechanic (any ind)
Transmission Mechanic (auto ser)
Automatic Transmission Mechanic (auto ser)
Tune Up Man (auto ser)

620.381 Automobile Radiator Man (auto ser)
 Automobile Service Mechanic (auto ser)
 Firefighting Equipment Specialist (gov ser)
 Mechanical Unit Repairman

621 Aircraft Mechanics and Repairmen

This group includes occupations concerned with repairing all types of aircraft engines, and mechanical or hydraulic systems and components of airplanes and missiles.

621.131 Foreman, Aircraft Maintenance (aircraft mfg; air trans)
 Foreman, Production Department (aircraft mfg)
 Supercharger-Repairman Foreman (aircraft mfg)

621.138 Reclamation Foreman (whole tr)

621.228 Field Service Representative (aircraft mfg)

621.281 Aircraft-and-Engine Mechanic (aircraft mfg; air trans)
 Aircraft-and-Engine Mechanic Apprentice (aircraft mfg;
 air trans)
 Airplane Inspector (air trans)
 Carburetor Man (air trans)
 Experimental Mechanic (aircraft mfg)
 Flight Engineer (air trans)
 Hydraulic Tester (aircraft mfg; air trans)
 Mechanic, Field-and-Service (aircraft mfg)
 Supercharger Mechanic (aircraft mfg; air trans)

621.381 Assembler, Aircraft Power Plant (aircraft mfg)
 Flight-Test Shop Mechanic (aircraft mfg)
 Mechanic, Flowmeter Test and Certification
 (aircraft mfg)

621.781 Mechanic, Aircraft Accessories (aircraft mfg)

621.884 Aircraft-and-Engine Mechanic Helper (aircraft mfg;
 air trans)
 Reclamation Man (whole tr)

622 Rail Equipment Mechanics and Repairmen

This group includes occupations concerned with inspecting and repairing surface and subsurface railway equipment.

622.131 Carman Foreman (loco & car bldg & rep)
 Foreman, Wheel Shop (loco & car bldg & rep)

- Roundhouse Foreman (loco & car bldg & rep)
- 622.281 Locomotive Inspector (loco & car bldg & rep)
- 622.381 Air Valve Repairman (loco & car bldg & rep)
 Carman (loco & car bldg & rep)
 Carman, Pullman (r r trans)
 Floor-Covering Layer (loco & car bldg & rep)
 Carman, Apprentice (loco & car bldg & rep)
 Mine-Car Repairman (mining & quarrying)
 Railroad Wheels and Axle Inspector (loco & car bldg & rep)
 Salvage Inspector (loco & car bldg & rep)
- 622.782 Triple-Air Valve Tester (loco & car bldg & rep)
- 622.884 Air-Compressor Mechanic (loco & car bldg & rep)
 Carman Helper (loco & car bldg & rep)
 Switch Repairman (r r trans)
 Tank-Car Inspector (comp & liquefied gases)

623 Marine Mechanics and Repairmen

This group includes occupations concerned with repairing mechanical equipment aboard fresh-water and sea-going ships, tugboats, barges, lighters, floating dry docks, and other marine craft and floating structures, and repairing related harbor and dock machinery.

- 623.281 Deck Engineer (water trans)
 Junior Engineer (water trans)
 Machinist, Marine Engine (ship & boat bldg & rep)
 Machinist, Outside (ship & boat bldg & rep)
 Motorboat Mechanic (any ind)
 Outboard-Motor Mechanic (ship & boat bldg & rep)
 Second Engineer, Dredge (const)
- 623.381 Gear Man (water trans)
- 623.884 Motorboat-Mechanic Helper (any ind)
- 623.887 Machinist Helper, Outside (ship & boat bldg & rep).

624 Farm Mechanics and Repairmen

This group includes occupations concerned with repairing machinery, equipment, and vehicles used in planting, cultivating, harvesting, moving, processing, and storing plant and animal farm products.

- 624.281 Farm Equipment Mechanic (agric)
 Windmill Repairman (any ind)
- 624.381 Farm Equipment Mechanic (agric)
 Farm Machinery Set. Up Man (whole tr)

Inspector and Tester (agric equipment)
Combine Inspector (agric equipment)
Treadmill Inspector (agric equipment)

624.781 Assembly Repairman (agric equipment)

624.884 Greaser (agric)

625 Engine, Power Transmission, and Related Mechanics

This group includes occupations concerned with repairing steam engines, except locomotives; reciprocating internal combustion engines; and auxiliary equipment.

625.131 Engine Repair Foreman (engine & turbine)
Engine-Testing Foreman (engine & turbine)

625.281 Diesel Engine Tester (engine & turbine)
Diesel Mechanic (any ind)
Engine Repairman, Service (engine & turbine)
Experimental Mechanic, Outboard Motors (engine & turbine)
Fuel-Injection Serviceman (any ind)
Gasoline-Engine Repairman (any ind)
Outboard Motor Tester (engine & turbine)
Power Saw Mechanic (any ind)
Rocket Engine Component Mechanic (aircraft mfg)

625.381 Diesel Engine Erector (engine & turbine)
Engine Repairman, Production (engine & turbine)
Life Tester, Outboard Motors (engine & turbine)

625.884 Diesel Mechanic Helper (any ind)

631 Powerplant Mechanics and Repairmen

This group includes occupations concerned with maintenance and repair of turbogenerators, steam generators, and auxiliary equipment in powerplants, utilizing organic and atomic fuels or waterpower.

631.131 Dam Maintenance Foreman (light, heat & power)
Machinist Foreman (light, heat & power)

631.281 Hydroelectric Machinery Mechanic (light, heat & power)
Powerhouse Repairman (light, heat & power)
Powerhouse Repairman Apprentice (light, heat & power)

631.884 Hydroelectric Machinery Mechanic Helper (light, heat
& power)
Powerhouse Repairman (light, heat & power)
Powerhouse Repairman Apprentice (light, heat & power)

631.887 Pulleyman (mining & quarrying)
Track Repairman Helper (const)

Structural Work Occupations

This category includes occupations concerned with fabricating, erecting, installing, paving, painting, repairing, and similarly working structures or structural parts, such as bridges, buildings, roads, motor vehicles, cables, airplane engines, girders, plates and frames. The work generally occurs outside a factory or shop environment, except for factory production line occupations. Tools used are hand or portable power tools, and such materials as wood, metal, concrete, glass, and clay are involved. Workers are frequently required to have a knowledge of the materials with which they work, e. g., stresses, strains, durability, and resistance to weather.

82 Electrical Assembling, Installing, and Repairing Occupations

This division includes occupations concerned with assembling, installing, erecting, and repairing electrical equipment and related structures designed for electric power generation, transmission, and distribution; communication, signaling, and object detection; process control, fire control, and data processing; transportation and materials-handling; heating, air conditioning, domestic electrical applications.

820 Occupations in Assembly, Installation, and Repair of Generators, Motors, Accessories, and Related Powerplant Equipment

This group includes occupations concerned with assembling components and premachined parts; connecting electrical circuits; testing circuitry and operation of generators, motors, accessories, controls, and related equipment; and making on-site repairs to operating equipment.

- 820.131 Circuit-Breaker Foreman (light, heat & power)
Electrician Foreman, Substation (light, heat & power)
- 820.138 Transformer Assembly Foreman (elec equip)
- 820.281 Circuit-Breaker Mechanic (light, heat & power)
Electrician Apprentice, Powerhouse (light, heat & power)
Electrician, Powerhouse (light, heat & power)
Electrician, Rectifier Maintenance (light, heat & power)
Electrician, Substation (light, heat & power)
Motor-Room Control Man (light, heat & power)
Engine-Assembly Foreman (engine & turbine)
- 820.381 Batteryman, Large Emergency Storage (light, heat & power)
Corrosion-Control Fitter (light, heat & power)
Electric-Motor-Generator-Set Assembler (elec equip)
Engine-Generator-Set Assembler (engine & turbine)
Transformer Assembler (elec equip)
- 820.781 Dynamo Man (light, heat & power)
Regulator Inspector (light, heat & power)

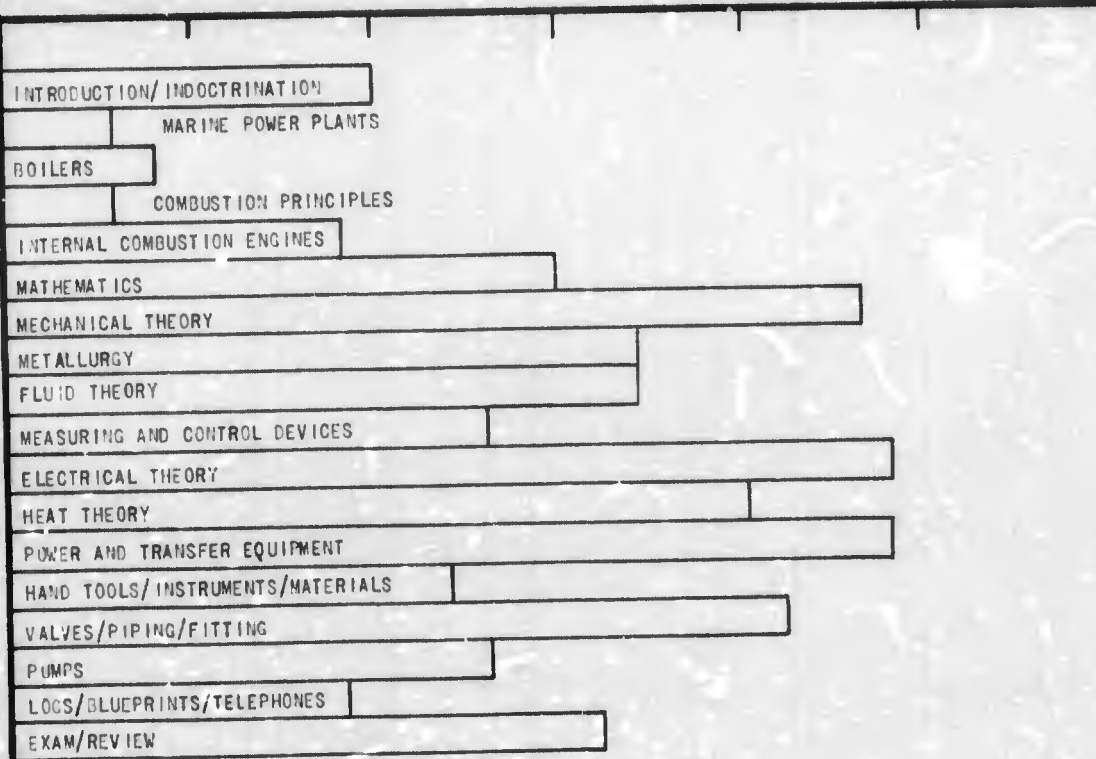
COMPARATIVE
ENGINEMAN RATING/
ENGINE REPAIR SPECIALTY
TECHNICAL TRAINING

H-11

CLOCK HOURS

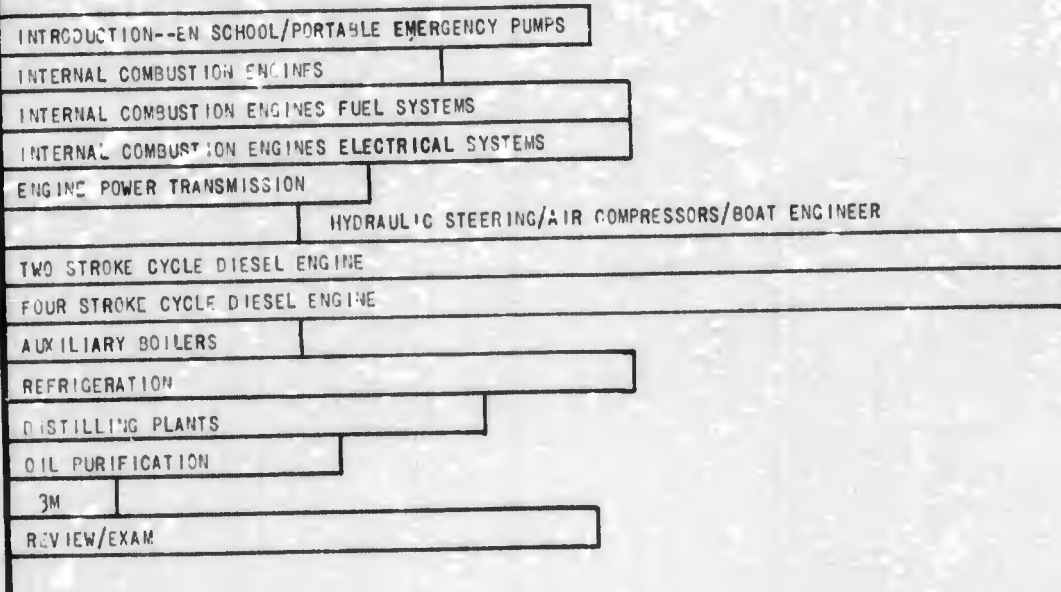
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BASIC PROPULSION ENGINEERING
253 CLOCK HOURS

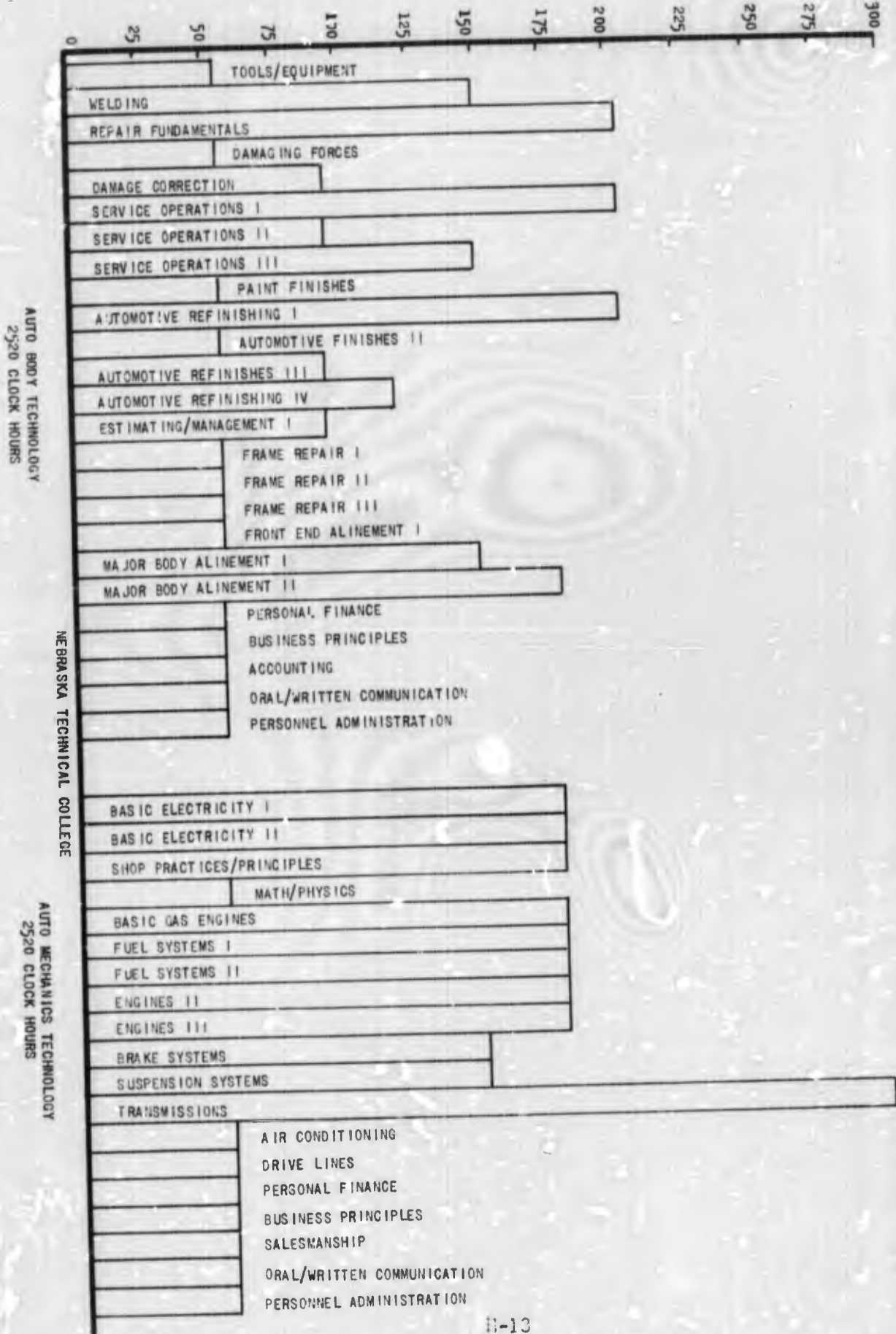


ENGINE REPAIR TECHNICAL TRAINING

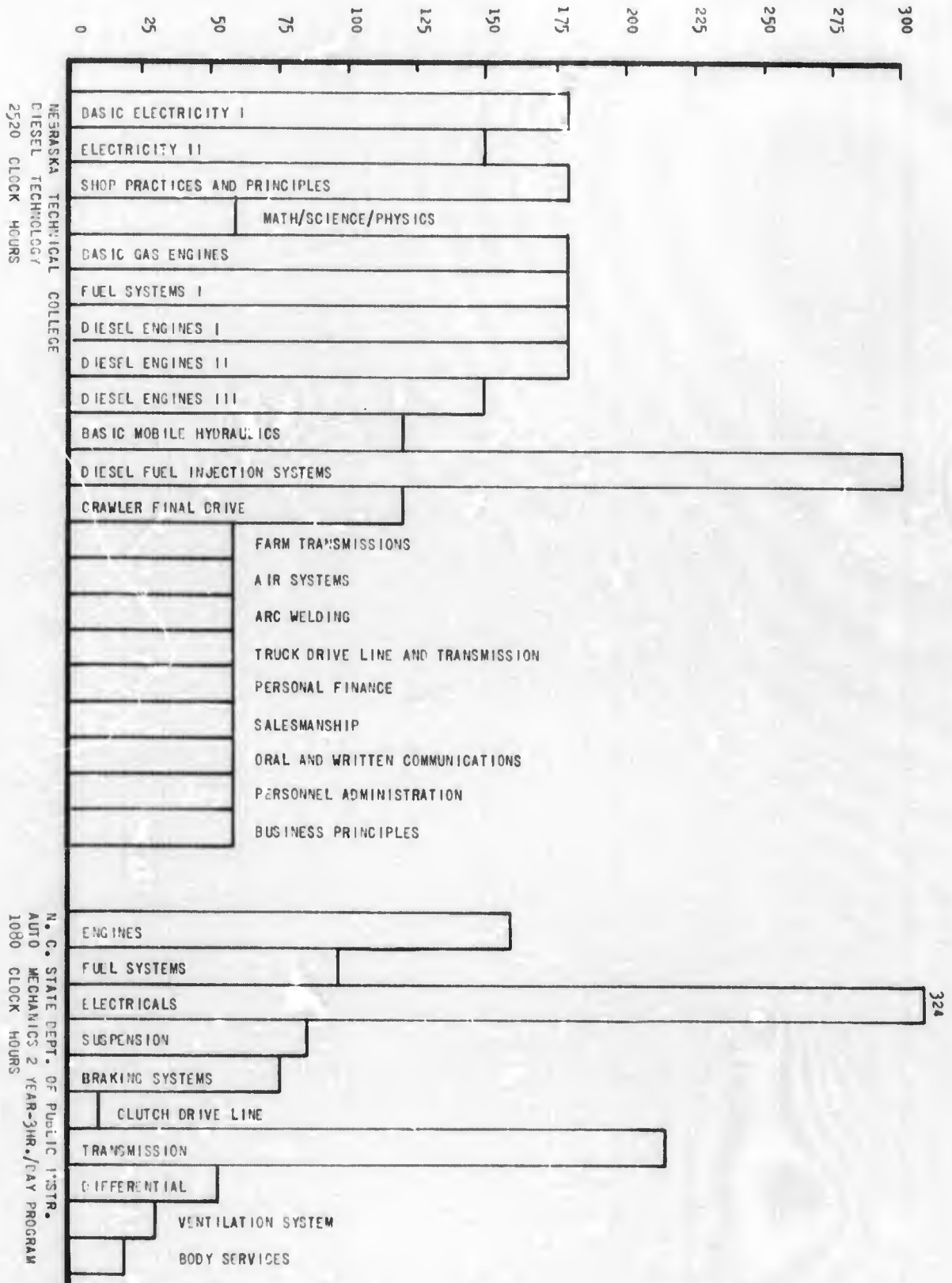
EN CLASS A SCHOOL
202 CLOCK HOURS



CLOCK HOURS



CLOCK HOURS

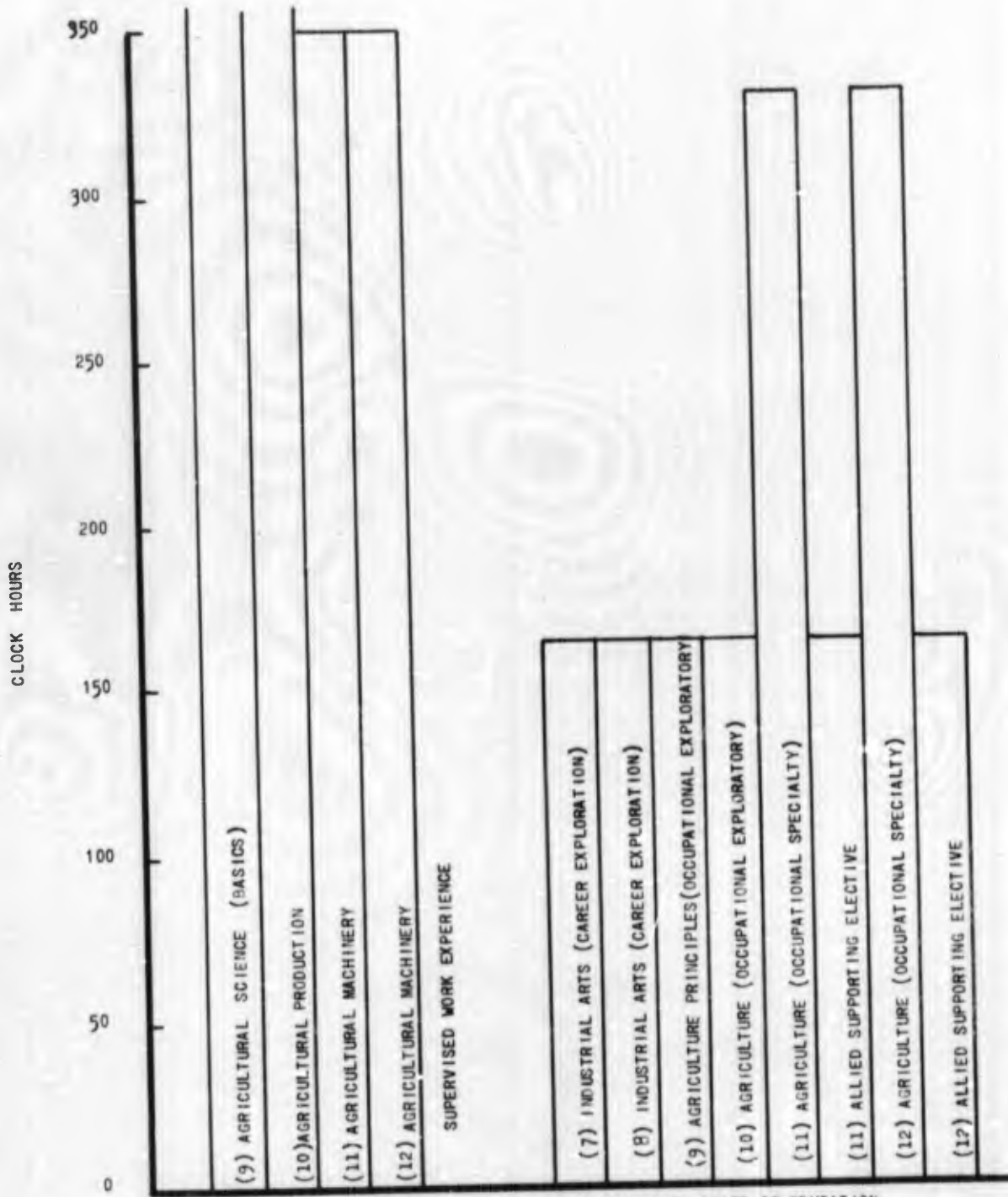


NEBRASKA TECHNICAL COLLEGE
DIESEL TECHNOLOGY
2520 CLOCK HOURS

N. C. STATE DEPT. OF PUBLIC INSTR.
AUTO MECHANICS 2 YEAR-3YR./DAY PROGRAM
1080 CLOCK HOURS

ENGINE REPAIR TECHNICAL TRAINING

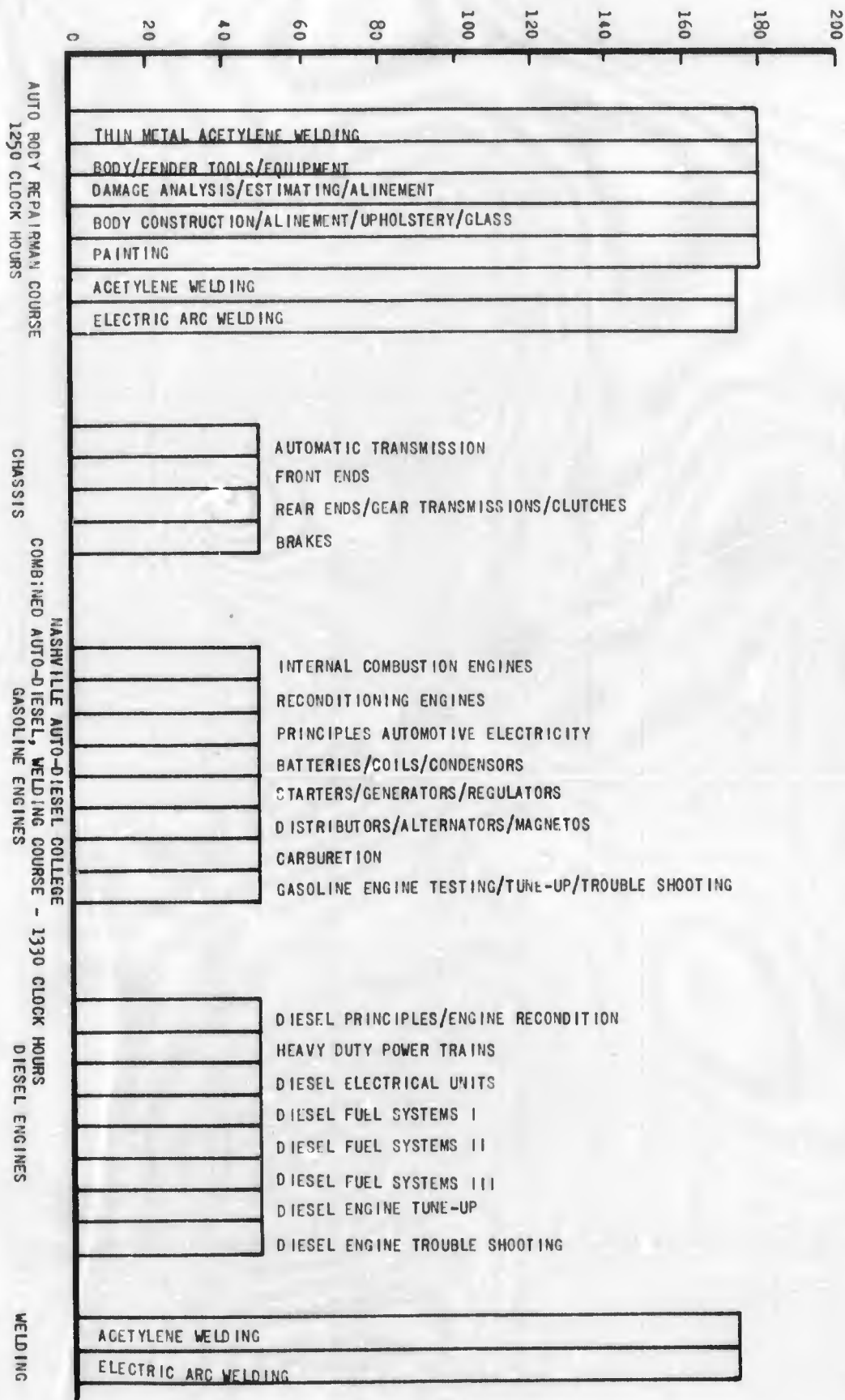
ENGINE REPAIR TECHNICAL TRAINING



S. C. STATE DEPT. OF EDUC.
 AGRI. MACHINERY EDUC.
 9-12 GRADES 700 plus C. H.

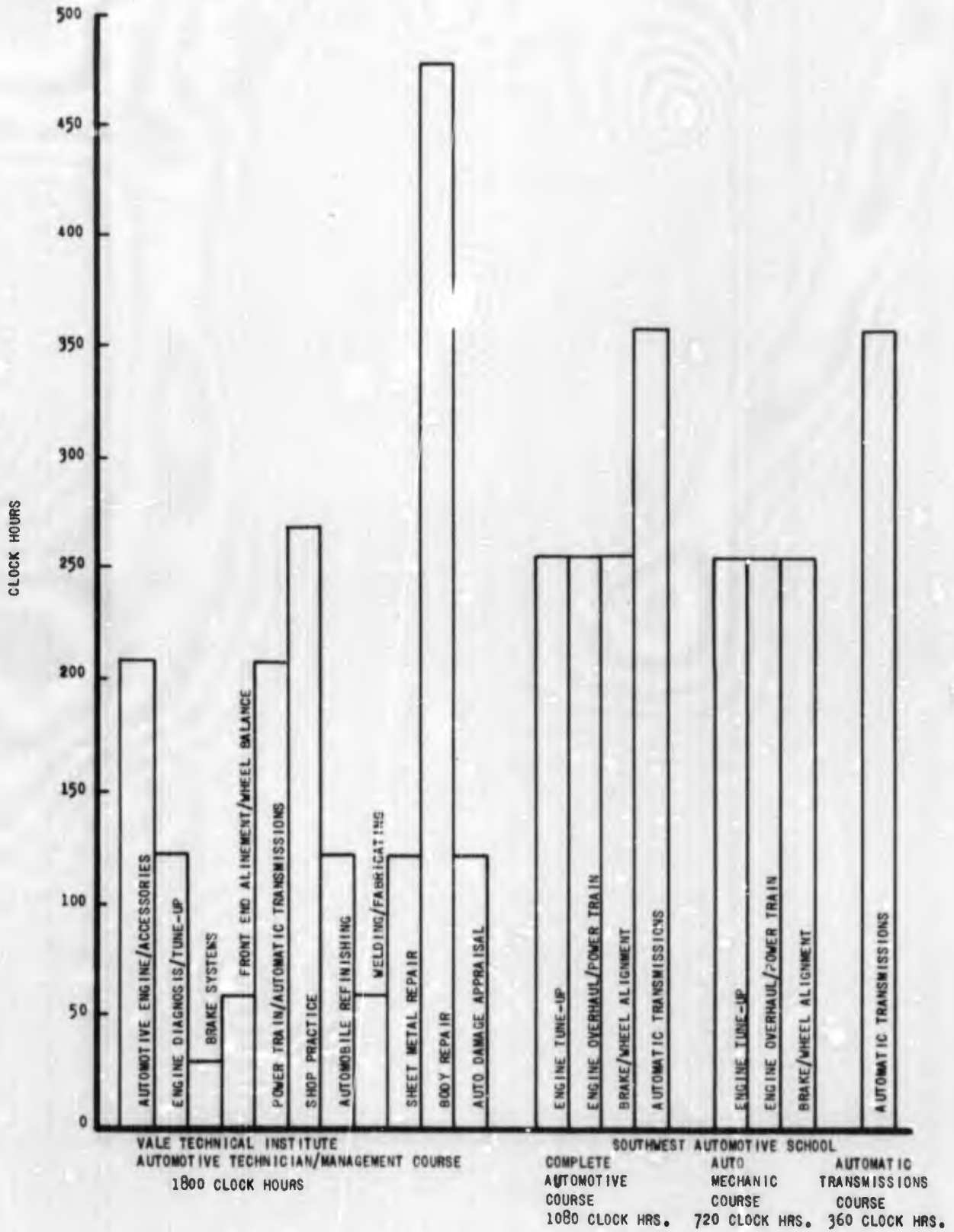
OREGON STATE BOARD OF EDUCATION
 AGRICULTURE CURRICULUM GUIDE
 7-12 GRADES 1980 CLOCK HOURS

