

**STATE COLLEGE RECORD**

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No. 10

# Gaston Technical Institute

Under the Auspices of

**THE SCHOOL OF ENGINEERING**

NORTH CAROLINA STATE COLLEGE

RALEIGH, NORTH CAROLINA



**ANNOUNCEMENTS FOR THE SESSION  
1956-1957**

**GASTON TECHNICAL INSTITUTE**

510 WEST AIRLINE AVENUE

GASTONIA, NORTH CAROLINA

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*On the Campus*

**GASTON TECHNICAL INSTITUTE**  
**Calendar for 1956 - 1957**

	1956 Fall	1957 Winter	1957 Spring	1957 Summer
Faculty Meeting . . . . .	Sept. 13			
Registration of Students	Sept. 17	Jan. 2	Mar. 18	June 10
Classwork Begins . . . . .	Sept. 18	Jan. 3	Mar. 19	June 11
Holidays . . . . .	Nov. 22,23		Apr. 19,22	July 1,2,3,4,5
Final Exams Begin . . . . .	Dec. 13	Mar. 14	May 29	Aug. 8
Term Ends . . . . .	Dec. 14	Mar. 15	May 30	Aug. 9
Commencement Exercises . . . . .	May 31			



*Television Laboratory*

## FOREWORD

In the spring of 1947 the Division of College Extension set up courses designed to prepare young men for technical positions in our expanding industry of the South. Students were accepted for the first class in September, 1947 and a technical school was formed. After five years of successful operation, the school was established at its present home at Gastonia, N. C. and became known as the Gaston Technical Institute.

## THE TECHNICIAN

A technician is a person trained in basic science. He is skilled in the use of tools and instruments. His job is to install and test technical equipment. After it has been installed, the technician's job is to keep it operating properly.

There are many kinds of technicians in industry today. They work with electricity, radio, television, machinery, automobiles, motors, controls, and many other devices essential to our modern civilization. Technicians must keep abreast of the new inventions and discoveries. Progress is the key to success in the technical world of today.

## THE NEED FOR A TECHNICAL INSTITUTE

Recent industrial development of the South has presented a new demand for trained technicians. This demand exceeds that for engineers by approximately eight to one but technicians have heretofore been unable to receive their training in the South.

An official of a large industrial plant, recently located in our State, reported that their operation was retarded two years because of the lack of properly trained technicians. Laborers and engineers were available.

Industry in the South cannot develop faster than these technicians are available. Realizing this need, the North Carolina State College has pioneered in the field and established the first technical institute in North Carolina and one of the first in the South.

The work for which the training prepares young men lies principally in the middle field of technical activity between the skilled trades and professional engineering. The courses are designed to prepare young men for specific duties in a specialized field of engineering.

As defined by the Technical Institute of Engineers' Council for Professional Development: "Technical Institute programs are intermediate between the high school and vocational school on one hand and the engineering college on the other. . . . The purpose is to prepare individuals for positions auxiliary to, but not in, the field of professional engineering. Curricula are essentially technological in nature, based upon principles of science, require the use of mathematics beyond high school, and emphasize rational processes rather than rules of practice. Curricula are briefer, more intensive, and more specific in purpose than collegiate engineering curricula though they lie in the same general fields of industry and engineering. Their aim is to prepare individuals for specific technical positions or lines of activity rather than broad sectors of engineering practice."

As in the past the technical institute program will be adapted to meet the needs of industry and the individual.

JAMES I. MASON, *Director*

# GASTON TECHNICAL INSTITUTE

## Office of Administration

- C. H. BOSTIAN, A.B., Catawba College; M.S., Ph.D., University of Pittsburgh, Chancellor, North Carolina State College.
- J. H. LAMPE, B.S., M.S., Dr. Eng., Johns Hopkins University; Dean of School of Engineering, North Carolina State College.
- J. G. VANN, Assistant Controller, North Carolina State College.
- E. W. RUGGLES, B.S., M.S., North Carolina State College, Director Division of College Extension, North Carolina State College.
- DAVID B. STANSEL, B.S., North Carolina State College; Assistant Director Division of College Extension, in charge of Engineering Extension.

## FACULTY

- J. I. MASON, A.B., University of North Carolina; Director, Gaston Technical Institute.
- J. T. AMOS, Instructor, Gasoline and Diesel Engines.
- D. C. BUMGARDNER, B.S., University of North Carolina; Instructor, Math, Physics.
- GRETCHEN CLONIGER, B.S., George Peabody College; Instructor, English.
- B. G. GRAY, Associate in Arts, Wilmington College; New England Aircraft School; Instructor, Automotive Technology.
- A. C. GROVES, Instructor, Radio and Television.
- W. C. GROVES, Instructor, Communications.
- R. C. GYLES, B.E.E., B.S., North Carolina State College; Instructor, Electricity, Radio.
- J. M. JENKINS, JR., B.S., M.A., North Carolina State College, Instructor, Engineering Drawing, Electricity.
- H. P. MACKIE, JR., Oak Ridge Military Institute, Lenoir-Rhyne College; Instructor, Gasoline and Diesel Engines.
- F. D. MAYS, Machine Shop Laboratory.
- D. P. MCINNIS, B.S. Educ., North Carolina State College; Instructor, Radio and Television.
- W. F. WILSON, B.M.E., N. C. State College; Instructor, Machine Shop.
- MRS. JAMES B. MCQUERE, Kings Business College, Secretary-Librarian.



*Administration Building*

## **GASTON TECHNICAL INSTITUTE**

### **Advisory Board**

C. C. Dawson, Chairman, Gastonia

Alexander Bell, Mount Holly

Charles K. Bryant, Sr., Gastonia

S. A. Burts, Bessemer City

J. A. Hendley, Stanley

Joe Hudson, Lowell

Howard Houser, Cherryville

Hunter Huss, Gastonia

Joe Lineberger, Belmont

Don Maddox, Gastonia

Harold Mercer, Gastonia

Coit M. Robinson, Lowell

Sam M. Stewart, Gastonia

Fred M. Waters, Gastonia

A. K. Winget, Jr., Gastonia

Frank A. Young, Gastonia

Chas. B. Zeigler, Gastonia

## ORGANIZATION OF THE SCHOOL

The Gaston Technical Institute is a non-profit educational institution. The purpose of the school is to offer four one-year terminal technical courses. The school is operated under the auspices of the School of Engineering by the Division of College Extension, N. C. State College, Raleigh, N. C. The local advisory board is composed of seventeen business and professional men of the community.

