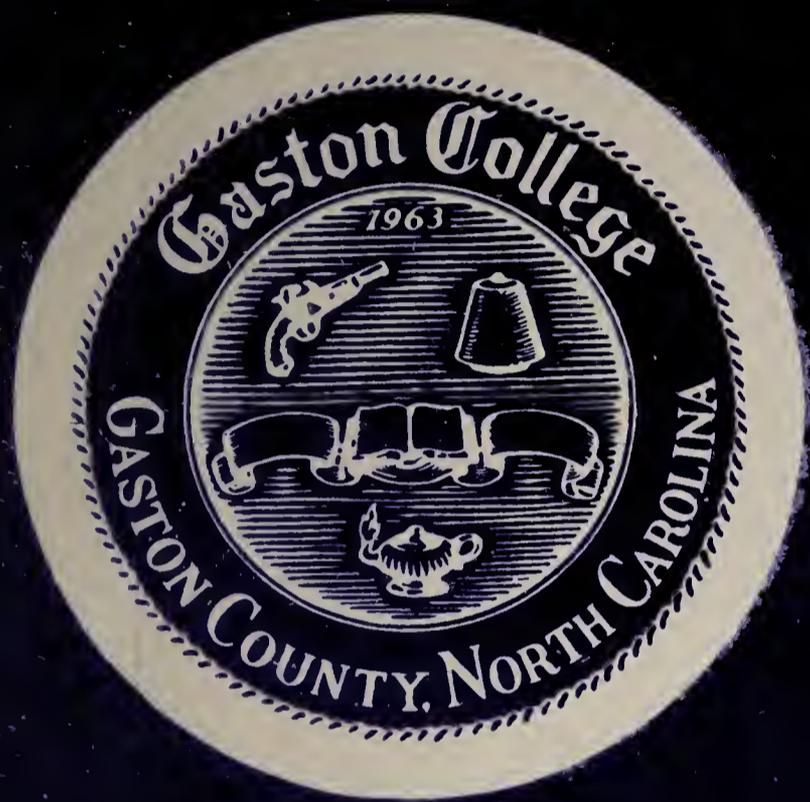


Gaston College

VOCATIONAL DIVISION



CATALOG SUPPLEMENT



FOREWORD

Gaston College is pleased to have curriculum courses in vocational education available to students whose interests and aptitudes point to the skilled crafts and service trades.

These programs provide students with the related knowledge and actual manipulative experiences necessary to become highly skilled craftsmen and servicemen. Unskilled and semi-skilled jobs are rapidly being replaced in our industries by automation; however there exists a critical shortage of skilled manpower. The Department of Labor's statistics show that the demand for skilled craftsmen will be even greater in the years ahead.

More and more young men and women should consider the skilled crafts and service trades as a vocational choice, a most rewarding and important career. To obtain the post-high school training necessary to enter these occupations, it is our desire that you will consider the vocational offerings at Gaston College.

DR. C. ROBERT BENSON, JR.
President Gaston College

GASTON COLLEGE

BOARD OF TRUSTEES

Ray P. Craig Chairman
J. Edward Stowe Vice-Chairman
H. S. Mackie Secretary
R. P. Caldwell Treasurer

APPOINTED BY GASTON COUNTY BOARD OF EDUCATION **Term Expires**

D. R. Mauney, Jr., 500 Old Post Rd., Cherryville, N.C. 6-30-69
Ray P. Craig, P O. Box 308, Stanley, N. C. 6-30-69

APPOINTED BY GASTONIA BOARD OF EDUCATION

J. Edward Stowe, 409 Thomas Trail, Gastonia, N. C. . . 6-30-69
H. S. Mackie, 403 W. Fifth Ave., Gastonia, N. C. . . . 6-30-69

APPOINTED BY GASTON COUNTY COMMISSIONERS

Gene Froneberger, Gold St., Bessemer City, N. C. . . . 6-30-67
R. P. Caldwell, 1208 E. Franklin Ave., Gastonia, N. C. 6-30-67

APPOINTED BY GASTONIA CITY COUNCIL

Robert M. Howard 407 S. Hanna St., Gastonia, N. C. . . 6-30-67
Leon I. Schneider, 1030 S. Belvedere, Gastonia, N. C. . . 6-30-67

APPOINTED BY GOVERNOR OF NORTH CAROLINA

J. Bart Hall, McAdenville Rd., Belmont, N. C. 6-30-69
James H. Atkins, 1114 Scotch Dr., Gastonia, N. C. . . . 6-30-67
Earl T. Groves, 1106 Fairfield Dr., Gastonia, N. C. . . 6-30-71
Albert G. Myers, Jr., 2605 Armstrong Circle 6-30-71

Dr. C. Robert Benson, Jr., President

GENERAL INFORMATION

HISTORY OF GASTON COLLEGE

Gaston College, chartered by the State of North Carolina on January 10, 1963, had its beginning three years earlier. The first tangible evidence of interest in a community college occurred when a committee of the Gastonia Chamber of Commerce attended ground-breaking ceremonies at Wilmington College on April 1, 1960. The next major step was taken in June of 1961 when the Gaston County Board of Education began consultations with the director of the State Board of Higher Education. On September 5, 1961, the Gastonia Chamber of Commerce and the Gaston County Commissioners jointly sponsored a dinner meeting at the Gaston Country Club for 40 county and city citizens interested in establishing a community college in Gaston County. Dr. William C. Friday, President of the University of North Carolina, gave an inspired address at this meeting on the need for a community college in Gaston County. Mr. C. Grier Beam, Chairman of the Board of County Commissioners, was asked to appoint a committee of 15 to further study the need of a community college for Gaston County. On October 5, 1961, this community college committee was formed with Dr. Woodrow Sugg, Superintendent of Gastonia City Schools, as acting chairman. The committee was composed of the following: Hunter Huss, Bill Brown, D. R. Mauney, John Rankin, Pat McSwain, Steve Dolley, J. E. Stowe, Clyde Dietz, A. R. England, Robert Stine, Bill Alligood, Ray P. Craig, Max Childers, Gene Froneberger, and Dr. Woodrow Sugg.

At its first meeting the committee chose Ray P. Craig as chairman and Duke England as secretary. Three sub-committees were appointed, headed by Ed Stowe, Steve Dolley, and Duke England, and charged with the responsibility to investigate the needs and possibilities of a community college for Gaston County.

On November 15, 1961, the committee met and heard reports from its three sub-committees urging a continuation of efforts to secure a community college. The committee reports were accepted with some revisions and submitted to the commission of 40 at a dinner meeting held at Charlotte College on December 11, 1961. This meeting was arranged by the Chamber of Commerce on an invitation from Dr. Bonnie Cone, President of Charlotte College. During the meeting, the final revised committee report was approved by a majority of the commission of 40.

During the next few months, led by Ray P. Craig and Ed Stowe, members of the study committee and the Chamber of Commerce appeared before practically every civic, religious, and educational organization in Gaston County dis-

cussing the need for a community college. Real progress began to be made. In April of 1962 the Gaston County Board of Education and the Gaston County Commissioners secured an option to purchase land on U. S. Highway 321 for a community college. Following approval by the County Board of Education, the Board of Higher Education of North Carolina, petitioned for a community college for Gaston County in May of 1962, gave tentative approval. In June the Advisory Budget Commission of North Carolina approved the plans for a community college in Gaston County.

The citizens of Gaston County then voted on December 11, 1962, a tax levy for Gaston College. The levy carried by a two to one majority. On January 10, 1963, a charter was issued to Gaston College by the State of North Carolina.

The first Board of Trustees of Gaston College, appointed in the manner prescribed in "The Community College Act of 1957," was composed of D. R. Mauney, Jr., Ray P. Craig, J. Edward Stowe, H. S. Mackie, Gene Froneberger, R. P. Caldwell, Robert M. Howard, Leon I. Schneider, J. Bart Hall, David F. Mason, Earl M. Price, and James H. Atkins. The Board met for the first time on February 11, 1963, and elected the following officers: Ray P. Craig, chairman; J. Edward Stowe, vice-chairman; H. S. Mackie, secretary; and R. P. Caldwell, treasurer. In addition to expressing its gratitude to the committee of 15 and the commission of 40, the Board of Trustees at its first meeting cited Dr. William Friday, President of the University of North Carolina, Dr. William Archie, Director of Board of Higher Education, and Dr. Bonnie Cone, President of Charlotte College, for their assistance in making Gaston College a reality. At its second meeting on February 25, 1963, committees of the Board of Trustees were named, and a bond election for capital outlay funds was tentatively set for September, 1963.

On April 1, 1963, Dr. Robert Benson, then President of College of The Albemarle in Elizabeth City, was selected the first President of Gaston College.

The first classes of Gaston College began September 28, 1964, in the Educational Building of the First Methodist Church of Gastonia, North Carolina. During the Thanksgiving recess the move was made to the new permanent buildings on Highway 321.

In accordance with plans worked out during the previous year, July 1, 1965, marked the merging of Gaston College, Gaston Technical Institute, and the Industrial Education Center into one comprehensive institution known as Gaston College and under the Board of Trustees of Gaston College.

Pending the construction of new facilities on the permanent Gaston College campus during the 1965-66 school year, Gaston Technical Institute and the Industrial Education Center continue to operate on the campus of Gaston Technical Institute in Gastonia.

OBJECTIVES

Gaston College provides two years of accredited courses leading to the Associate in Arts degree and paralleling the freshman and sophomore years at most colleges and universities, and two years of liberal arts, technical and vocational courses terminating in Associate in Arts degrees. In addition, it provides employed adults with opportunities for continued education to increase occupational competency, aid personal growth, and contribute to cultural enrichment through organized study in general and vocational education.

Gaston College emphasizes educational potentialities and aspires to develop individuals mentally, morally, socially, and physically through guidance, instruction, and experience, in order that they may find a fruitful and satisfying place in the complexities of modern society.

LOCATION

Gaston College is located approximately three miles north of Gastonia just outside Dallas, North Carolina, on Highway 321. The mailing address is Post Office Box 1397, Gastonia, North Carolina.

FACILITIES

There are on the permanent campus 19 classrooms, 5 science laboratories, a learning laboratory, a language laboratory, art studios, a completely furnished library, administrative offices, student and faculty lounge areas, a snack bar, and a bookstore.

The one million dollar inter-connected technical and vocational buildings under construction will vastly increase the classroom, laboratory, and administrative space.

LIBRARY

Gaston College has a basic collection of approximately 9,000 volumes. A carefully selected group of approximately 100 periodicals is received regularly. In addition to the general circulating collection, the library supplements classroom instruction with reserve collections in each subject field especially selected and kept up to date. Reference and research materials are available on the under-graduate level.

ADMISSION INFORMATION

STATEMENT OF POLICY

Gaston College has been established to serve the community by providing college level courses for all who are able to profit by post-high school education.

BEGINNING STUDENTS

Admission to credit courses is open to all persons who are graduates of accredited high schools or who possess a high school equivalency certificate (or diploma) issued by the North Carolina State Department of Education or by the Department of Education of any one of the United States.

Adults who have not completed high school and who do not possess a high school equivalency certificate may be admitted on a special trial basis, earning admittance as a regular college student and receiving full college credit by maintaining a "C" (2.0) average, or higher, for the first 12 hours of degree-level courses attempted.

STEPS IN ADMISSION PROCEDURES

At the time of his first application for admission to Gaston College, each prospective student should submit an application form (secured from the Office of the Director of Admissions) properly executed and accompanied by a \$10.00 application fee. This fee will be applied toward the tuition for the first quarter of attendance. It is refundable only in case the student is not accepted by the College. The application fee is not required for subsequent applications.