CLOCK HOURS

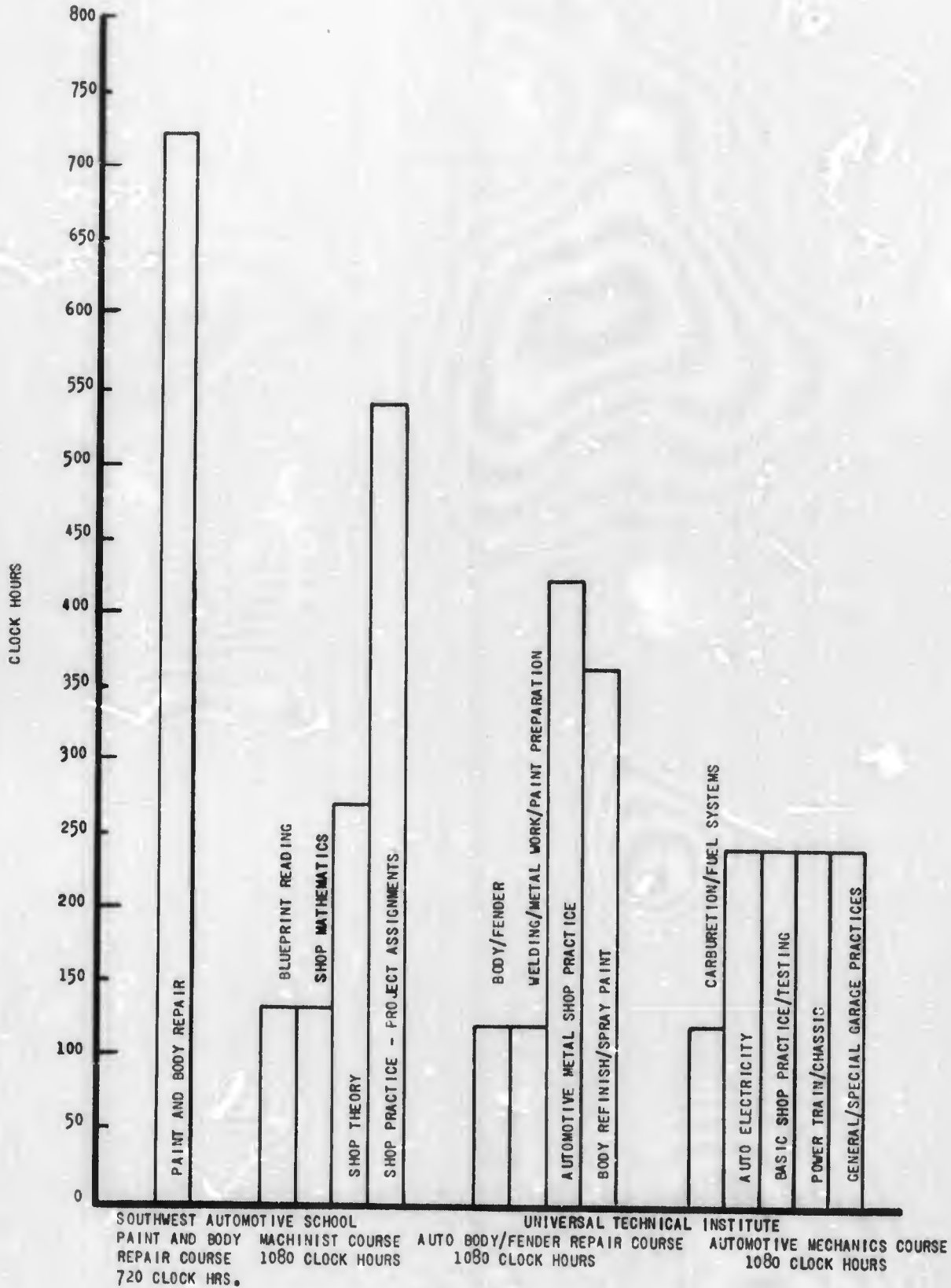


ENGINE REPAIR TECHNICAL TRAINING

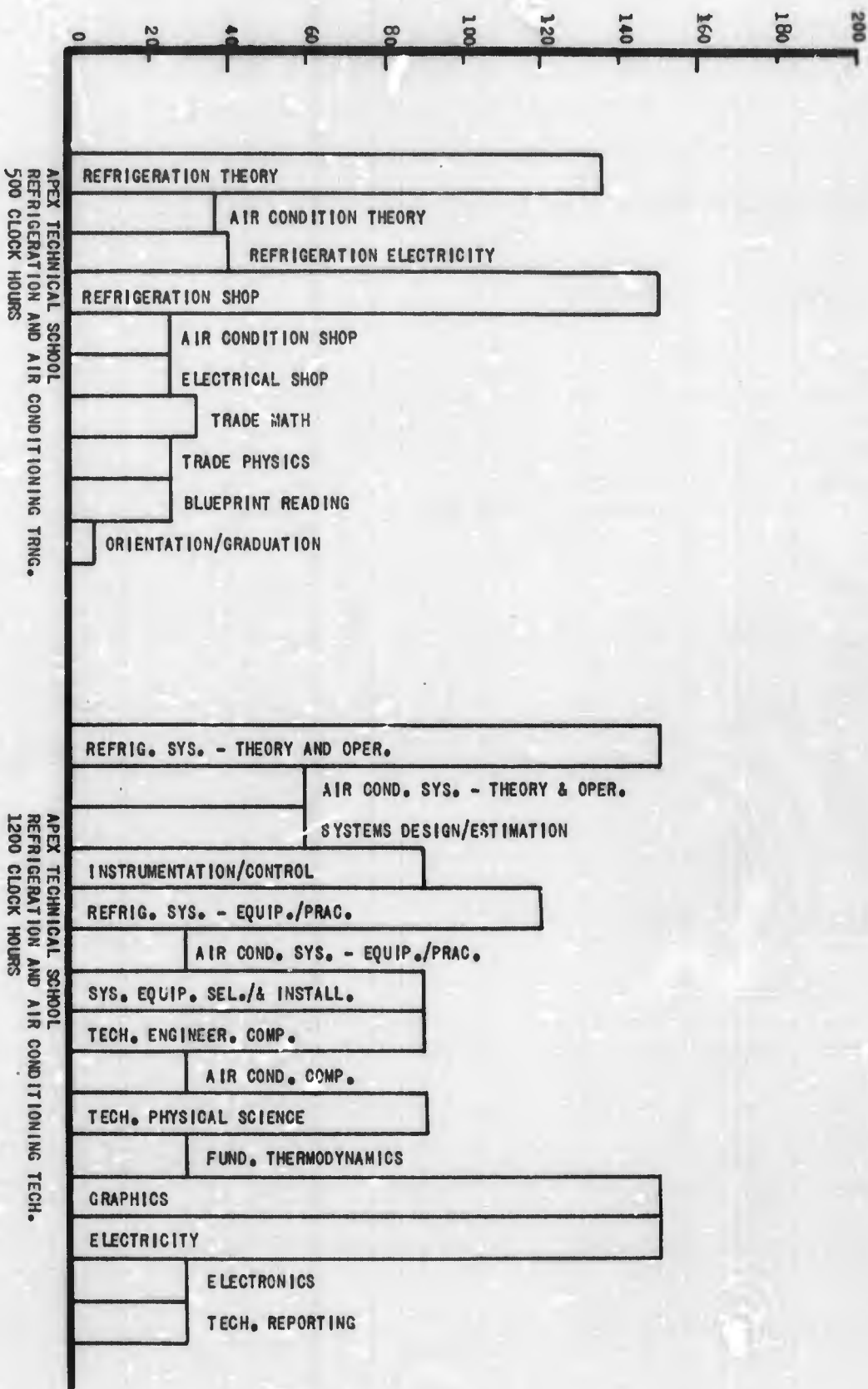
ENGINE REPAIR TECHNICAL TRAINING



ENGINE REPAIR TECHNICAL TRAINING



CLOCK HOURS



ENGINE REPAIR TECHNICAL TRAINING

ENGINEMAN RATING/ENGINE REPAIR SPECIALTY TECHNICAL TRAINING
DURATIONS OF TRAINING COURSES AND COMPONENTS OF COURSES

Basic Propulsion Engineering and Engineman Class A School -
15 Weeks - 455 Clock Hours

Basic Propulsion Engineering - 253 Clock Hours - 215 Clock Hours Class -
38 Clock Hours Practical
Engineman Class A School - 202 Clock Hours - 115 Clock Hours Class -
87 Clock Hours Practical

Basic Propulsion Engineering

Components

10 Hours - Introduction and Indoctrination
3 Hours - Introduction to Marine Power Plants
4 Hours - Introduction to Boilers
3 Hours - Combustion Principles
9 Hours - Internal Combustion Engines
15 Hours - Mathematics Review
23 Hours - Mechanical Theory
17 Hours - Metallurgy
17 Hours - Fluid Theory
13 Hours - Measuring and Control Devices
24 Hours - Electrical Theory
20 Hours - Heat Theory
24 Hours - Power and Transfer Equipment
12 Hours - Hand Tools, Instruments, Materials
21 Hours - Valves, Piping, Fitting
13 Hours - Pumps
9 Hours - Logs, Blueprints, Telephones
16 Hours - Exam, Review

Engineman Class A School

Components

16 Hours - Introduction - Engineman School/Portable Emergency Pumps
12 Hours - Internal Combustion Engines
17 Hours - Internal Combustion Engines Fuel Systems
17 Hours - Internal Combustion Engines Electrical Systems
10 Hours - Engine Power Transmission
8 Hours - Hydraulic Steering/Air Compressors/Boat Engineer Duties
28 Hours - Two Stroke Cycle Diesel Engine
23 Hours - Four Stroke Cycle Diesel Engine
8 Hours - Auxiliary Boilers
17 Hours - Refrigeration
13 Hours - Distilling Plants
9 Hours - Oil Purification

3 Hours - Maintenance and Material Management
16 Hours - Review, Examination

Nebraska Technical College

Auto Body Technology - 6 Quarters

2520 Clock Hours Class, Lab, Shop

Components

60 Hours - Tools and Equipment
150 Hours - Welding
210 Hours - Repair Fundamentals
60 Hours - Damaging Forces
90 Hours - Damage Correction
210 Hours - Service Operations I
90 Hours - Service Operations II
150 Hours - Service Operations III
60 Hours - Paint Finishes
210 Hours - Automotive Refinishing I
60 Hours - Automotive Finishes II
90 Hours - Automotive Refinishes III
120 Hours - Automotive Refinishing IV
90 Hours - Estimating and Management I
60 Hours - Frame Repair I
60 Hours - Frame Repair II
60 Hours - Frame Repair III
60 Hours - Front End Alinement I
150 Hours - Major Body Alinement I
180 Hours - Major Body Alinement II
60 Hours - Personal Finance
60 Hours - Business Principles
60 Hours - Accounting
60 Hours - Oral and Written Communication
60 Hours - Personnel Administration

Auto Mechanics Technology - 6 Quarters

2520 Clock Hours Class, Lab, Shop

Components

180 Hours - Basic Electricity I
180 Hours - Basic Electricity II
180 Hours - Shop Practices and Principles
60 Hours - Math and Physics
180 Hours - Basic Gas Engines
180 Hours - Fuel Systems I
180 Hours - Fuel Systems II
180 Hours - Engines II

- 180 Hours - Engines III
- 150 Hours - Brake Systems
- 150 Hours - Suspension Systems
- 300 Hours - Transmissions
- 60 Hours - Air Conditioning
- 60 Hours - Drive Lines
- 60 Hours - Personal Finance
- 60 Hours - Business Principles
- 60 Hours - Salesmanship
- 60 Hours - Oral and Written Communication
- 60 Hours - Personnel Administration

Diesel Technology - 6 Quarters

2520 Clock Hours Class, Lab, Shop

Components

- 180 Hours - Basic Electricity I
- 150 Hours - Electricity II
- 180 Hours - Shop Practices and Principles
- 60 Hours - Math, Science and Physics
- 180 Hours - Basic Gas Engines
- 180 Hours - Fuel Systems I
- 180 Hours - Diesel Engines I
- 180 Hours - Diesel Engines II
- 150 Hours - Diesel Engines III
- 120 Hours - Basic Mobile Hydraulics
- 300 Hours - Diesel Fuel Injection Systems
- 120 Hours - Crawler Final Drive
- 60 Hours - Farm Transmissions
- 60 Hours - Air Systems
- 60 Hours - Arc Welding
- 60 Hours - Truck Drive Line and Transmission
- 60 Hours - Personal Finance
- 60 Hours - Salesmanship
- 60 Hours - Oral and Written Communications
- 60 Hours - Personnel Administration
- 60 Hours - Business Principles

North Carolina State Department of Public Instruction

Suggested Auto Mechanics Curriculum

Two Year - 3 Hour/Day Program in connection with Secondary School Studies
1080 Clock Hours Class, Lab, Practical Experiences

Components

- 162 Hours - Engines
- 97 Hours - Fuel Systems
- 324 Hours - Electricals

86 Hours - Suspension
76 Hours - Braking Systems
11 Hours - Clutch Drive Line
216 Hours - Transmission
54 Hours - Differential
32 Hours - Ventilation System
22 Hours - Body Services

NOTE: Shop Safety, Care in Use of Hand Tools, and Use of Manuals are emphasized in each component. Secondary level academic subjects include English, Social Studies, Mathematics, Science and Drafting.

South Carolina State Department of Education

Vocational Agricultural Education

More than 700 Clock Hours of In-School Instruction and Supervised Work Experience during Regular Secondary School Education - (Agricultural Machinery training)

Components

Unspec. Hours - 9th Grade - Agricultural Science (Basics)
Unspec. Hours - 10th Grade - Agricultural Production
350 Hours - 11th Grade - Agricultural Machinery*
350 Hours - 12th Grade - Agricultural Machinery*

*Includes Adjustment, Maintenance and Repair of all Agricultural Machinery; Farm Machinery Assembly; Gasoline Engines; Welding; Hydraulics; Diesel Engines; and Service and Parts Departments Operating Procedures

NOTE: Instruction in other Agricultural vocational specialty areas (e. g. Agricultural Production and Business Management, Horticulture, Floriculture, Livestock Management, Agricultural Chemicals, Forestry, Pulpwood Production) also occurs during the 11th and 12th Grades of High School.

Oregon State Board of Education

Suggested Agriculture Curriculum Guide - 7th through 12th Grades of School

Approximately 1980 Clock Hours Class, Lab
(Assume 55 minute class periods - 180 days per school year)

Components

165 Hours - 7th Grade - Industrial Arts (Career Exploration)
165 Hours - 8th Grade - Industrial Arts (Career Exploration)
165 Hours - 9th Grade - Agriculture Principles (Occupational Exploratory)*

165 Hours - 10th Grade - Agriculture (Occupational Exploratory)*
330 Hours - 11th Grade - Agriculture (Occupational Specialty)*
165 Hours - 11th Grade - Allied Supporting Elective**
330 Hours - 12th Grade - Agriculture (Occupational Specialty)*
165 Hours - 12th Grade - Allied Supporting Elective**

*Each Student's program includes a supervised agricultural experience project.

**Courses such as Applied Electricity, Applied Physics, Bookkeeping, Building Construction, Business Economics, Business Law, Business Marketing, Data Processing, Power Mechanics, Welding.

NOTE: Primary interest is in comparing Agricultural Mechanics with the Engine Repair specialty of the Engineman Navy Rating. All areas of agricultural instruction are: (1) Animal Science, (2) Soil Science, (3) Plant Science, (4) Agricultural Mechanics, (5) Agricultural Business Management, (6) Leadership and Personal Development, and (7) Agricultural Occupations. Agricultural Mechanics includes instruction in (1) Machinery and Equipment - operation and maintenance, (2) Small Engines and Tractors - principles of operation and maintenance, (3) Electricity, (4) Buildings and Structures, (5) Metal Processes, (6) Tractor Hydraulics, and (7) Tractor Selection.

Nashville Auto-Diesel College, Nashville, Tennessee

Auto Body Repairman Course

1250 Clock Hours - Class, Practical

Components

180 Hours - Thin Metal Acetylene Welding
180 Hours - Body/Fender Tools and Equipment
180 Hours - Damage Analysis and Estimating/Alinement
180 Hours - Body Construction/Alinement, Upholstery/Glass
180 Hours - Painting
175 Hours - Acetylene Welding
175 Hours - Electric Arc Welding

Combined Auto-Diesel, Welding Course

1330 Clock Hours - Class, Practical

Components

Chassis

49 Hours - Automatic Transmission
49 Hours - Front Ends
49 Hours - Rear Ends/Gear Transmissions/Clutches
49 Hours - Brakes

Gasoline Engines

- 49 Hours - Internal Combustion Engines
- 49 Hours - Reconditioning Engines
- 49 Hours - Principles Automotive Electricity
- 49 Hours - Batteries/Coils/Condensers
- 49 Hours - Starters/Generators/Regulators
- 49 Hours - Distributors/Alternators/Magnetos
- 49 Hours - Carburetion
- 49 Hours - Gasoline Engine Testing/Tune-Up/Trouble Shooting

Diesel Engines

- 49 Hours - Diesel Principles/Engine Recondition
- 49 Hours - Heavy Duty Power Trains
- 49 Hours - Diesel Electrical Units
- 49 Hours - Diesel Fuel Systems I
- 49 Hours - Diesel Fuel Systems II
- 49 Hours - Diesel Fuel Systems III
- 49 Hours - Diesel Engine Tune-Up
- 49 Hours - Diesel Engine Trouble Shooting

Welding

- 175 Hours - Acetylene Welding
- 175 Hours - Electric Arc Welding

Vale Technical Institute, Blairsville, Pennsylvania

Automotive Technician and Management Course - 14 Months

1800 Clock Hours - Class, Shop

Components

- 210 Hours - Automotive Engine and Accessories
- 120 Hours - Engine Diagnosis and Tune-Up
- 30 Hours - Brake Systems
- 60 Hours - Front End Alinement/Wheel Balance
- 210 Hours - Power Train/Automatic Transmissions
- 270 Hours - Shop Practice
- 120 Hours - Automobile Refinishing
- 60 Hours - Welding/Fabricating
- 120 Hours - Sheet Metal Repair
- 480 Hours - Body Repair
- 120 Hours - Auto Damage Appraisal

Southwest Automotive School, Oklahoma City, Oklahoma

Complete Automotive Course - 9 Months

1080 Clock Hours - Lecture, Lab

Components

240 Hours - Engine Tune-Up
240 Hours - Engine Overhaul/Power Train
240 Hours - Brake and Wheel Alignment
360 Hours - Automatic Transmissions

Auto Mechanic Course - 6 Months

720 Clock Hours - Lecture, Lab

Components

240 Hours - Engine Tune-Up
240 Hours - Engine Overhaul/Power Train
240 Hours - Brake and Wheel Alignment

Automatic Transmissions Course - 3 Months

360 Clock Hours - Lecture, Lab

Components

360 Hours - Automatic Transmissions

Paint and Body Repair Course - 6 Months

720 Clock Hours - Lecture, Lab

Components

720 Hours - Paint and Body Repair

Machinist Course - 36 Weeks

1080 Clock Hours - Lecture, Lab

Components

135 Hours - Blueprint Reading
135 Hours - Shop Mathematics
270 Hours - Shop Theory
540 Hours - Shop Practice - Project Assignments

Universal Technical Institute - Omaha, Nebraska

Auto Body and Fender Repair Course - 9 Months

1080 Clock Hours - Class, Practical

Components

120 Hours - Body and Fender
120 Hours - Welding/Metal Work/Paint Preparation
450 Hours - Automotive Metal Shop Practice
360 Hours - Body Refinish/Spray Paint

Automotive Mechanics Course - 9 Months

1080 Clock Hours - Class, Practical

Components

120 Hours - Carburetion/Fuel Systems
240 Hours - Auto Electricity
240 Hours - Basic Shop Practice/Testing
240 Hours - Power Train and Chassis
240 Hours - General/Special Garage Practices

Apex Technical School, New York City

Refrigeration and Air Conditioning Training

500 Clock Hours - Class and Shop

Components

135 Hours - Refrigeration Theory
37½ Hours - Air Condition Theory
40 Hours - Refrigeration Electricity
150 Hours - Refrigeration Shop
25 Hours - Air Condition Shop
25 Hours - Electrical Shop
32½ Hours - Trade Math
25 Hours - Trade Physics
25 Hours - Blueprint Reading
5 Hours - Orientation/Graduation

Refrigeration and Air Conditioning Technician

1200 Clock Hours - Class and Shop

Components

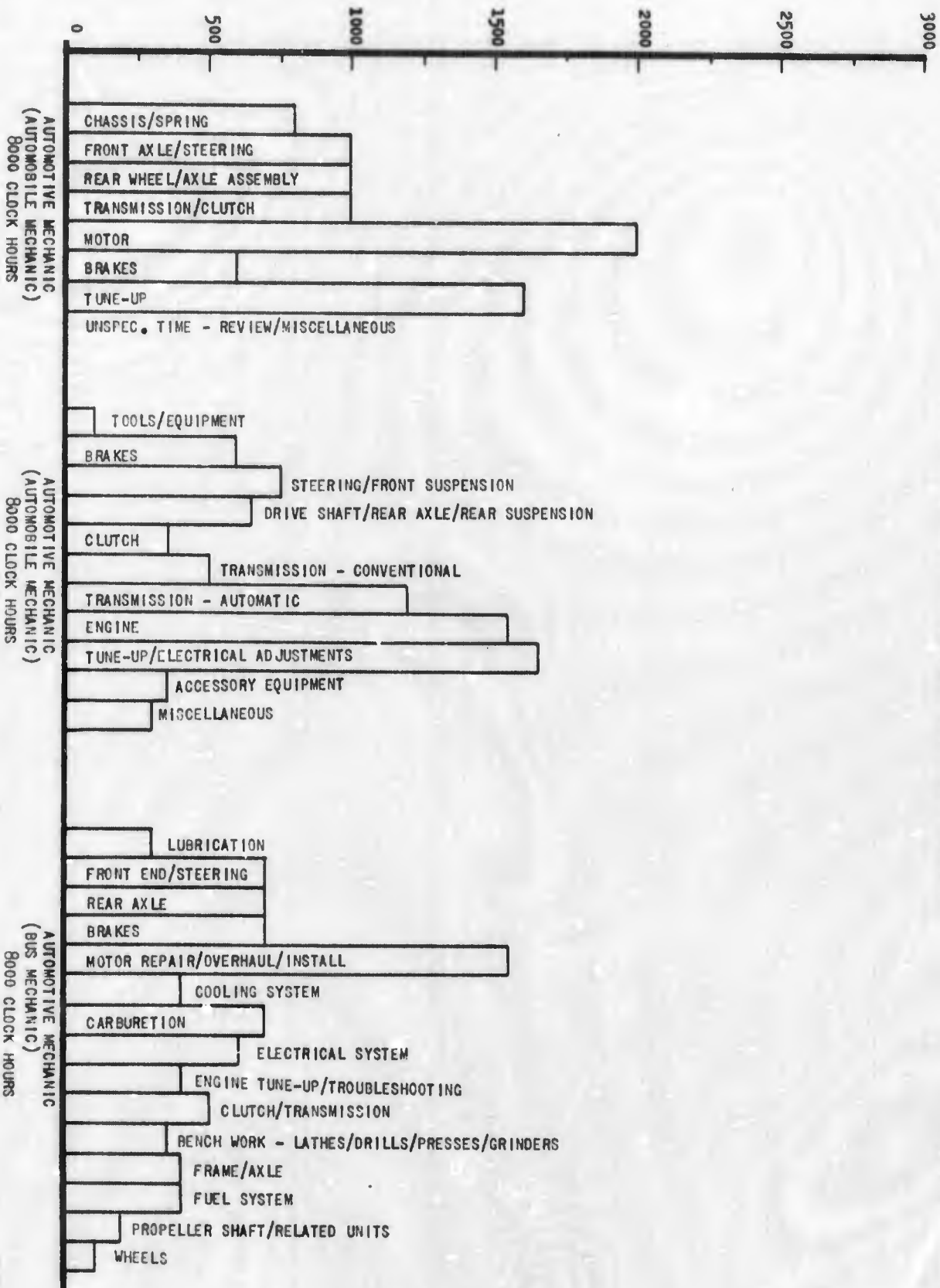
150 Hours - Refrigeration Systems - Theory & Opn.
60 Hours - Air Condition Systems - Theory & Opn.
60 Hours - Systems Design & Estimation