### Location

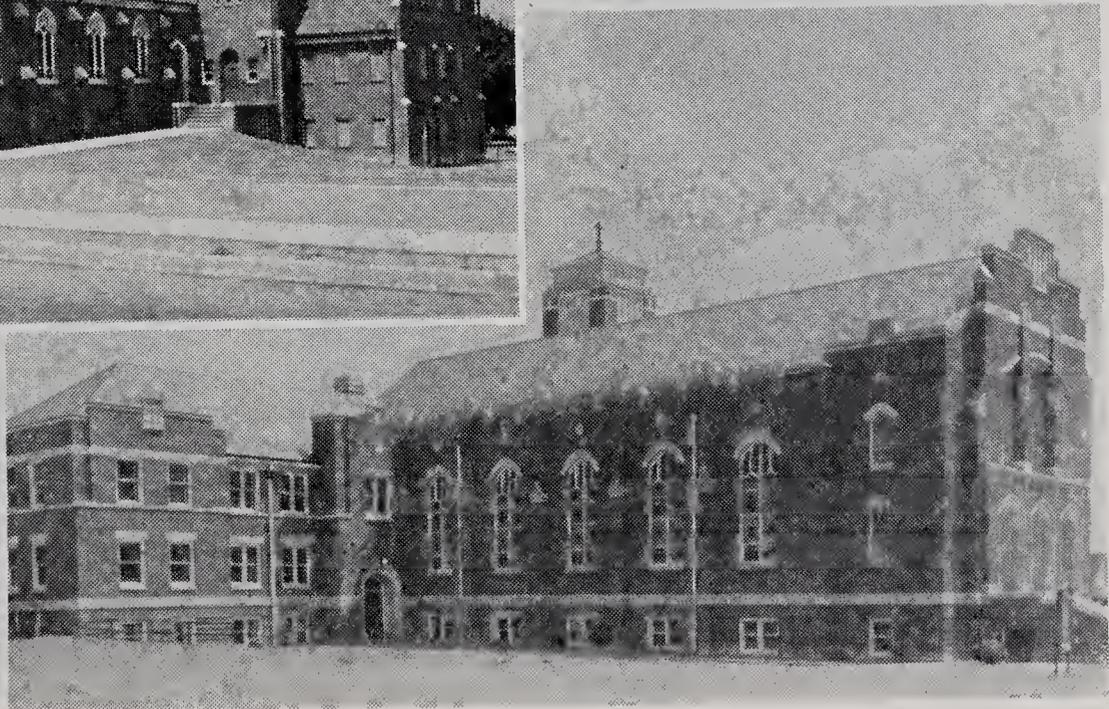
The Gaston Technical Institute occupies a sizable lot at 510 West Airline Avenue in Gastonia, N. C. The administration offices and classrooms are in the main building, and the shops are located on the same lot adjoining Boyce Street. The school is located close to the principal business district. Students will have easy access to the cultural advantages offered by the organizations of the city.

## THE CITY OF GASTONIA

Gastonia is the county seat of Gaston County, the sixth most populous county in the State and one of North Carolina's most highly industrialized counties. The city has a present population of about 35,000 and the county an estimated 125,000.



*Shop Building*



*Churches of Gastonia*

Gastonia is a church-going community with 92 churches, representing the usual denominations found in the Southeast. It has an active recreation program, four hospitals, a host of civic organizations, and is noted for its outstanding character-building agencies.

Gaston County is not only the first county in the United States in the production of textile products, but many other diversified manufacturers have found a congenial home here, and about 29,000 production workers are presently engaged in manufacturing.

Lying in almost the exact center of the Piedmont Section of the Carolinas, Gastonia has a pleasant and invigorating climate, protected from extremes of heat and cold by the mountain ranges to the west. The altitude above sea level is 825 feet, the mean annual temperature is 60.5 degrees, and the average rainfall 47.53 inches. The famous mountain resorts of western North Carolina are distant just two hours driving time, and the well-known Carolina beaches only five hours away.

Twenty miles west of Gastonia is the National Military Park, commemorating the Battle of Kings Mountain, considered the turning point of the Revolutionary War. Thousands of tourists visit the historic spot every year.



*Battleground Monument—Kings Mountain*

## HISTORY AND OBJECTIVES OF THE SCHOOL

### Aim and Nature of the School:

“Technical training such as that given at the Gaston Technical Institute is a definite must if North Carolina is to continue industrial expansion. The Gaston Technical Institute is doing a good job in providing technical training in several fields. Only through such technical schools can the State and its towns and cities hope to supply industry with adequately trained technicians.”

Luther H. Hodges

Governor of North Carolina

The establishment of this Institute, the first in North Carolina, will be recorded in history as one of the progressive moves in technical education.

Technical Institute training is very essential to the industrial area. Modern industry requires many technically trained men, not only in production but in the operation and maintenance of its plants.

The Gaston Technical Institute will help to provide these men for Gaston County and North Carolina.

CHANCELLOR CAREY H. BOSTIAN  
N. C. State College

“Young men who are graduates of technical institutes have before them expanding opportunities in our industries and in our community activities. The Gaston Technical Institute, which is sponsored by the Engineering School of North Carolina State College, offers a one year terminal program of this kind. It is the key to the increasing complexity of our modern productivity, and it is the ladder by which young men can climb rapidly in our industrial world.”

DEAN J. H. LAMPE, School of Engineering  
N. C. State College

“I consider this institute an absolute ‘must’ for Gaston County. With the coming of the Atomic Age our industries will have to seek more technically-skilled supervisors and workers. We will have a real need for personnel trained in the courses which will be offered at this school.”