Students who have never before attended a college should request their high school registrar to forward a transcript of their work to the Gaston College Admissions Office.

College transfer students should request official transcripts of all work attempted from each of the colleges or universities previously attended. Such transcripts must be sent directly to the Gaston College Admissions Office.

Any student who submits false information with regard to his application for admission is subject to immediate exclusion and loss of all credits.

PHYSICAL EXAMINATION FOR ADMISSION

Each full-time student is required to have a physical examination prior to registration in the fall.

GUIDANCE TEST BATTERY

Each full time student entering Gaston College is required to take the Guidance Test Battery. These tests do not affect eligibility for admission to the college; they are chiefly of value to the Guidance Department in assisting a student to plan his educational and vocational goal. They are also used for placement in certain specialized courses and programs.

Notification of the time and place to report for the Guidance Test Battery will be mailed each applicant by the office of the Director of Student Personnel.

ADMISSIONS ADVISEMENT

Trained personnel are available to discuss with prospective applicants the various programs and courses offered by Gaston College. However, it is to the advantage of the prospective student to defer conferences with admission advisors until after his transcripts have been received at the College and he has taken the College Guidance Test Battery. After the applicant's tests have been scored and analyzed, he will be mailed an appointment to confer with a guidance counselor. Applicants unable to keep that appointment should telephone the office of the Director of Student Personnel to arrange another appointment.

VETERANS

New students eligible to enter with veterans benefits should apply to the Veterans Administration for certificates or supplemental certificates of entitlement. This should be done some weeks in advance in order to have the certificates ready for registration. Veterans transferring from other colleges or universities should make their applications before leaving their former schools.

INSTITUTIONAL MEMBERSHIP

Gaston College is an associate member of the American Association of Junior Colleges. Appropriate action has been taken to achieve "early recognition" by the Southern Association of Colleges and Schools in order to obtain the earliest possible accreditation by that body and to make that accreditation retroactive to the first graduating class.

Credits earned at Gaston College in college-parallel courses are transferable to senior colleges and universities.

FINANCIAL INFORMATION

(All fees are subject to change without prior notice.)

REGISTRATION FEES

An annual registration fee of \$2.00 will be charged for each full-time and part-time student when he first enrolls. Upon his continued enrollment this fee will be charged at the student's first registration following July 1st of each year. It will not be charged again during the year except for students who drop out of school during a quarter and then re-enroll the next term or later.

The registration fee is not refundable. Exceptions to the registration fee may be made in certain special, short, non-credit seminars.

TUITION

Tuition fees for full-time students (12 quarter hours or more) is \$30.00 per quarter. For part-time students the charge is \$2.00 per quarter hour of credit.

STUDENT ACTIVITY FEE

The Student Activity Fee for each full-time student is \$10.00 per quarter. Part-time students may elect to pay the Student Activity Fee and enjoy its benefits.

OUT OF STATE STUDENTS

Students whose legal residency is out of the state of North Carolina shall be charged two and one-half times the above rate.

REFUND POLICIES

A refund shall be allowed of two-thirds of the tuition fees paid when withdrawal occurs before the end of twenty school days (the first school month) of a regular term, or before the end of six days of a summer session.

Refund for the part-time and extension courses is not allowed.

STUDENT ACTIVITIES AND STUDENT SERVICES

GUIDANCE AND COUNSELING

Gaston College emphasizes its Guidance and Counseling program. At any appointed time after the Guidance Test Battery has been taken, the student will have an interview with one of the college's professionally trained guidance counselors. At this interview the student may, if he is undecided as to his future goal, receive the professional advice of the guidance counselor in respect to programs which appear to be appropriate for the student concerned. In addition, the guidance counselor will help the student to select his courses for the first semester of college.

The College provides continuing counseling service by assigning each student to a member of the faculty according to the student's particular field of interest. Subsequently, the faculty advisor helps the student to arrange his program of study and approves the courses to be taken prior to registration each semester. Changes in courses must be made through the advisor.

In addition, professionally trained counselors are available to assist individual students in resolving problems of a more personal nature which may interfere with progress toward their chosen objectives.

FRESHMAN ORIENTATION

Each fall a Freshman Orientation Program serves to introduce the student to the collegiate environment. Orientation informs the student concerning the academic and social policies of the College and acquaints him with the library and other facilities. Throughout the orientation period, a group of upper classmen will be available to make the incoming freshmen feel at home and to answer any questions they may have about the College policies or procedures.

STUDENT GOVERNMENT ASSOCIATION

Students receive practical experience in responsible citizenship through participation in a program of self-government. The Gaston College Student Government Association consists of all full-time students who are registered at the College. Part-time students who elect to pay the student activity fee may also be members of the Association. Officers are chosen each year and each class is represented in the Student Government Association. The purpose of the Association is to regulate all matters of the student community which do not fall under the immediate jurisdiction of the administration and faculty.

STUDENT PUBLICATIONS

A newspaper published by and for the students is issued at regular intervals. The students will also prepare and publish a regular college annual. Students who are interested in any aspect of such publications activities are invited to participate.

OTHER STUDENT ACTIVITIES

The student activity fee provides a package of entertainment, cultural, and recreational activities. The payment of this fee, required of each full-time student, provides free admission to college dramatic productions, Student Government Association activities, socials and entertainment furnished and sponsored by Gaston College, and subscriptions to the college newspaper and annual.

A number of organizations designed for students with a particular interest are open to students at Gaston College. These include, among others, Foreign Language Clubs, the Library Club, Circle K, and the Student Christian Association.

CLASS ORGANIZATIONS

Each class has its own organization, elects its officers and representatives to the Student Government Association each year, and has an advisor from the administration or faculty.

ATHLETICS AND INTRAMURAL ACTIVITIES

Gaston College has an intercollegiate basketball team. Other intercollegiate activities may be organized on a year to year basis according to the interest of the student body in those sports. There are also a number of intramural athletic competitions organized under the auspices of the department of physical education.

LIBRARY SERVICES

The library has a growing collection of materials selected by trained professional librarians in consultation with faculty and administrative personnel.

Attractive exhibits of books, newspapers, and current periodicals encourage students to read. The library hours are from 8:00 a.m. to 9:00 p.m. Mondays through Fridays, and from 9:00 a.m. to 12:00 noon on Saturdays.

BOOKSTORE

The College maintains a Bookstore on the campus. It is operated as a service to the student body, faculty and staff. Textbooks, school supplies and other course-related materials are available at the Bookstore. In addition, the store offers for sale other items which are of especial interest to Gaston College students.

SNACK BAR

The College offers a Snack Bar which is located adjacent to the Student Lounge. The Snack Bar supplies sandwiches, hamburgers, hot-dogs, confections, soft drinks, and other related items in demand by the students, faculty and staff.





Gaston College Library



Gaston College Liberal Arts Building

AIR CONDITIONING & REFRIGERATION

PURPOSE OF CURRICULUM

In recent years the use of air-conditioning and refrigeration equipment has increased tremendously. Practically all new building construction for business and commercial use have "year-round" air-conditioning systems. Many homes now have air-conditioning and the trend is toward greater use of "year-round" systems for cooling and heating. Food stores are requiring greater use of refrigeration systems for storage and display of products. With this great upswing in the use of air-conditioning and refrigeration equipment, a greater demand is made on trained personnel to plan and supervise installations and to supervise the operation and maintenance of heating, air-conditioning, and refrigeration equipment.

This curriculum is designed to meet the basic requirements of a program to provide capable service men in the industry. The principle objective has been to outline the required technical information and theoretical knowledge, while maintaining a good balance of manipulative skills. Considerable emphasis is placed on self-development in an effort to encourage the individual trained hereby to continue to study and grow as the industry advances.

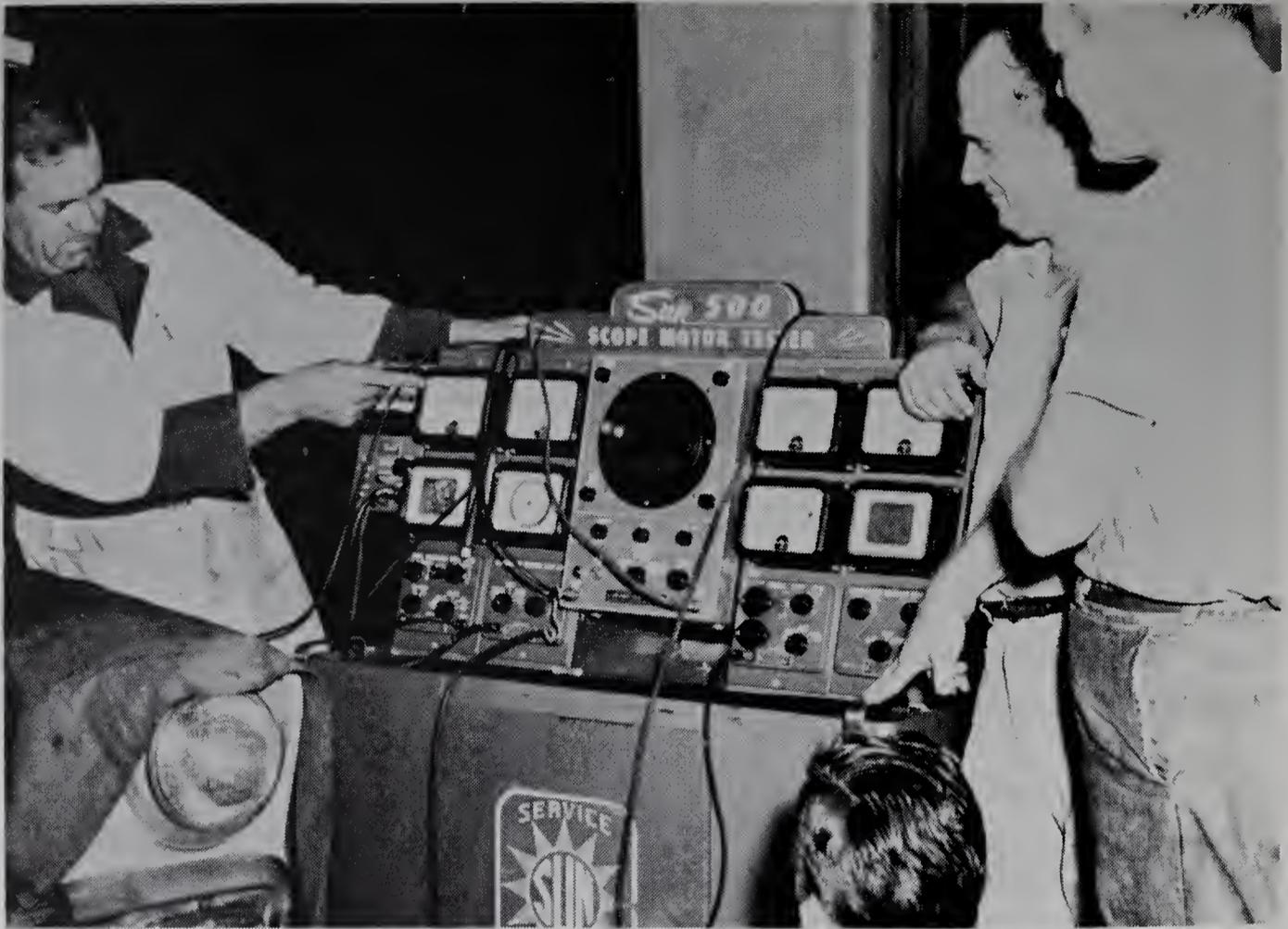


JOB DESCRIPTION

The air-conditioning and refrigeration serviceman is employable in areas of sales, maintenance, installation, and production. He is involved with equipment for changing temperature, control systems, and ducts and piping for distribution of air, water, steam, and refrigerants. His duties may be concerned with any or all of these systems and components.