- 90 Hours - Instrumentation/Control
- 120 Hours - Refrigeration Systems - Equipment/Practices
- 30 Hours - Air Condition Systems - Equipment/Practices
- 90 Hours - Systems Equipment Selection & Installation
- 90 Hours - Technical Engineering Computations
- 30 Hours - Air Condition Computations
- 90 Hours - Technical Physical Science
- 30 Hours - Fundamental Thermodynamics
- 150 Hours - Graphics
- 150 Hours - Electricity
- 30 Hours - Electronics
- 30 Hours - Technical Reporting

ENGINE REPAIR
OCCUPATIONAL
APPRENTICESHIP
TRAINING

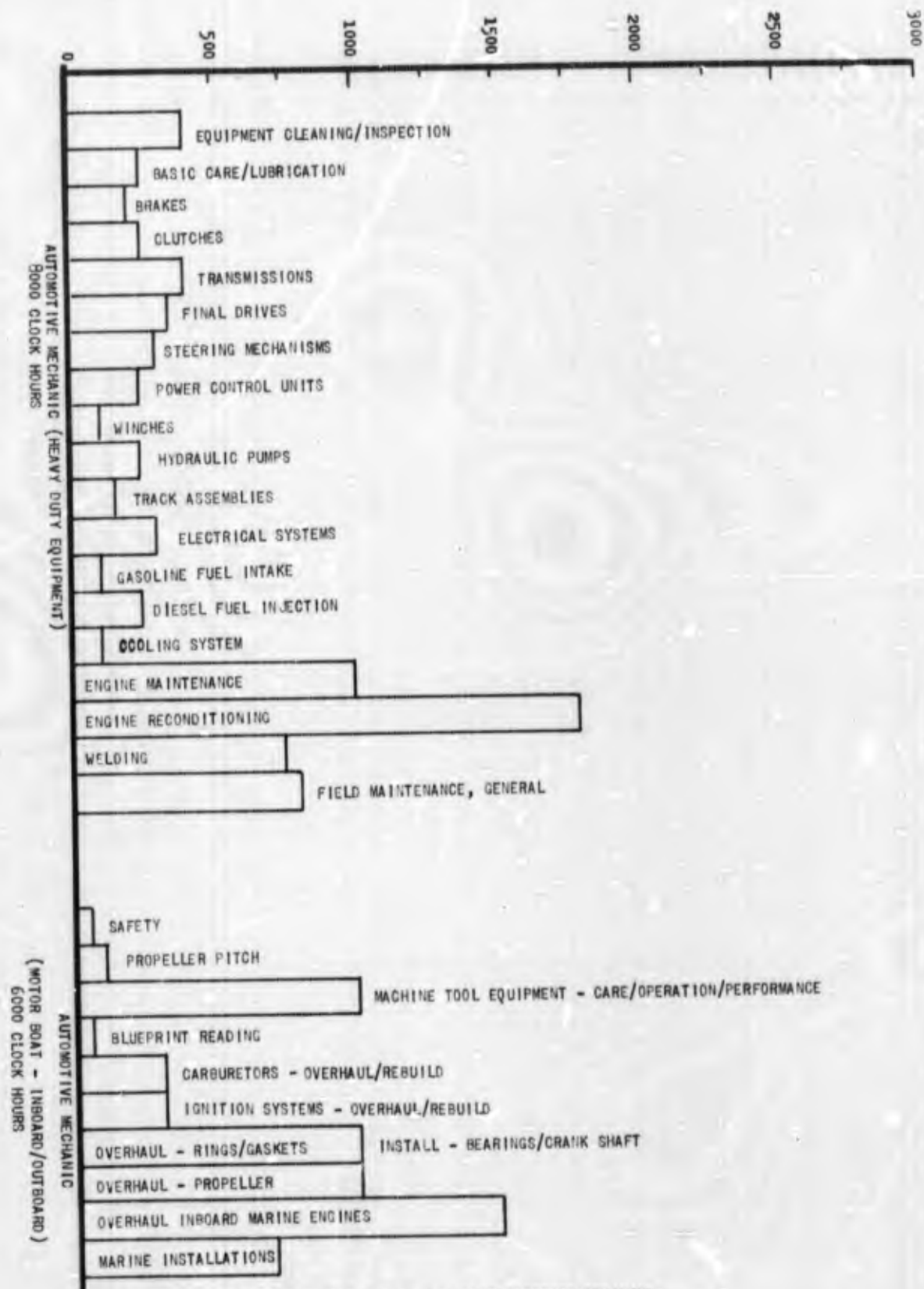
H-29

CLOCK HOURS



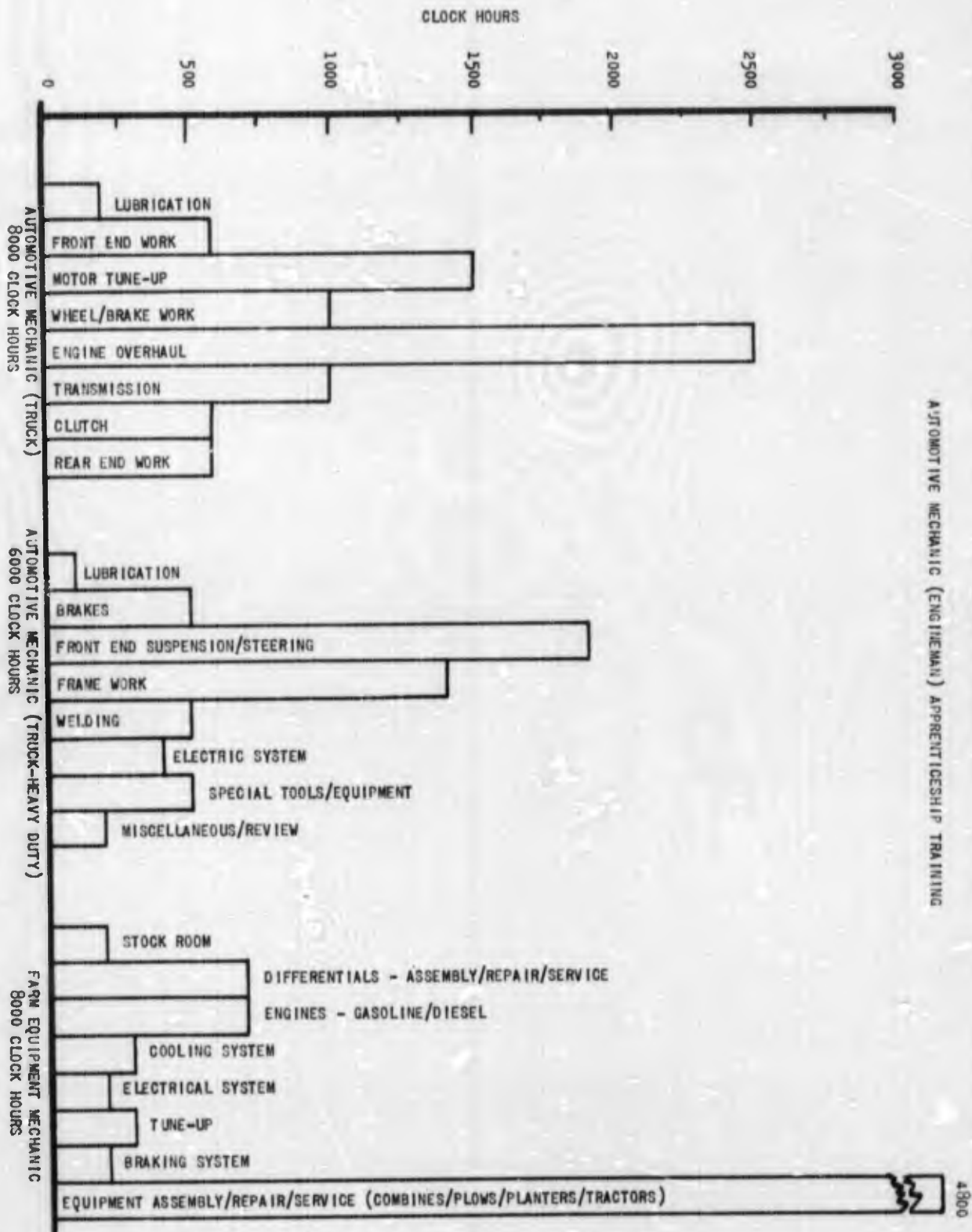
NOTE: 2000 CLOCK HOURS EQUALS 1 YEAR OF APPRENTICESHIP TRAINING.

CLOCK HOURS

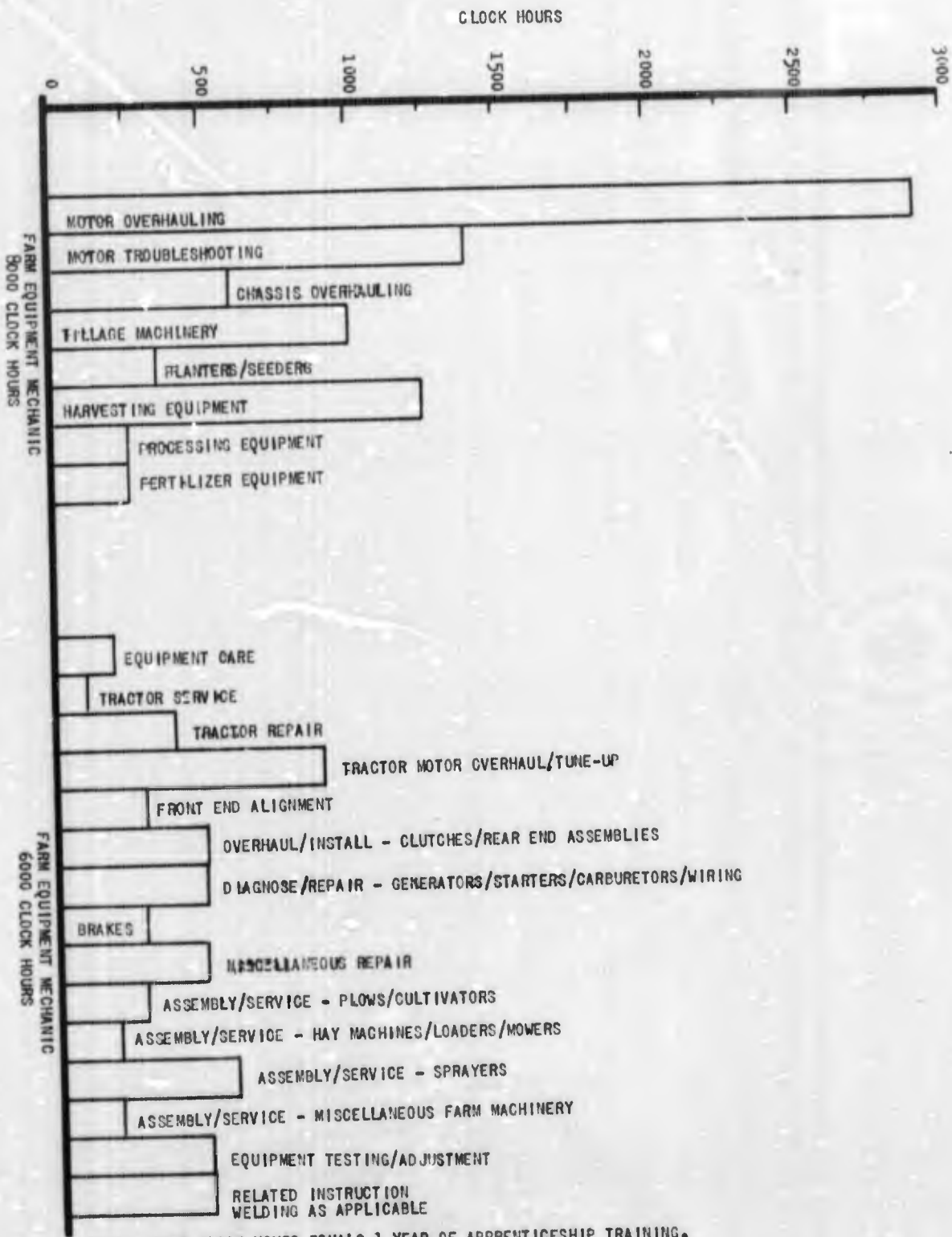


NOTE: 2000 CLOCK HOURS EQUALS 1 YEAR OF APPRENTICESHIP TRAINING.

AUTOMOTIVE MECHANIC (ENGINE/HEAVY DUTY EQUIPMENT) APPRENTICESHIP TRAINING



NOTE: 2000 CLOCK HOURS EQUALS 1 YEAR OF APPRENTICESHIP TRAINING.



AUTOMOTIVE MECHANIC (ENGINEERMAN) APPRENTICESHIP TRAINING

AUTOMOTIVE MECHANIC (ENGINEMAN)
OCCUPATIONAL APPRENTICESHIP TRAINING
U. S. DEPARTMENT OF LABOR APPRENTICESHIP SCHEDULES

Automotive Mechanic (Automobile Mechanic) - 8000 Clock Hours*

Components

- 800 Hours - Chassis and Spring
- 1000 Hours - Front Axle and Steering
- 1000 Hours - Rear Wheel and Axle Assembly
- 1000 Hours - Transmission and Clutch
- 2000 Hours - Motor
- 600 Hours - Brakes
- 1600 Hours - Tune-Up (Carburetion/Ignition/Cooling/Fuel Pump/
Air Conditioning)
- Unspec. - Review/Miscellaneous (Not to exceed 25% of Hours per Quarter)

Automotive Mechanic (Automobile Mechanic) - 8000 Clock Hours

Components

- 100 Hours - Tools/Equipment - Use/Care
- 600 Hours - Brakes
- 750 Hours - Steering/Front Suspension
- 650 Hours - Drive Shaft/Rear Axle/Rear Suspension
- 350 Hours - Clutch
- 500 Hours - Transmission (Conventional)
- 1200 Hours - Transmission (Automatic)
- 1550 Hours - Engine
- 1650 Hours - Tune-Up/Electrical Adjustments
- 350 Hours - Accessory Equipment - Installation/Maintenance
- 300 Hours - Miscellaneous

Automotive Mechanic (Bus Mechanic) - 8000 Clock Hours

Components

- 300 Hours - Lubrication
- 700 Hours - Front End/Steering
- 700 Hours - Rear Axle
- 700 Hours - Brakes
- 1550 Hours - Motor Repair/Overhaul/Install
- 400 Hours - Cooling System
- 700 Hours - Carburetion
- 600 Hours - Electrical System
- 400 Hours - Engine Tune-Up/Troubleshooting
- 500 Hours - Clutch/Transmission

*2000 Clock Hours is equal to 1 Year of Apprenticeship Training

- 350 Hours - Bench Work - Valve Refacer/Lathes/Drills/Presses/Grinders
- 400 Hours - Frame/Axle Straightening
- 400 Hours - Fuel System
- 200 Hours - Propeller Shaft/Related Units
- 100 Hours - Wheels

Automotive Mechanic (Heavy Duty Equipment Mechanic) - 8000 Clock Hours

Components

- 400 Hours - Equipment Cleaning/Inspection
- 250 Hours - Basic Care/Lubrication
- 200 Hours - Brakes
- 250 Hours - Clutches
- 400 Hours - Transmissions
- 350 Hours - Final Drives
- 300 Hours - Steering Mechanisms
- 250 Hours - Power Control Units
- 100 Hours - Winches
- 2250 Hours - Hydraulic Pumps
- 150 Hours - Track Assemblies
- 300 Hours - Electrical Systems
- 100 Hours - Gasoline Fuel Intake
- 250 Hours - Diesel Fuel Injection
- 100 Hours - Cooling System
- 1000 Hours - Engine Maintenance
- 1800 Hours - Engine Reconditioning
- 750 Hours - Welding
- 800 Hours - Field Maintenance, General

Automotive Mechanic (Motor Boat Mechanic, Inboard and Outboard - 6000 Clock Hours)

Components

- 50 Hours - Safety
- 100 Hours - Propeller Pitch
- 1000 Hours - Machine Tool Equipment - Care/Operation/Performance
(Drill Press/Grinder/Layout/Bench and Vise)
- 50 Hours - Blueprint Reading
- 300 Hours - Carburetors - Overhaul/Rebuild
- 300 Hours - Ignition Systems - Overhaul/Rebuild
- 1000 Hours - Overhaul Power Head, Rings, Gaskets/Clean Water Jackets/
Install Freeze Plugs/Main Bearings/Crank Shaft
- 1000 Hours - Overhaul - Lower Unit/Propeller/Shaft
- 1500 Hours - Overhaul Inboard Marine Engines
- 700 Hours - Marine Installations

Automotive Mechanic (Truck Mechanic) - 8000 Clock Hours

Components

- 200 Hours - Lubrication
- 600 Hours - Front End Work
- 1500 Hours - Motor Tune-Up
- 1000 Hours - Wheel/Brake Work
- 2500 Hours - Engine Overhaul
- 1000 Hours - Transmission
- 600 Hours - Clutch
- 600 Hours - Rear End Work

Automotive Mechanic (Truck Mechanic, Heavy Duty) - 6000 Clock Hours

Components

- 100 Hours - Lubrication
- 1000 Hours - Brakes
- 1900 Hours - Front End Suspension/Steering
- 1400 Hours - Frame Work
- 500 Hours - Welding
- 400 Hours - Electrical System - Wire Diagram/Lighting Equipment/Signals
- 500 Hours - Special Tools/Equipment
- 200 Hours - Miscellaneous/Review

Farm Equipment Mechanic - 8000 Clock Hours

Components

- 200 Hours - Stock Room
- 700 Hours - Differentials - Assembly/Repair/Service
- 700 Hours - Engines - Gasoline/Diesel
- 300 Hours - Cooling System
- 200 Hours - Electrical System
- 300 Hours - Tune-Up
- 200 Hours - Braking System
- 4800 Hours - Equipment Assembly/Repair/Service (Combines, Thrashers, Hay Balers, Plows, Bulldozers, Cultivators, Sprayers, Planters, Tractors)

Farm Equipment Mechanic - 8000 Clock Hours

Components

Tractor Division

- 2900 Hours - Motor Overhauling
- 1400 Hours - Motor Troubleshooting
- 600 Hours - Chassis Overhauling

Field Equipment Division

1000 Hours - Tillage Machinery
350 Hours - Planters and Seeders
1250 Hours - Harvesting Equipment
250 Hours - Processing Equipment
250 Hours - Fertilizer Equipment

Farm Equipment Mechanic - 6000 Clock Hours

Components

200 Hours - Equipment Care
100 Hours - Tractor Service
400 Hours - Tractor Repair
900 Hours - Tractor Motor Overhaul/Tune-Up
300 Hours - Front End Alignment
500 Hours - Clutches/Rear End Assemblies - Overhaul/Install
496 Hours - Generators/Starters/Carburetors/Wiring - Diagnose/Repair
300 Hours - Brakes - Reline/Adjust
500 Hours - Miscellaneous Auto Repairing
300 Hours - Assembly/Service - Plows/Cultivators
200 Hours - Assembly/Service - Hay Machines/Loaders/Mowers
600 Hours - Assembly/Service - Sprayers
200 Hours - Assembly/Service - Miscellaneous Farm Machinery
500 Hours - Equipment Testing/Adjustment
504 Hours - Related Instruction
Unspec. - Welding, to be included where applicable

APPENDIX I

INSTRUMENTMAN RATING/
INSTRUMENT REPAIR SPECIALTY
COMPARATIVE
OCCUPATIONAL SPECIALTY
AND
TECHNICAL TRAINING
DATA

This Appendix contains comparative Navy and civilian occupational specialty and technical/apprenticeship training data. This information in the present format may be used by recruiters as an aid to classify lateral entry petty officer recruits.

The comparative civilian occupational specialty data have been obtained from the U. S. Department of Labor, Dictionary of Occupational Titles, and are presented according to the same numeric code sequence that is contained within that classification document. Comparable civilian occupations are listed for each specific Navy rating. Broad civilian occupational specialty categories are listed first, followed by a list of the occupations within each specialty.

The occupational titles data that are presented in each Appendix are all inclusive, but does not provide a complete list of each different occupational title within each specific occupational specialty category. Additional occupational title information may be obtained by referring to the specified numeric code listed in the Dictionary of Occupational Titles, as the need may arise.

The comparative technical training data have been obtained from the curricula of accredited private and state supported trade and technical schools, community and junior colleges, and vocational training courses at regular high schools. The comparative apprenticeship training data were obtained from U. S. Department of Labor recommended schedules. These data are distributed as equitably as possible between private and state supported schools, and with a sufficient nationwide geographic dispersal to enable as broad as possible a comparison between civilian and Navy vocational training.

The technical and apprenticeship training data are presented to afford examples of comparative Navy and civilian vocational training for each occupational specialty that comprises the functions of each given Navy rating. These data are presented for information purposes to help the recruiter in processing pre-enlistment packages and/or appropriate service record pages. The prospective petty officer recruit's training and experience background data may be compared with the training and experience requirements for a given Navy rating. Also, these same data may be compared with other appropriate civilian occupational training data to determine the prospective recruit's background and proficiency in a specific occupational specialty area. This will help to insure the proper placement of new petty officer recruits.

C

COMPARATIVE
INSTRUMENTMAN RATING/
INSTRUMENT REPAIR OCCUPATIONAL
SPECIALTIES DATA

**NAVY INSTRUMENTMAN RATING AND COUNTERPART CIVILIAN
OCCUPATIONAL SPECIALTIES**

Instrumentmen perform organizational and intermediate maintenance on mechanical instruments, office machines and navy timepieces, and implement Navy or Mechanical Instrument Repair and Calibration Shop (MIRCS) procedures.

Counterpart civilian occupational specialties to this Navy rating are skills found in Processing, Machine Trades, Bench Work and Structural Work occupations.

Similar occupations include, among others, such skills as tool maker, abrading, business and commercial machine repair, silversmith, jeweler, clock repair, measurement instrument repair, and coppersmith occupations.

The following is a list of these occupations with the appropriate D. O. T. codes (U. S. Department of Labor, Dictionary of Occupational Titles). Broad specialty categories are listed first, then a comprehensive list of occupations within each specialty follows.

- 5 Processing Occupations
- 50 Occupations in Processing of Metal
- 502 Melting, Pouring, Casting, and Related Occupations

- 6 Machine Trades Occupations
- 60 Metal Machining Occupations
- 600 Machinists and Related Occupations
- 601 Toolmakers, and Related Occupations
- 603 Abrading Occupations
- 61 Metalworking Occupations, Not Elsewhere Classified
- 619 Miscellaneous Metalworking Occupations, Not Elsewhere Classified
- 62/63 Mechanics and Machinery Repairmen
- 633 Business and Commercial Machine Repairmen

- 7 Bench Work Occupations
- 70 Occupations in Fabrication, Assembly, and Repair of Metal Products, Not Elsewhere Classified
- 700 Occupations in Fabrication, Assembly, and Repair of Jewelry, Silverware, and Related Products
- 701 Occupations in Fabrication, Assembly, and Repair of Tools, and Related Products
- 703 Occupations in Assembly and Repair of Sheetmetal Products, Not Elsewhere Classified
- 704 Engravers, Etchers and Related Occupations
- 705 Filing, Grinding, Buffing, Cleaning and Polishing Occupations, Not Elsewhere Classified

- 71 Occupations in Fabrication and Repair of Scientific and Medical Apparatus, Photographic and Optical Goods, Watches and Clocks, and Related Products
- 710 Occupations in Fabrication and Repair of Instruments for Measuring, Controlling, and Indicating Physical Characteristics
- 715 Occupations in Fabrication and Repair of Watches, Clocks, and Parts
- 716 Occupations in Fabrication and Repair of Engineering and Scientific Instruments and Equipment, Not Elsewhere Classified
- 719 Occupations in Fabrication and Repair of Scientific and Medical Apparatus, Photographic and Optical Goods, Watches and Clocks, and Related Products, Not Elsewhere Classified
- 72 Occupations in Assembly and Repair of Electrical Equipment
- 729 Occupations in Assembly and Repair of Electrical Equipment, Not Elsewhere Classified
- 74 Painting, Decorating, and Related Occupations
- 740 Painters, Brush
- 77 Occupations in Fabrication and Repair of Sand, Stone, Clay and Glass Products
- 770 Occupations in Fabrication and Repair of Jewelry, Ornaments, and Related Products
- 771 Stone Cutters and Carvers
- 777 Modelmakers, Patternmakers, Moldmakers and Related Occupations
- 779 Occupations in Fabrication and Repair of Sand, Stone, Clay, and Glass Products, Not Elsewhere Classified

- 8 Structural Work Occupations
- 86 Construction Occupations, Not Elsewhere Classified
- 862 Plumbers, Gas Fitters, Steam Fitters, and Related Occupations

- 9 Miscellaneous Occupations
- 97 Occupations in Graphic Art Work
- 970 Art Work Occupations, Brush, Spray, or Pen
- 971 Photoengraving Occupations
- 979 Occupations in Graphic Art Work, Not Elsewhere Classified

Processing Occupations

This category includes occupations concerned with refining, mixing, compounding, chemically treating, heat treating, or similarly working materials and products. Knowledge of a process and adherence to formulas or other specifications are required in some degree. Vats, stills, ovens, furnaces, mixing machines, crushers, grinders, and related equipment or machines are usually involved.

50 Occupations in Processing of Metal

This division includes occupations concerned with molding, casting, coating, conditioning, or otherwise processing metal. Foundry occupations are included in Division 51.

502 Melting, Pouring, Casting and Related Occupations

This group includes occupations concerned with heating metal to change it from a solid to a liquid state, pouring it into a mold or other receptacle and allowing or causing it to solidify.

- 502.130 Foreman, Casting and Pasting (elec equip)
- 502.381 Caster (jewelry)
Molder, Punch (aircraft mfg)
- 502.382 Fluoroscope Operator (aircraft mfg, nonfer.
metal alloys)
- 502.782 Bullet Casting Operator (ammunition)
Bullet Slug Casting Machine Operator (ammunition)
Caster (nonfer. metal alloys)
Casting Machine Operator (nonfer. metal alloys)
Casting Machine Operator Automatic (elec equip)
Centrifugal Casting Machine Operator (jewelry)
Die Casting Machine Operator (elec equip)
Shot Dropper (ammunition)
- 502.884 Blast Furnace Keeper (iron & steel)
Lead Caster (elec equip)
Mill Helper (nonfer. metal alloys)
Mold Setter (elec equip)
Needle Leader (knit goods)
Second Helper (iron & steel)
Steel Pourer (iron & steel)
Steel Pourer Helper (iron & steel)
- 502.885 Lead Slug Caster (rubber goods)
Metal Man (print & pub; type founding)
Molder, Lead Ingot (ammunition)
Wire Wheel Operator (nonfer. Metal alloys)

502.886 Casting Machine Operator Helper (elec equip)
 Furnace Helper (nonfer. metal alloys; ore dress,
 smelt & refin)
 Mixer Operator Helper, Hot Metal (iron & steel)

502.887 Blast Furnace Keeper Helper (iron & steel)
 Bottom Maker (iron & steel)
 Busher (abrasive & polish. prod)
 Hot Top Liner Helper (iron & steel)
 Laborer, Solder Making (nonfer. metal alloys)
 Scaleman (nonfer. metal alloys)

6 Machine Trades Occupations

This category includes occupations concerned with feeding, tending, operating, controlling, and setting up machines to cut, bore, mill, abrade, print and similarly work such materials as metal, paper, wood and stone. Throughout this category, the overall relationship of the worker to the machine is of prime importance. At the more complex level, the important aspects of the work included understanding machine functions, reading blueprints, making mathematical computations, and exercising judgment to attain conformance to specifications. Coordination of the eyes and hands is the most significant factor at the lower levels. Disassembly, repair, reassembly, installation, and maintenance of machines and mechanical equipment, and weaving, knitting, spinning, and similarly working textiles are included in this category.

60 Metal Machining Occupations

This division includes occupations concerned with shaping metal parts or products by removing excess from stock or objects, primarily by such means as cutting, boring, milling, abrading, and planing. Includes laying out, job setting, repairing, fitting, and assembly. The machining of plastics is also included when the methods applied to the machining of metal are used.

600 Machinists and Related Occupations

This group includes occupations concerned with shaping metal parts by milling, turning, planing, abrading, boring, chipping, sawing, and shaving with a variety of metal working machines. Includes laying out, job setting, fitting, assembling, and repairing. Occupations primarily concerned with Machine Shop tools are included in Group 601 and machining gears in Group 602.