C. C. DAWSON, *Chairman*, Advisory Board  
Gaston Technical Institute

“One of the greatest needs of North Carolina today is to have more trained technicians to staff—the many industries which have chosen, and will choose, North Carolina as their home. The Gaston Technical Institute meets that need to the degree that the young men of the State take advantage of its training.

While the Technical Institute is a State institution, the people of Gastonia and Gaston County are glad to have it located in our community and we feel a definite obligation to do everything possible for the success of the Institute and the welfare of the faculty and student body.”

MILES H. RHYNE, *President*  
Gastonia Chamber of Commerce

“The technical institute program pioneered in the South by the North Carolina State College has proved to be one of the most successful ventures undertaken by the Division of College Extension. We have developed a course of instruction to meet the specific needs of established industries as well as the new ones which are ‘mushrooming’ in our State. We are providing for the great number of high school graduates an opportunity which heretofore has been possible only in a few areas of our nation.”

E. W. RUGGLES, *Director*, Division of  
College Extension—N. C. State College



*Electrical Technology Students on Visit to a Nearby Plant*

## Founded 1952

Mr. Brice T. Dickson, Manager of the Chamber of Commerce, conceived the idea of the establishment of a technical institute in Gaston County. Most of the preliminary work was handled by Mr. C. C. Dawson, acting as Chairman of the Contact Committee of the Gastonia Chamber of Commerce. Gaston County's industrial and business firms raised the money to provide the physical plant. North Carolina State College of Engineering supplies the Administrative officers and faculty.

## Facilities

The Administration Building houses the offices, bookstore, snack bar, class rooms, and library. Newly constructed buildings with a floor space of approximately 7,000 feet house the machine shop, welding shop, sheet metal shop, woodworking shop, electrical laboratory and the shop and laboratory for gasoline and diesel engines.

The Gaston Technical Institute Library, operating as a part of the D. H. Hill Library of N. C. State College, has 1,193 volumes of its own. For special research or reference the student has a choice of either the D. H. Hill Library of N. C. State College, or the Gastonia Public Library, which has 62,000 volumes.



*Gastonia Public Library and Memorial Hall*



*Shop Building*

## **The School Year**

Three quarters make up the school year. New classes will be formed at the beginning of each quarter, and new students will be accepted at the beginning of any quarter. New classes will not be scheduled if there is not enrollment large enough to justify the course being given.

## **Tuition And Fees**

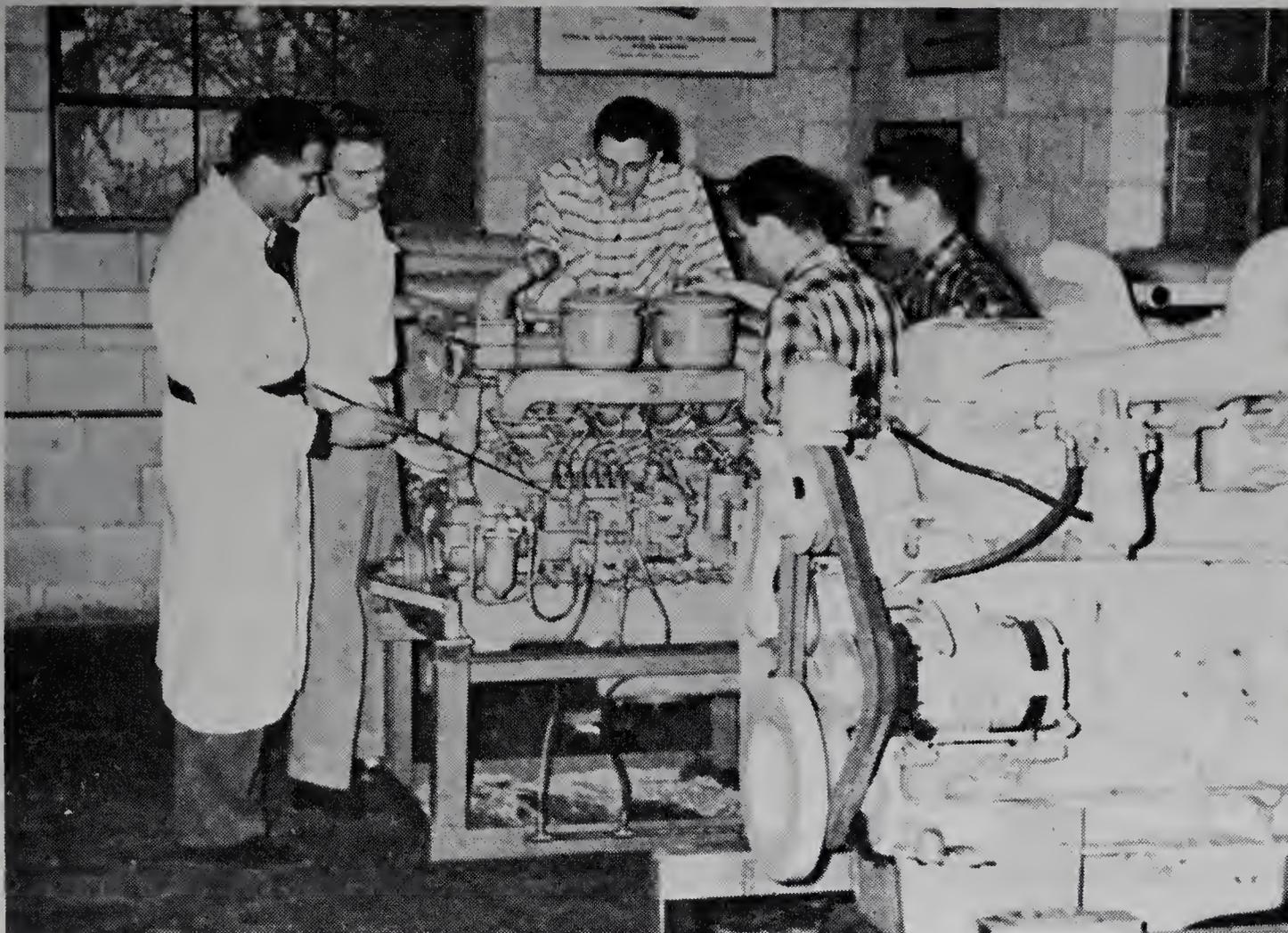
The following fees are due on registration days:

Registration Fee .....	\$10.00 per term
*Tuition Fee .....	50.00 per term
Laboratory Fee .....	10.00 per term
Books and Laboratory Supplies (estimated) .....	66.00 per term
Student Activities .....	4.00 per term

## **Room and Board**

Two boarding houses are available to the students. Rooms in desirable homes may be secured near these boarding houses. Both room and board may be obtained for approximately sixteen dollars per week or less.