CURRICULUM

| 1st QUARTER | | | Class | Lab | Credit |
|--------------------|------|---------------------------------------|--------------|------------|---------------|
| AHR | 1101 | Principles of Refrigeration | 3 | 8 | 6 |
| ENG | 1101 | Reading Improvement | 2 | 0 | 2 |
| MAT | 1111 | Plane and Solid Geometry | 5 | 0 | 5 |
| PHY | 1112 | Applied Physics II | 3 | 2 | 4 |
| WLD | 1111 | Welding | 0 | 3 | 1 |
| | | | <hr/> | <hr/> | <hr/> |
| | | | 13 | 13 | 18 |
| | | | | | |
| 2nd QUARTER | | | | | |
| AHR | 1102 | Domestic and Commercial Refrigeration | 3 | 8 | 6 |
| AHR | 1122 | Automatic Controls I | 3 | 2 | 4 |
| DRA | 1101 | Blueprint Reading | 0 | 3 | 1 |
| ENG | 1102 | Communication Skills | 2 | 0 | 2 |
| MAT | 1112 | Algebra I | 5 | 0 | 5 |
| | | | <hr/> | <hr/> | <hr/> |
| | | | 13 | 13 | 18 |
| | | | | | |
| 3rd QUARTER | | | | | |
| AHR | 1103 | Principles of Air Conditioning | 3 | 8 | 6 |
| AHR | 1113 | Calculation of Heat Loss and Gain | 3 | 0 | 3 |
| AHR | 1123 | Automatic Controls II | 3 | 2 | 4 |
| DRA | 1153 | Sheet Metal Pattern Drafting | 0 | 3 | 1 |
| ELC | 1123 | Industrial Electricity | 3 | 3 | 4 |
| | | | <hr/> | <hr/> | <hr/> |
| | | | 12 | 16 | 18 |
| | | | | | |
| 4th QUARTER | | | | | |
| AHR | 1104 | All-Year Comfort Systems | 3 | 6 | 5 |
| AHR | 1114 | Estimating | 2 | 2 | 3 |
| AHR | 1154 | Reverse Refrigeration | 2 | 6 | 4 |
| AHR | 1164 | Automotive Air Conditioning | 3 | 2 | 4 |
| SOC | 1104 | Management Procedures | 2 | 0 | 2 |
| | | | <hr/> | <hr/> | <hr/> |
| | | | 12 | 16 | 18 |



AUTOMOTIVE & DIESEL MECHANICS

PURPOSE OF CURRICULUM

This curriculum provides a training program for developing the basic knowledge and skills needed to inspect, diagnose, repair or adjust automotive vehicles. Manual skills are developed in practical shop work. Thorough understanding of the operating principles involved in the modern automobile comes in class assignments, discussion, and shop practice.

Complexity in automotive vehicles increases each year because of scientific discovery and new engineering. These changes are reflected not only in passenger vehicles, but also in trucks, buses and a variety of gasoline-powered equipment. This curriculum provides a basis for the student to compare and adapt to new techniques for servicing and repair as vehicles are changed year by year.

JOB DESCRIPTION

Automobile mechanics maintain and repair mechanical, electrical, and body parts of passenger cars, trucks, and buses. In some communities and rural areas they also may service tractors or marine engines and other gasoline-powered equipment. Mechanics inspect and test to determine the causes of faulty operation. They repair or replace defective parts to

restore the vehicle or machine to proper operating condition. They use shop manuals and other technical publications.

Automotive mechanics in smaller shops usually are general mechanics qualified to perform a variety of repair jobs. A large number of automobile mechanics specialize in particular types of repair work. For example, some may specialize in repairing only power steering and power brakes, or automatic transmissions. Usually such specialists have an all-round knowledge of automotive repair and may occasionally be called upon to do other types of work.

CURRICULUM

| 1st QUARTER | | | Class | Lab | Credit |
|--------------------|------|--|--------------|------------|---------------|
| AUT | 1101 | Automotive Engines | 3 | 9 | 6 |
| ENG | 1101 | Reading Improvement | 2 | 0 | 2 |
| MAT | 1101 | Fundamentals of Math | 5 | 0 | 5 |
| PHY | 1111 | Applied Physics I | 3 | 2 | 4 |
| WLD | 1111 | Welding | 0 | 3 | 1 |
| | | | — | — | — |
| | | | 13 | 14 | 18 |
| 2nd QUARTER | | | | | |
| AHR | 1164 | Automotive Air Conditioning | 3 | 2 | 4 |
| AUT | 1102 | Automotive Electrical and Fuel Systems | 3 | 11 | 7 |
| DRA | 1101 | Blueprint Reading | 0 | 3 | 1 |
| ENG | 1102 | Communication Skills | 2 | 0 | 2 |
| PHY | 1112 | Applied Physics II | 3 | 2 | 4 |
| | | | — | — | — |
| | | | 11 | 18 | 18 |
| 3rd QUARTER | | | | | |
| AUT | 1103 | Automotive Power Train Systems | 3 | 8 | 6 |
| AUT | 1113 | Automotive Chassis and Suspensions | 3 | 6 | 5 |
| PHY | 1113 | Applied Physics II | 3 | 2 | 4 |
| SOC | 1103 | Human Relations | 3 | 0 | 3 |
| | | | — | — | — |
| | | | 12 | 16 | 18 |
| 4th QUARTER | | | | | |
| AUT | 1104 | Automotive Servicing | 3 | 11 | 7 |
| AUT | 1154 | Introduction to Diesel Engines | 3 | 5 | 5 |
| AUT | 1164 | Braking Systems | 3 | 3 | 4 |
| SOC | 1104 | Management Procedures | 2 | 0 | 2 |
| | | | — | — | — |
| | | | 11 | 19 | 18 |

ELECTRICAL INSTALLATION AND MAINTENANCE

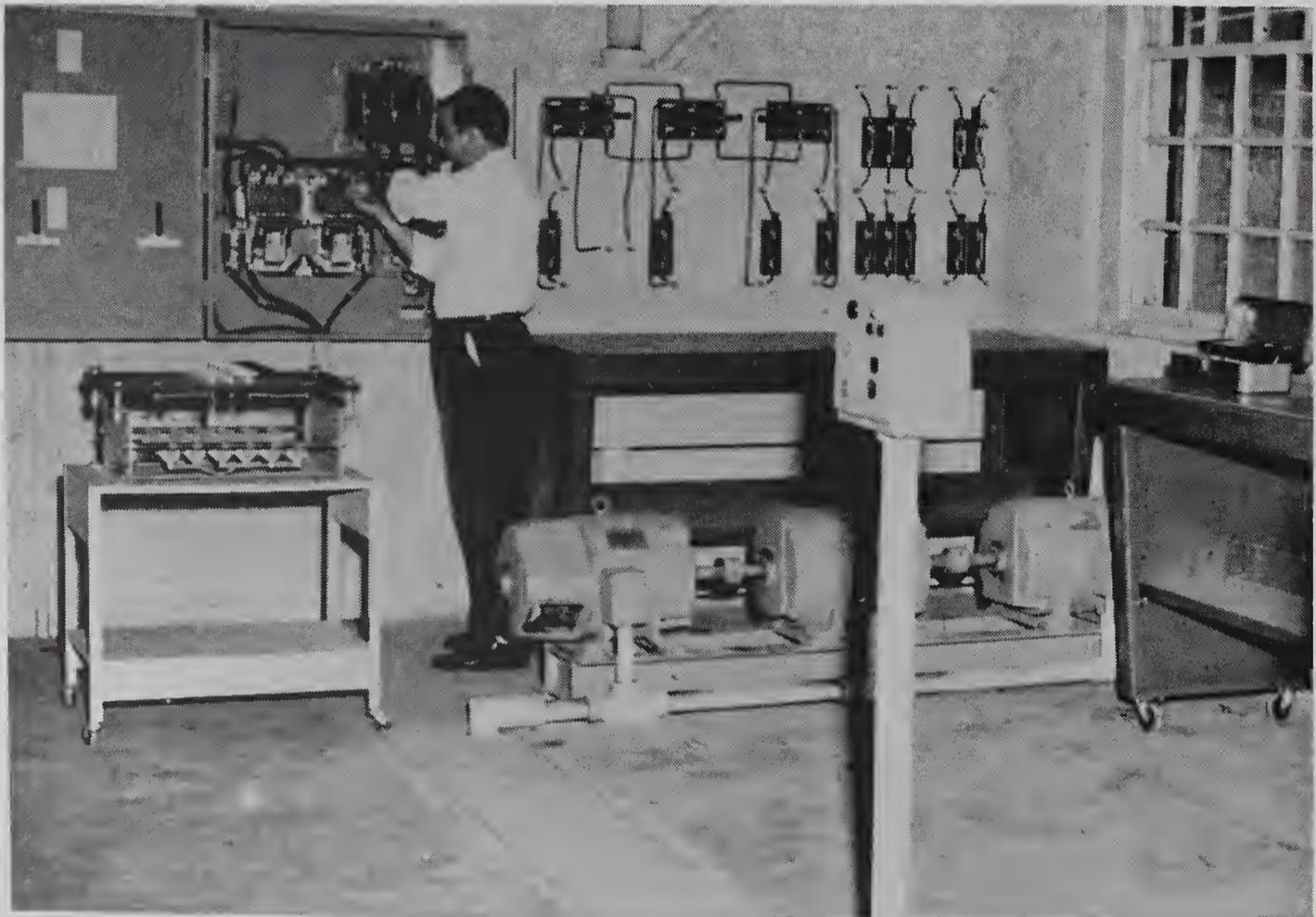
PURPOSE OF THE CURRICULUM

The rapid expansion of the national economy and the increasing development of new electrical products is providing a growing need for qualified people to install and maintain electrical equipment. By mid-1960 more than 350,000 were employed as either construction electricians or maintenance electricians. Between 5,000 and 10,000 additional tradesmen are required each year to replace those leaving the industry. It is expected that the total requirements for electrical tradesmen will reach 500,000 by 1965 and 700,000 by 1970. The majority of the electrical tradesmen today are trained through apprenticeship or on-the-job training programs.

This curriculum guide will provide a training program in the basic knowledge, fundamentals, and practices involved in the electrical trades. A large portion of the program is devoted to laboratory and shop instruction which is designed to give the student practical knowledge and application experience in the fundamentals taught in class.