600.131 Machine Shop Foreman, Tool (mach shop)
 Salvage Engineer (mach mfg)

600.280 Experimental Mechanic (motor & bicycles)
Instrument Maker (any ind)
Precision Instrument and Tool Maker
Instrument Builder (inst & app)
Instrument Maker and Repairman (petrol prod)
Instrument Maker Apprentice (any ind)
Precision Mechanical Instrumentmaker Apprentice
Model Maker (firearms)
Sample Maker (elec equip)

600.380 Fixture Maker (light fix)
Set Up Man (clock & watch)
Pinion and Wheel Cutting Set Up Man (clock & watch)
Set Up Man, Plastics (fabric. plastics prod)

601 Toolmakers, and Related Occupations

This group includes occupations concerned with the entire scope of constructing, repairing, maintaining, and calibrating machine-shop tools, jigs, fixtures, instruments, and metal-forming dies.

601.280 Tap and Die Maker Technician (clock & watch)
Tool and Die Maker
Tool and Die Repairman
Horological Tool and Die Maker (clock & watch)
Tool and Die Maker Apprentice
Tool Maker
Pinion Master Form and Cutter Maker (clock & watch)
Swiss Jig Borer and Grinder Technician (clock & watch)
Tool Maker Apprentice

601.281 Inspector, Tool
Precision Inspector
Gage Controller (clock & watch)

601.380 Carbide Tool Maker (clock & watch)
Diamond Tool Maker (clock & watch)

601.381 Die Maker (jewelry)
Forcer Maker (jewelry)
Die Maker Apprentice (jewelry)
Die Polisher (wire)
Template Maker (any ind)

601.782 Knife Grinder (woodworking)
Profile Grinder Technician (clock & watch)
Tool Dresser Helper (any ind)

603

Abrading Occupations

This group includes occupations concerned with smoothing, polishing, or sharpening metal objects by the wearing away action of abrasives or machine files.

603.782

Barrel Polisher, Inside (firearms)
Buffing Machine Operator (any ind)
Buffing Machine Operator, Silverware (silverware)
Contact Lens Mold Finisher (optical goods)
Deburrer, Strip (clock & watch)
Grinder (clock & watch)

61

Metalworking Occupations, Not Elsewhere Classified

This division includes occupations, not elsewhere classified, concerned with shaping and conditioning metal by rolling, forging, extruding, drawing out, punching, blanking, and press working.

619

Miscellaneous Metalworking Occupations, Not Elsewhere Classified

This group includes occupations, not elsewhere classified, concerned with shaping and conditioning metal by such means as rolling, forging, extruding, blanking, and pressworking.

619.130

Coil Winding Foreman (electronics)
Coin Machine Foreman (coin mach)
Foreman, Assembly Department (struct. & ornam. metalwork)
Foreman, Cold Rolling (iron & steel)
Foreman, Continuous Weld Pipe Mill (iron & steel)
Foreman, Hot Wound Spring Production (spring)
Foreman, Line (any ind)
Foreman, Pipe Finishing (iron & steel)
Foreman, Punch and Assembly Department (elec equip)
Foreman, Set Up Man (any ind)
Foreman, Wire Rope Fabrication (wirework)
Head Welder, Electric Weld Pipe Mill (iron & steel)
Hydraulic Pressure Auto Frettage Machine Operator
Foreman (firearms)
Machine Operator Foreman (firearms)
Structural Mill Foreman (nonfer. metal alloys)

619.131

Machining and Assembly Foreman (elec equip)
Shop Foreman (struct. & ornam. metalwork)
Shrink Pit Foreman (firearms)

- 619.132 Foreman, Finishing and Shipping (iron & steel)
Foreman, Plate Heating Rolling and Finishing
(iron & steel)
Lead Section Foreman (iron & steel)
Sheet Metal Foreman (nonfer. metal alloys)
Shell Shop Foreman (ammunition)
- 619.137 Machine Adjuster Leader (ammunition)
- 619.180 Needlemaker (needle, pin & rel prod)
Ornamental Metal Worker (fabric. metal prod, n.e.c.)
Ecclesiastical Art Metal Worker (fabric. metal prod,
n.e.c.; silverware)
Ornamental Metal Worker Apprentice (fabric. metal prod,
n.e.c.; struct. & ornam. metalwork)
Spring Manufacturing Set Up Technician (clock & watch)
- 619.380 Drivematic Machine Operator (any ind)
Grid Machine Job Setter (electronics)
Metal Fabricator (any ind)
Ornamental Metal Worker (struct. & ornam. metalwork)
Metal Fabricator Apprentice (any ind)
Multi-Operation-Forming-Machine Set Up Man (any ind)
Punch Press Set Up Man (any ind)
Die Set Up Man
Spring Repairman, Hand (auto ser)
- 619.782 Bell Spinner (musical inst)
Fishing Accessories Maker (sports equip)
Fittings Finisher (plumb. supplies)
Four Slide Machine Operator (any ind)
Spinner (jewelry)
Spinner, Hand (any ind)
Type Rolling Machine Operator (typewriters & parts)
- 619.884 Former Helper, Hand (any ind)
Ornamental Metal Worker Helper (fabric. metal prod)
- 619.885 Etcher, Machine (cut tools)
Spinning Lathe Operator, Automatic (any ind)
- 62 Mechanics and Machinery Repairmen
63

This division includes groups of occupations concerned with installing, inspecting, testing, repairing, rebuilding, and maintaining in efficient operating condition all types of engines and a wide variety of mechanical equipment designed for general or specific application in domestic, commercial, industrial, and agricultural activities. Occupations in this division typically require knowledge of the structural and functional

characteristics of specific machines or types of machines, and include such tasks as locating and drilling holes, aligning structural and moving parts, and occasionally operating machine tools to remove excess metal from semifinished or repaired parts. Occupations concerned with assembling new or rebuilt heavy machines, such as turbines and presses in the machine shop or erection shop, involving close tolerance machining and hand finishing of castings and other machine parts are included in Division 60. Occupations concerned with machine setup and adjustment only are included in groups covering operation of the same machines.

633 Business and Commercial Machine Repairmen

This group includes occupations concerned with repairing calculating, bookkeeping, addressing, duplicating, and related machines. Including both manual and electric typewriters and cash registers. Sales and service occupations are included in Group 281; and electronic data processing equipment is included in Group 722 and Group 823.

- 633.131 Office Machine Serviceman Foreman (any ind)
- 633.281 Assembly Technician (office mach)
Cash Register Serviceman (any ind)
Dictating Transcribing Machine Serviceman (any ind)
Machine Analyst (office mach)
Mail Processing Equipment Mechanic (gov ser)
Office Machine Serviceman (any ind)
Office Machine Serviceman Apprentice (any ind)
Scale Mechanic (any ind)
Statistical Machine Serviceman (any ind)

7 Bench Work Occupations

This category includes occupations concerned with the use of body members, hand tools, and bench machines to fit, grind, carve, mold, paint, sew, assemble, inspect, repair, and similarly work relatively small objects and materials, such as jewelry, phonographs, light bulbs, musical instruments, tires, footwear, pottery and garments. The work is usually performed at a set position in a mill, plant, or ship, at a bench, worktable or conveyor. The the more complex levels, workers frequently read blueprints, follow patterns, use a variety of handtools, and assume responsibility for meeting standards. Workers at the less complex levels are required to follow standardized procedures.

70 Occupations in Fabrication, Assembly, and Repair of Metal Products, Not Elsewhere Classified

This division includes occupations, not elsewhere classified, concerned with fabricating, assembling, and repairing or reconditioning products primarily made of metal, but may include parts of plastic or

Bright Cutter (jewelry)
 Chain Maker, Machine (jewelry)
 Driller (jewelry)
 Earring Maker (jewelry)
 Filer (jewelry)
 Gold Cutter (gold leaf & foil)
 Hollow Handle Knife Assembler (silverware)
 Jigsayer (jewelry)
 Lathe Hand (jewelry)
 Mesh Cutter (jewelry)
 Oxidizer (silverware)
 Preparer, Making Department (jewelry)
 Profile Saw Operator (silverware)
 Ring Stamper (jewelry)
 Silverware Assembler (silverware)
 Stretcher (jewelry)

700.827

Bench Worker, Hollow Handle (silverware)
 Boiler Out (jewelry)
 Caster Helper (jewelry)
 Charger (jewelry)
 Melter (jewelry)
 Mold Maker Helper (jewelry)
 Planisher (jewelry)
 Polisher (jewelry)
 Preparer (jewelry)
 Riveter (jewelry)
 Scraper (jewelry)

701

Occupations in Fabrication, Assembly, and Repair
 of Tools, and Related Products

This group includes occupations concerned with hand forging, straightening, tempering, sharpening, assembling, repairing, and reconditioning handtools used on wood working, metalworking, ceramics, construction, mechanics, agriculture, masonry, sheet metal jewelry, and watchmaking; setting, filing, welding, or otherwise reconditioning circular or bandsaw blades; and grinding or otherwise reconditioning twist drills, reamers, lathe bits, and other cutting tools used in power and machine tools.

701.137

Foreman, Assembly and Packing (cut tools)

701.281

Quality Control Inspector (cut tools)

701.381

Saw Filer (any ind)
 Tool Grinder (any ind)

701.684

Inspector, Open Die (cut tools)

701.687 Level Vial Curvature Gager (cut tools)
 Level Vial Inspector and Tester (cut tools)

701.781 Repairman, Handtools (cut tools)

701.884 Calibrator (cut tools)
 Level Vial Setter (cut tools)
 Saw Edge Fuser, Circular (cut tools)
 Saw Setter (stonework)
 Tool Filer (pottery & porc)
 Tool Maintenance Man (typewriters & parts)

701.887 Assembler (cut tools)
 Blade Balancer (agri edulp)
 Cold Press Loader (cut tools)
 Scissors Honer (any ind)
 Wedger, Machine (cut tools)

703 Occupations in Assembly and Repair of Sheetmetal
 Products, Not Elsewhere Classified

This group includes occupations, not elsewhere classified, concerned with laying out, cutting, shaping, and fitting ferrous or non-ferrous sheet metal to assemble or repair sheet metal parts and items. Structural sheet metal work is included in Division 80.

703.137 Assembly Foreman (tinware)

703.381 Patternmaker (stonework)

703.587 Metal Finish Inspector (any ind)

703.687 Metal Finish Inspector (furn)
 Testing Machine Operator (tinware)

703.884 Bench Shears Operator (furn)
 Cupboard Builder (furn)
 Template Cutter (cut tools)

703.887 Assorter (iron & steel)
 Pail Boiler (tinware)
 Steel Barrel Reamer (cooperage)

704 Engravers, Etchers and Related Occupations

This group includes occupations concerned with engraving or etching designs or lettering into surfact of flat or curved metal objects, using engravers' hand tools and machines or etching acids and inks. Photo-engravers and printing plate engravers are included in Division 97.

- 704.131 Engraving Foreman (engraving; jewelry)
Die Engraving Foreman (engraving)
Jewelry Engraving Foreman (engraving; jewelry)
- 704.281 Engraver, Picture (print & pub)
- 704.361 Chaser (jewelry; silverware)
Dynamic Etching Processor (aircraft mfg)
Engine Turner (jewelry)
Engraver Apprentice Decorative (engraving)
Engraver, Decorative (engraving)
Engraver, Hand (engraving)
Engraver, Hand (print & pub)
Engraver, Letter (print & pub)
Engraver, Seals (pen & pencil)
Roller Repairman (print & pub)
- 704.587 Spoilage Girl (tinware)
- 704.824 Engraver, Machine (engraving) I
Engraver, Machine (engraving) II
Engraver, Pantograph (engraving) I
Engraver, Pantograph (engraving) II
Etched Circuit Processor (electronics)
Etcher (engraving)
Silk Screen Etcher (engraving)
- 704.887 Cleaner (engraving)
Etcher, Hand (cut tools)
- 705 Filing, Grinding, Buffing, Cleaning and Polishing
Occupations, Not Elsewhere Classified
- This group includes occupations, not elsewhere classified, concerned with filing, grinding, buffing, cleaning, and polishing metal parts or objects other than by use of production machines. Tool sharpening is included in Group 701.
- 705.781 Die Barber (mach shop)
Filer, Finish (firearms)
Lapper, Hand, Tool (mach shop)
- 705.884 Bench Grinder (any ind)
Blade Groover (cut tools)
Buffer (any ind)
Buffing Machine Tender (any ind)
Filer and Sander (shaped wood; art)
Filer, Hand (cut tools; hardware)
Filer, Hand, Tool (mach shop)
Final Finisher, Forging Dies (mach shop)

Gold-Neb Grinder (pen & pencil)
Grinder (any ind)
Grinder-Chipper (any ind)
Metal Finisher (any ind)
Mold Finisher (mach shop)
Mother Repairman (phonograph)
Nib Finisher (pen & pencil)
Polisher (any ind)
Polisher and Buffer (any ind)
Polisher Apprentice (any ind)
Scraper, Hand (mach shop)
Snag Grinder (found)

705.887

Ether-Can Polisher (tinware)
Jigger (jewelry)
Laborer, Grinding & Polishing (any ind)
Metal Sander and Finisher (furn)
Packet Polisher (needle, pin. & rel. prod)

71

Occupations in Fabrication and Repair of Scientific
and Medical Apparatus, Photographic and Optical
Goods, Watches and Clocks, and Related Products

This division includes occupations concerned with assembling,
fabricating and repairing scientific, engineering, and medical equipment,
photographic and optical goods, clocks and watches, and related products,
using specialized handtools and gench-type machines.

710

Occupations in Fabrication and Repair of Instruments
for Measuring, Controlling, and Indicating
Physical Characteristics

This group includes occupations concerned with fabricating and
repairing instruments for measuring, controlling, and indicating
temperature, pressure and vacuum, fluid flow, liquid level, mechanical
motion, rotation, humidity, density, acidity or alkalinity, and
combustion, including those used to control home air-conditioning and
heating systems and as components in household appliances; dial pressure
gages; scales and balances; and apparatus for testing such physical
properties as hardness, tension, torsion, compression, and elasticity.
Instruments for measuring, recording, and controlling electrical
characteristics are included in Division 72.

710.128

Technical Instructor, Balances (bal & scales)

710.130

Machine Group and Special Assemblies Foreman
(inst & app)

710.131

Foreman, Thermostatic Controls (inst & app)
Gas Meter Repairman Foreman (light, heat & power)

Instrument Foreman (any ind)
 Instrument Mechanic Foreman (light, heat & power)
 Instrument Repairman Foreman (any ind)
 Meter and Regulator Shop Foreman (light, heat & power; petrol refin)
 Meter Repair Shop Foreman (light, heat & power)
 Meter Shop Foreman (waterworks)
 Shop Foreman (petrol production)

710.281
 Controller Adjuster (tobacco)
 Electrical Inspector (inst & app)
 Electromechanical Technician (inst & app)
 Electronic Scale Assembler and Tester (bal & scales)
 Gas Meter Prover (light, heat & power)
 Gas Meter Repairman (light, heat & power)
 Gas Meter Repairman Apprentice (light, heat & power)
 Hydrometer Calibrator (inst & app)
 Industrial Gas Serviceman (light, heat & power)
 Instrument Inspector (inst & app)
 Instrument Man (aircraft mfg; air trans)
 Instrument Mechanic (light, heat & power)
 Instrument Mechanic Apprentice (light, heat & power)
 Instrument Repairman (any ind)
 Meter Repairman (any ind)
 Taximeter Repairman (auto ser)
 Tin Case Meter Repairman (light, heat & power)
 Water Meter Repairman (waterworks)

710.381
 Assembly Tester (inst & app)
 Atomic Fuel Assembler (chem)
 Balancer, Scale (bal & scales)
 Electromechanical Inspector (inst & app)
 Electronic Assembler and Tester (bal & scales)
 Gas Meter Inspector (light, heat & power)
 Instrument Man Helper (aircraft mfg; air trans)
 Meter Mechanic (light, heat & power)
 Register Repairman (r.r.trans)
 Repairman, Gyroscope (inst & app)
 Speedometer Repairman (auto ser)

710.384
 Inspector, Mechanical and Electrical (elec equip)
 Meter Inspector (light, heat & power)
 Passer and Finisher, Clinical Thermometer (inst & app)
 Salvage Man (inst & app)

710.387
 Calibration Checker (inst & app)
 Roving Inspector (inst & app)
 Tester, Regulator (sports equip; surgical appl)

710.684 Dip and Slow Light Tester (light, heat & power)
Slow Motion Tester (light, heat & power)

710.687 Calibration Checker (inst & app)
Inspector, Etched Metal Parts (inst & app)
Speedometer Inspector (inst & app)
Thermostat Adjuster (inst & app)

710.781 Calibrator (elec equip)
Gas Governor Repairman (light, heat & power; petrol
refin; pipe lines)
Steam Meterman (light, heat & power)
Thermostat Repairman (inst & app)

710.884 Agate Setter (bal & scales)
Assembler (bal & scales)
Assembler (inst & app)
Bellows Charger (inst & app)
Calibrator (inst & app)
Channel Tester (light, heat & power)
Filler (inst & app)
Frequency Meter Aliner (electronics)
Gage Calibrator (inst & app)
Gas Governor Repairman Helper (light, heat & power;
petrol refin; pipe lines)
Gas Meter Diaphragm Installer (light, heat & power)
Gas Meter Packer (light, heat & power)
Gas Meter Stripper (light, heat & power)
Graduating Machine Operator (inst & app)
Instrument Mechanic Helper (light, heat & power)
Instrument Repairman Helper (any ind)
Meter Repairman Helper (any ind)
Parking Meter Serviceman (gov ser)
Scroll Assembler (bal & scales)
Sealer (bal & scales)
Slide Processor (inst & app)
Speedometer Assembler (inst & app)
Speedometer Calibrator (inst & app)
Thermostat Assembler (inst & app)
Thermostat Calibrator (inst & app)
Thermostat Setter (inst & app)
Valve Assembler (inst & app)

710.887 Bellows Crimper (inst & app)
Bellows Tester (inst & app)
Dewaxer (inst & app)
Gas Meter Repairman Helper (light, heat & power)
Instrument Checker (inst & app)
Tie Up Man (bal & scales)

715

Occupations in Fabrication and Repair of Watches,
Clocks and Parts

This group includes occupations concerned with fabricating and repairing complete mechanical or electric watches and clocks, and mechanical movements used in such clock work-operated devices as timers and electric meters or recorders.

- 715.131 Casing Foreman (clock & watch)
 Damascening Foreman (clock & watch)
 Dials Foreman (clock & watch)
 Hairspring Foreman (clock & watch)
 Mainspring Foreman (clock & watch)
 Supervisor, Inspector (clock & watch)
 Tumbling and Rolling Foreman (clock & watch)
- 715.228 Instructor, Watch Assembly (clock & watch)
- 715.281 Chronometer Adjuster (clock & watch)
 Repairman (clock & watch)
 Watch Adjuster (clock & watch)
 Watchmaker (any ind)
 Watchmaker Apprentice (any ind)
- 715.381 Assemblyman (clock & watch)
 Banking Inspector (clock & watch)
 Barrel Endshake Adjuster (clock & watch)
 Barrel Inspector (clock & watch)
 Coordinate Measuring Machine Technician (clock & watch)
 Final Inspector (clock & watch)
 Hairspring Inspector (clock & watch)
 Hairspring Truer (clock & watch)
 Hairspring Vibrator (clock & watch)
 Inspector (clock & watch)
 Inspector, Watch Parts (clock & watch)
 Timing Adjuster (clock & watch)
 Train Inspector (clock & watch)
 Watch Assembler (clock & watch)
 Watch Assembly Inspector (clock & watch)
- 715.384 Hairspring Truing Inspector (clock & watch)
 Truer (clock & watch)
- 715.387 Inspector, Watch Parts (clock & watch)
 Mechanism Inspector (clock & watch)
 Poising Inspector (clock & watch)
- 715.585 Timing Machine Operator (clock & watch)
- 715.587 Diamond Sizer and Sorter (clock & watch; jewelry)

715.684 Hairspring Inspector (clock & watch)
Wheel and Pinion Inspector (clock & watch)

715.685 Torque Tester (clock & watch)

715.687 Balance Bridge Inspector (clock & watch)
Balance Truing Inspector (clock & watch)
Case Inspector (clock & watch)
Dial Inspector (clock & watch)
Final Inspector, Movement Assembly (clock & watch)
Gager (clock & watch)
Hairspring Adjuster (clock & watch)
Inspector, Casing (clock & watch)
Inspector, Soldering (clock & watch)
Jewel Gager (clock & watch)
Jewel Inspector (clock & watch)
Motion Inspector (clock & watch)
Screw Inspector (clock & watch)
Transfer Inspector (clock & watch)

715.781 Banking Adjuster (clock & watch)
Barrel Assembler (clock & watch)
Barrel Bridge Assembler (clock & watch)
Chronometer Assembler (clock & watch)
Chronometer Balance and Hairspring Assembler
(clock & watch)
Damascener (clock & watch)
Dial Maker (clock & watch)
Hairspring Assembler (clock & watch)
Pallet Stone Inserter (clock & watch)
Pallet Stone Positioner (clock & watch)
Pearler (clock & watch)
Polisher (clock & watch)
Polisher, Gold Wheel (clock & watch)
Rayer (clock & watch)
Screwhead Polisher (clock & watch)
Tooth Polisher (clock & watch)
Trainer (clock & watch)
Underturner (clock & watch)

715.884 Balance Assembler (clock & watch)
Balance Bridge Assembler (clock & watch)
Balance Truer (clock & watch)
Barrel Finisher (clock & watch)
Bench Hand (clock & watch)
Beveler (clock & watch)
Blocker (clock & watch)
Brusher (clock & watch)
Burnisher, Balance Wheel Arm (clock & watch)
Burrer (clock & watch)

Canon Pinion Adjuster (clock & watch)
Cap Jewel Plate Assembler (clock & watch)
Casker (clock & watch)
Collet Driller (clock & watch)
Colleter (clock & watch)
Countersinker (clock & watch)
Crown Attacher (clock & watch)
Crown Wheel Assembler (clock & watch)
Crystal Cutter (clock & watch)
Cutter, V-Groove (clock & watch)
Deburrer (clock & watch)
Dialer (clock & watch)
Dial Refinisher (clock & watch)
Dial Screw Assembler (clock & watch)
Driller and Broacher (clock & watch)
End Polisher (clock & watch)
Finer (clock & watch)
Grinder (clock & watch)
Hand Filer, Balance Wheel (clock & watch)
Hands Assembler (clock & watch)
Jewel Grinder (clock & watch)
Jewel Hole Cornerer (clock & watch)
Jewel Hole Driller (clock & watch)
Lacquerer (clock & watch)
Mainspring Winder (clock & watch)
Mainspring Winder and Oiler (clock & watch)
Mechanism Assembler (clock & watch)
Oiler (clock & watch)
Overcoiler (clock & watch)
Overcoil Stepper (clock & watch)
Pallet Assembler (clock & watch)
Pallet Rectifier (clock & watch)
Pallet Stone Grinder (clock & watch)
Pearler (clock & watch)
Pin Inserter, Regulator (clock & watch)
Pinion Polisher (clock & watch)
Pivoter (clock & watch)
Pointer Machine Operator (clock & watch)
Poiser, Balance (clock & watch)
Polisher, Balance Screwhead (clock & watch)
Polisher, Numeral (clock & watch)
Polisher, Screwhead Sides (clock & watch)
Press Operator, Pierce and Shave (clock & watch)
Profiler, Hand (clock & watch)
Put In Beat Adjuster (clock & watch)
Reamer, Center Hole (clock & watch)
Rough Opener, Jewel Hole (clock & watch)
Screwmaker, Hand Lathe (clock & watch)
Set Staff Fitter
Solderer (clock & watch)

Staker (clock & watch)
Stoner (clock & watch)
Surfacer (clock & watch)
Tapper (clock & watch)
Tapper, Balance Wheel Screw Hole (clock & watch)
Transferrer (clock & watch)
Tubing Machine Operator (clock & watch)

715.887

Assembler, Filling (clock & watch)
Band Attacher (clock & watch)
Barrel Cap Setter (clock & watch)
Clock Assembler (clock & watch)
Crystal Attacher (clock & watch)
Dial Brusher (clock & watch)
Dial Paster (clock & watch)
Dial Racker (clock & watch)
Dogger (clock & watch)
Dustproof Assembler (clock & watch)
Felt Assembler (clock & watch)
Fill Loader (clock & watch)
Foot Straightener (clock & watch)
Hairspring Cutter (clock & watch)
Hammer Adjuster (clock & watch)
Jewel Setting Stringer (clock & watch)
Jewel Stringer (clock & watch)
Mainspring Barrel Assembly Cleaner (clock & watch)
Mainspring Former, Arbor End (clock & watch)
Mainspring Former, (Brace End (clock & watch)
Masker (clock & watch)
Painter Pointer (clock & watch)
Pointer Dipper (clock & watch)
Pointer Mounter (clock & watch)
Scratch Brusher (clock & watch)
Set Key Driver (clock & watch)
Sifter (clock & watch)
Spring Layer (clock & watch)
Studder, Hairspring (clock & watch)
Take Off Operator (clock & watch)
Touch Up Girl (clock & watch)
Washer (clock & watch)
Wheel Trimmer (clock & watch)
Winder (clock & watch)
Wire Cutter, Hairspring (clock & watch)

716

Occupations in Fabrication and Repair of
Engineering and Scientific Instruments and
Equipment, Not Elsewhere Classified

This group includes occupations, not elsewhere classified, concerned with fabricating and repairing laboratory, scientific, and engineering apparatus, such as nautical, navigational, aeronautical, surveying, and

drafting instruments.

- 716.884 Electronic Sensing Equipment Assembler (inst & app)
- 719 Occupations in Fabrication and Repair of Scientific and Medical Apparatus, Photographic and Optical Goods, Watches and Clocks, and Related Products, Not Elsewhere Classified
- 719.281 Hearing Aid Repairman (any ind)
- 719.381 Instrument Maker (optical goods)
- 719.781 Tube Shrinking Machine Operator (inst & app)
- 719.884 Assembler Regulators (inst & app)
Plater (inst & app)
Sensitizer and Printer (inst & app)
- 719.887 Laborer, Production (inst & app)
Optical Element Cleaner (optical goods)
Polisher (optical goods)
- 72 Occupations in Assembly and Repair of Electrical Equipment

This division includes occupations concerned with assembling, fabricating, or repairing equipment, components, and parts for equipment to transmit, control, or convert electrical power signaling and detection equipment, and home radios, television sets, and phonographs.

- 729 Occupations in Assembly and Repair of Electrical Equipment, Not Elsewhere Classified

This group includes occupations, not elsewhere classified, concerned with assembling, fabricating, or repairing electrical equipment.

- 729.131 Inspector, Chief (elec equip)
Relay Shop Foreman (light, heat & power)
Salvage Supervisor (light, heat & power)
- 729.138 Assembly Line Foreman (any ind)
- 729.281 Audio-Video Repairman (any ind)
Electrical Instrument Repairman (any ind)
Electric Meter Repairman (light, heat & power)
Electric Tool Repairman (any ind)
Electromedical Equipment Repairman (any ind)
Inside Meterman (light, heat & power)
Instrument Maker (elec equip; electronics)

Wireman (office mach)
X-Ray Equipment Tester (any ind)

729.381 Pin Game Machine Inspector (coin mach)

729.884 Dial Marker (elec equip)
Fare Register Repairman (motor trans)

74 Painting, Decorating, and Related Occupations

This division includes occupations concerned with applying decorative or protective materials such as paint, enamel, varnish, shellac, stain or oil, to articles by brushing, spraying, wiping, or hand-dipping, including preparation of the article's surface, mixing coating ingredients, handrubbing filled or coated surfaces, and related activities.

740 Painters, Brush

This group includes occupations concerned with covering or decorating surfaces, using brushes.

740.381 Decorator (glass mfg; glass prod)
Liner (pottery & porc)
Luster Applicator (glass mfg; glass prod)

740.884 Charger (jewelry)
Decorator (button; jewelry)
Enameler (jewelry)
Retoucher (bal & scales)
Striper, Hand (motor & bicycles)
Touch Up Painter, Hand (any ind)

740.887 Button Spindler (button)
Dixonac Operator (electronics)
Painter, Brush (any ind)
Painter, Panel Edge (furn)
Stamp Filler (any ind)
Tire Finisher (rubber tire & tube)

77 Occupations in Fabrication and Repair of Sand, Stone,
Clay, and Glass Products

This division includes occupations concerned with handcraft and related activities involving specialized handtools and power tools used in cutting, grading, and polishing precious or semiprecious stones, including natural or synthetic gems, jewel bearings, and diamond wire drawing dies; cutting and polishing ornamental and structural stone; forming, decorating, and finishing porcelain, pottery, tiles, and other ceramic products; molding, shaping, and decorating artistic and laboratory glassware, pressed lenses, and other handmade glass products; and producing commercial or industrial abrasives.