\* Tuition fee for out-of-State students is \$65.00 per term



*Diesel Engine Laboratory*

## **Refunds**

A refund of the amount paid the Institute, less the registration fee, is made to a student withdrawing within ten days from the date of registration. No refund will be made if a student withdraws after this 10-day period.

The refund policy of charges for veterans enrolled under provisions of Public Law 550 will be on a pro rata basis in accordance with the requirements contained in this Law under Section 254, (c) (13).

## **Books, Equipment and Supplies**

All text books, instruments and supplies needed by the student may be purchased at the G. T. I. Book Store located on the campus.

## **Admission, Academic Information**

Admission Requirements:

Graduation from an approved high school or its equivalent in experience.

Transfer Credit

The Gaston Technical Institute will accept work done at other institutions evaluated on the basis of similar study successfully pursued. However, a minimum of two term's residence work is required for graduation.

## Procedure in Applying For Admission

The applicant, if distance is not too great, should make a personal application. An application form with high school transcript blank may be obtained by writing the Director, Gaston Technical Institute, 510 West Airline Avenue, Gastonia, N. C. telephone number UNiversity 50500, or the Division of College Extension, N. C. State College, Raleigh, N. C.

## Veterans

Courses offered by the Gaston Technical Institute are approved by the Veterans Administration for training under the G. I. Bill of Rights. Applicants are admitted under Public Laws 346, 16 or 894 and 550.

After a letter of acceptance has been issued from the Gaston Technical Institute, the veteran should make application through the Veterans Administration office for a Certificate for Education and Training.

Veterans accepted are referred to the local office of the Veterans Administration, U. S. Post Office Building, 301 W. Main Avenue, Gastonia, N. C. for assistance in problems pertaining to veterans' benefits.

Under Public Law 550 (Korean Bill), veterans receive an allowance each month from the Government. Tuition, books and supplies are not paid for by the Veterans Administration but are paid for by the veteran himself.



*Classroom*

## Late Registration

An extra fee is charged for registration after the days designated: \$2.00 for the first day and \$1.00 for each additional day.

## Regulations

A student is expected to abide by the regulations set up by the administration as necessary for the successful operation of the Gaston Technical Institute. By proper adherence to the regulations as published from time to time, the student will help himself and the school.

## Certificates

The School of Engineering, North Carolina State College, has granted the Gaston Technical Institute the authority to award appropriate certificates to the students who have completed the prescribed course of instruction.