JOB DESCRIPTION

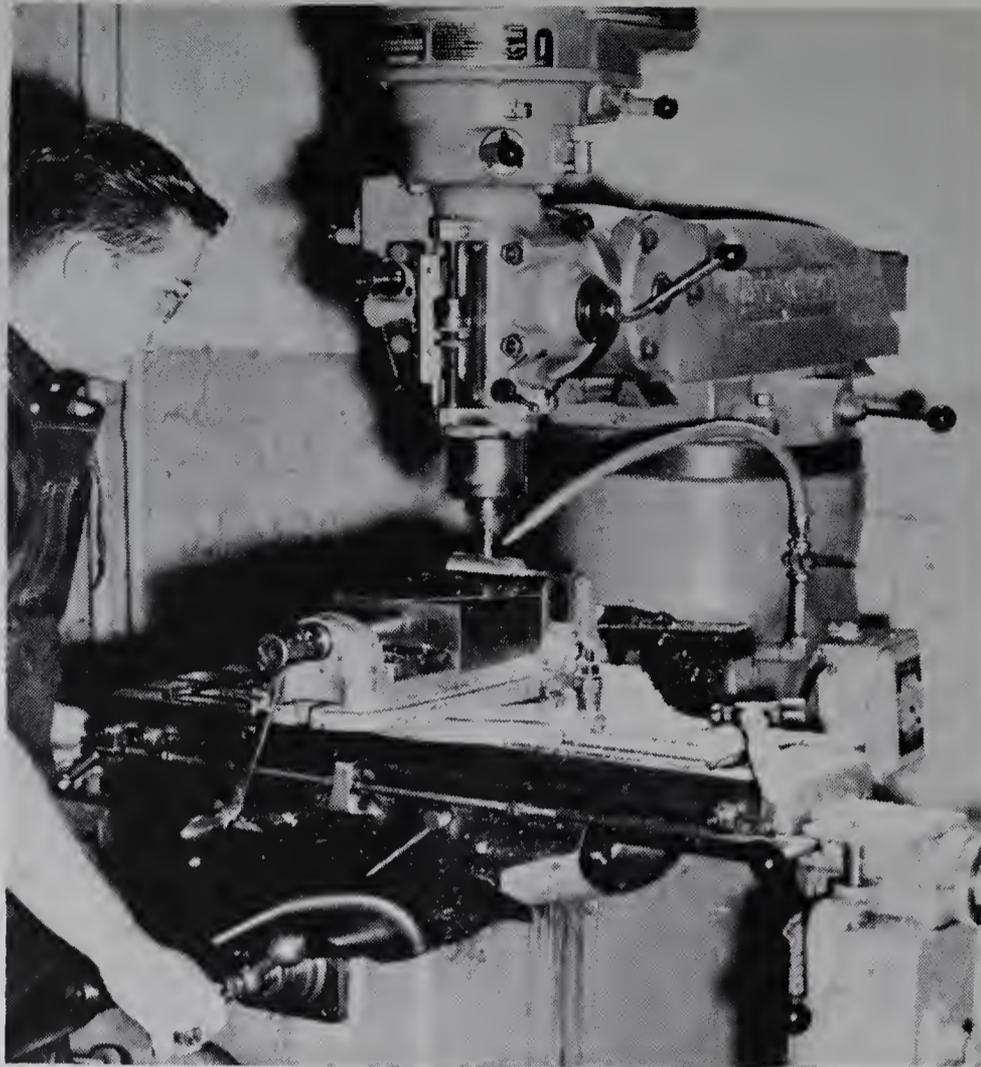
The graduate of the electrical trades program will be qualified to enter an electrical trade as an on-the-job trainee or apprentice, where he will assist in the planning, layout,



installation, checkout, and maintenance of systems in residential, commercial, or industrial plants. He will have an understanding of the fundamentals of the National Electrical Code regulations as related to wiring installations, electrical circuits, and the measurements of voltage, current, power, and power factor of single and polyphase alternating circuits. He will have a basic knowledge of motor and motor control systems; industrial electronic control systems; business procedures, organization, and practices; communicative skills; and the necessary background to be able to advance through experience and additional training through up-grading courses.

CURRICULUM

| 1st QUARTER | Class | Lab | Credit |
|---|---|---|---|
| DRA 1101 Blueprint Reading | 0 | 3 | 1 |
| ELC 1151 Residential Wiring Methods | 3 | 9 | 6 |
| ENG 1101 Reading Improvement | 2 | 0 | 2 |
| MAT 1112 Algebra I | 5 | 0 | 5 |
| PHY 1112 Applied Physics II | 3 | 2 | 4 |
| | <hr style="width: 100%; border: 0; border-top: 1px solid black; margin: 0;"/> | <hr style="width: 100%; border: 0; border-top: 1px solid black; margin: 0;"/> | <hr style="width: 100%; border: 0; border-top: 1px solid black; margin: 0;"/> |
| | 13 | 14 | 18 |
| 2nd QUARTER | | | |
| ELC 1102 Direct and Alternating Current | 3 | 8 | 6 |
| ENG 1102 Communications Skills | 2 | 0 | 2 |
| MAT 1113 Trigonometry | 5 | 0 | 5 |
| PHY 1111 Applied Physics I | 3 | 2 | 4 |
| WLD 1111 Welding | 0 | 3 | 1 |
| | <hr style="width: 100%; border: 0; border-top: 1px solid black; margin: 0;"/> | <hr style="width: 100%; border: 0; border-top: 1px solid black; margin: 0;"/> | <hr style="width: 100%; border: 0; border-top: 1px solid black; margin: 0;"/> |
| | 13 | 13 | 18 |
| 3rd QUARTER | | | |
| ELC 1153 AC and DC Machines | 5 | 6 | 7 |
| ELC 1163 Electrical Controls | 3 | 3 | 4 |
| ELC 1173 Electrical Codes and Estimates | 2 | 4 | 4 |
| SOC 1103 Human Relations | 3 | 0 | 3 |
| | <hr style="width: 100%; border: 0; border-top: 1px solid black; margin: 0;"/> | <hr style="width: 100%; border: 0; border-top: 1px solid black; margin: 0;"/> | <hr style="width: 100%; border: 0; border-top: 1px solid black; margin: 0;"/> |
| | 13 | 13 | 18 |
| 4th QUARTER | | | |
| ELC 1154 Commercial and Industrial Wiring | 5 | 6 | 7 |
| ELC 1164 Industrial Electronics | 3 | 6 | 5 |
| ELC 1174 Power Distribution | 3 | 0 | 3 |
| ELC 1184 Lighting | 2 | 2 | 3 |
| | <hr style="width: 100%; border: 0; border-top: 1px solid black; margin: 0;"/> | <hr style="width: 100%; border: 0; border-top: 1px solid black; margin: 0;"/> | <hr style="width: 100%; border: 0; border-top: 1px solid black; margin: 0;"/> |
| | 13 | 14 | 18 |



MACHINIST

PURPOSE OF CURRICULUM

This curriculum was prepared to meet a definite need for training of machinists. Surveys recently completed in North Carolina show that many of the existing industries lack time and facilities for training enough machinists to meet present and planned needs. Expanding industries already located in our State and new industries under development invariably express the need for skilled craftsmen who have the background knowledge and potential to advance.

This curriculum is designed to give learners the opportunity to acquire basic skills and the related technical information necessary to gain employment and build a profitable career in the machine shop industry in the State.

JOB DESCRIPTION

The machinist is a skilled metal worker who shapes metal parts by using machine tools and hand tools. His training and experience enable him to plan and carry through all the operations needed in turning out a machined product and to switch readily from one kind of product to another. A machinist is able to select the proper tools and material re-

quired for each job and to plan the cutting and finishing operations in their proper order so that he can complete the finished work according to blueprint or written specifications. He makes standard shop computations relating to dimensions of work, tooling, feeds, and speeds of machining. He often uses precision measuring instruments such as micrometers and gages to measure the accuracy of his work to thousandths of an inch.

The skilled worker must be able to set up and operate most types of machine tools. The machinist also must know the composition of metals so that he can heat and quench cutting tools and parts to improve machinability. His wide knowledge enables him to turn a block of metal into an intricate, precise part.

CURRICULUM

| 1st QUARTER | | | Class | Lab | Credit |
|--------------------|------|----------------------------------|--------------|------------|---------------|
| DRA | 1101 | Blueprint Reading | 0 | 3 | 1 |
| ENG | 1101 | Reading Improvement | 2 | 0 | 2 |
| MAT | 1101 | Fundamentals of Math | 5 | 0 | 5 |
| MEC | 1101 | Machine Shop I | 3 | 9 | 6 |
| PHY | 1111 | Applied Physics I | 3 | 2 | 4 |
| | | | — | — | — |
| | | | 13 | 14 | 18 |
| 2nd QUARTER | | | | | |
| DRA | 1152 | Blueprint Reading for Machinists | 0 | 3 | 1 |
| ENG | 1102 | Communication Skills | 2 | 0 | 2 |
| MAT | 1152 | Machinist Mathematics I | 5 | 0 | 5 |
| MEC | 1102 | Machine Shop | 3 | 9 | 6 |
| PHY | 1112 | Applied Physics II | 3 | 2 | 4 |
| | | | — | — | — |
| | | | 13 | 14 | 18 |
| 3rd QUARTER | | | | | |
| MAT | 1153 | Machinist Mathematics II | 5 | 0 | 5 |
| MEC | 1103 | Machine Shop III | 3 | 9 | 6 |
| MEC | 1123 | Structure of Metals | 3 | 2 | 4 |
| SOC | 1103 | Human Relations | 3 | 0 | 3 |
| | | | — | — | — |
| | | | 14 | 11 | 18 |
| 4th QUARTER | | | | | |
| MEC | 1104 | Machine Shop IV | 3 | 9 | 6 |
| MEC | 1124 | Heat Treating Practice | 2 | 6 | 4 |
| MEC | 1134 | Production and Quality Control | 4 | 2 | 5 |
| MEC | 1144 | Production Planning | 3 | 0 | 3 |
| | | | — | — | — |
| | | | 12 | 17 | 18 |