770

Occupations in Fabrication and Repair of Jewelry,
Ornaments, and Related Products

This group includes occupations concerned with precious and semiprecious, natural and synthetic, ornamental and industrial stones, gems, jewel bearings, and diamond dies.

- 770.131 Jewel Foreman (clock & watch)
- 770.281 Diamond Cutter (jewelry)
Diamond Selector (jewelry)
Gem Cutter (jewelry)
Industrial Diamond Polisher (jewelry)
- 770.287 Diamond Expert (jewelry)
- 770.381 Bead Maker (jewelry)
Jewel Bearing Maker (jewelry)
Rolled Gold Plater (jewelry)
Spotter (jewelry)
- 770.781 Diamond Cleaver (jewelry)
Diamond Die Polisher (clock & watch; wire)
Diamond Driller (clock & watch; jewelry)
Finisher, Fine Diamond Dies (jewelry)
Jewel Blocker and Sawyer (clock & watch)
Lathe Operator (jewelry)
Oliving Machine Operator (clock & watch)
Phonograph Needle Tip Maker (phonograph)
Sapphire Stylus Grinder (phonograph)
- 770.884 Beveler, Endstone Cap (clock & watch)
Facer (jewelry)
Flat Surfacer, Jewel (clock & watch)
Jewel Bearing Broacher (jewelry)
Jewel Bearing Driller (jewelry)
Jewel Bearing Facer (jewelry)
Jewel Bearing Grinder (jewelry)
Jewel Bearing Polisher (jewelry)
Jewel Bearing Turner (jewelry)
Jewel Corner Brushing Machine Operator (clock & watch)
Jewel Cupping Machine Operator (clock & watch)
Jewel Grinder (clock & watch)
Turner, Machine (jewelry)
- 770.887 Artificial Pearl Maker (jewelry)
Artificial Pearl Maker Helper (jewelry)
Gager (jewelry)
Pulverizer (jewelry)
Sawyer (jewelry)

771 Stone Cutters and Carvers

This group includes occupations concerned with cutting, shaping, and finishing granite, slate, marble, and other types of stone.

771.281 Stencil Cutter (stonework)
Stone Carver (const; stonework)
Stone Carver Apprentice (const; stonework)

771.381 Stonecutter, Hand (stonework)
Stonecutter, Freestone (const)

771.884 Beveler (stonework)
Coper, Hand (stonework)
Miller, Head, Assistant, Wet Process (corn prod)
Rock Splitter (stonework)
Slate Splitter (stonework)

777 Modelmakers, Patternmakers, Moldmakers, and Related Occupations

This group includes occupations concerned with building clay or plaster models and patterns of one of a kind or mass produced products made of metallic or plaster materials; and making molds used in casting or forming such items as three dimensional maps, trophies, or jewelry.

777.381 Ear Mold Laboratory Technician (fabric. plastics prod)
Model and Mold Maker (brick & tile)
Model and Mold Maker, Plaster (conc. prod)
Patternmaker Apprentice, Plaster (aircraft mfg)
Patternmaker Plaster (aircraft mfg)
Plaster Molder (found)
Plaster Pattern Caster (aircraft mfg; mach tool & access)
Relief Map Modeler (any ind)
Sand Tester (found)

777.781 Mold Maker (jewelry)
Mold Maker (pottery & porc)

777.884 Form Maker, Plaster (fabric. plastics prod)
Mold Maker (stat. & art goods)

779 Occupations in Fabrication and Repair of Sand, Stone, Clay and Glass Products, Not Elsewhere Classified

This group includes occupations, not elsewhere classified, concerned with fabricating and repairing sand, stone, clay, and glass products.

779.131 Foreman (stat. & art goods)

- 779.281 Clay Modeler (any ind)
- 779.381 Glazier, Stained Glass (glass prod)
Repairman, Art Objects (any ind)
Tracer (const; stonework)
- 779.387 Final Inspector (mirror)
Inspector (wallboard)
- 779.687 Decorating Inspector (glass mfg)
- 779.781 Mosaic Worker (glass prod; stat. & art goods)
- 779.884 Bander, Hand (glass mfg; glass prod)
Fettler (brick & tile)
Tile Edger
Glass Lined Tank Repairman (malt liquors)
Level Vial Sealer (cut tools)
Model Maker, Terra Cotta (brick & tile)
Patternmaker (glass prod)
Pipe Finisher (brick & tile)
Plaster Maker (stat. & art goods)
Plastic Molder (model & pattern)
Second Cutter (glass mfg)
Stone Repairer (stonework)
- 779.887 Cell Assembler (plastics mat)
End Finder, Roving Department (glass mfg)
End Finder, Twisting Department (glass mfg)
Glass Bulb Silverer (glass prod)
Tape Mold Maker (plastics mat)
Waxer (glass prod)

8 Structural Work Occupations

This category includes occupations concerned with fabricating, erecting, installing, paving, painting, repairing, and similarly working structures or structural parts, such as bridges, buildings, roads, motor vehicles, cables, airplane engines, girders, plates and frames. The work generally occurs outside a factory or shop environment, except for factory production line occupations. Tools used are hand or portable power tools, and such materials as wood, metal, concrete, glass and clay are involved. Workers are frequently required to have a knowledge of the materials with which they work, e. g., stresses, strains, durability, and resistance to weather.

86 Construction Occupations, Not Elsewhere Classified

This division includes craft and noncraft occupations, not elsewhere classified, concerned with building and repairing structures.

862

Plumbers, Gas Fitters, Steam Fitters, and Related Occupations

This group includes occupations concerned with assembling and installing gas, steam, plumbing, and related fixtures, pipes, and fittings in structures, using pipe-cutting and pipe threading tools, welding equipment, and other pipe-fitting tools and equipment.

- 862.131 Foreman, Pipe Lines (petrol production)
Pipe Fitter Foreman (const)
Pipe Fitter Foreman (ship & boat bldg & rep)
Plumber Foreman (const)
- 862.132 Well Point Pumping Foreman (const)
- 862.134 Suction Dredge Pipe Line Placing Foreman (const)
- 862.138 Mains and Service Foreman (light, heat & power)
Steam Distribution Foreman (light, heat & power)
Water and Sewer Systems Foreman (waterwrks)
- 862.281 Coppersmith (ship & boat bldg & rep)
Oil Burner Installation and Serviceman (any ind)
Pipe Fitter (ship & boat bldg & rep)
- 862.287 Coating Inspector, Pipe Line (const; pipe lines)
- 862.381 Aircraft Mechanic, Plumbing and Hydraulics
(aircraft mfg)
Furnaceman (light, heat & power)
Gas Main Fitter (light, heat & power)
Industrial Gas Fitter (light, heat & power)
Pipe Fitter (const)
Airdox Man (mining & quarrying)
Freight Air Break Fitter (loco & car bldg & rep)
Instrument Fitter (const)
Maintenance Man, Sewer and Waterworks (const)
Pipe Fitter, Maintenance (any ind)
Pipe Fitter, Sprinkler Systems (const)
Pipe Fitter, Welding (const)
Pneumatic Tube Fitter (const)
Pipe Fitter Apprentice (const)
Pipe Fitter Apprentice, Sprinkler Systems (const)
Pipe Fitter, Diesel Engine (engine & turbine)
Pipe Fitter, Turbine (engine & turbine)
Steam Serviceman (light, heat & power)
Thread Inspector (petrol production)
- 862.685 Water Test Man (any ind)
- 862.687 Cooling Pipe Inspector (const)
Holiday-Detector Operator (const)

- 862.782 Pipe Cleaning and Priming Machine Operator (const)
Pipe Cleaning Machine Operator (const)
Pipe Wrapping Machine Operator (const; pipe lines)
- 862.884 Fitter (const; pipe lines)
Gas Serviceman, Helper (light, heat & power)
Hydrant and Valve Maintenance Man (waterworks)
Hydrant and Valve Setter (const)
Junction Maker (brick & tile)
Laborer, Construction or Leak Gang (light, heat & power)
Pipe Calker (const)
Pipe Fitter Helper (const)
Furnaceman, Helper (light, heat & power)
Gas Fitter Helper (const)
Pipe Fitter Helper (ship & boat bldg & rep)
Pipe Line Worker (const)
Plumber Helper (const)
Sewer Tapper (const)
Soft Water Serviceman (bus ser)
Tapping Machine Operator (const)
- 862.885 Pipe Machine Operator (const)
- 862.886 Plugman (const)
- 862.887 Back Up Man (const)
Clampman (const)
Connection Man (const)
Crankman (const)
Laborer, Pipe Line (const)
Laborer, Plumbing (const)
Oil Burner Installation and Serviceman Helper
(any ind)
Paperhanger, Pipe (const)

9 Miscellaneous Occupations

This category includes occupations concerned with transportation services; packaging and warehousing; utilities; amusement, recreation, and motion picture services; mining and logging; graphic arts; and various miscellaneous activities.

97 Occupations in Graphic Art Work

This division includes occupations concerned with handsetting text or display type; making and mounting plates of line or continuous tone illustrations; assembling hand or machine set type, plates, and spacing material to make up pages and forms; reproducing type, illustrations, pages, and forms by photoengraving, lithographic process, electrotyping, or stereotyping to make plates for printing presses; copying lettering.

lines, or designs, and retouching artwork; etching or engraving printing rollers; developing and printing film and prints; bookbinding; and related graphic arts activities.

970

Art Work Occupations

This group includes occupations concerned with copying or altering designs or lettering following layout or other directions; retouching original artwork, including photographic negatives or positives, using brush, spray, airbrush, or pen; drawing lines, such as column rules, on page layouts; and related artwork. Creating layouts and producing original art are included in Division 14.

- 970.081 Sign Writer, Hand (any ind)
- 970.281 Airbrush Artist (profess & kin)
Delineator (profess & kin)
Form Designer (print & pub)
Painter, Plate (print & pub)
Photograph Retoucher (any ind)
- 970.381 Ben-Day Artist (print & pub)
Colorist, Photography (any ind)
Engrosser (profess & kin)
Inker & Opaquer (motion pic)
Lay Out Man (signs)
Letterer (profess & kin)
Music Grapher (print & pub)
Painter, Animated Cartoons (motion pic)
Painter, Hand (any ind)
Painter, Sign (any ind)
Painter, Sign, Maintenance (r. r. trans)
Stencil Cutter (loco & car bldg & rep)
Repeat Chief (print & pub)
Retoucher, Photoengraving (print & pub)
Sketch Maker, Photoengraving (print & pub)
- 970.781 Spotter, Photographic (any ind)
- 970.884 Airbush Operator (print & pub)
Colorer (print & pub)
Painter, Airbrush (any ind)

971

Photoengraving Occupations

This group includes occupations concerned with reproducing line or continuous tone copy on metallic printing plates for use in letterpress printing, using photo-etching process; mounting and photographing copy; developing latent images on plates; and etching plates to leave raised printing surface.

- 971.281 Etcher, Hand (print & pub)
Lithographer (bal & scales)
- 971.381 Etcher Apprentice, Photoengraving (print & pub)
Photoengraver (print & pub)
Etcher, Photoengraving (print & pub)
Stripper (print & pub)
Photoengraving Apprentice (print & pub)
Photoengraving Finisher (print & pub)
Photoengraving Printer (print & pub)
Photoengraving Proofer (print & pub)
Photoengraving Proofer Apprentice (print & pub)
Screen Maker, Photographic Process (any ind)
Stripper Apprentice (print & pub)
- 971.382 Photographer, Photoengraving (print & pub)
Step and Repeat Man (print & pub)
- 971.684 Blocker (print & pub)
- 971.782 Stencil Operator, Photographic (print & pub)
- 971.884 Stager (print & pub)
- 971.885 Copyman (print & pub)
Printing-Chase Operator (electronics)
- 971.887 Etcher Helper, Hand (print & pub)
- 979 Occupations in Graphic Art Work, Not Elsewhere
Classified

This group includes occupations, not elsewhere classified, concerned with graphic arts, such as engraving, roller making, silk screen painting, and other graphic arts and related activities.

- 979.081 Printmaker (profess & kin)
- 979.130 Blueprinting and Photocopy Supervisor (any ind)
- 979.137 Finishing Room Foreman (print & pub)
- 979.138 Production Supervisor (print & pub)
Lithographic Copy Preparer (print & pub)
- 979.281 Die Maker (print & pub)
Engraver, Block (print & pub)
- 979.380 Pantograph Setter (print & pub)
- 979.381 Copy Cameraman (any ind)
Microfilm Technician (any ind)

Document Restorer (profess & kin)
 Letterer (type founding)
 Line Up Man (print & pub)
 Music Engraver (print & pub)
 Paste Up Man (print & pub)
 Paste Up Man Apprentice (print & pub)
 Siderographer (print & pub)
 Silk Screen Cutter (any ind)
 Silk Screen Maker (glass mfg)
 Stencil Maker (fiber rugs)

979.382 Photostat Operator (any ind)

979.387 Print Inspector (bus ser)

979.687 Examiner (print & pub)

979.781 Engraver (print & pub)
 Engraver, Copperplate
 Engraver, Steel Plate
 Engraver, Rubber (print & pub)
 Sketch Maker (any ind)

979.782 Blocker (print & pub)
 Blueprinting Machine Operator (any ind)
 Copyflex Machine Operator (any ind)
 Ozalid Operator (any ind)
 Clamper (print & pub)
 Engraver, Machine (print & pub)
 Pantographer (print & pub)
 Proofing Machine Operator (print & pub)
 Roller Varnisher (print & pub)
 Router (print & pub)

979.884 Engraver (print & pub)
 Globe Mounter (print & pub)
 Gold Leaf Stamper (any ind)
 Impression Man (print & pub)
 Map and Chart Mounter (print & pub)
 Screen Painter (textile)
 Silk Screen Machine Operator (pottery & porc)
 Silk Screen Printer (any ind)
 Target Face Maker (sports equip)
 Wallpaper Printer (wallpaper)

979.886 Print Shop Helper (print & pub)

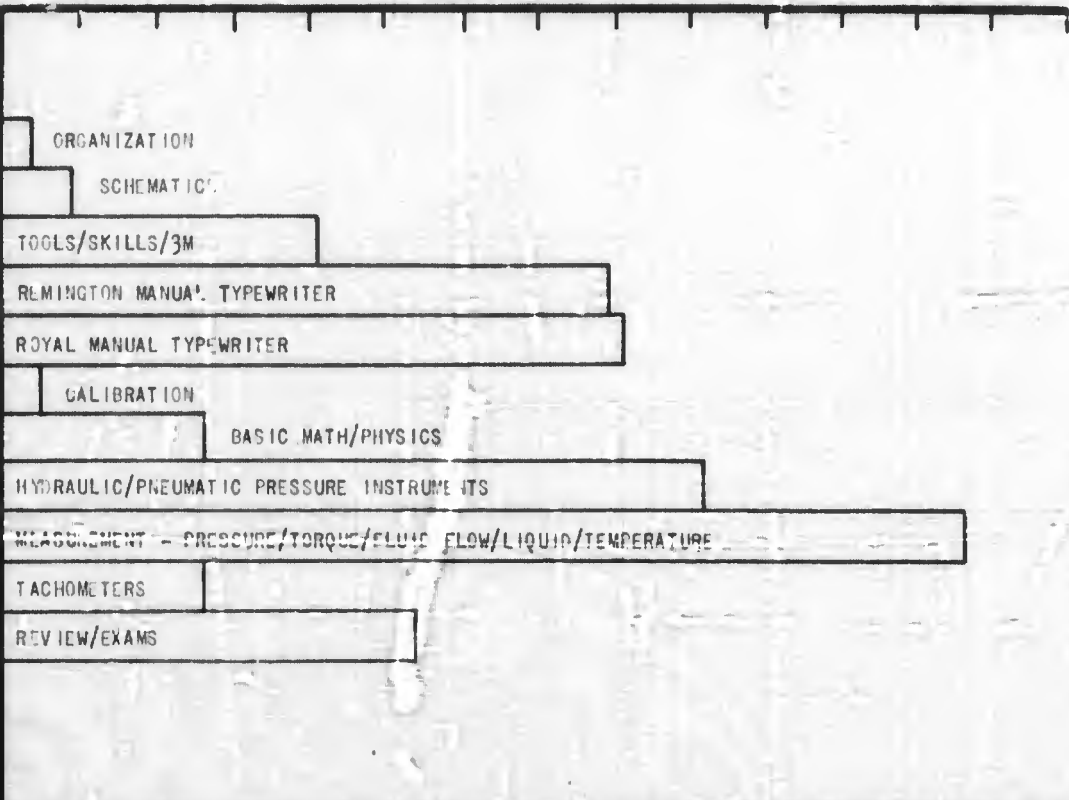
979.887 Photolith Operator (any ind)
 Photostatic Print Cutter (any ind)

COMPARATIVE
INSTRUMENTMAN RATING/
INSTRUMENT REPAIR SPECIALTY
TECHNICAL TRAINING

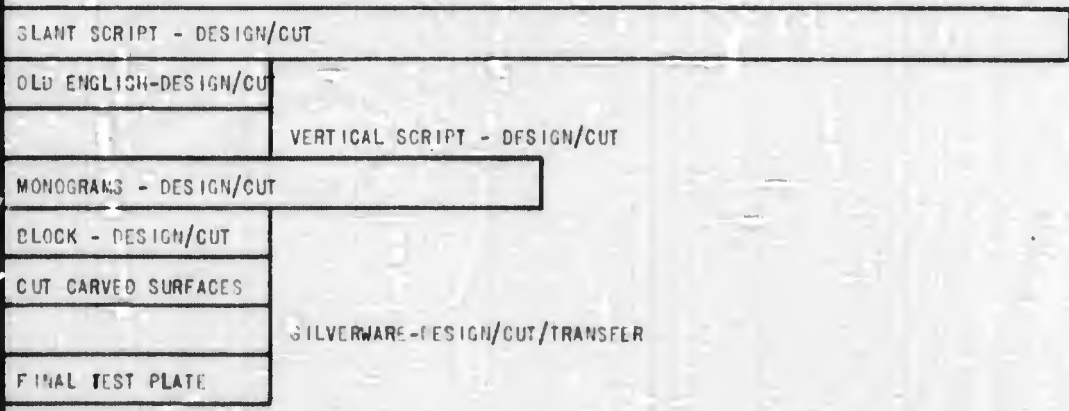
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

IM CLASS A SCHOOL
546 CLOCK HOURS

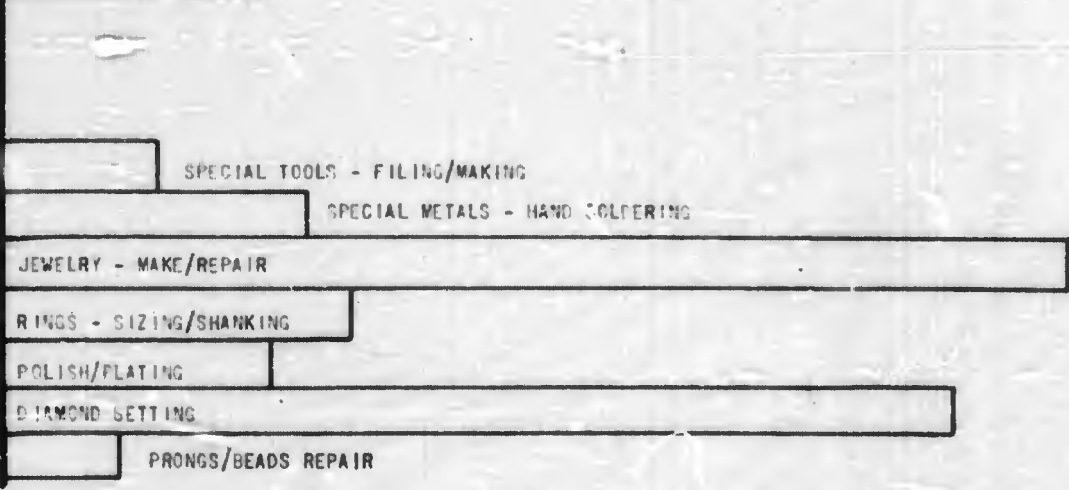
INSTRUMENT REPAIR TECHNICAL TRAINING



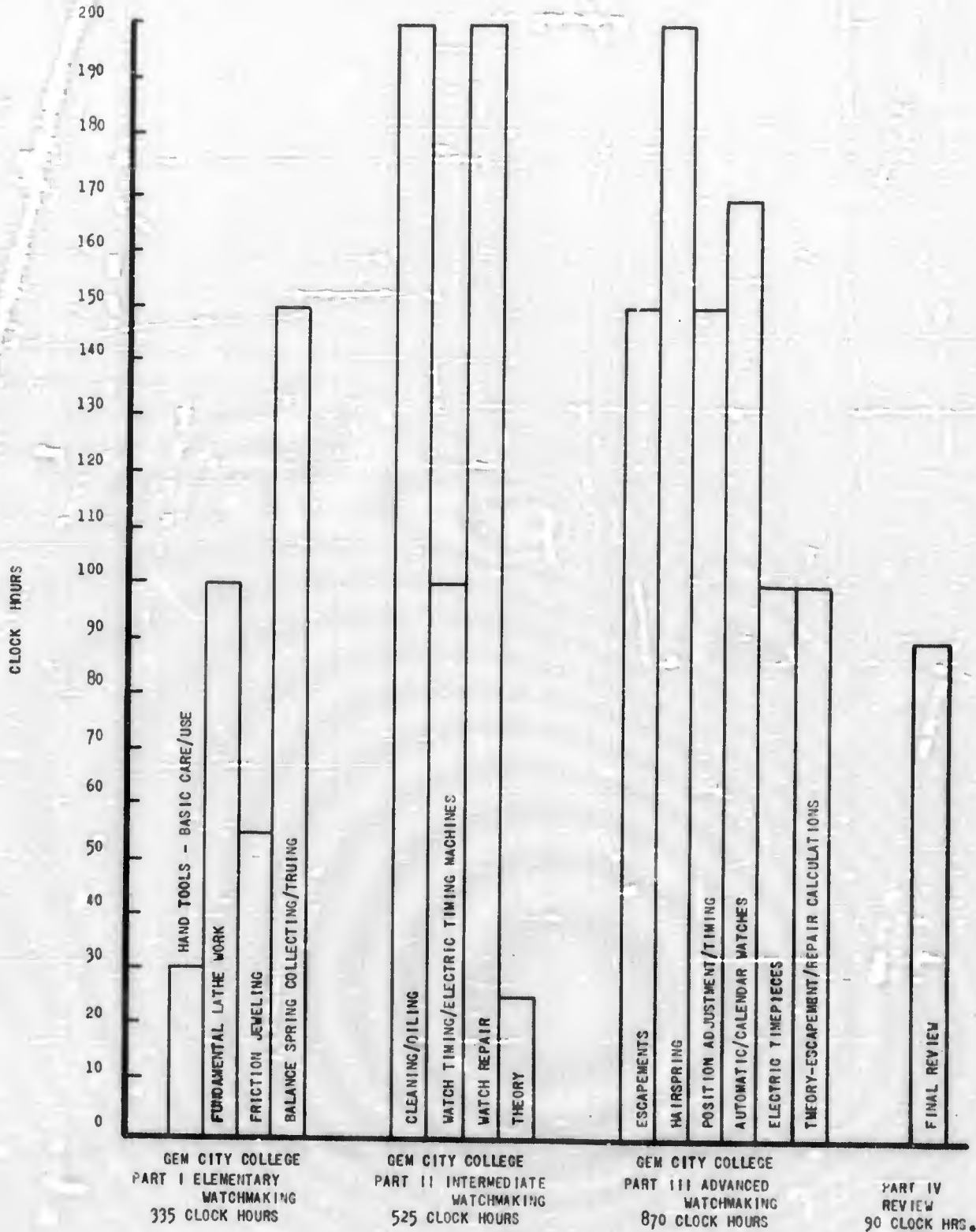
GEM CITY COLLEGE
BASIC ENGRAVING
420 CLOCK HOURS



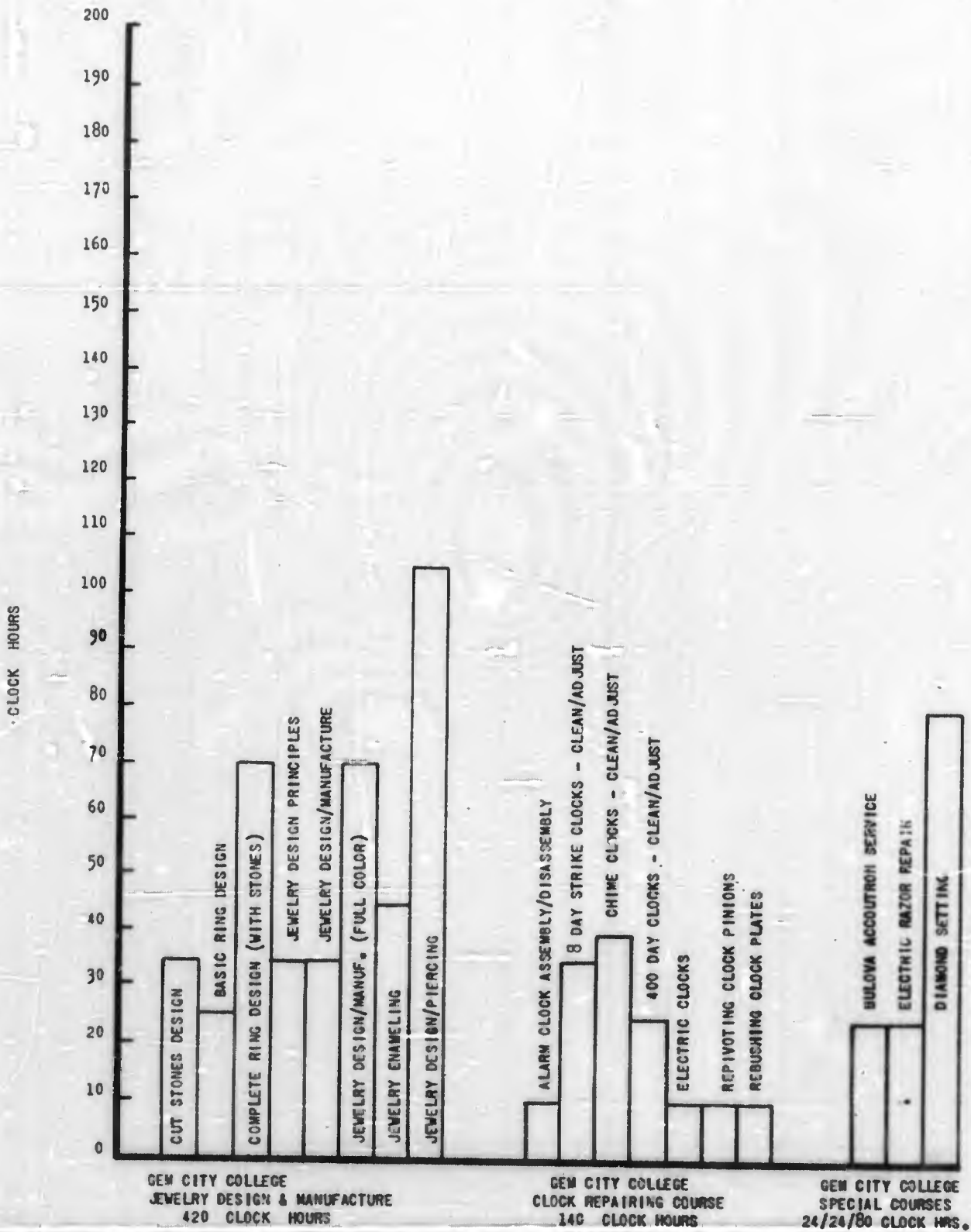
GEM CITY COLLEGE
DIAMOND SETTING
420 CLOCK HOURS



INSTRUMENT REPAIR TECHNICAL TRAINING
 WATCHMAKING & REPAIRING
 1820 CLOCK HOURS



INSTRUMENT REPAIR TECHNICAL TRAINING



INSTRUMENT REPAIR TECHNICAL TRAINING

GEM CITY COLLEGE

COMPLETE HOROLOGY

3640 CLOCK HOURS

**WATCHMAKING/REPAIRING
CLOCK REPAIRING
ENGRAVING
ADVANCED ENGRAVING
JEWELRY/DIAMOND SETTING
JEWELRY DESIGN AND MANUFACTURE**