## Grade System

A—Excellent, 90-100

B—Good, 80-89

C—Fair, 70-79

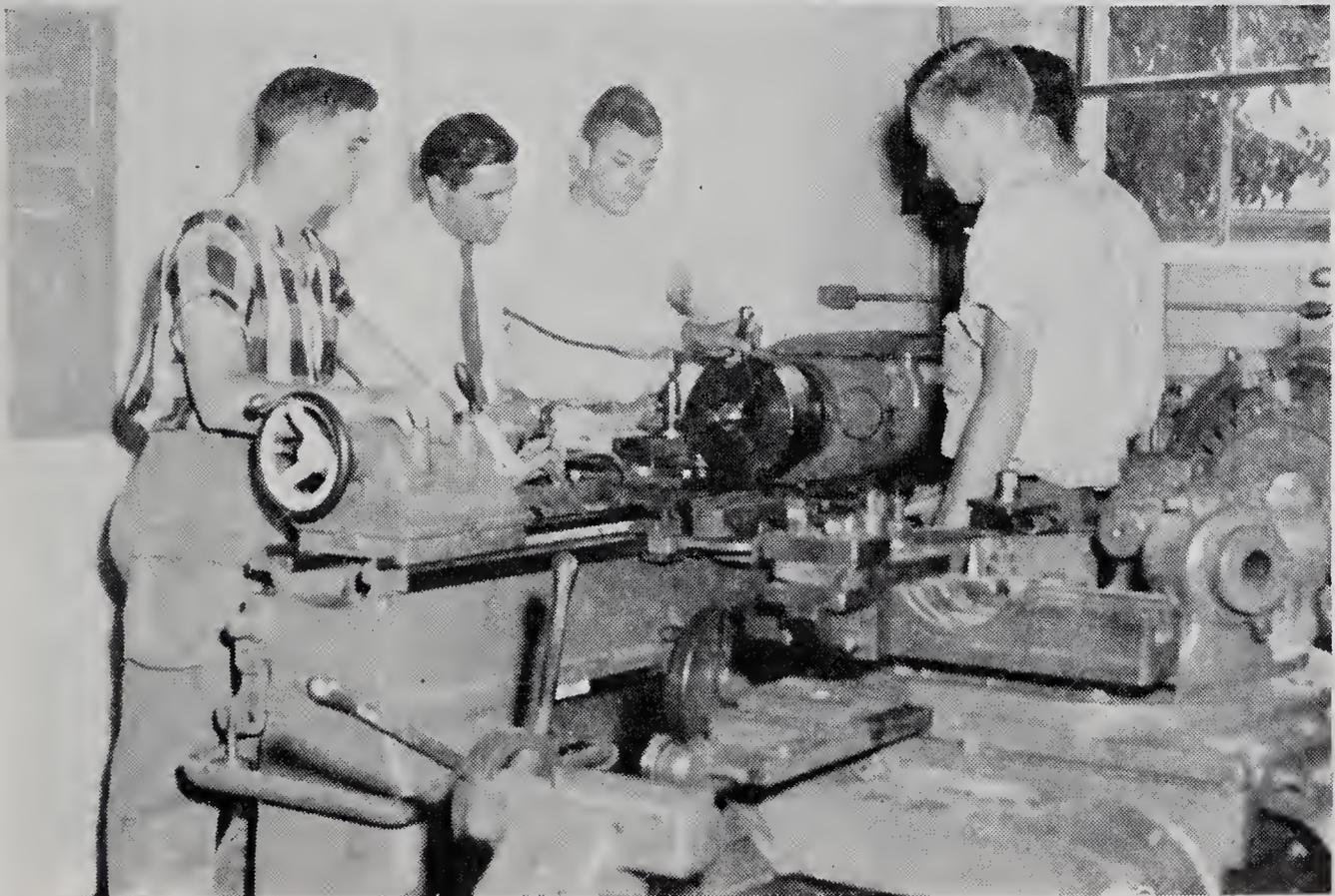
D—Passing, 60-69

F—Failure, below 60

Abs.—Absent from examination  
(equivalent to failure unless excused)

Inc.—Incomplete (An incomplete

signifies that student has passed the final examination but is incomplete in some report or other work assigned by his instructor or that he has an excused absence for the final examination, which will be given him at some later date.) An "Inc." must be completed satisfactorily during the next term or it automatically becomes an "F".



*Radio Laboratory*

## ACTIVITIES

Gaston Technical Institute offers a program of extra-curricular activities to provide the recreational requirement of the students. During the fall, touch football is the intramural activity in which most of the students take part. The teams are composed of the boys from the different departments of the school. Basketball becomes a major sport during the winter term and a very rigid schedule is set up within the various athletic teams of the city. Following the basketball season a softball team is organized and games are regularly scheduled within the city league.

The municipal recreational facilities of the City of Gastonia are available to the student body. Other sports include tennis, golf, volley ball, table tennis, bowling, and swimming.

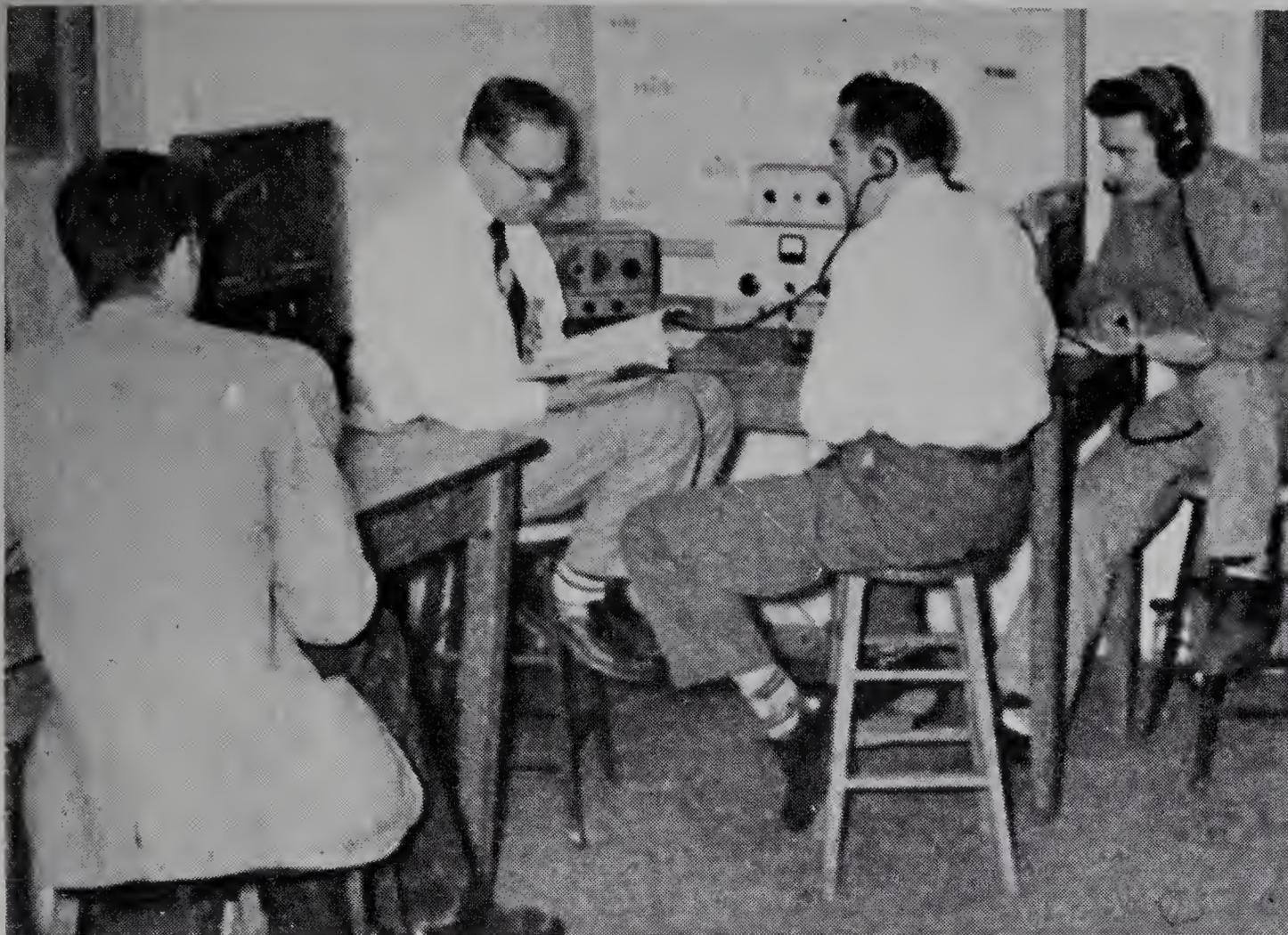
A students' newspaper is edited by the English Department. Social events are sponsored at intervals throughout the year.

In addition to the school sponsored activities, students have the opportunity of attending some of the largest athletic contests of the State, including football, basketball, baseball, and boxing.