TOOL AND DIE

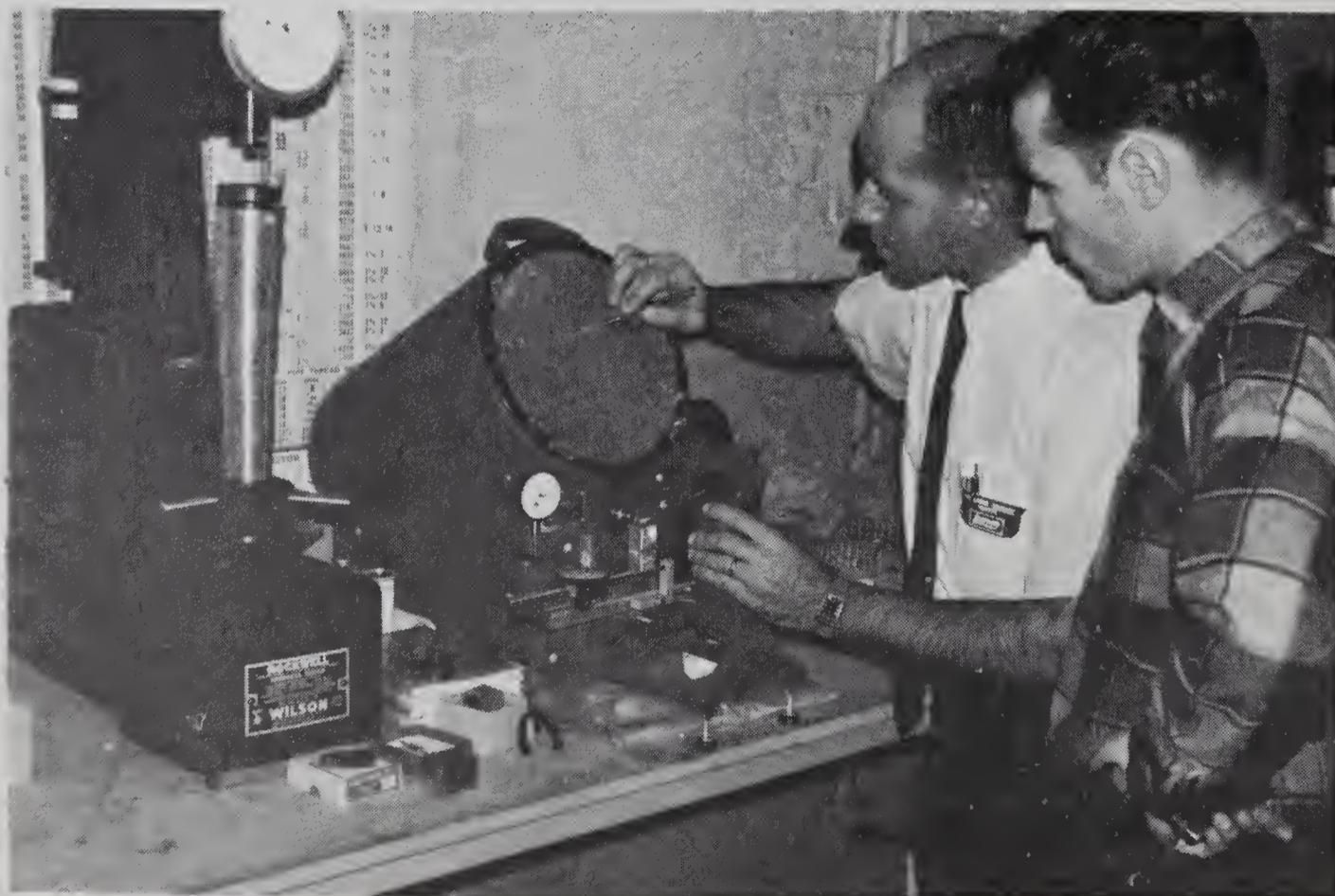
PURPOSE OF CURRICULUM

The tool and die maker is the foundation man of many industries. This individual is highly skilled and possesses a tremendous depth of technical knowledge. This curriculum is designed to start an advanced machinist into the elementary requirement of tool and die making and progresses into more complex dies, jigs and fixture gauges, and other areas.

This course will enable the advanced machinist to compare the machines found in a tool and die shop with those found in an average machine shop. Each student will be required to become highly proficient in the use of each machine used in tool and die making. The related courses are designed to give the student an opportunity to advance his knowledge in mathematics, strength of materials, drafting, and hydraulics and pneumatics.

JOB DESCRIPTION

The tool and die maker must have patience and interest to do an unhurried, painstaking job. Always in demand to repair and replace tools and dies; to retool plants for new models, products or devices. There exists no shortcut to this highly skilled occupation—one of the best paying and exacting of all machine shop crafts. After completing this program the graduate will serve an additional four to five years as an apprentice where he will work on the job under the direct guidance of a journeyman.



CURRICULUM

5th QUARTER

| | | | Class | Lab | Credit |
|-----|------|---------------------|-------|-----|--------|
| DFT | 1155 | Drafting I | 3 | 3 | 4 |
| MEC | 1105 | Machine Processes I | 3 | 12 | 7 |
| MAT | 1115 | Trigonometry II | 5 | 0 | 5 |
| PHY | 1105 | Mechanics | 2 | 0 | 2 |
| | | | — | — | — |
| | | | 13 | 15 | 18 |

6th QUARTER

| | | | | | |
|-----|------|-----------------------|----|----|----|
| DFT | 1156 | Jigs and Fixtures | 3 | 3 | 4 |
| MAT | 1156 | Applied Mathematics I | 5 | 0 | 5 |
| MEC | 1106 | Machine Processes II | 3 | 12 | 7 |
| MEC | 1116 | Mechanisms | 2 | 0 | 2 |
| | | | — | — | — |
| | | | 13 | 15 | 18 |

7th QUARTER

| | | | | | |
|-----|------|---------------------------|----|----|----|
| MAT | 1157 | Applied Mathematics II | 5 | 0 | 5 |
| MEC | 1107 | Machine Processes III | 3 | 12 | 7 |
| MEC | 1157 | Metallurgy I | 3 | 3 | 4 |
| MEC | 1167 | Hydraulics and Pneumatics | 2 | 0 | 2 |
| | | | — | — | — |
| | | | 13 | 15 | 18 |

8th QUARTER

| | | | | | |
|-----|------|----------------------|----|----|----|
| MEC | 1108 | Machine Processes IV | 5 | 9 | 8 |
| MEC | 1158 | Metallurgy II | 3 | 3 | 4 |
| MEC | 1168 | Special Problems | 2 | 3 | 3 |
| MEC | 1178 | Tool Design | 3 | 0 | 3 |
| | | | — | — | — |
| | | | 13 | 15 | 18 |



VOCATIONAL DRAFTING

PURPOSE OF CURRICULUM

This curriculum is designed to prepare students to enter the field of drafting. The first three quarters contain courses basic to all fields of drafting. The fourth quarter contains specialization and related courses that prepare one to enter several drafting occupations.

Each course is prepared to enable an individual to advance rapidly in drafting proficiency upon entering the field of work. Courses are arranged in sequence to develop drafting skills and proficiency in mathematics and science. The draftsman associates with many levels of personnel—administrative, architects, engineers, skilled workmen—and must be able to communicate effectively with them. Courses to develop knowledge and skills in communication, human relations, economics and industrial organization are provided to assist the student in developing understandings and confidence in his relations with other persons.

JOB DESCRIPTION

Draftsmen prepare clear, complete, and accurate working plans and detail drawings, from rough or detailed sketches or notes for engineering or manufacturing purposes, according to the specified dimensions: Makes final sketch of

the proposed drawing, checking dimensions of parts, materials to be used, the relation of one part to another, and the relation of the various parts to the whole structure. Makes any adjustments or changes necessary or desired. Inks in all lines and letters on pencil drawings as required. Exercises manual skill in the manipulation of triangle, T-square, and other drafting tools. Lays tracing paper on drawing and traces drawing in ink. Makes charts for representation of statistical data. Makes finished designs from sketches. Utilizes knowledge of various machines, engineering practices, mathematics, building materials, and other physical sciences to complete the drawings.

CURRICULUM

1st QUARTER

| | | | Class | Lab | Credit |
|-----|------|--------------------------|-------|-----|--------|
| DFT | 1101 | Drafting I | 3 | 9 | 6 |
| ENG | 1101 | Reading Improvement | 2 | 0 | 2 |
| MAT | 1111 | Plane and Solid Geometry | 5 | 0 | 5 |
| MEC | 1201 | Machine Processes I | 0 | 3 | 1 |
| PHY | 1111 | Applied Physics I | 3 | 2 | 4 |
| | | | 13 | 14 | 18 |

2nd QUARTER

| | | | | | |
|-----|------|----------------------|----|----|----|
| DFT | 1102 | Drafting II | 3 | 9 | 6 |
| ENG | 1102 | Communication Skills | 2 | 0 | 2 |
| MAT | 1112 | Algebra I | 5 | 0 | 5 |
| MEC | 1202 | Machine Processes II | 0 | 3 | 1 |
| PHY | 1112 | Applied Physics II | 3 | 2 | 4 |
| | | | 13 | 14 | 18 |

3rd QUARTER

| | | | | | |
|-----|------|----------------------|----|----|----|
| DFT | 1103 | Drafting III | 3 | 6 | 5 |
| DFT | 1113 | Descriptive Geometry | 1 | 3 | 2 |
| MAT | 1113 | Trigonometry | 5 | 0 | 5 |
| MEC | 1153 | Metallurgy I | 1 | 2 | 2 |
| PHY | 1113 | Applied Physics III | 3 | 2 | 4 |
| | | | 13 | 13 | 18 |

4th QUARTER

| | | | | | |
|-----|------|------------------------|----|----|----|
| DFT | 1104 | Drafting IV | 3 | 9 | 6 |
| DFT | 1124 | Technical Illustration | 2 | 3 | 2 |
| ELC | 1123 | Industrial Electricity | 3 | 3 | 4 |
| MEC | 1154 | Metallurgy II | 1 | 2 | 3 |
| SOC | 1103 | Human Relations | 3 | 0 | 3 |
| | | | 12 | 17 | 18 |

ELECTRONICS SERVICING

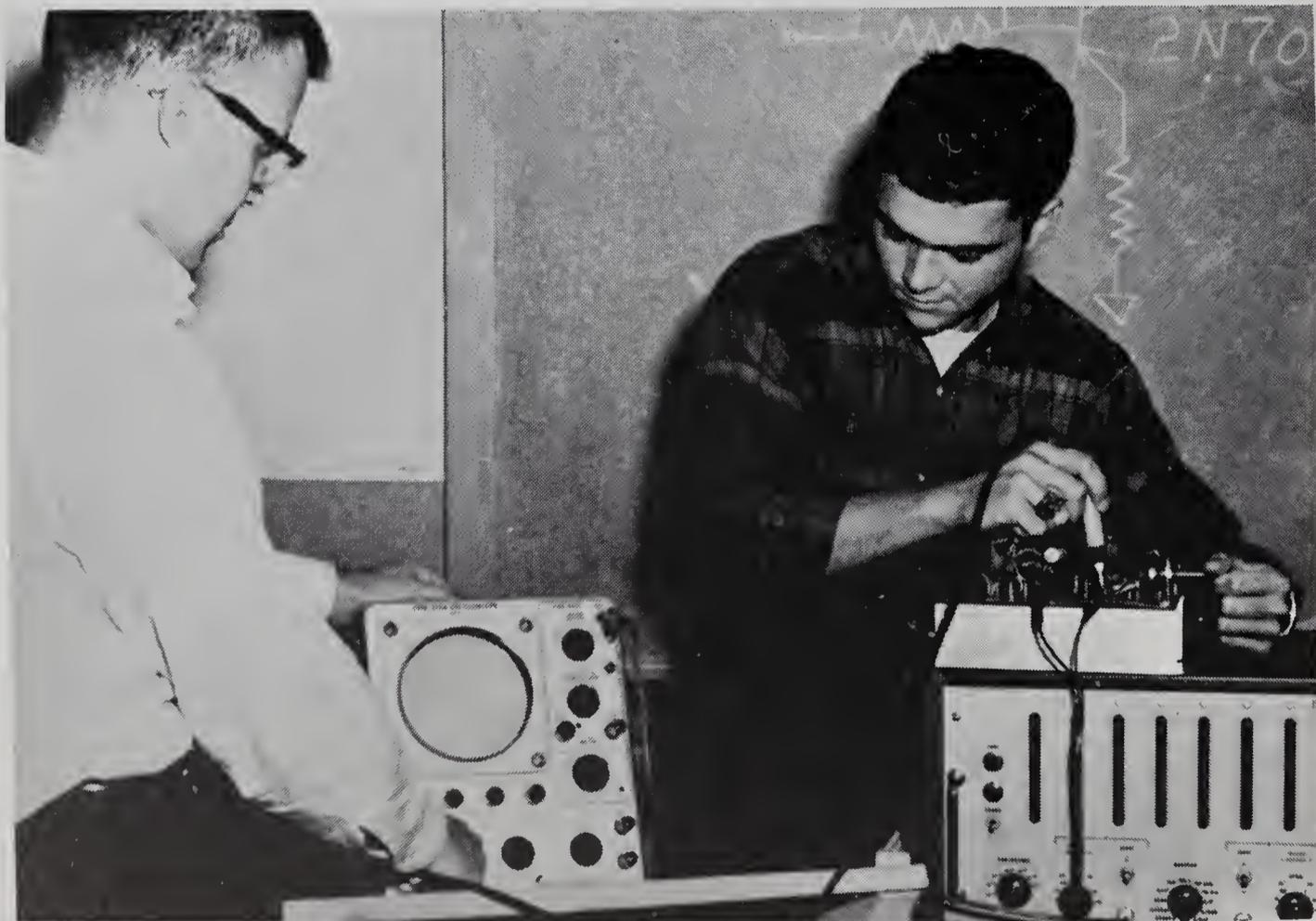
PURPOSE OF CURRICULUM

Within recent years improved electronic techniques have provided expanded entertainment and educational facilities in the form of monochrome and color television, frequency modulated radio, high fidelity amplifiers and stereophonic sound equipment. These developments require expanded knowledge and skill of the individual who would qualify as a competent and up-to-date serviceman.