**NOTE: THIS INCLUDES ALL INSTRUMENT REPAIR TECHNICAL TRAINING COURSES EXCEPT
FOR THE SPECIAL TRAINING COURSES.**

INSTRUMENTMAN RATING/INSTRUMENT REPAIR SPECIALTY
DURATIONS OF TRAINING COURSES AND COMPONENTS OF COURSES

Instrumentman Class A School - 17 Weeks

546 Clock Hours -227 Clock Hours Class, 319 Clock Hours Practical

Components

- 4 Hours - Organization
- 9 Hours - Schematics
- 41 Hours - Tools/Skills/3M
- 79 Hours - Remington Manual Typewriter
- 81 Hours - Royal Manual Typewriter
- 5 Hours - Calibration
- 27 Hours - Basic Math/Physics
- 92 Hours - Hydraulic/Pneumatic Pressure Instruments
- 127 Hours - Measurement - Low Pressure/Torque/Fluid Flow/Liquid Level/
Temperature
- 27 Hours - Tachometers
- 54 Hours - Review/Exams/Graduation

Gem City College, Quincy, Illinois

Engraving (Basic) (a recommended pre-requisite) - 12 Weeks

420 Clock Hours Class and Lab

Components

- 140 Hours - Slant Script - Design/Cut
- 35 Hours - Old English - Design/Cut
- 35 Hours - Vertical Script - Design/Cut
- 70 Hours - Monograms - Design/Cut
- 35 Hours - Block - Design/Cut
- 35 Hours - Cut Carved Surfaces
- 35 Hours - Silverware - Design/Cut/Transfer
- 35 Hours - Final Test Plate

Jewelry - Diamond Setting - 12 Weeks

420 Clock Hours - Class and Lab

Components

- 20 Hours - Special Tools- Filing/Making
- 40 Hours - Special Metals - Hand Soldering
- 140 Hours - Jewelry - Make/Repair

- 45 Hours - Rings - Sizing/Shanking
- 35 Hours - Polishing/Plating
- 125 Hours - Diamond Setting
- 15 Hours - Prongs/Bead Repair

Jewelry Design and Manufacture - 12 Weeks

420 Clock Hours Class and Lab

Components

- 35 Hours - Cut Stones Design
- 25 Hours - Basic Ring Design
- 70 Hours - Complete Ring (with Stones) Design
- 35 Hours - Jewelry Design Principles
- 35 Hours - Jewelry Design/Manufacture
- 70 Hours - Jewelry Design/Manufacture (Full Color)
- 45 Hours - Jewelry Enameling
- 105 Hours - Jewelry Design/Piercing

Watchmaking and Repairing Course - 52 Weeks

1820 Clock Hours Class and Lab

Components

Part I - Elementary Watchmaking

- 30 Hours - Hand Tools - Basic Care/Use
- 100 Hours - Fundamental Lathe Work
- 55 Hours - Friction Jeweling
- 150 Hours - Balance Spring Collecting/Truing

Part II - Intermediate Watchmaking

- 200 Hours - Cleaning/Oiling
- 100 Hours - Watch Timing/Electric Timing Machines
- 200 Hours - Watch Repair
- 25 Hours - Theory

Part III- Advanced Watchmaking

- 150 Hours - Escapements
- 200 Hours - Hairspring
- 150 Hours - Position Adjustment/Timing
- 170 Hours - Automatic/Calendar Watches
- 100 Hours - Electric Timepieces
- 100 Hours - Theory Escapement/Repair Calculations

Part IV - Review

- 90 Hours - Final Review

Clock Repairing Course - 4 Weeks

140 Clock Hours - Class and Lab

Components

- 10 Hours - Alarm Clock Assembly/Disassembly
- 35 Hours - 8 Day Strike Clocks - Clean/Adjust
- 40 Hours - Chime Clocks - Clean/Adjust
- 25 Hours - 400 Day Clocks - Clean/Adjust
- 10 Hours - Electric Clocks
- 10 Hours - Repivoting Clock Pinions
- 10 Hours - Rebushing Clock Plates

Special Courses

24 Hours - Bulova Accoutron Service

24 Hours - Electric Razor Repair

80 Hours - Diamond Setting

Complete Horology - 104 Weeks

3640 Clock Hours - Class and Lab

Components

- 1820 Hours - Watchmaking/Repairing
- 140 Hours - Clock Repairing
- 420 Hours - Engraving
- 420 Hours - Advanced Engraving
- 420 Hours - Jewelry/Diamond Setting
- 420 Hours - Jewelry Design and Manufacture

NOTE: Other comparative civilian occupational specialty training occurs at the factories of each specific manufacturer, e. g., typewriters and other office machines, gauges and other measurement instruments, precision and fine products such as silverware, and watches and clocks.

APPENDIX J

MACHINERY REPAIRMAN RATING/
MACHINERY REPAIR SPECIALTY
COMPARATIVE
OCCUPATIONAL SPECIALTY
AND
TECHNICAL/APPRENTICESHIP TRAINING
DATA

This Appendix contains comparative Navy and civilian occupational specialty and technical/apprenticeship training data. This information in the present format may be used by recruiters as an aid to classify lateral entry petty officer recruits.

The comparative civilian occupational specialty data have been obtained from the U. S. Department of Labor, Dictionary of Occupational Titles, and are presented according to the same numeric code sequence that is contained within that classification document. Comparable civilian occupational specialty categories are listed first, followed by a list of the occupations within each specialty.

The occupational titles data that are presented in each Appendix are all inclusive, but does not provide a complete list of each different occupational title within each specific occupational specialty category. Additional occupational title information may be obtained by referring to the specified numeric code listed in the Dictionary of Occupational Titles, as the need may arise.

The comparative technical training data have been obtained from the curricula of accredited private and state supported trade and technical schools, community and junior colleges, and vocational training courses at regular high schools. The comparative apprenticeship training data were obtained from U. S. Department of Labor recommended schedules. These data are distributed as equitably as possible between private and state supported schools, and with a sufficient nationwide geographic dispersal to enable as broad as possible a comparison between civilian and Navy vocational training.

The technical and apprenticeship training data are presented to afford examples of comparative Navy and civilian vocational training for each occupational specialty that comprises the functions of each given Navy rating. These data are presented for information purposes to help the recruiter in processing pre-enlistment packages and/or appropriate service record pages. The prospective petty officer recruit's training and experience background data may be compared with the training and experience requirements for a given Navy rating. Also, these same data may be compared with other appropriate civilian occupational training data to determine the prospective recruit's background and proficiency in a specific occupational specialty area. This will help to insure the proper placement of new petty officer recruits.

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COMPARATIVE
MACHINERY REPAIRMAN RATING/
MACHINERY REPAIR
OCCUPATIONAL SPECIALTIES
DATA

NAVY MACHINERY REPAIRMAN RATING AND COUNTERPART CIVILIAN
OCCUPATIONAL SPECIALTIES

Navy Machinery Repairman rating personnel operate machine tools to make new and/or replacement parts for machinery and mechanical assemblies and to restore used or damaged parts to serviceable status; maintain machine shop drawing files; maintain stock of tools and expendable stores; operate tool issue room; and perform organizational and intermediate maintenance on assigned equipment and in support of other ships.

Counterpart civilian occupational specialties to this Navy rating are skills found in Machine Trades Occupations.

Similar Machine Trades occupations include skills in Machinist, Toolmaker, Gear Machining, Abrading, Turning, Milling and Planing, Boring, Sawing, Metal Machining, Fabricating Machine, Forming, Miscellaneous Metal Working, Metalworking Machinery Mechanic, Textile Machinery Equipment Mechanic and Repairman, and Special Mechanic occupations.

The following is a list of these occupations, with the appropriate D.O.T. Codes (U. S. Department of Labor, Dictionary of Occupational Titles). Broad specialty categories are listed first, then a comprehensive list of occupations within each specialty follows.

- O/1 Professional, Technical and Managerial Occupations
- 00/01 Occupations in Architecture and Engineering
- 007 Mechanical Engineering Occupations

- 6 Machine Trades Occupations
- 60 Metal Machining Occupations
- 600 Machinists and Related Occupations
- 601 Toolmakers, and Related Occupations
- 602 Gear Machining Occupations
- 603 Abrading Occupations
- 604 Turning Occupations
- 605 Milling and Planing Occupations
- 606 Boring Occupations
- 607 Sawing Occupations
- 609 Metal Machining Occupations, Not Elsewhere Classified
- 61 Metalworking Occupations, Not Elsewhere Classified
- 616 Fabricating Machine Occupations
- 617 Forming Occupations, Not Elsewhere Classified
- 619 Miscellaneous Metalworking Occupations, Not Elsewhere Classified
- 62/63 Mechanics and Machinery Repairmen
- 626 Metalworking Machinery Mechanics
- 627 Printing and Publishing Mechanics and Repairmen
- 628 Textile Machinery and Equipment Mechanics and Repairmen
- 629 Special Industry Mechanics
- 630 General Industry Mechanics and Repairmen
- 632 Ordnance and Accessories Mechanics and Repairmen
- 638 Miscellaneous Occupations in Machine Installation and Repair
- 639 Mechanics and Machinery Repairmen, Not Elsewhere Classified

0/1

Professional, Technical and Managerial Occupations

This category includes occupations concerned with the theoretical or practical aspects of such fields of human endeavor as art, science, engineering, education, medicine, law, business relations, and administrative, managerial, and technical work. Most of these occupations require substantial educational preparation (usually at the university, junior college, or technical institute level).

00/01

Occupations in Architecture and Engineering

This division includes occupations concerned with the practical application of physical laws and principles of engineering and/or architecture for the development and utilization of machines, materials, instruments, structures, processes, and services. Typical specializations are research, design, construction, testing, procurement, production, operations, and sales. Also includes preparation of drawings, specifications, and cost estimates, and participation in verification tests.

007

Mechanical Engineering Occupations

This group includes occupations concerned with the application of the principles of physics and engineering for the generation, transmission, and utilization of heat and mechanical power, and for the design and production of tools and machines. Accessory techniques needed may be those used in electrical, metallurgical, and civil engineering. Typical specializations are power generation and transmission, hydraulics, instrumentation, automotive engineering, railroad equipment engineering, heating and ventilating, air conditioning, machine design, and research.

007.081

Tool Designer (profess. & kin.)
Gage Designer
Tool Engineer (profess. & kin.)
Valve Designing Engineer (profess. & kin.)

007.181

Die Designer (mach. shop)

Machine Trades Occupations

This category includes occupations concerned with feeding, tending, operating, controlling, and setting up machines to cut, bore, mill, abrade, print, and similarly work such materials as metal, paper, wood, and stone. Throughout this category, the overall relationship of the worker to the machine is of prime importance. At the more complex levels, the important aspects of the work include understanding machine functions, reading blueprints, making mathematical computations, and exercising judgment to attain conformance to specifications. Coordination of the eyes and hands is the most significant factor at the lower levels. Disassembly, repair, reassembly, installation, and maintenance of machines and mechanical equipment, and weaving, knitting, spinning, and similarly working textiles are included in this category.

60 Metal Machining Occupations

This division includes occupations concerned with shaping metal parts or products by removing excess material from stock or objects, primarily by such means as cutting, boring, milling, abrading, and planing. Includes laying out, job setting, repairing, fitting, and assembly. The machining of plastics is also included when the methods applied to the machining of metal are used.

600 Machinists and Related Occupations

This group includes occupations concerned with shaping metal parts by milling, turning, planing, abrading, boring, chipping, sawing, and shaving with a variety of metal-working machines. Includes laying out, job setting, fitting, assembling, and repairing. Occupations primarily concerned with machine shop tools are included in Group 601 and machining gears in Group 602.

- 600.131 Machine-Shop Foreman, Tool (mach. shop)
Salvage Engineer (mach. mfg.)
- 600.280 Experimental Mechanic (motor. & bicycles)
Instrument Maker (any ind.) II
Instrument-Maker-and-Repairman (petrol. production)
Machinist (mach. shop)
Machinist, Automotive (auto. ser.)
Machinist, Experimental (mach. shop)
Machinist, Ultrasonic (mach. shop)
Maintenance Machinist (any ind.)
Model Maker (firearms)
Patternmaker, Metal (found.)
Sample Maker (elec. equip.)
- 600.251 Assembler, Steam-and-Gas Turbine (engine & turbine)
Inspector, Rough Castings (found.)
Machine Builder (mach. mfg.; mach. tool & access.)

- 600.380 Fixture Maker (light. fix.)
 Job Setter (mach. shop)
 Heddle-Machine Fixer (mach. mfg.)
 Machine Set-Up Operator (mach. shop)
 Barrel Reamer-Rifler, Special (firearms)
 Special-Barrel Processor (firearms)
 Machine Try-Out Man (mach. tool & access.)
 Model Maker (inst. & app.)
- 600.381 Lay-Out Man (mach. shop)
 Propeller Lay-Out Man (aircraft mfg.)
- 600.884 Instrument-Maker Helper (any ind.)
- 601 Toolmakers, and Related Occupations
- This group includes occupations concerned with the entire scope of constructing, repairing, maintaining, and calibrating machine-shop tools, jigs, fixtures, instruments, and metalforming dies.
- 601.130 Tool-and-Die Foreman (mach. shop)
- 601.280 Die Maker, Die-Casting and Plastic Molding (mach. shop)
 Die Maker, Stamping (mach. shop)
 Die Maker, Trim (mach. shop)
 Die Maker, Wire Drawing (mach. shop)
 Diamond-Die Maker (mach. shop)
 Die Sinker (mach. shop)
 Edger Man (mach. shop)
 Die-Template Maker, Extrusion (mach. shop)
 Tool-and-Die Maker (mach. shop)
 Horological Tool-and-Die Maker (clock & watch)
 Tool-Machine Set-Up Operator (mach. shop)
 Tool Maker (mach. shop)
- 601.281 Die Maker, Bench, Stamping (mach. shop)
 Die Maker, Four-Slide Machine (mach. shop)
 Progressive-Die Maker (mach. shop)
 Die Sinker, Bench (mach. shop)
 Die-Try-Out Man, Stamping (mach. shop)
 Inspector, Gage (mach. shop)
 Inspector, Set-Up and Lay-Out Man (mach. shop)
 Inspector, Tool (mach. shop)
 Tool Maker, Bench (mach. shop)
 Gage Maker (mach. shop)
 Jig-and-Fixture Maker (mach. shop)
 Tool Repairman, Bench (mach. shop)
- 601.380 Carbide Operator (mach. shop)
 Carbide-Tool Maker (clock & watch)
 Diamond-Tool Maker (clock & watch)

601.381 Die Finisher (mach. shop)
Punch Finisher (mach. shop)
Die Maker (jewelry)
Die-Maker Apprentice (jewelry)
Die Polisher (wire)
Plastic-Fixture Builder (mach. tool & access)
Plastic Tool Maker (mach. shop)
Saw Maker (cut. tools)
Sawsmith (cut. tools)
Template Maker (any ind.)
Boilermaker Loftsmen (boilermaking; ship & boat bldg. & rep.)

601.782 Knife Grinder (woodworking)
Profile-Grinder Technician (clock & watch)
Tool Dresser (any ind.)

601.885 Tool-Dresser Helper (any ind.)

602 Gear Machining Occupations

This group includes occupations concerned with shaping metal gears by any combination of milling, turning, planing, abrading, boring, chipping, sawing, or shaving.

602.280 Gear-Cutting-Machine Set-Up Operator, Tool (mach. shop)

602.380 Gear-Cutting-Machine Set-Up Operator (mach. shop)

602.382 Gear Inspector (mach. shop)
Gear Roller (mach. shop)
Gear-Sorting-Machine Operator (mach. shop)

602.782 Gear-Generator Set-Up Operator, Spiral Bevel (mach. shop)
Straight Bevel (mach. shop)
Gear-Hobber Set-Up Operator (mach. shop)
Gear-Lapping-Machine Operator (mach. shop)
Gear-Milling-Machine Set-Up Operator (mach. shop)
Gear-Shaper Set-Up Operator (mach. shop)
Gear-Shaver Set-Up Operator (mach. shop)
Grinder, Gear (mach. shop)
Grinder Set-Up Operator, Gear, Tool (mach. shop)

602.885 Gear-Cutting-Machine Operator, Production (mach. shop)

603 Abrading Occupations

This group includes occupations concerned with smoothing, polishing, or sharpening metal objects by the wearing away action of abrasives or machine files.

603.280 Buffing-Line Set-Up Man (any ind.)
 Grinder Operator, External, Tool (mach. shop)
 Grinder Operator, Internal, Tool (mach. shop)
 Grinder Operator, Surface, Tool (mach. shop)
 Grinder Operator, Tool (mach. shop)
 Grinder Operator, Universal, Tool (mach. shop)
 Grinder Set-Up Operator, Jig (mach. shop)
 Grinder Set-Up Operator, Thread Tool (mach. shop)
 Tool-Grinder Operator (mach. shop)
 Broach Grinder (mach. shop)
 Drill Sharpener (mach. shop)
 Hob Grinder (mach. shop)

603.380 Grinder Set-Up Man (mach. shop)
 Honing-Machine Set-Up Man (mach. shop)

603.782 Barrel Polisher, Inside (firearms)
 Buffing Machine Operator (any ind.)
 Grinder (clock & watch) I
 Grinder Set-Up Operator, Centerless (mach. shop)
 Grinder Set-Up Operator, External (mach. shop)
 Grinder Set-Up Operator, Internal (mach. shop)
 Grinder Set-Up Operator, Surface (mach. shop)
 Blanchard Grinder Set-Up Operator (mach. shop)
 Honing-Machine Operator, Production (mach. shop)
 Honing-Machine Set-Up Operator (mach. shop)
 Honing-Machine Set-Up Operator, Tool (mach. shop)
 Lapping-Machine Set-Up Operator (mach. shop)
 Linter-Saw Sharpener (oils & fats)

603.882 Mirror-Finishing-Machine Operator (silverware)
 Nicking-Machine Operator (cut. tools)
 Polishing-Machine Operator (any ind.)
 Printing-Roller Polisher (print. & pub.)

603.885 Band-Reamer-Machine Operator (nonfer. metal alloys)
Bearingnizer (auto. mfg.)
 Bevel Polisher (clock & watch) I
 Bevel Polisher (clock & watch) II
 Bit Sharpener (woodworking)
 Bit-Sharpener Operator (mining & quarrying)
 Bottom Polisher (elec. equip.)
 Brush Polisher (clock & watch)
 Burhisher (clock & watch)
 Burnishing-Machine Operator (clock & watch)
 Burnishing-Press Operator (clock & watch)
 Burrer, Machine (clock & watch)
 Deburrer (needle, pin, & rel. prod.)
 Flat Polisher (clock & watch)
 Grinder Operator, Automatic (cut. tools)
 Grinder Operator, Production (mach. shop)
 Knife Filer (sugar)

603.885 Knife Glazer (silverware)
Con. Lapping-Machine Operator, Production (mach. shop)
Barrel Lapper (firearms)
Shot-Grinder Operator (ammunition)
Snailer (clock & watch)
Stoner and Polisher, Bevel Face (clock & watch)
Tool Grinder (any ind.) II
Knife and Spur Grinder (excelsior)

603.886 Metal-Tube Polisher (furn.)
Polishing-Machine-Operator Helper (any ind.)

603.887 Shear-Grinder-Operator Helper (textile)

604 Turning Occupations

This group includes occupations concerned with shaping metal by the paring or chipping action of rigid cutting tools applied to metal rotating in a lathe.

604.130 Foreman, Roll Shop (iron & steel)

604.280 Engine-Lathe Set-Up Operator, Tool (mach. shop)
Screw-Machine Set-Up Man, Multiple Spindle, Jobbing
(mach. shop)
Screw-Machine Set-Up Man, Single Spindle, Jobbing
(mach. shop)
Screw-Machine Set-Up Operator, Multiple-Spindle,
Jobbing (mach. shop)
Screw-Machine Set-Up Operator, Single Spindle,
Jobbing (mach. shop)
Turret-Lathe Set-Up Operator, Tool (mach. shop)

604.380 Chucking-Machine Set-Up Man (mach. shop)
Chucking-Machine Set-Up Operator (mach. shop)
Chucking-Machine Set-Up Operator, Multiple Spindle,
Vertical (mach. shop)
Lathe Set-Up Man (mach. shop)
Screw-Machine Set-Up Man, Production (mach. shop)
Set-Up Man, Automatic-Spinning Lathe (any ind.)
Set-Up Man, Automatic-Spinning-and-Beading-Lathe
(any ind.)
Turret-Lathe Set-Up Man (mach. shop)
Turret-Lathe Set-Up Operator (mach. shop)

604.782 Fox-Lathe Operator (clock & watch)
Profiler, Balance-Wheel Inside Diameter (clock & watch)
Screw-Machine Operator, Multiple Spindle, Jobbing
(mach. shop)
Screw-Machine Operator, Single Spindle, Jobbing
(mach. shop)

- 604.782 Screw-Machine Set-Up Operator, Production (mach. shop)
 Con. Threading-Machine Operator (mach. shop)
 Turner, Automatic Lathe (clock & watch)
- 604.885 Cup-Trimming-Machine Operator (ammunition)
 Facing-Machine Operator (clock & watch)
 Grinder, Lap (clock & watch)
 Knurling-Machine Operator (ammunition)
 Lap-Truing-Machine Operator (optical goods)
 Lathe Operator, Production (mach. shop)
 Knurling-Machine Operator (pen & pencil)
 Tapper (clock & watch) I
 Rim-Turning Finisher (clock & watch)
 Screw-Machine Operator, Production (mach. shop)
 Threading-Machine Operator (ammunition)
- 604.886 Threading-Machine Feeder, Automatic (mach. shop)
 Wire Threader (clock & watch)
- 605 Milling and Planing Occupations
- This group includes occupations concerned with removing excess
 metal by the action of a revolving multiple-tooth cutter, thus producing
 flat or profiled surfaces, grooves, and slots.
- 605.280 Profiling-Machine Set-Up Operator, Tool (mach. shop)
- 605.380 Milling-Machine Set-Up Man (mach. shop)
 Milling-Machine Set-Up Operator, Tool (mach. shop)
 Planer-Type-Milling-Machine Set-Up Operator (mach. shop)
 Rotary-Head-Milling-Machine Set-Up Operator (mach. shop)
- 605.782 Barrel-Rib Matter (firearms)
 Broaching-Machine Operator, Production (mach. shop)
 Broaching-Machine Set-Up Operator (mach. shop)
 Engraver, Tire Mold (mach. shop)
 Keyseating-Machine Set-Up Operator (mach. shop)
 Milling-Machine Set-Up Operator (mach. shop)
 Scalper Operator (nonfer. metal alloys)
 Thread-Milling-Machine Set-Up Operator (mach. shop)
 Pantograph-Machine Set-Up Operator (mach. shop)
 Planer-Set-Up Operator, Tool (mach. shop)
 Profiling-Machine Set-Up Operator (mach. shop)
 Router Operator (aircraft mfg.)
 Router Operator, Radial (aircraft mfg.)
 Shaper Set-Up Operator, Tool (mach. shop)
 Steel-Wool-Machine Operator, Automatic (abrasive & polish.
 prod.)
 Tooth Cutter, Escape Wheel (clock & watch)
 Wheel Cutter (clock & watch)

605.885 Balance Recesser (clock & watch)
Barrel Rifler (firearms)
File Cutter (cut. tools)
Hooking-Machine Operator (clock & watch)
Jewel Stripper (clock & watch)
Lever Miller (clock & watch)
Milling-Machine Operator, Production (mach. shop)
Pinion Cutter (clock & watch)
Tooth Cutter, Pinions (clock & watch)
Planing-Machine Operator (clock & watch)
Profiling-Machine Operator (clock & watch)
Scribing-Machine Operator (cut. tools)
Squaring-Machine Operator (clock & watch)
Tooth Cutter, Clutch (clock & watch)
Tooth Cutter, Spur (clock & watch)
Tooth Hobber (clock & watch)

606 Boring Occupations

This group includes occupations concerned with piercing metal by means of rotary cutting tools advanced into the material in the direction of the tool's axis to make, enlarge, or thread holes.

606.280 Boring-Machine Set-Up Operator, Jig (mach. shop)
Boring-Mill Set-Up Operator, Horizontal (mach. shop)

606.380 Drill-Press Set-Up Operator, Multiple Spindle
(mach. shop)
Drill-Press Set-Up Operator, Radial (mach. shop)
Drill-Press Set-Up Operator, Radial, Tool
(mach. shop)

606.782 Boring-Machine Operator (mach. shop)
Connecting-Rod Borer (auto. ser.)
Driller-and-Reamer, Automatic (musical inst.)
Drill-Press Operator, Production (mach. shop)
Barrel Reamer (firearms)
Reamer Operator (mach. shop)
Tapper Operator (mach. shop)
Drill-Press Operator, Tape Control (mach. shop)
Drill-Press Set-Up Operator, Single Spindle
(mach. shop)
Jig Borer, Tape Control (mach. shop)
Main-Bearing Borer (auto. ser.)
Tapper Operator (nut & bolt)

606.885 Balance-Wheel-Screw-Hole Driller (clock & watch)
Boring-Machine Operator (clock & watch)
Boring-Machine Operator, Production (mach. shop)
Chamfering-Machine Operator (ammunition) I
Chamfering-Machine Operator (ammunition) II
Choke Reamer (firearms)

606.885 Counterborer (clock & watch)
Con. Double-Reamer Operator (nonfer. metal alloys)
Drilling-Machine Operator, Automatic (clock & watch)
Reamer (clock & watch)
Tapping - Machine Operator, Automatic (clock & watch)

607 Sawing Occupations

This group includes occupations concerned with severing or shaping metal by the reciprocal or rotary cutting action of a saw-toothed or abrasive-edged blade or disk which wears out a kerf.

607.782 Cut-Off Saw Operator, Metal (mach. shop)
Do-All-Saw Operator (mach. shop)
Profile Trimmer (silverware)
Saw Operator (aircraft mfg.)

607.885 Screw Slotter (clock & watch)

607.886 Magnesium-Mill Operator (nonfer. metal alloys)

609 Metal Machining Occupations, n.e.c.

This group includes occupations, not elsewhere classified, concerned with shaping metal parts or products by removing excess material from stock or objects.

609.130 Automatics Foreman (clock & watch)
Foreman (plumb. supplies)
Jobmaster (clock & watch)
Machine-Shop Foreman, Production (mach. shop)
Press-Hand Supervisor (jewelry)
Screw Foreman (clock & watch)

609.131 Foreman, Mold Making (glass mfg.)
Foreman, Mold Shop (glass mfg.)
Inspection Foreman (mach. shop)

609.132 Slab-Conditioner Foreman (nonfer. metal alloys)

609.137 Filing-and-Polishing Foreman (fireworks)

609.280 Gunsmith, Ballistics Laboratory (ammunition)
Mechanical Technician, Laboratory (clock & watch)

609.380 Engine-Lathe Set-Up Operator (mach. shop)
Metal Sprayer, Machined Parts (any ind.)
Threading-Machine Set-Up Man (mach. shop)
Turbine-Blade Assembler (engine & turbine)

- 609.381 Inspector, Floor (mach. shop)
 Propeller Inspector (ship & boat bldg. & rep.)
 Turbine Inspector (engine & turbine)
 Turbine Subassembler (engine & turbine)
- 609.382 Inspector, Magnetic (mach. shop)
- 609.484 Inspector, Cold Working (firearms)
- 609.587 Ball Sorter (mach. mfg.)
- 609.684 Inspector, General (any ind.)
 Booster Inspector (ammunition)
 Carburetor Inspector (auto. mfg.)
 Connecting - Rod Inspector (mach. shop)
 Piston-Ring Inspector (mach. mfg.)
 Sheet-Steel Inspector (mach. shop)
 Thermostat Inspector (any ind.)
- 609.782 Automatic-Wheel-Line Operator (mach. shop)
 Balancing-Machine Operator (any ind.)
 Collet Maker (clock & watch)
 Crook Operator (musical inst.)
 Electrical-Discharge-Machine Operator, Production
 (mach. shop)
 Electrical-Discharge-Machine Set-Up Operator
 (mach. shop)
 Grinder Set-Up Operator, Thread (mach. shop)
 Machine Operator, Centrifugal-Control Switches
 (elec. equip.)
 Multi-Purpose Machine Operator, Tape Control
 (mach. shop)
 Screwmaker, Automatic (clock & watch)
 Straight-Pin Making-Machine Operator (needle, pin. &
 rel. prod.)
 Tape-Control Machine Operator (mach. shop)
- 609.884 Laborer, General (mach. shop)
- 609.885 Engraver, Automatic (clock & watch)
 Feeder, Multi-Purpose Machine (typewriters & parts)
 Milliskeener (clock & watch)
 Production-Machine Operator (mach. shop)
 Transfer-Machine Operator (mach. shop)
 Trim-Machine Operator (ammunition)
 Turret-Lathe Operator, Tumble Tailstock (clock & watch)
- 61 Metalworking Occupations, N.E.C.