The highlight of student activities is the annual Technicians' Fair, held during the spring term. At this time the students put on display, for the benefit of the many invited guests, a number of projects which they have made during the year.



*Basketball Team 1954-55*



*Ham Shack*

### **G.T.I. HAM CLUB**

The G.T.I. Ham Club is a campus organization. The purpose of the club is to interest students in amateur radio as a hobby.

Local "hams" from Gastonia and the surrounding area are invited to the meetings where they share their experiences in this world-wide fraternity.

Members of the faculty who are amateur radio operators serve as advisors. The faculty "hams" are as follows:

Mr. Clay Groves—W4ONR

Mr. D. P. McInnis—K4CDY

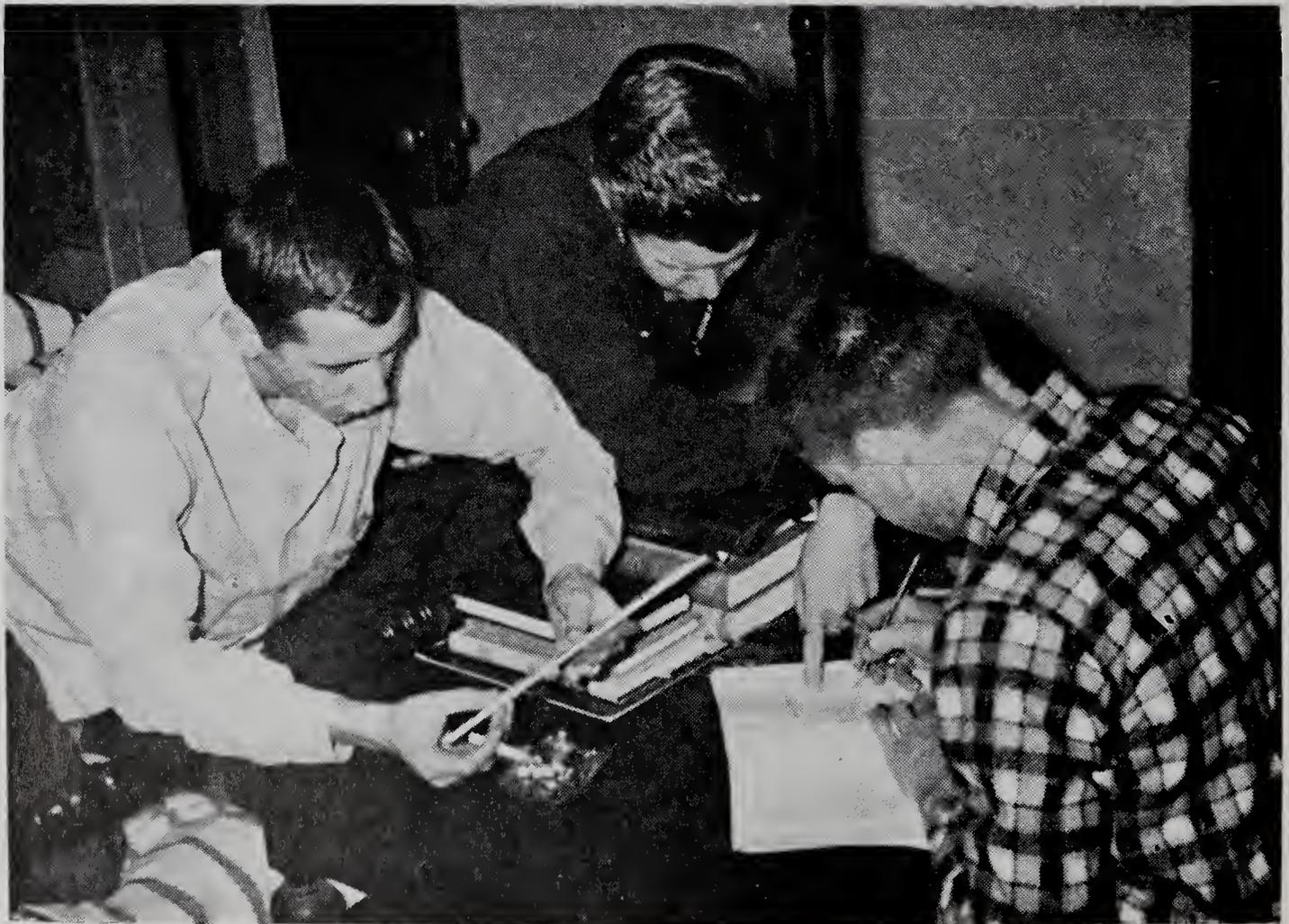
## THE GASTON TECHNICAL INSTITUTE PROGRAM

The curricula listed in this catalogue are patterned to meet the interests of a large number of young people in North Carolina. It is the hope and plan of the Gaston Technical Institute of maintaining a curriculum tailored to provide training to meet the needs of our area.

### THE CURRICULA

The curricula are listed on separate pages.

The description of the courses follows the listing. The first digit of the number stands for the term (first, second, or third). The second digit indicates the course being taught during the term. "R" designates the number of recitations per week; "L", the number of laboratory periods per week.