This curriculum guide provides a training program which will provide the basic knowledge and skills involved in the installation, maintenance and servicing of radio, television and sound amplifier system. A large portion of time is spent in the laboratory verifying electronic principles and developing servicing techniques.

JOB DESCRIPTION

A radio and television serviceman may be required to install, maintain and service amplitude modulated and frequency modulated home and auto radios, transistorized radios, monochrome and color television sets, intercommunication, public address and paging systems, high fidelity and stereophonic amplifiers, record players and tape recorders.



His work will require meeting the public both in the repair shop and on service calls. A serviceman who establishes his own business will also need to know how to maintain business records and inventory.

CURRICULUM

| 1st QUARTER | | | Class | Lab | Credit |
|--------------------|------|-------------------------|---|---|---|
| ELN | 1101 | Instrument Fundamentals | 3 | 9 | 6 |
| ELN | 1111 | Laboratory Techniques | 0 | 3 | 1 |
| ENG | 1101 | Reading Improvement | 2 | 0 | 2 |
| MAT | 1112 | Algebra I | 5 | 0 | 5 |
| PHY | 1112 | Applied Physics II | 3 | 2 | 4 |
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| | | | 13 | 14 | 18 |

2nd QUARTER

| | | | | | |
|-----|------|-------------------------------|---|---|---|
| ELN | 1102 | DC and AC Circuits | 3 | 6 | 5 |
| ELN | 1112 | Trouble-Shooting Techniques I | 0 | 6 | 2 |
| ENG | 1102 | Communication Skills | 2 | 0 | 2 |
| MAT | 1113 | Trigonometry | 5 | 0 | 5 |
| PHY | 1111 | Applied Physics I | 3 | 2 | 4 |
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| | | | 13 | 14 | 18 |

3rd QUARTER

| | | | | | |
|-----|------|---------------------------------|---|---|---|
| ELN | 1103 | Electron Devices and Circuits I | 5 | 8 | 8 |
| ELN | 1113 | Trouble-Shooting Techniques II | 0 | 6 | 2 |
| ELN | 1153 | Applied Mathematics | 5 | 0 | 5 |
| SOC | 1103 | Human Relations | 3 | 0 | 3 |
| | | | <hr style="width: 100%; border: 0.5px solid black;"/> | <hr style="width: 100%; border: 0.5px solid black;"/> | <hr style="width: 100%; border: 0.5px solid black;"/> |
| | | | 13 | 14 | 18 |

4th QUARTER

| | | | | | |
|-----|------|-------------------------------------|---|---|---|
| ELN | 1104 | Electron Devices and Circuits II | 5 | 8 | 8 |
| ELN | 1114 | Trouble-Shooting Techniques III | 0 | 6 | 2 |
| ELN | 1124 | Transmission Theory and Maintenance | 3 | 3 | 4 |
| ELN | 1134 | FCC Rules and Regulations | 3 | 2 | 4 |
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| | | | 11 | 19 | 18 |



WELDING

PURPOSE OF CURRICULUM

This curriculum was developed to fill the tremendous need for weldors in North Carolina. The recently completed Manpower Survey shows quite clearly that many weldors will be needed annually to fill present and projected vacancies in the State.

The content of this curriculum is designed to give students sound understanding of the principles, methods, techniques and skills essential for successful employment in the welding field and metals industry.

The field of welding offers a person prestige, security, and a future of continuous employment with steady advancement. It offers employment in practically any industry: shipbuilding, automotive, aircraft, guided missiles, railroads, construction, pipe fitting, production shop, job shop and many others.

JOB DESCRIPTION

Weldors join metals by applying intense heat, and sometime pressure, to melt the edges to form a permanent bond. Closely related to welding is "oxygen cutting." Of the more

than 35 different ways of welding metals, arc, gas, and resistance welding are the three most important.

The principal duty of the weldor using manual techniques is to control the melting by directing the heat, from either an electric arc or gas welding torch, and to add filler metal where necessary to complete the joint. He should possess a great deal of manipulative skill with a knowledge of jigs, welding symbols, mathematics, basic metallurgy, and blueprint reading.

CURRICULUM

| 1st QUARTER | Class | Lab | Credit |
|--|---|---|---|
| ENG 1101 Reading Improvement | 2 | 0 | 2 |
| MAT 1101 Fundamentals of Mathematics | 5 | 0 | 5 |
| PHY 1112 Applied Physics II | 3 | 2 | 4 |
| WLD 1101 Welding I | 3 | 9 | 6 |
| WLD 1121 Hand Power Tools | 0 | 3 | 1 |
| | <hr style="width: 100%; border: 0.5px solid black;"/> | <hr style="width: 100%; border: 0.5px solid black;"/> | <hr style="width: 100%; border: 0.5px solid black;"/> |
| | 13 | 14 | 18 |
| 2nd QUARTER | | | |
| DRA 1101 Blueprint Reading | 0 | 3 | 1 |
| ENG 1102 Communication Skills | 2 | 0 | 2 |
| MAT 1111 Plane and Solid Geometry | 5 | 0 | 5 |
| PHY 1111 Applied Physics I | 3 | 2 | 4 |
| WLD 1102 Welding II | 3 | 9 | 6 |
| | <hr style="width: 100%; border: 0.5px solid black;"/> | <hr style="width: 100%; border: 0.5px solid black;"/> | <hr style="width: 100%; border: 0.5px solid black;"/> |
| | 13 | 14 | 18 |
| 3rd QUARTER | | | |
| DRA 1163 Blueprint Reading for Welding | 0 | 3 | 1 |
| WLD 1103 Welding III | 3 | 6 | 5 |
| WLD 1123 Structure of Metals I | 5 | 4 | 7 |
| WLD 1133 Mechanical Testing and Inspection | 0 | 6 | 2 |
| SOC 1103 Human Relations | 3 | 0 | 3 |
| | <hr style="width: 100%; border: 0.5px solid black;"/> | <hr style="width: 100%; border: 0.5px solid black;"/> | <hr style="width: 100%; border: 0.5px solid black;"/> |
| | 11 | 19 | 18 |
| 4th QUARTER | | | |
| WLD 1104 Welding IV | 3 | 9 | 6 |
| WLD 1124 Structure of Metals II | 5 | 4 | 7 |
| WLD 1134 Introduction to Pipe Welding | 3 | 3 | 4 |
| WLD 1144 Estimating | 0 | 2 | 1 |
| | <hr style="width: 100%; border: 0.5px solid black;"/> | <hr style="width: 100%; border: 0.5px solid black;"/> | <hr style="width: 100%; border: 0.5px solid black;"/> |
| | 11 | 18 | 18 |

COURSE DESCRIPTIONS

AIR CONDITIONING & REFRIGERATION

AHR 1101 PRINCIPLES OF REFRIGERATION

Essential terminology, laws of refrigeration, heat and the methods of heat transfer, the compression system, use and care of tools and equipment, tubing and fittings. Practice will be given in basic refrigeration jobs such as tube bending, flaring, swaging, identification of fittings, soldering and use of basic test equipment.

AHR 1102 DOMESTIC AND COMMERCIAL REFRIGERATION

Refrigeration service practice on domestic refrigeration systems using conventional, hermetic, and absorption systems. Cabinet care, controls, system maintenance, and system replacement will be stressed. Typical service problems will be solved by each student. Complete re-building of domestic refrigerators, including a cabinet refinishing, will be undertaken.

AHR 1103 PRINCIPLES OF AIR CONDITIONING

The history, theory, and factors covering air conditioning are studied. Instruction will include air conditioning terminology, temperature measurement, air movement, humidity, psychometric properties, comfort zone, effective temperature, duct systems, air diffusion, air cleaning zone, testing instruments and heat loads.

AHR 1113 CALCULATION OF HEAT LOSS AND GAIN

A practical course dealing with relays, solenoids, thermostatic and pressure motor controls, defrost controls, and wiring diagrams. Emphasis will be placed on proper diagnosis of electrical troubles in sealed refrigeration systems.

AHR 1122 AUTOMATIC CONTROLS I

Practice in computing system loads, equipment sizing and balancing, and the use of charts and tables pertaining to refrigeration equipment.

AHR 1123 AUTOMATIC CONTROLS II

Electric, Electronic and pneumatic control systems as related to ventilation, refrigeration, and air conditioning systems. Test instruments and their use. System adjustments for proper operation.

DRA 1153 SHEET METAL PATTERN DRAFTING

A specialized course in drafting for the heating, air conditioning and refrigeration students. Emphasis will be placed on reading of blueprints that are common to the trade; including ducts and equipment layout.

ELC 1123 INDUSTRIAL ELECTRICITY

The study of the various electrical devices used in air conditioning and heating equipment. Included will be transformers, various types of motors and starting devices, switches, electrical heating devices and wiring.

AHR 1104 ALL-YEAR COMFORT SYSTEMS

Auxiliary equipment used in conjunction with refrigeration systems to provide both heating and cooling for "all-year" comfort will be studied and systems will be designed using this auxiliary equipment. Included will be oil-fired systems, gas-fired systems, water-circulating systems, electric-resistance systems and the special controls used in the "all-year" comfort systems.

AHR 1114 ESTIMATING

Practical exercises in estimating for the student to gain experience. The student will prepare estimates and submit bids on projects involving the major types of heating and air-conditioning systems used in domestic and commercial building.

AHR 1154 REVERSE REFRIGERATION

Complete study of heat pump installation, its controls, theory and operation. Practical work experience in trouble shooting on systems.

AHR 1164 AUTOMOTIVE AIR CONDITIONING

General Introduction to the principles of refrigeration; study of the assembly of the components and connections necessary in the mechanisms, the methods of operation, and control; proper handling of refrigerants in charging the system.

AUTOMOTIVE & DIESEL MECHANICS**AUT 1101 AUTOMOTIVE ENGINES**

Development of a thorough knowledge and ability in using, maintaining, and storing the various hand tools and measuring devices needed in automotive repair work. Study of the construction and operation of components of automotive engines. Testing of engine performance; servicing and maintenance of pistons, valves, cams and camshafts, fuel and exhaust systems, cooling systems; proper lubrication; and methods of testing, diagnosing and repairing.

AHR 1164 AUTOMOTIVE AIR CONDITIONING

General Introduction to the principles of refrigeration; study of the assembly of the components and connections necessary in the mechanisms, the methods of operation, and control; proper handling of refrigerants in charging the system.

AUT 1102 AUTOMOTIVE ELECTRICAL AND FUEL SYSTEMS

A thorough study of the electrical and fuel systems of the automobile. Battery cranking mechanism, generator, ignition, accessories and wiring; fuel pumps, carburetors, and fuel injectors. Characteristics of fuels, types of fuel systems, special tools, and testing equipment for the fuel and electrical system.

AUT 1103 AUTOMOTIVE POWER TRAIN SYSTEMS

Principles and functions of automotive power train systems: clutches, transmission gears, torque converters, drive shaft assemblies, rear axles and differentials. Identification of troubles, servicing, and repair.