This division includes occupations, not elsewhere classified, concerned with shaping and conditioning metal by rolling, forging, extruding, drawing out, punching, blanking, and press working.

This group includes occupations concerned with shaping, fitting, and assembling metal parts.

- 616.130 Foreman (nut & bolt)
Foreman, Leaf-Spring Production (spring)
Foreman, Specialty Manufacturing (iron & steel)
Foreman, Steel Division (matt. & bedspring)
- 616.280 Embossing Toolsetter (ammunition)
Spring - Coiling - Machine Set-Up Man (spring)
- 616.380 Four-Slide-Machine Set-Up Man (any ind.)
Loom Setter, Wire Weaving (wirework)
Machine Operator (any ind.) I
Sheet-Metal-Fabricating-Machine Operator (any ind.)
Multi-Operation-Forming-Machine Operator (any ind.) I
Set-Up Man (any ind.) I
Brake Set-Up Man (any ind.)
Set-Up Man, Sheet Metal (any ind.)
Spring Maker (spring) I
Welder, Pipe Making (iron & steel)
- 616.381 Spring Inspector (spring) I
- 616.484 Truer (spring)
- 616.685 Chain-Testing-Machine Operator (forging)
Load Tester (spring)
- 616.780 Body-Maker Maintenance Man (tinware)
Nail-Making-Machine Set-Up Man (nail)
Shotgun-Shell-Assembly-Machine Adjuster (ammunition)
Spade-Winding-Machine Adjuster (electronics)
Straight-Line-Press Set-Up Man (ammunition)
Trim-Machine Adjuster (ammunition)
- 616.782 Arbor-Press Operator (any ind.) I
Bearing-Press-Machine Operator (loco. & car bldg. & rep.)
Cylinder-Block-Hole Reliner (auto. ser.)
Wheel-Press Operator (loco. & car bldg. & rep.)
Track Repairman (const.) I
Bale-Tie-Machine Operator (wirework)
Barbed-Wire-Machine Operator (wirework)
Cage Maker, Machine (conc. prod.)
Crimping-Machine Operator (any ind.)
Fabric-Machine Operator (matt. & bedspring) I
Fence-Making-Machine Operator (wirework)
Kick-Press Operator (any ind.) I
Nail-Assembly-Machine Operator (nail)

- 616.782
Con. Safety-Pin-Assembling-Machine Operator (needle, pin, & rel. prod.)
Stranding-Machine Operator (elec. equip.; insulated wire; wirework)
Wire Weaver, Cloth (wirework)
- 616.885 Bench-Loom Weaver (wirework)
Bench Worker (spring)
Chain-Forming-Machine Operator (forging)
Clinching-Machine Operator (elec. equip.)
Coil Assembler, Machine (matt. & bedspring)
Fabric-Machine Operator (matt. & bedspring) II
Filament Maker (electronics)
Heddle-Machine Operator (mach. mfg.)
Metal-Sponge-Making-Machine Operator (nonfer. metal alloys)
Multi-Operation Forming-Machine Operator (any ind.) II
Body Maker (tinware)
Tubing-Mill Operator (any ind.)
Paperback-Machine Operator (wirework)
Pocket-Machine Operator (matt. & bedspring)
Riveter (light. fix.)
Riveting-Machine Operator (furn.)
Cradle-Slide Maker (furn.)
Scroll-Machine Operator (struct. & ornam. metalwork)
Side-Seam Tender (tinware)
Slat Twister (matt. & bedspring)
Spiral Spring Winder (spring)
Spring Coiler (spring)
Swager Operator (pen & pencil)
Sweep-Press Operator (clock & watch)
Tensioning-Machine Operator (conc. prod.)
Wire Corner (needle, pin, & rel. prod.)
Wire-Screen Weaver, Machine (wirework)
Spiral Weaver (wirework)
Zipper Cutter (needle, pin, & rel. prod.)
- 616.887 Stranding-Machine-Operator Helper (wirework)
Wire-Weaver Helper (wirework)
- 617 Forming Occupations, n.e.c.

This group includes occupations, not elsewhere classified, concerned with shaping metal by the application of machine pressure.

- 617.280 Press Operator, Heavy Duty (any ind.)
Bulldozer Operator (any ind.) II
Dishing-Machine Operator (any ind.)
- 617.380 Brake Operator (any ind.) I
Brake Operator, Heavy Duty (any ind.)
Brake Operator, Sheet Metal (any ind.) I

- 617.780 Set-Up Man (iron & steel; nonfer. metal alloys)
 Set-Up Man, Kick Press (button)
 Swaging-Machine Adjuster (ammunition)
- 617.782 Barrel-De-Denting-Machine Operator (malt liquors)
 Bending-Machine Operator (any ind.) I
 Bumper Operator (aircraft mfg.)
 Embossing-Machine Operator (nonfer. metal alloys)
 Forming-Roll Operator (any ind.) I
 Beading-Machine Operator (any ind.) I
 Forming-Roll Operator, Heavy Duty (any ind.)
 Hobbing-Press Operator (any ind.)
 Roll-Forming-Machine Operator (any ind.) I
 Spring Former, Machine (spring)
 Straightening-Press Operator (any ind.)
 Barrel Straightener (firearms) II
 Crankshaft Straightener (auto. mfg.)
 Gear Straightener (auto. mfg.)
 Tube Bender, Brass-Wind Instruments (musical inst.)
- 617.885 Belling-Machine Operator (iron & steel)
 Bending-Machine Operator (any ind.) II
 Corner Former (wood. box)
 Knitter, Wire Mesh (wirework)
 Knurling-Machine Operator (needle, pin, & rel. prod.)
 Nail-Making-Machine Tender (nail)
 Power-Press Tender (any ind.)
 Cork Blocker (cork prod.)
 Gasket Cutter (cork prod.)
 Punch-Press Operator (any ind.)
 Stamping-Press Operator (any ind.)
 Turning-Machine Operator (any ind.)
 Punch-Press Operator (any ind.)
 Draw-Press Operator (any ind.)
 Fin-Machine Operator (auto. mfg.)
 Forming-Press Operator (any ind.)
 Multiple-Punch-Press Operator (any ind.)
 Half-Head and Stamp-Press Operator (ammunition)
 Swager and Piercer (clock & watch)
 Trimming-Press Operator (forging)
 Ripper (furn.)
 Roll-Forming-Machine Operator (any ind.)
 Sintering-Press Operator (iron & steel)
 Swaging-Machine Operator (ammunition)
- 617.886 Hoop Coiler (cooperage)
- 619 Miscellaneous Metalworking Occupations, n.e.c.

This group includes occupations, not elsewhere classified, concerned with shaping and conditioning metal by such means as rolling, forging, extruding, blanking, and pressworking.

- 619.130 Coil-Winding Foreman (electronics)
 Coin-Machine Foreman (coin mach.)
 Foreman, Assembly Department (struct. & ornam. metalwork)
 Foreman, Cold Rolling (iron & steel)
 Foreman, Continuous-Weld-Pipe Mill (iron & steel)
 Foreman, Hot-Wound Spring Production (spring)
 Foreman, Line (any ind.)
 Foreman, Pipe Finishing (iron & steel)
 Foreman, Punch-and-Assembly Department (elec. equip.)
 Foreman, Set-Up Man (any ind.)
 Foreman, Wire-Rope Fabrication (wirework)
 Head Welder, Electric-Weld Piper Mill (iron & steel)
 Hydraulic-Pressure-Auto-Frettage-Machine-Operator Foreman
 (firearms)
 Structural-Mill Foreman (nonfer. metal alloys)
- 619.131 Machining- and-Assembly Foreman (elec. equip.)
 Shop Foreman (struct. & ornam. metalwork)
 Shrink-Pit Foreman (firearms)
- 619.132 Foreman, Finishing-and-Shipping (iron & steel)
 Foreman, Plate Heating-Rolling-and-Finishing (iron & steel)
 Lead-Section Foreman (ammunition)
 Sheet-Mill Foreman (nonfer. metal alloys)
 Shell-Shop Foreman (ammunition)
- 619.134 Foreman, Conditioning Yard (iron & steel)
- 619.137 Machine-Adjuster Leader (ammunition)
- 619.280 Needlemaker (needle, pin, & rel. prod.)
 Ornamental-Metal Worker (fabric. metal prod., n.e.c.)
 Ecclesiastical-Art-Metal Worker (fabric. metal prod.,
 n.e.c.; silverware)
 Ornamental-Metal-Worker Apprentice (fabric. metal prod.,
 n.e.c.; struct. & ornam. metalwork)
 Spring-Manufacturing Set-Up Technician (clock & watch)
- 619.281 Casting Repairman (any ind.)
 Inspector, Metal Fabricating (any ind.)
 Lay-Out Inspector (any ind.)
 Machine-Operations Inspector (any ind.)
 Template Inspector (any ind.)
- 619.330 Drivematic-Machine Operator (any ind.)
 Grid-Machine Job Setter (electronics)
 Metal Fabricator (any ind.) I
 Boilermaker (boilermaking) II
 Ornamental-Metal Worker (struct. & ornam. metalwork)
 Metal-Fabricator Apprentice (any ind.)
 Multi-Operation-Forming-Machine Set-Up Man (any ind.)
 Punch-Press Set-Up Man (any ind.)
 Spring Repairman, Hand (auto. ser.)

619.381 Former, Hand (any ind.)
Inspector (iron & steel)

619.384 Inspector (nonfer. metal alloys) I

619.387 Salvage Man (nonfer. metal alloys)

619.782 Bell Spinner (musical inst.)
Bullet-Grooving-Sizing-and-Lubricating-Machine
Operator (ammunition)
Coupling-Machine Operator (iron & steel)
Fishing-Accessories Maker (sports equip.)
Fittings Finisher (plumb. supplies)
Four-Slide-Machine Operator (any ind.) I
Heater (forging)
Hoop Bender, Tank (cooperage)
Hoop-Flaring-and-Coiling-Machine Operator
(cooperage)
Hoop Maker, Machine (cooperage)
Hydraulic-Pressure-Auto-Frettage-Machine Operator
(firearms)
Lathe Winder (spring)
Roll Operator (any ind.) I
Angle-Roll Operator (any ind.)
Flanging-Roll Operator (any ind.)
Roll Operator, Sheet Metal (any ind.)
Roll-Threader Operator (nut & bolt)
Sampler, First (ore dress, smelt., & refin.)
Seamless-Tube Roller (iron & steel)
Shrink-Pit Operator (firearms)
Spinner (jewelry)
Spinner, Hand (any ind.)
Spinner, Hydraulic (any ind.)
Stretcher-Leveler Operator (nonfer. metal alloys)
Trimmer Operator (nut & bolt)
Type-Rolling-Machine Operator (typewriters & parts)

619.884 Former Helper, Hand (any ind.)
Ornamental-Metal-Worker Helper (fabric. metal prod., n.e.c.)

619.885 Banding-Machine Operator (ammunition)
Banding-Machine Operator (furn.)
Band Maker (agric.)
Bobbin Man (glass mfg.)
Brake Operator (any ind.)
Bundling-Machine Operator (forging)
Coil-Rewind-Machine Operator (nonfer. metal alloys)
Drum Straightener (any ind.)
Embossing-Machine Operator (ammunition)
Etcher, Machine (cut. tools)
Forming-Roll Operator (any ind.)

619.885
Con. Beading-Machine Operator (any ind.)
Drum Straightener (any ind.)
Seaming-Machine Operator (tinware)
Four-Slide-Machine Operator (any ind.)
Head-Gage-Unit Operator (ammunition)
Heel-Washer-Stringing-Machine Operator (rubber goods)
Knurling-Machine Operator (nail)
Machine Operator (any ind.)
Sheet Metal Production Worker (any ind.)
Metallic-Yarn-Slitting-Machine Operator (nonfer. metal alloys)
Production-Machine Tender (nut & bolt)
Repairer, Shoe Sticks (rubber goods)
Rod-Puller and Coiler (nonfer. metal alloys)
Spinning-Lathe Operator, Automatic (any ind.)
Spool Winder (nonfer. metal alloys)
Twisting-Machine Operator (any ind.)
Twisting-Machine Operator (struct. & ornam. metalwork)
Winding-Lathe Operator (ammunition)
Winding-Machine Operator (conc. prod.)
Wire-Winding-Machine Operator (wood. box)

619.886 Automatic Stacker (tinware)
Boiler-Shop Helper (boilermaking)
Forge Helper (forging)
Hoop-Maker Helper, Machine (cooperage)
Hopper Man (ammunition)
Machine Feeder (any ind.)
Machine Feeder (elec. equip.)
Spike-Machine Heater (nail)
Stretcher-Leveler-Operator Helper (nonfer. metal alloys)

619.887 Coil Binder (nonfer. metal alloys)
Machine Helper (any ind.)
Pitch Filler (any ind.)

62/63 Mechanics and Machinery Repairmen

This division includes groups of occupations concerned with installing, inspecting, testing, repairing, rebuilding, and maintaining in efficient operating condition all types of engines and a wide variety of mechanical equipment designed for general or specific application in domestic, commercial, industrial, and agricultural activities. Occupations in this division typically require knowledge of the structural and functional characteristics of specific machines or types of machines, and include such tasks as locating and drilling holes, alining structural and moving parts, and occasionally operating machine tools to remove excess metal from semifinished or repaired parts. Occupations concerned with assembling new or rebuilt heavy machines, such as turbines and presses in the machine shop or erection shop, involving close tolerance machining and hand finishing of castings and other machine parts are included in Division 60. Occupations concerned with machine setup and adjustment only are included in groups covering operation of the same machines.

This group includes occupations concerned with repairing general purpose and specialized metal-cutting and metal-forming machines, accessories, and related equipment.

- 626.281 Forge-Shop-Machine Repairman (forging)
 Machine Repairman, Maintenance (any ind.)
 Seamer Mechanic (any ind.)
 Reform Man (can. & preserv.)
- 626.381 Gas-Welding-Equipment Mechanic (any ind.)
 Apparatus-repair mechanic
 Hydraulic-Press Serviceman (ammunition)
 Repairman Welding, Brazing-and-Burning Machines
 (welding)
 Repairman, Welding Equipment (welding)
- 626.781 Case-finishing-Machine Adjuster (ammunition)
- 626.884 Tong Repairman (nonfer. metal alloys)
 Utility Man, Merchant Mill (iron & steel)

627 Printing and Publishing Mechanics and Repairmen

This group includes occupations concerned with maintaining and repairing all types of presses, typesetting and typesetting machines, collators, and related apparatus used in job shops and commercial printing and publishing houses and book binderies, and establishments engaged in printing textiles or plastics.

- 627.281 Machine Apprentice, Composing Room (print. & pub.)
 Machinist Apprentice, Linotype (print. & pub.)
 Machinist, Linotype (print. & pub.)
 Composing-Room Machinist (print. & pub.)
 Press-Maintenance Man (print. & pub.)

628 Textile Machinery and Equipment Mechanics and Repairmen

This group includes occupations concerned with maintaining and repairing textile machinery used in the preparation of vegetable, animal or synthetic fibers; producing yarn, weaving or knitting cloth; and producing lace and embroidery, napping and otherwise finishing fabric; and performing operations such as slitting or folding preparatory to marketing.

- 628.281 Machine Fixer (fiber rugs)
 Overhauler (textile)
- 628.381 Card Clothier (textile)
- 628.684 Parts Inspector, Textile Machinery (textile)
- 628.782 Flat Clothier (textile)
 Roller Coverer (textile)
 Shear Grinder Operator (textile)

628.884 Assembler, Half Lap (textile)
Needle Setter (textile)
Needle Straightener (hosiery; knit goods)
Overhead-Cleaner Maintenance Man (textile)
Reed Man (textile)
Shuttle Fixer (textile)
Spindle Plumber (textile)
Wire Repairman (carpet and rug)

628.887 Flyer Repairman (textile)
Quill Reamer (textile)
Bobbin Reamer (textile)

629 Special Industry Mechanics

This group includes occupations concerned with repairing machines and equipment designed to perform specialized functions in the manufacture of specific products, or to perform particular functions commonly found in an industry or in a group of related industries.

629.131 Foreman, Reclamation (petrol. production)

629.132 Foreman, Bottle House Cleaner (malt liquors)

629.281 Bakery Machine Mechanic (bake prod.)
Carton Forming Machine Adjuster (tobacco)
Cellophane-Casting Machine Repairman (fabric)
Dairy Equipment Repairman (dairy prod.)
Electric Eye Sorting Machine Technician (can & preserv.)
Film Laboratory Equipment Mechanic (motion pic.)
Final Inspector, Food Packaging Equipment (mach. mfg.)
Forming Machine Adjuster (glass mfg.)
Gum Wrapping Machine Mechanic (chew. gum)
Laundry Machine Mechanic (laund.)
Machine Adjuster (tobacco)
Maintenance Man, Television Picture Tubes (electronics)
Maintenance Mechanic (grain & feed mill)
Maintenance Mechanic Record Process Equipment (phonograph)
Miller, Head, Wet Process (corn prod.)
Powder Line Repairman (explosives)
Pump Inspector (paper & pulp)

629.381 Machine Clothing Man (paper & pulp)
Oil Tool Maintenance Man (petrol. production)
Roll Grinding Inspector (rubber reclaim.)

629.780 Sizer, Machine (optical goods)

629.781 Foiling Machine Adjuster (ammunition)

629.782 Laboratory Helper (mach. mfg.)
Roll Grinder (rubber reclaim.)

629.884 Curing-Press Maintenance Man (rubber tire & tube)
Drum Repairman (tobacco)

630

General Industry Mechanics and Repairmen

This group includes occupations concerned with maintenance and repair of a variety of machines and equipment used in various combinations to perform common or specialized functions in the processing and manufacturing industries.

- 630.131 Pump-Serviceman Foreman (any ind.)
- 630.134 Anode-Crew Foreman (ore dress., smelt., & refin.)
Foreman, Cell Maintenance (ore dress., smelt., & refin.)
- 630.281 Gas-Plant Repairman (light, heat, & power)
Gas Worker (comp. & liquefied gases)
Maintenance Mechanic, Compressed-Gas Plant (comp. & liquefied gases)
Mechanical Inspector (petrol. refin.)
Oven-Equipment Repairman (coke prod.)
Pneumatic-Tool Repairman (any ind.)
Pneumatic-Tube Repairman (any ind.)
Pump Serviceman (any ind.)
Gas Worker (comp. & liquefied gases)
Gas Worker (comp. & liquefied gases)
Repairman (chem.) I
Repairman (mining & quarrying)
Repairman (ore dress., smelt., & refin.)
Rubberizing Mechanic (any ind.)
Service Mechanic, Compressed-Gas Equipment (comp. & liquefied gases)
Treatment-Plant Mechanic (waterworks)
- 630.381 Conveyor-Maintenance Man (any ind.)
Door-Closer Mechanic (any ind.)
Lead Operator (ore dress., smelt., & refin.)
Lubrication-Equipment-Maintenance Man (any ind.)
Spray-Gun Repairman (any ind.)
Valve Repairman (comp. & liquefied gases)
- 630.382 Pump Tester (mach. mfg.)
- 630.780 Polishing-Wheel Maker (abrasive & polish. prod.)
- 630.781 Fuel-System-Maintenance Man (air trans.)
- 630.782 Bench Head (engine & turbine)
- 630.884 Anode Man (ore dress., smelt., & refin.)
Beltman (any ind.)
Equipment-Cleaner-and-Tester (ore dress., smelt., & refin.)
Fixture-Maintenance Man (any ind.)

This group includes occupations concerned with repairing, modifying, and maintaining in readiness small arms, field artillery, naval weapons, fire-control apparatus, munitions and related ordnance. Occupations concerned with ordnance fabrication are covered in Groups 694 and 736. Occupations concerned with instruments are covered in Group 711. Occupations concerned with electronic equipment are covered in Groups 722 and 823.

- 632.131 Artillery-Maintenance Foreman (firearms)
- 632.281 Gunsmith (any ind.)
Ordnanceman (gov. ser.)
Aircraft Armament Mechanic (gov. ser.)
- 632.381 Inspector, Firearms (ammunition)
Inspector, Remote Control (firearms)
- 632.780 Gage and Weigh Machine Adjuster (ammunition)
Inspecting Machine Adjuster (ammunition)
Loading Machine Adjuster (ammunition)
Loading Unit Tool Setter (ammunition)
Primer Inserting Machine Adjuster (ammunition)
Primer Waterproofing Machine Adjuster (ammunition)
Rim Fire Priming Tool Setter (ammunition)
Varnishing Unit Tool Setter (ammunition)
- 632.781 Gun Synchronizer (firearms)
- 632.884 Gymnasticator Operation (firearms)
- 638 Miscellaneous Occupations in Machine
Installation and Repair

This group includes occupations which are too broad to classify on the basis of a particular machine or type of machinery.

- 638.131 Maintenance Mechanic Foreman (any ind.)
Master Mechanic, Maintenance (any ind.)
Mechanical Maintenance Man Foreman (any ind.)
Millwright Foreman (any ind.)
- 638.281 Automated Equipment Engineer Technician (mach. mfg.)
Machinery Erector (engine & turbine; mach. mfg.)
Maintenance Mechanic (any ind.) II
Maintenance Technician (profess. & kin.)
Manufacturers Service Representative (mach. mfg.,
mach-tool & access.)
Millwright (any ind.)
Maintenance Man, Gas Plant (light, heat & power)
Millwright Apprentice (any ind.)
Salvage Man (any ind.)
- 638.781 Machine Assembler (mach. shop.)

638.884 Maintenance Mechanic Helper (any ind.)
Millwright Helper (any ind.)

639 Mechanics and Machinery Repairmen

This includes occupations, not elsewhere classified concerned with inspecting, maintaining, and repairing mechanical equipment.

639.131 Foreman, Cooler Service (coin mach.)

639.251 Service Engineer (any ind.) I

639.281 Coin Machine Serviceman (bus. ser.)
Sewing Machine Repairman (any ind.)

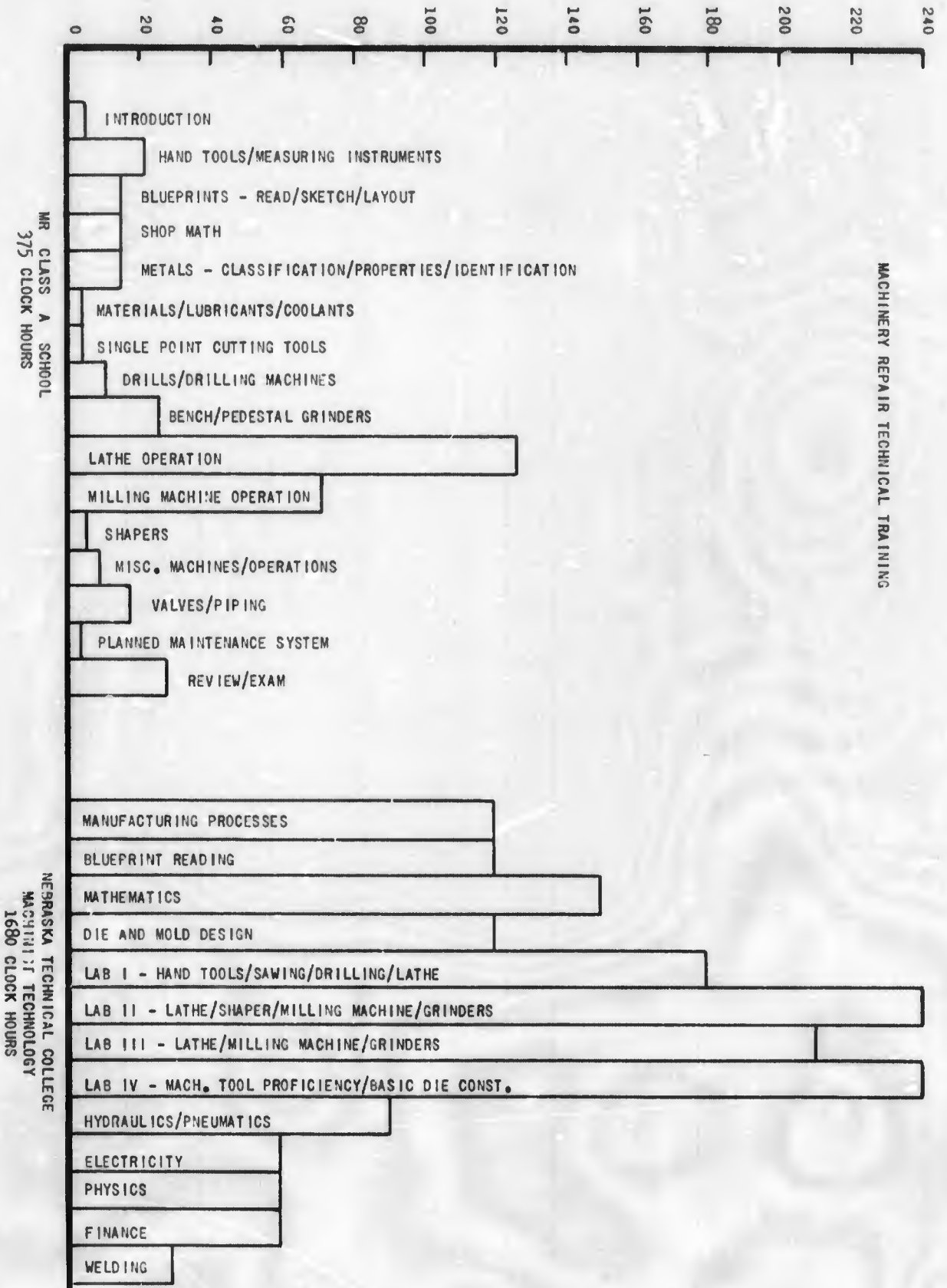
639.381 Pinsetter Adjuster, Automatic (sports equip.)
Vending Machine Repairman (bus. ser.; coin mach.)