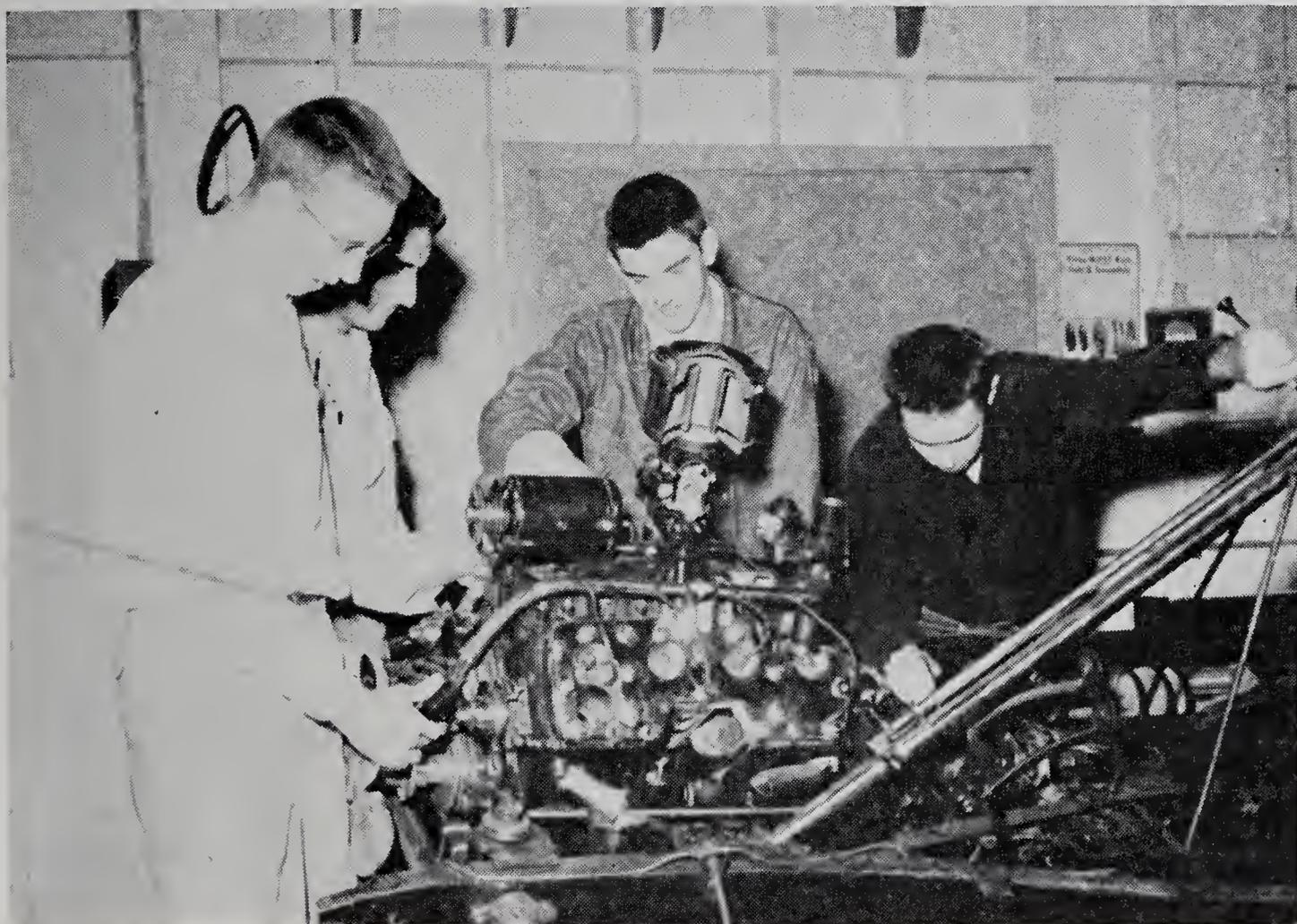
*Before Class*

## AUTOMOTIVE TECHNOLOGY

This course is designed to prepare the student to take responsible positions in the automotive maintenance industry. The primary demand in the automotive and transportation field today is for men who are trained in precision methods of maintenance. The modern automobiles and trucks on our highways are made to meet high standards. In order to prolong the useful life of automotive equipment, the public demands expert care.

Technicians in the automotive industry aid in the development of better maintenance programs, promotion of engineering sales, and in the improvement of servicing and parts merchandising.

Theory and practical laboratory work are continued with academic study in order to provide a well-rounded program. A brief description of each course may be found in the back of this catalogue.



*Gasoline Engine Laboratory*

# AUTOMOTIVE TECHNOLOGY

## FIRST TERM

SYMBOLS	R	L	SUBJECT TITLE
Eng. Dwg. 11 .....	0	6	Engineering Drawing
Math 11 .....	5	0	Algebra
Phys. 11 .....	5	3	Physics
I. C. E. 11 .....	3	3	Internal Combustion Engines
I. C. E. 12 .....	2	3	Fuel System and Carburetion
	<hr style="width: 100%;"/>	<hr style="width: 100%;"/>	
	15	15	

## SECOND TERM

Eng. Dwg. 22 .....	0	6	Engineering Drawing
Engl. 21 .....	5	0	English
Math 22 .....	5	0	Plane Trigonometry
I. C. E. 22 .....	0	3	Internal Combustion Engines (Overhaul)
I. C. E. 23 .....	2	3	Ignition and Electrical System
I. C. E. 24 .....	2	3	Gear Systems
I. C. E. 25 .....	1	0	Shop Management
	<hr style="width: 100%;"/>	<hr style="width: 100%;"/>	
	15	15	

## THIRD TERM

Engl. 32 .....	5	0	English
I. C. E. 34 .....	2	3	Operation and Maintenance
I. C. E. 35 .....	2	3	Fuel Systems (Diesel)
I. C. E. 36 .....	3	3	Hydraulic System and Suspension
I. C. E. 37 .....	3	3	Operation and Maintenance (Diesel)
I. C. E. 38 .....	0	3	General Shop Practice
	<hr style="width: 100%;"/>	<hr style="width: 100%;"/>	
	15	15	



*Engine Laboratory*

## ELECTRICAL TECHNOLOGY

The program in Electrical Technology is designed to give the student an understanding of electrical principles and to prepare him for responsible positions in the electrical industry. Graduates will be prepared for technical positions in the manufacture, testing, installation, and maintenance of electrical equipment, as well as the related positions of electrical drafting and electrical equipment sales.

The course emphasizes principles and the application of principles in laboratory work. The subjects of emphasis are physics, mathematics, circuit theory, electrical wiring, drafting, electrical machinery, electrical controls, and electronics.

A description of each course may be found in the back of the catalogue.