AUT 1113 AUTOMOTIVE CHASSIS AND SUSPENSIONS

Principles and functions of the components of automotive chassis. Practical job instruction in adjusting and repairing of suspension, steering and braking systems. Units to be studied will be shock absorbers, springs, steering systems, steering linkage, front end types and servicing of brakes.

AUT 1104 AUTOMOTIVE SERVICING

Emphasis is on the shop procedures necessary in determining the nature of troubles developed in the various component systems of the automobile. Troubleshooting of automotive systems, providing a full range of testing, adjusting, repairing and replacing experiences.

AUT 1154 INTRODUCTION TO DIESEL ENGINES

Study of the construction and operation of components of Diesel engines. Testing of engine performance. Fuel, exhaust, and cooling systems. Methods of testing and trouble shooting on diesel engines.

AUT 1164 BRAKING SYSTEMS

A complete study of various braking systems employed on automobiles and trucks. Emphasis is placed on how they work and proper adjusting techniques and replacement.

ELECTRICAL INSTALLATION AND MAINTENANCE

ELC 1151 RESIDENTIAL WIRING METHODS

A complete study of residential wiring systems and components with particular emphasis on the National Electrical Code, State and Local Codes.

ELC 1102 DIRECT AND ALTERNATING CURRENT

A study of the electrical structure of matter and electron theory, the relationship between voltage, current, and resistance in series, parallel and series parallel circuits. An analysis of direct current circuits by Ohm's Law and Kirchhoff's Law. A study of the sources of direct current voltage potentials. Fundamental concepts of alternating current flow, reactance, impedance, phase angle, power, and resonance. Analysis of alternating current circuits.

ELC 1153 AC & DC MACHINES

Provides fundamental concepts in single and polyphase alternating current circuits, voltages, currents, power measurements, transformers, and motor. Instruction in the use of the electrical test instruments in circuit analysis. The basic concepts of AC and DC machines and simple system controls. An introduction to the type control used in small appliances, such as: thermostats, times, or sequencing switches.

ELC 1163 ELECTRICAL CONTROLS

Basic industrial electronic systems, such as: motor controls, alarm systems, heating systems and controls, magnetic amplifier controls, welding control systems using thyatron tubes, and other basic types.

ELC 1173 ELECTRICAL CODES AND ESTIMATES

Specifications for industrial, commercial, and residential wiring installations including a consideration of the applicable codes, regulations and licenses, analysis of plans and specifications for the preparation of electrical estimates covering industrial, commercial, and residential wiring installations.

ELC 1154 COMMERCIAL AND INDUSTRIAL WIRING

Layout, planning, and installation of wiring systems in commercial and industrial complexes, with emphasis upon blueprint reading and symbols, the related National Electrical Codes, and the application of the fundamentals to practical experience in wiring, conduit preparation, and installation of simple systems.

ELC 1164 INDUSTRIAL ELECTRONICS

A survey course in electronic devices and circuits that are fundamental to the electrical trade.

ELC 1174 POWER DISTRIBUTION

A study of electrical distribution systems for power, light and heat, including switchboards, panels, switchgear, and wiring for standard utilization and distribution voltages up to 15 kilowatts.

ELC 1184 LIGHTING

A study of light sources, luminaries, illumination levels and interior lighting layouts, roadway lighting and flood-lighting.

MACHINIST

MEC 1101 MACHINE SHOP I

An introduction to the machinist trade and the potential it holds for the craftsman. Deals primarily with the identification, care and use of basic hand tools and precision measuring instruments. Elementary layout procedures and processes of lathe, drill press, grinding (off-hand) and milling machines will be introduced both in theory and practice.

DRA 1152 BLUEPRINT READING FOR MACHINISTS

Advanced blueprint reading as related to actual complete detail drawings found in machine shops. Discussion as to how pieces will be produced and this relationship to the drawing.

MAT 1152 MACHINIST MATHEMATICS I

Fundamental geometric concepts and construction of plane and solid figures, surface and volume measurements, and related problems; introduction to trigonometry of the right triangle.

MEC 1102 MACHINE SHOP II

Advanced operations in layout tools and procedures, power sawing, drill press, surface grinder, milling machine and shaper. The student will be introduced to the basic operations on the cylindrical grinder and will select projects encompassing all the operations, tools and procedures thus far used and those to be stressed throughout the course.

MAT 1153 MACHINIST MATHEMATICS II

Introduces gear ratio, lead screw and indexing problems with emphasis on application to the machine shop. Practical applications and problems furnish the trainee with experience in geometric propositions and trigonometric relations to shop problems; concludes with an introduction to compound angle problems.

MEC 1103 MACHINE SHOP III

Advanced work on the engine lathe, turning, boring and threading machines, grinders, milling machine and shaper. Introduction to basic indexing and terminology with additional processes on calculating, cutting and measuring of spur, helical, and worm gears and wheels. The trainee will use precision tools and measuring instruments such as vernier height gages, protractors, comparators, etc. Basic exercises will be given on the turret lathe and on the tool and cutter grinder.

MEC 1123 STRUCTURE OF METALS

Elementary and practical approach to metals, their structure, markings, classifications and uses. Interpretation of properties and specifications of steels by use of manuals, catalogs, charts, etc.

MEC 1104 MACHINE SHOP IV

Development of class projects using previously learned procedures in planning, blueprint reading, machine operations, final assembly and inspection. Additional processes on the turret lathe, tool and cutter grinder, cylindrical and surface grinder, advanced milling machine operations, etc. Special procedures and operations, processes and equipment, observing safety procedures faithfully and establishing of good work habits and attitudes acceptable to the industry.

MEC 1124 HEAT TREATING PRACTICE

Working knowledge of the methods of treating ferrous and nonferrous metals. The effects of hardening, tempering, and annealing upon the structure and physical properties of metals. Trainees will be given the opportunity to acquaint themselves with the equipment and processes of heat treating.

MEC 1134 PRODUCTION AND QUALITY CONTROL

Principles and techniques of quality control and cost saving. Organization and procedure for efficient quality control. Functions, responsibilities, structure, costs, reports, records, personnel and vendor-customer relationships in quality control. Sampling inspections, process control and tests for significance.

MEC 1144 PRODUCTION PLANNING

Day to day plant direction; forecasting, product planning and control, scheduling, dispatching, routing, and inventory control. Case histories are discussed in the classroom, and courses of corrective action are developed.

TOOL AND DIE

MEC 1105 MACHINE PROCESSES I

This course is designed to introduce the student to the tools, instruments, and machines used in the tool and die shop. The student will compare the machines used in production with those used in tool and die making. The student will become familiar with jigs and fixtures and their applications pertaining to production machining. Each student will be subjected to a series of projects that will require extreme proficiency.

MAT 1115 TRIGONOMETRY

A basic review of mathematics will form a foundation for a study of trigonometry of right triangles, vectors, coordinate systems, logarithmic and dimensional analysis. Applications to typical problems found in the tool and die shop will be presented and solutions will be found by using mathematics.

DFT 1155 DRAFTING I

An introductory course in drafting for students needing a knowledge of drawing principles and practices for reading and describing objects in the graphic language. The student is expected to gain basic skills in drawing with instruments, geometrical construction, freehand sketching, and describing objects orthographically with principal views and sections.

PHY 1105 MECHANICS

An analytical approach to the principles of mechanics and heat. Subject matter includes measurement, vector and scalar quantities, force, and motion, work and energy, statics, elasticity, fluids, thermal behavior of matter, and heat transfer.

MEC 1106 MACHINE PROCESSES II

Advanced operations of the tool shop, utilizing all machines. A study of shearing, punching, forming and drawing dies will be presented. The student will receive instructions on gauging practices and its application to the finished product, and will become familiar with various types of gauging procedures. Each student will work individually on a series of projects, gaining proficiency and knowledge of the various types of tools and dies found in industry.

MAT 1156 APPLIED MATHEMATICS I

The application of trigonometry and geometry will be presented to solve compound angles. This course will use as many practical problems as possible to enable the student to work with typical problems in compound angles and curves without points of generation.

DFT 1156 JIGS AND FIXTURES

A study of basic locating and clamping principles and devices, dimensioning, tolerances, etc., laboratory design of jigs and fixtures.

MEC 1116 MECHANISMS

This course consists of an application of mathematics and drafting

room procedures to the solution of problems involving the principles of machine elements. A study of motions of linkages, velocities, and acceleration of points within a link mechanism, and layout methods for designing cams, belting, pulleys, gear and gear trains will be presented.

MEC 1107 MACHINE PROCESSES III

This course will present a study of progressive dies typical of the operations found in the average industry. Step by step tooling used to transform raw material into a finished working part will be studied. Total utilization of all machines and instruments will be required. Application of hydraulic systems, air operated systems, pneumatic systems, and electronic controls and cycle devices will be presented. Emphasis will be placed on proper holding locations for machining and gauging finished parts.

MAT 1157 APPLIED MATHEMATICS II

A study of stresses and shears that occur in materials when subjected to tensile, compressive, and/or shearing forces. Stresses in thin walled cylinders, riveted and welded joints, shear and bending moment diagrams, deflection, eccentrically applied loads, torsion, and factors of column design will be emphasized.

MEC 1157 METALLURGY I

Properties of metals and various methods of changing these properties, classification of metals, powder metallurgy, and factors contributing to production and selection of metals will be presented. Chemical finishes, electroplating, and other methods of finishing or treating metals will be areas of study.

MEC 1167 HYDRAULICS AND PNEUMATICS

A basic theory of hydraulics and pneumatics systems and their combinations in various circuits. Function and basic design of circuits and motors, controls, electrohydraulic servo elements, synchro elements, and air operated systems will be presented. Automated systems of productions utilizing dies, tools, gauges, jigs and fixtures will be considered.

MEC 1108 MACHINE PROCESSES IV

This course will be used to review various processes of tool and die work, jigs and fixtures and gauging. Consideration of the production desired will be used to select the proper systems. Each student will work individually on different processes or systems utilizing all machines, instruments, and tools in tool and die making.

MEC 1158 METALLURGY II

A continuation of Metallurgy I with more time devoted to actual preparation of sample specimen pieces, more advanced techniques in the analysis of the structure and composition of metals.

MEC 1168 SPECIAL PROBLEMS

This course will be used to subject the student to special problems within local industries. Numerous field trips will be scheduled for individual and groups to review installation of systems, development of dies, tools, jigs and fixtures, and gauging. Each student will be required to follow one complete system from the design stage through to production. Special procedures of die casting, sand casting, shell molding, injection molding, hydro forming, and others will be presented.

MEC 1178 TOOL DESIGN

This course will enable the student to plan the process of production and isolate the areas that must be tooled for production. Cost of tools, die work, jig and fixtures, and gauging will be considered. Students review available items from vendors and utilize standard bushing charts and other references. Typical tool design procedures will be employed and prints must reflect standard procedures.

VOCATIONAL DRAFTING

DFT 1101 DRAFTING I

An introduction to drafting and the study of drafting practices. Instruction is given in the selection, use and care of instruments, single-stroke lettering, applied geometry, freehand sketching consisting of orthographic and pictorial drawings. Orthographic projection, reading and instrument drawing of principal views, single auxiliary views (primary), and double (oblique) auxiliary views will be emphasized. Dimensioning and note practices will be studied with reference to the American Standards Association practices. Methods of reproducing drawings will be included at the appropriate time.