639.781 Tool Dresser (petrol. production)

639.884 Bicycle Repairman (any ind.)
Lawn Mower Repairman (any ind.)
Sewing Machine Repairman Helper (any ind.)

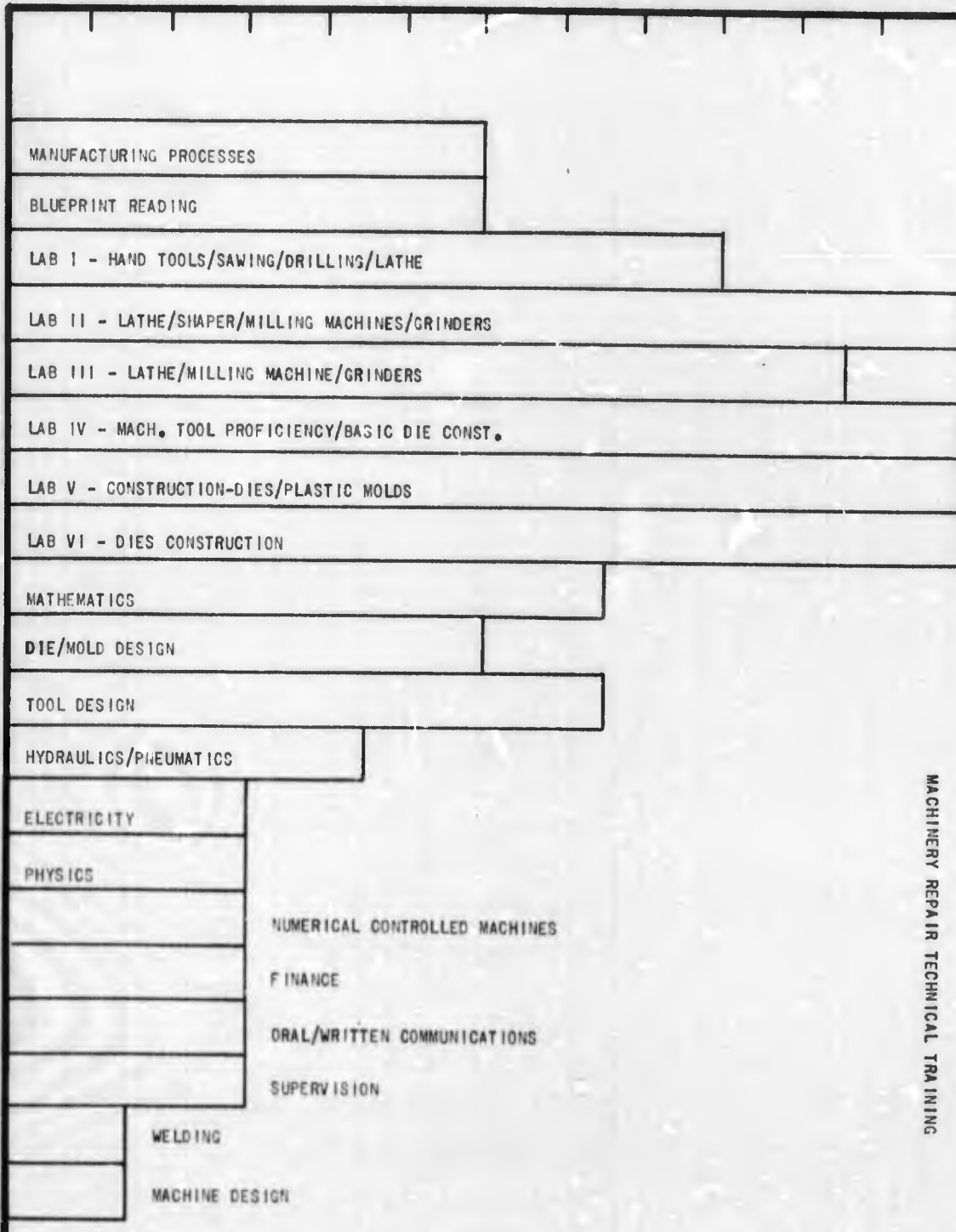
MACHINERY REPAIR
OCCUPATIONAL
TECHNICAL TRAINING

CLOCK HOURS



CLOCK HOURS

0 20 40 60 80 100 120 140 160 180 200 220 240



NEBRASKA TECHNICAL COLLEGE
MACHINE TOOL TECHNOLOGY
2520 CLOCK HOURS

MACHINERY REPAIR TECHNICAL TRAINING

MACHINERY REPAIR OCCUPATIONAL TECHNICAL TRAINING
DURATIONS OF TRAINING COURSES AND COMPONENTS OF COURSES

Machinery Repairman Class A School - 12 Weeks

375 Clock Hours - 130 Clock Hours Class, 245 Clock Hours Practical

Components

- 5 Hours - Introduction
- 22 Hours - Hand Tools/Measuring Instruments
- 15 Hours - Blueprints - Read/Sketch/Layout
- 15 Hours - Shop Math
- 15 Hours - Metals - Classification/Physical Properties/Identification
- 4 Hours - Materials/Lubricants/Coolants
- 4 Hours - Single Point Cutting Tools
- 11 Hours - Drills/Drilling Machines
- 26 Hours - Bench/Pedestal Grinders
- 126 Hours - Lathe Operation - Basic/Intermediate/Advanced
- 70 Hours - Milling Machine Operation - Basic/Advanced
- 5 Hours - Shapers
- 8 Hours - Misc. Machines/Operations
- 17 Hours - Valves/Piping
- 4 Hours - Planned Maintenance System
- 28 Hours - Review/Exam/Critique

Nebraska Technical College

Machine Tool Technology Course - 6 Quarters

2520 Clock Hours Class, Lab, Shop

Components

- 120 Hours - Manufacturing Processes
- 120 Hours - Blueprint Reading
- 180 Hours - Machine Tool Lab I-Hand Tools/Sawing/Drilling/Lathe/Shaper
- 240 Hours - Machine Tool Lab II-Lathe/Shaper/Milling Machines/Grinders
- 210 Hours - Machine Tool Lab III-Lathe/Milling Machine/Grinders
- 240 Hours - Machine Tool Lab IV-Mach. Tool Proficiency/Basic Die Const.
- 240 Hours - Machine Tool Lab V-Construction-Dies/Plastic Molds
- 240 Hours - Machine Tool Lab VI-Dies Construction
- 150 Hours - Mathematics
- 120 Hours - Die/Mold Design
- 150 Hours - Tool Design
- 90 Hours - Hydraulics/Pneumatics
- 60 Hours - Electricity
- 60 Hours - Physics

- 60 Hours - Numerical Controlled Machines
- 60 Hours - Finance
- 60 Hours - Oral/Written Communications
- 60 Hours - Supervision
- 30 Hours - Welding
- 30 Hours - Machine Design

Machinist Technology Course - 4 Quarters

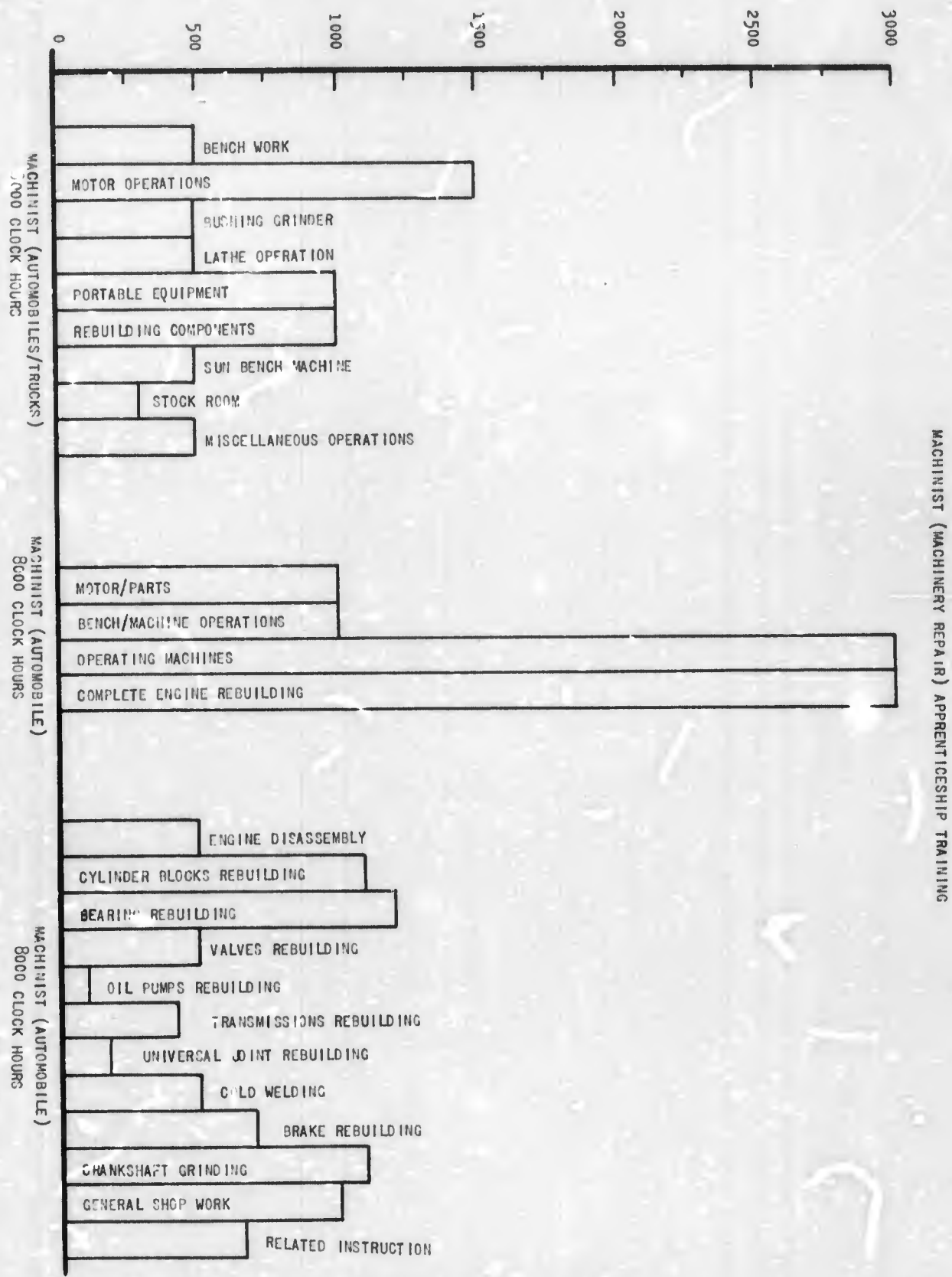
1680 Clock Hours Class, Lab, Shop

Components

- 120 Hours - Mig. Processes
- 120 Hours - Blueprint Reading
- 150 Hours - Mathematics
- 120 Hours - Die and Mold Design
- 180 Hours - Machine Tool Lab I-Hand Tools/Sawing/Drilling/Lathe/Shaper
- 240 Hours - Machine Tool Lab II-Lathe/Shaper/Milling Machine/Grinders
- 210 Hours - Machine Tool Lab III-Lathe/Milling Machine/Grinders
- 240 Hours - Machine Tool Lab IV-Mach. Tool Proficiency/Basic Die Const.
- 90 Hours - Hydraulics/Pneumatics
- 60 Hours - Electricity
- 60 Hours - Physics
- 60 Hours - Finance
- 30 Hours - Welding

MACHINERY REPAIR
OCCUPATIONAL
APPRENTICESHIP TRAINING

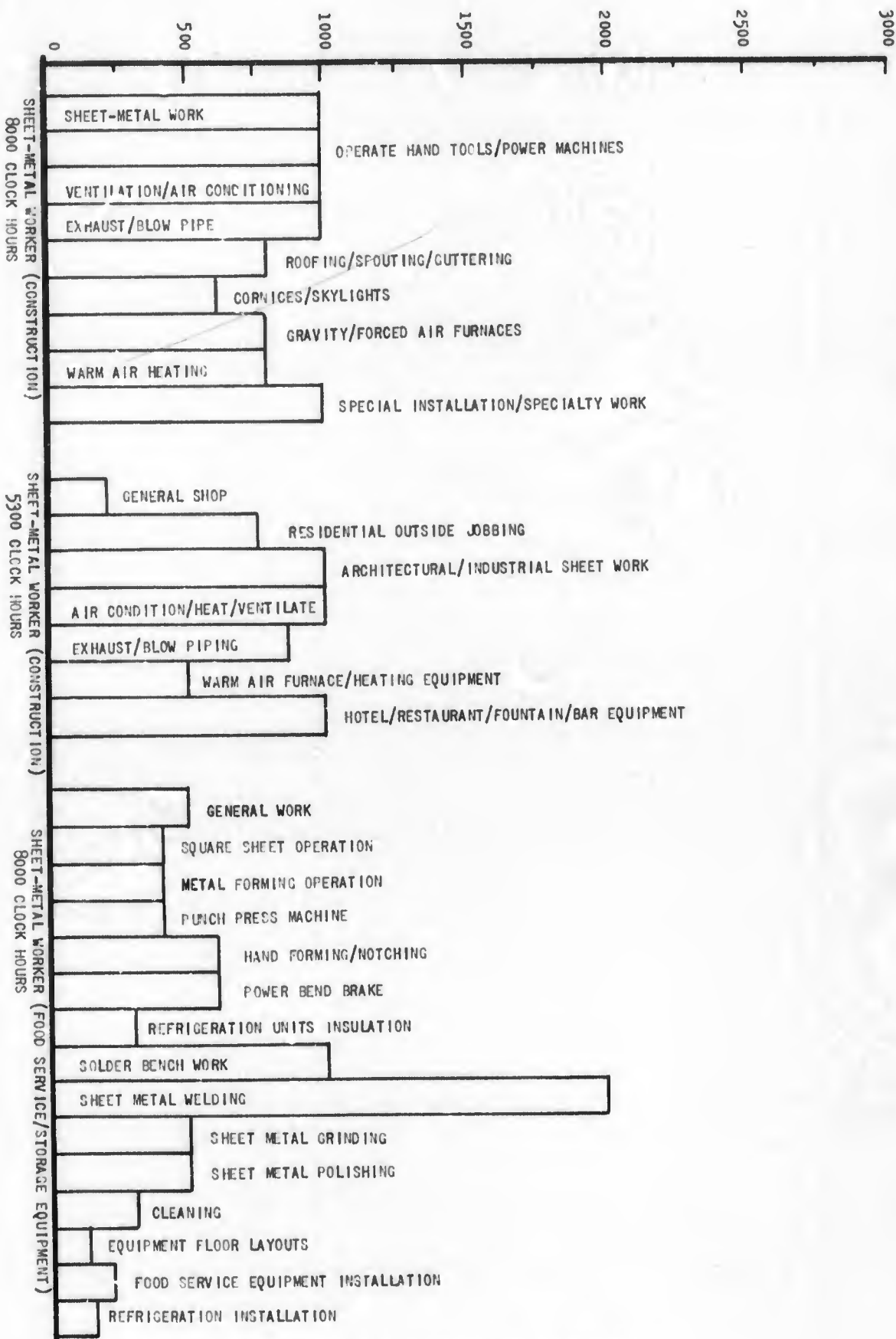
CLOCK HOURS



MACHINIST (MACHINERY REPAIR) APPRENTICESHIP TRAINING

NOTE: 2000 CLOCK HOURS EQUALS 1 YEAR OF APPRENTICESHIP TRAINING.

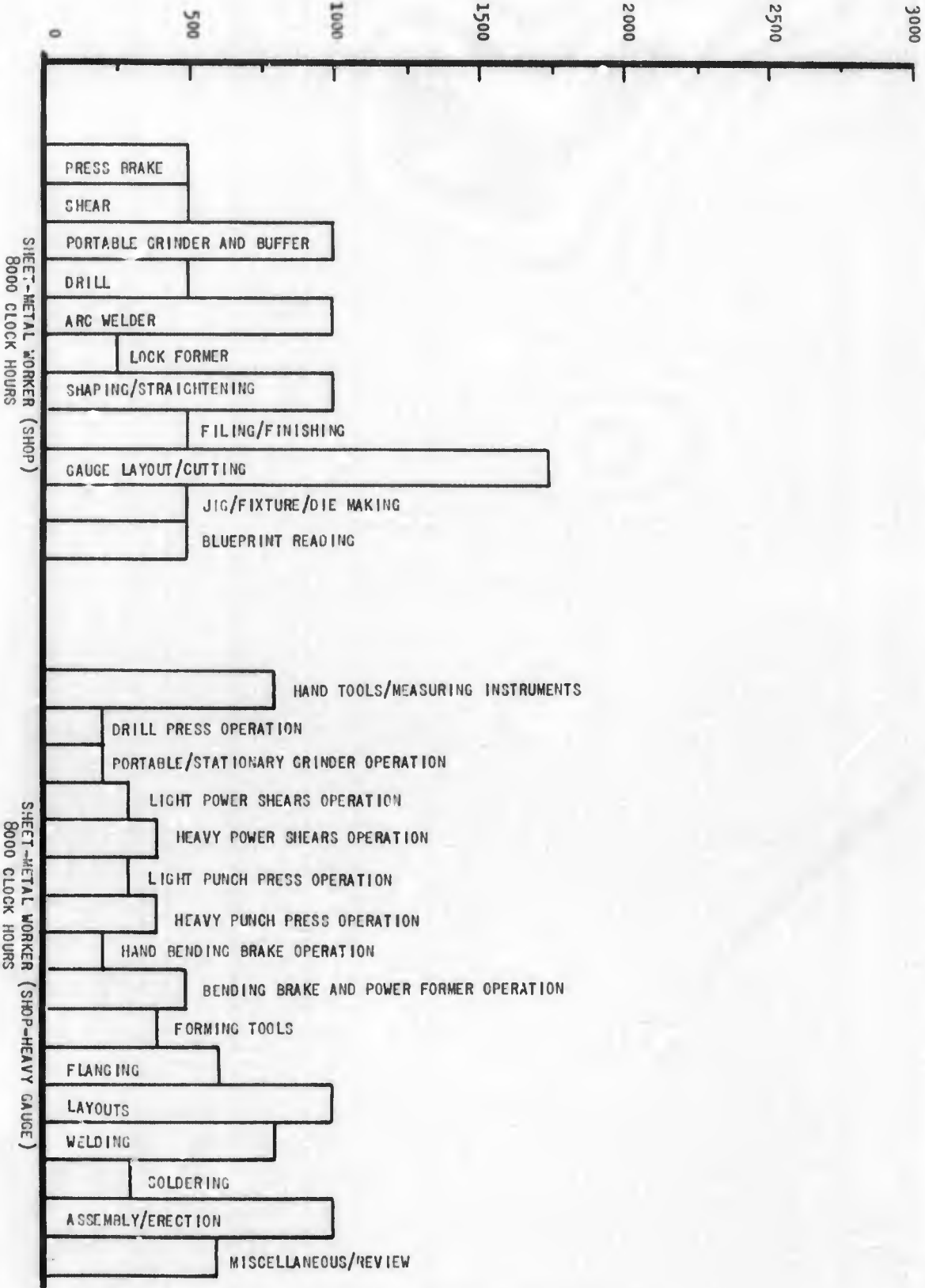
CLOCK HOURS



SHEET-METAL WORKER (MACHINERY REPAIR) APPRENTICESHIP TRAINING

NOTE: 2000 CLOCK HOURS EQUALS 1 YEAR OF APPRENTICESHIP TRAINING.

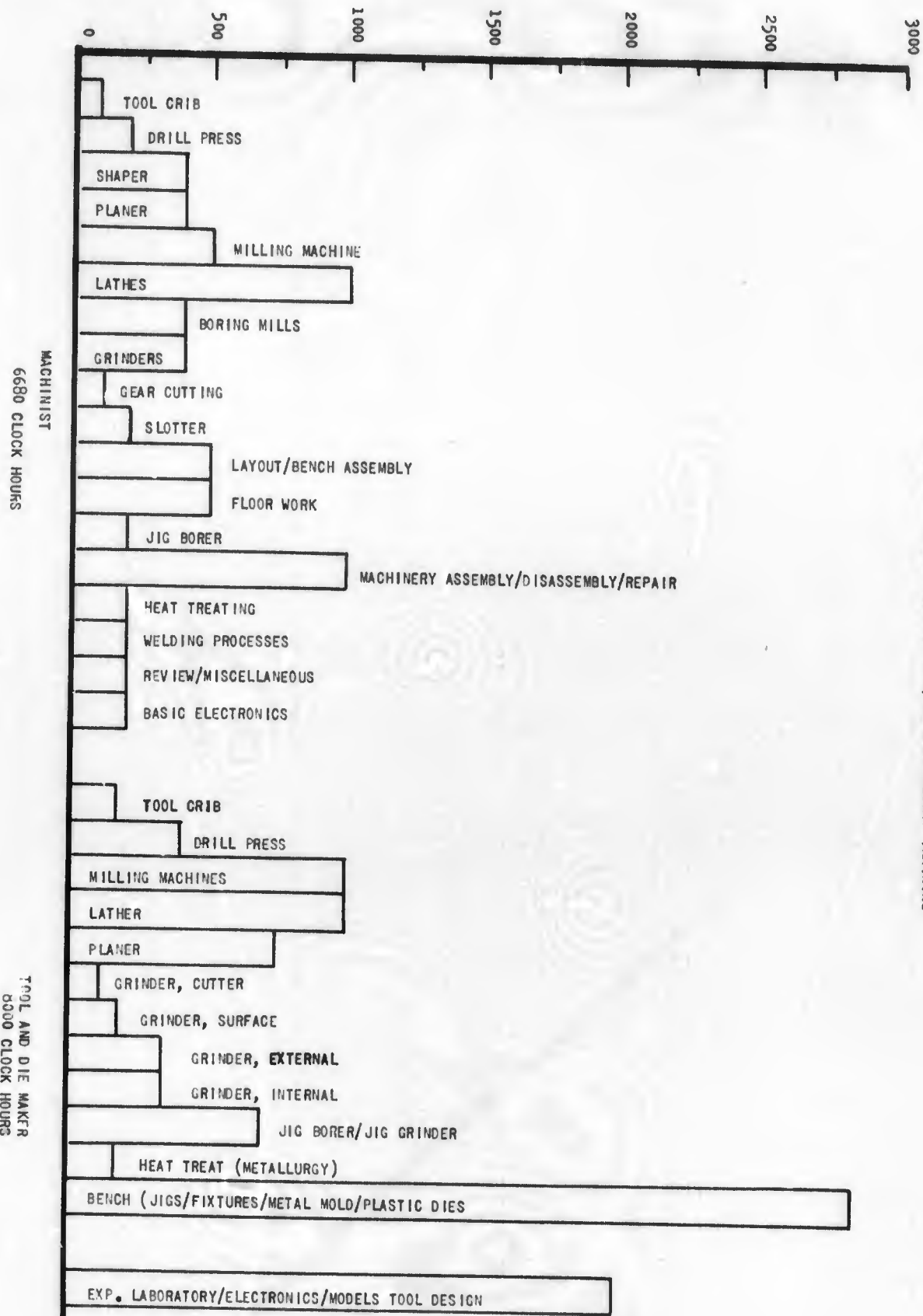
CLOCK HOURS



SHEET-METAL WORKER (MACHINERY REPAIR) APPRENTICESHIP TRAINING

NOTE: 2000 CLOCK HOURS EQUALS 1 YEAR OF APPRENTICESHIP TRAINING.

CLOCK HOURS



NOTE: 2000 CLOCK HOURS EQUALS 1 YEAR OF APPRENTICESHIP TRAINING.

MACHINIST (MACHINERY REPAIR)
OCCUPATIONAL APPRENTICESHIP TRAINING
U. S. DEPARTMENT OF LABOR APPRENTICESHIP SCHEDULES

Machinist (Automobile Machinist-Industrial Trucks) - 8000 Clock Hours*

Components

- 500 Hours - Minor Bench Work (Reface/Reset/Assemble Valves)
- 1500 Hours - Motor Operations (Dismantling/Rebuilding)
- 500 Hours - Bushing Grinder
- 500 Hours - Lathe Operation
- 1000 Hours - Portable Equipment (Boring/Grinding)
- 1000 Hours - Rebuilding Components (Starters/Generators/Carburetors)
- 500 Hours - Sun Bench Machine - Tests (Voltage Regulators/Generators)
- 300 Hours - Stock Room
- 500 Hours - Miscellaneous Occupations

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Machinist (Automobile Machinist) - 8000 Clock Hours

Components

- 1000 Hours - Motors/Parts - Disassembly/Cleaning
- 1000 Hours - Bench/Simple Machine Operations (Grinders/Surface Grinders/
Clutch Rebuilding/Assembly)
- 3000 Hours - Operating Machines (Lathe/Drill Press/Piston Grinder/Babbitt)
- 3000 Hours - Complete Engine Rebuilding

Machinist (Automobile Machinist) - 8000 Clock Hours

Components

- 500 Hours - Engine Disassembly
- 1100 Hours - Cylinder Blocks Rebuilding
- 1200 Hours - Bearings Rebuilding (Main/Camshaft/Connecting Rod)
- 500 Hours - Valves Rebuilding
- 100 Hours - Oil Pumps Rebuilding
- 428 Hours - Transmissions Rebuilding
- 200 Hours - Universal Joint Rebuilding
- 500 Hours - Cold Welding
- 700 Hours - Brake Rebuilding
- 1100 Hours - Crankshaft Grinding
- 1000 Hours - General Shop Work (Lathe/Drill Press/Grinder)
- 672 Hours - Related Instruction

*2000 Clock Hours is equal to 1 Year of Apprenticeship Training

Sheet Metal Worker (Construction) - 3000 Clock Hours

Components

- 1000 Hours - General Sheet Metal Work
- 1000 Hours - Operate Hand Tools/Power Machines
- 1000 Hours - Ventilation/Air Conditioning
- 1000 Hours - Exhaust/Blow Pipe
- 800 Hours - Roofing/Spouting/Guttering
- 600 Hours - Cornices/Skylights
- 800 Hours - Gravity/Forced Air Furnaces
- 300 Hours - Warm Air Heating
- 1000 Hours - Special Installation/Specialty Work

Sheet Metal Worker (Construction) -5300 Clock Hours

Components

- 200 Hours - General Shop (Tools/Machines/Soldering)
- 750 Hours - Residential Outside Jobbing (Roofing/Gutters/Ventilators/Outlets)
- 1000 Hours - Architectural/Industrial Sheet Work (Cornices/Skylights/Fire Doors/Electrical Signs)
- 1000 Hours - Air Conditioning/Heating/Ventilating (Ducts/Pipes/Connections)
- 850 Hours - Exhaust/Blow Piping
- 500 Hours - Warm Air Furnace/Heating Equipment
- 1000 Hours - Hotel/Restaurant/Fountain/Bar Equipment

Sheet Metal Worker (Industrial-Food Service/Storage Equipment-
2000 Clock Hours)

Components

- 500 Hours - General Work (Safety/Cut-Out/Developing/Sketching/Drawing)
- 400 Hours - Square Sheet Operation
- 400 Hours - Metal Forming Operation
- 400 Hours - Punch Press Machine
- 600 Hours - Hand Forming/Notching
- 600 Hours - Power Bend Brake
- 300 Hours - Refrigeration Units Insulation
- 1000 Hours - Solder Bench Work
- 2000 Hours - Sheet Metal Welding
- 500 Hours - Sheet Metal Grinding
- 500 Hours - Sheet Metal Polishing

NOTE: In general, Sheet Metal Work is comparable to the Machinery Repair occupational specialty because of work with tools and machines. Also, Sheet-Metal workers may be identified as applicable with the other Group VII (Engineering and Hull) Ratings.

- 300 Hours - Cleaning
- 128 Hours - Equipment Floor Layouts
- 222 Hours - Food Service Equipment Installation
- 150 Hours - Refrigeration Installation

Sheet Metal Worker (Shop) - 2000 Clock Hours

Components

Equipment

- 500 Hours - Press Brake
- 500 Hours - Shear (Power/Bench)
- 1000 Hours - Portable Grinder and Buffer
- 500 Hours - Drill
- 1000 Hours - Arc Welder (Spot/Acetylene Welders)
- 250 Hours - Lock Former

Bench Work

- 1000 Hours - Shaping/Straightening
- 500 Hours - Filing/Finishing
- 1750 Hours - Gauge Layout/Cutting
- 500 Hours - Jig/Fixture/Die Making



Blueprints

- 500 Hours - Blueprint Reading (Work/Templates Layout)

Sheet Metal Worker (Shop Heavy Gauge)- 3000 Clock Hours

- 300 Hours - Hand Tools/Measuring Instruments
- 200 Hours - Drill Press Operation
- 200 Hours - Portable/Stationary Grinder Operation
- 300 Hours - Light Power Shears Operation
- 400 Hours - Heavy Power Shears Operation
- 300 Hours - Light Punch Press Operation
- 400 Hours - Heavy Punch Press Operation
- 200 Hours - Hand Bending Brake Operation
- 500 Hours - Bending Brake and Power Former Operation
- 400 Hours - Forming Tools
- 600 Hours - Flanging (Regular/Irregular)
- 1000 Hours - Layout (Description/Sketch/Blueprint)
- 300 Hours - Welding (Arc/Torch/Spot)
- 300 Hours - Soldering (Hard/Soft)
- 1000 Hours - Assembly/Erection
- 600 Hours - Miscellaneous/Review

MACHINIST (MACHINERY REPAIR)
OCCUPATIONAL APPRENTICESHIP TRAINING
INTERNATIONAL ASSOCIATION OF MACHINISTS AND AEROSPACE WORKERS

Machinist - 6680 Clock Hours (Minimum Requirement)*

Components

80 Hours - Tool Crib
200 Hours - Drill Press
400 Hours - Shaper
400 Hours - Planer
500 Hours - Milling Machine
1000 Hours - Lathe (Bench/Turret/Engine)
400 Hours - Boring Mill (Vertical/Horizontal)
400 Hours - Grinder (Internal/External/Surface)
100 Hours - Gear Cutting
200 Hours - Slotter
500 Hours - Layout/Bench Assembly
500 Hours - Floor Work
200 Hours - Jig Borer
1000 Hours - Machinery Assembly/Disassembly/Repair
200 Hours - Heat Treating
200 Hours - Welding Processes
200 Hours - Review/Miscellaneous
200 Hours - Basic Electronics

Tool and Die Maker - 3000 Clock Hours

Components

160 Hours - Tool Crib
400 Hours - Drill Press
1000 Hours - Milling Machines
1000 Hours - Lather
750 Hours - Planer
120 Hours - Grinder/Cutter
165 Hours - Grinder, Surface
330 Hours - Grinder, External
330 Hours - Grinder, Internal
700 Hours - Jig Borer/Jig Grinder
165 Hours - Heat Test (Metallurgy)
2880 Hours - Bench (Jigs/Fixtures/Metal Mold/Plastic Dies)

Additional Work Experience for 5 Year Program

2000 Hours - Experimental Laboratory/Basic Electronics/Model Making/
Tool Design

*2000 Clock Hours is equal to 1 Year of Apprenticeship Training