DFT 1102 DRAFTING II

The trainee will study simple and successive revolutions and their applications to practical problems. Sections and conventions will be studied and both detail and assembly sections will be drawn. Intersections and developments will be studied by relating the drawing to the sheet metal trades. Models of the assigned drawings will be made from construction paper, cardboard, or similar materials as a proof of the solution to the problems drawn.

Methods of drawing and projecting axonometric, oblique and perspective drawing will be studied with emphasis on the practical applications of pictorial drawings. Various methods of shading will be introduced and dimensioning and sectioning of oblique and axonometric pictorials will be done.

DFT 1103 DRAFTING III

An introduction to mechanical drafting beginning with problems concerning precision and limit dimensioning. Methods of fastening materials, and fasteners: keys, rivets, springs, and welding. Symbols will be studied and drawings will be made involving these items. Principles of design will be introduced with the study of basic mechanisms of motion transfer; gears, cams, power trains, pulleys, belting and methods of specifying and calculating dimensions will be studied. Drawings will be made involving these mechanisms.

DFT 1113 DESCRIPTIVE GEOMETRY

Graphical analysis of space problems. The problems deal with practical design elements involving points, lines, planes, connectors, and a combination of these. Included are problems dealing with solid geometry theorems. Where applicable, each graphical solution shall be accompanied by the analytical solution.

MEC 1153 METALLURGY I

Investigates the properties of ferrous metals and tests to determine their uses. Instructions will include some chemical metallurgy to provide a background for the understanding of the physical changes and causes of these changes in metals. Physical metallurgy of ferrous metals, producing iron and steel, theory of alloys, shaping and forming, heat treatments for steel, surface treatments, alloy of special steel, classification of steels, and cast iron will be topics for study.

DFT 1104 DRAFTING IV

Principles of design sketching, design drawings, layout drafting, detailing from layout drawings, production drawings and simplified drafting practices constitute areas of study. Forging and casting drawings will be made from layouts. Specifications, parts list and bill of materials are emphasized in this course. The student will develop a complete set of working drawings of a tool, jig, fixture or simple machine and learn principles of design, handbook and manual usage.

DFT 1124 TECHNICAL ILLUSTRATION

A study of methods used in the preparation of pictorial drawings, methods of rendering, use of paste-up techniques for parts catalogs and or technical manuals.

ELC 1123 INDUSTRIAL ELECTRICITY

The study of various electrical devices used in air conditioning and heating equipment. Included will be transformers, various types of motors and starting devices, switches, electrical heating devices and wiring.

MEC 1154 METALLURGY II

Continuation of the study of physical metallurgy. The non-ferrous metals; bearing metals (brass, bronze, lead) light metals (aluminum and magnesium) and copper and its alloys are studied. Power metallurgy, titanium, zirconium, indium and vanadium are included in this course.

ELECTRONICS SERVICING**ELN 1101 INSTRUMENT FUNDAMENTALS**

VOM measurements, VTVM characteristics and measurements, capacitance and resistance measurement, measurement of inductance and Q.

ELN 1111 LAB TECHNIQUES

A thorough and detailed study of and work experience in the manual skills associated with servicing all types of electronic equipment.

ELN 1102 DC AND AC CIRCUITS

A study of the structure of matter and the electron theory, the relationship between voltage, current and resistance in series, parallel and series-parallel circuits. Analysis of direct current circuits by Ohm's law and Kirchhoff's law; sources of direct current potentials. Fundamental concepts of alternating current flow; a study of reactance, impedance, phase angle, power and resonance and alternating current circuit analysis.

ELN 1112 TROUBLE-SHOOTING TECHNIQUES I

Principles of radio reception and practices of servicing; included are block diagrams of radio receivers, servicing techniques of AM and FM receivers by resistance measurements, signal injection, voltage analysis, oscilloscope methods of locating faulty stages and components and the alignment of AM and FM receivers.

Prerequisite: ELN 123, ELN 122.

ELN 1103 ELECTRON DEVICES AND CIRCUITS I

An introduction to vacuum tubes and their development; the theory, characteristics and operation of vacuum diodes, semi-conductor diodes, rectifier circuits, filter circuits, triodes and simple voltage amplifier circuits.

ELN 1113 TROUBLE SHOOTING TECHNIQUES II

A study of principles of television receivers, alignment of radio and intermediate frequency amplifiers, adjustment of horizontal and vertical sweep circuits will be taught. Techniques of trouble shooting and repair of TV receivers with the proper use of associated test equipment will be stressed.

ELN 1153 APPLIED MATH

Mathematical methods used in analyzing electronic circuits will be developed. Elementary A-C circuits, complex Algebra, Rms current and average power. Analysis of simple circuits by substitution and graphical means.

ELN 1104 ELECTRON DEVICES & CIRCUITS II

A continuing study of tubes and circuits; the theory, characteristics, and operation of the tetrode and pentode tubes, voltage and power amplifiers, tunable RF amplifiers, oscillators and demodulator circuits. Prerequisite: ELN 123, ELN 122.

ELN 1114 TROUBLE SHOOTING TECHNIQUES III

Continuation of the development of techniques of diagnosing problems and repair of more sophisticated electronic gear.

ELN 1124 TRANSMISSION THEORY AND MAINTENANCE

A course to acquaint the student with the theory and maintenance of fixed station and mobile station transmitters and receivers. For radio laws, sufficient information will be given to qualify the student to take the FCC second class radiotelephone license examination. Prerequisites: ELN 126, ELN 125.

ELN 1134 FCC RULES AND REGULATIONS

Study of Rules and Regulations applicable to wire and wireless communications.

WELDING

WLD 1101 WELDING I

Introduction to the history of oxyacetylene welding, the principles of welding and cutting, nomenclature of the equipment, assembly of units. Welding procedures such as practice of puddling and carrying the puddle, running flat beads, butt welding in the flat, vertical and overhead position, brazing, hard and soft soldering. Safety procedures are stressed throughout the program of instruction.

WLD 1121 HAND AND POWER TOOLS

Designed to introduce the students to the correct use of hand tools found in the metalworking industry. Demonstrations show the proper procedure and safe use of power tools used in the welding and metal shop. Each student is required to complete a series of small projects utilizing hand and power tools.

WLD 1102 WELDING II

The operation of A.C. transformers and D.C. motor generator arc welding sets. Studies are made of welding heats, polarities, and electrodes for use in joining various metal alloys by the arc welding process. After the student is capable of running beads, butt and fillet welds in all positions are made and tested in order that the student may detect his weaknesses in welding. Safety procedures are emphasized throughout the course.

WLD 1103 WELDING III

Introduction and practical operations in the use of inert-gas-shield arc welding. A study will be made of the equipment, operation, safety and practice in the various positions. A thorough study of such topics as: principles of operation, shielding gases, filler rods, process variations and applications, manual and automatic welding.

WLD 1123 STRUCTURE OF METALS I

Elementary and practical approach to ferrous metals, their structure, markings, classifications and uses. Interpretation of properties and specifications of steels by use of manuals, catalogs, charts, etc.

WLD 1133 MECHANICAL TESTING AND INSPECTION

The standard methods for mechanical testing of welds. The student is introduced to the various types of tests and testing procedures and performs the details of the test which will give adequate information as to the quality of the weld. Types of tests to be covered are: bend, destructive, free-bend, guided-bend, nick-tear, notched-bend, tee-bend, nondestructive, V-notch, Charpy impact, etc.

WLD 1104 WELDING IV

Student is given an opportunity to specialize and review Gas, Arc and/or inert welding.

WLD 1124 STRUCTURE OF METALS II

Elementary and practical approach to non-ferrous metals, their structure, markings, classifications and uses. Interpretation of properties and specifications of steels by use of manuals, catalogs, charts, etc.

WLD 1134 INTRODUCTION TO PIPE WELDING

Designed to provide practice in the welding of pressure piping in the horizontal, vertical, and horizontal fixed position shielded metal arc welding processes according to Section IX of the ASME code.

WLD 1144 ESTIMATING

Cost estimates are prepared working from actual shop prints.

ENGLISH

ENG 1101 READING IMPROVEMENT

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

ENG 1102 COMMUNICATION SKILLS

Development of ability to communicate effectively through the medium of good language usage in speaking and writing. Organizing thoughts, and presenting thoughts effectively in connection with problems.

SOCIOLOGY

SOC 1103 HUMAN RELATIONS

Development of understanding of relationships to other persons through some of the basic principles of human psychology. The problems of the individual and his work situation are studied in relation to the established organization of modern business and industry and in relation to government practices and labor organization, with special emphasis on the operating responsibilities of good management.

SOC 1104 MANAGEMENT PROCEDURES

An introduction to the business world, problems of small business operation, basic business law, business forms and records, financial problems ordering and inventorying, layout of equipment and offices, methods of improving business, and employer-employee relations.

PHYSICS

PHY 1111 APPLIED PHYSICS I

Introductory physics and its application. Systems of measurement, theory of matter, properties of solids, liquids, and gases.

PHY 1112 APPLIED PHYSICS II

Basic principles of electricity, types of electricity, and its production, transmission, and transformation. Such factors as the electron theory, electrical measurement, magnetism, electromagnetism, and the magnetic effects of electricity constitute major areas of study.

PHY 1113 APPLIED PHYSICS III

Physical principles of force, energy, work and power; equilibrium and the laws of motion; principles of machines, mechanical advantage, and transmission of power in practical applications and the use of vectors and graphical presentations.

MATHEMATICS

MAT 1101 FUNDAMENTALS OF MATHEMATICS

Practical number theory. Analysis of basic operations: addition, subtraction, multiplication and division. Fractions, decimals, powers and roots, percentages, ratio and proportion. Plane and solid geometric figures used in industry; measurement of surfaces and volumes. Introduction to algebra used in trades. Practice in depth.

MAT 1111 GEOMETRY

Fundamental properties and definitions; plane and solid geometric figures, selected general theorems, geometric construction of lines, angles and plane figures. Dihedral angles, areas of plane figures, volumes of solids. Geometric principles are applied to shop operations.

MAT 1112 ALGEBRA

Basic concepts and operations of algebra: historical background of our base-10 number system; algebraic operations: addition, subtraction, multiplication and division; fractions, letter representation, grouping, factoring, ratio and proportions, variation; graphical and algebraic solution of first degree equations; solution of simultaneous equations by: addition and subtraction, substitution, graphing; exponents, logarithms, tables and interpolation.

MAT 1113 TRIGONOMETRY

Trigonometric ratios; solving problems with right triangles; using tables, and interpolating; solution of oblique triangles using law of sines and law of cosines; graphs of the trigonometric functions; inverse functions, trigonometric equations. All topics are applied to practical problems.

CORE RELATED COURSES

DRA 1101 BLUEPRINT READING

Interpretation and reading of blueprints. Development of ability to read and interpret blueprints, charts, instruction and service manuals, and wiring diagrams. Information on the basic principles of lines, views, dimensioning procedures, and notes.

WLD 1111 WELDING

Welding demonstrations by the instructor and practice by students in the welding shop. Safe and correct methods of assembling and operating the welding equipment. Practice will be given for surface welding; bronze welding, silver-soldering, and flame-cutting methods applicable to mechanical repair work.

MEC 1111 MACHINE PROCESSES I

An introductory course designed to acquaint the student with basic hand tools, safety procedures and machine processes of our modern industry. It will include a study of measuring instruments, characteristics of metals and cutting tools. The student will become familiar with the lathe family of machine tools by performing selected operations such as turning, facing, threading, drilling, boring, and reaming.

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"He Who Hath A Trade Hath An Estate"

— Ben Franklin