*Electrical Laboratory*

# ELECTRICAL TECHNOLOGY

## FIRST TERM

SYMBOLS	R	L	SUBJECT TITLE
Eng. Dwg. 11 .....	0	6	Engineering Drawing
Math 11 .....	5	0	Algebra
Phys 11 .....	5	3	Physics
Elect. 11 .....	2	3	Electrical Measurements
Elect. 12 .....	3	3	Electrical Wiring
	15	15	

## SECOND TERM

E. Dft. 21 .....	0	6	Electrical Drafting
English 21 .....	5	0	English
Math 22 .....	5	0	Plane Trigonometry
Elect. 23 .....	5	3	Electricity and Electronics
Elect. 24 .....	0	6	Electricity (Motor Repair)
	15	15	

## THIRD TERM

Engl. 32 .....	5	0	English
Elect. 35 .....	5	3	Electronics
Elect. 36 .....	5	6	Electrical Machines
Elect. 37 .....	0	3	Estimating (Wiring)
Elect. 38 .....	0	3	Electrical Controls
	15	15	



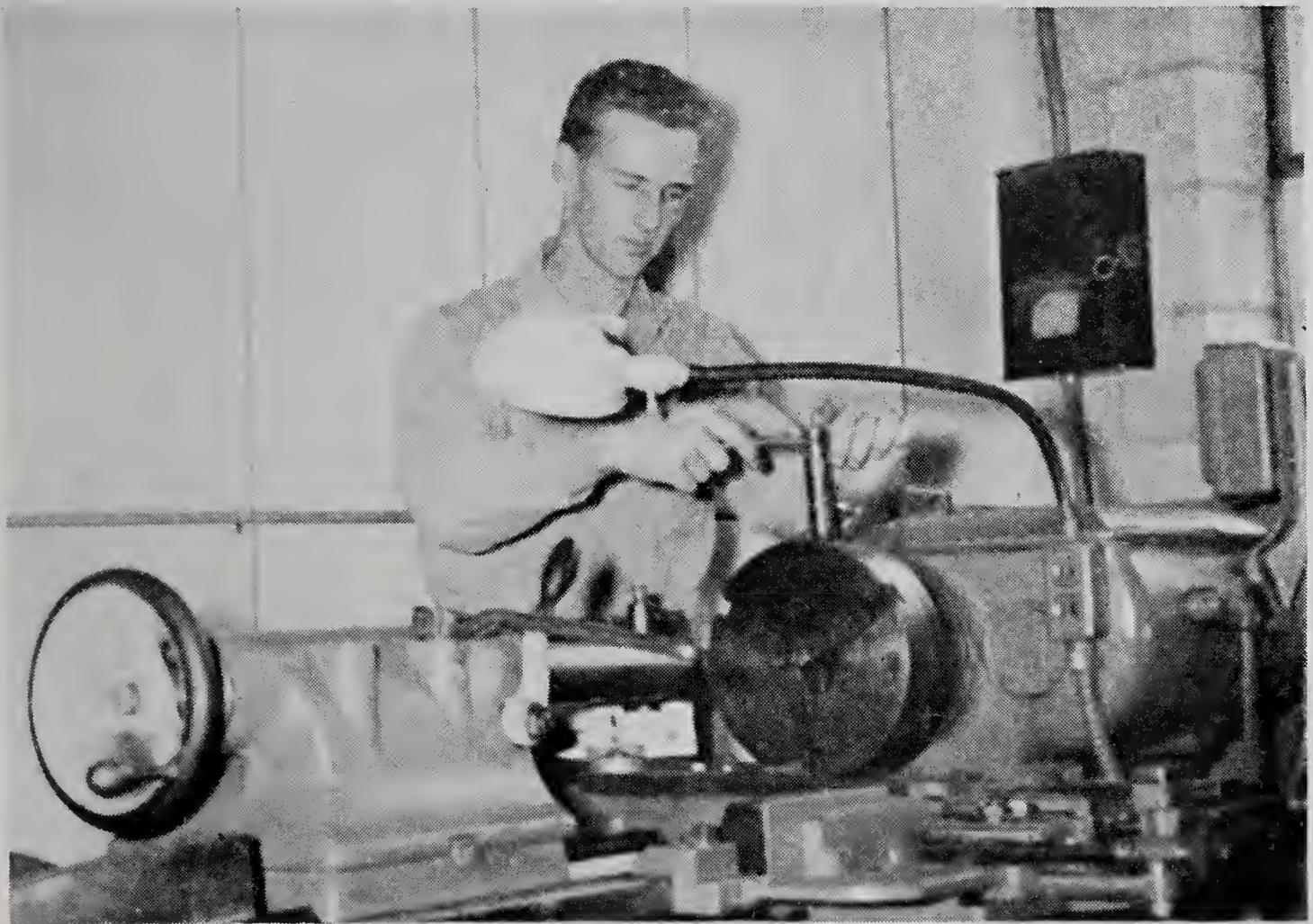
*Electrical Motor Laboratory*

## MECHANICAL TECHNOLOGY

In all of the industries we find a demand for technicians trained in the design and maintenance of the machinery of this machine age. In mechanical technology, students are trained in machines in general and in the special field of heating and air conditioning.

The development of new and improved machinery and the expansion of industry in the South requires an evergrowing force of technicians. Air conditioning has become a must for every business that is to compete in pleasing the public. The development of the heat pump, food freezer, and electronic heaters holds much promise in store for our generation. Again the technician is needed to design, install, and care for the mechanical and electrical appliances of our time.

A description of each course may be found in the back of this catalogue.



*Machine Shop Laboratory*

# MECHANICAL TECHNOLOGY

## FIRST TERM

SYMBOLS	R	L	SUBJECT TITLE
Eng. Dwg. 11 .....	0	6	Engineering Drawing
Math 11 .....	5	0	Algebra
Phys. 11 .....	5	3	Physics
Elect. 11 .....	2	3	Electrical Measurements
Mech. 11 .....	3	3	General Machine Shop
	<hr/>	<hr/>	
	15	15	

## SECOND TERM

Eng. Dwg. 22 .....	0	6	Engineering Drawing
Engl. 21 .....	5	0	English
Math 22 .....	5	0	Plane Trigonometry
Elect. 24 .....	0	6	Electricity (Motor Repair)
Mech. 22 .....	5	3	Heat and Fluids
	<hr/>	<hr/>	
	15	15	

## THIRD TERM

Engl. 32 .....	5	0	English
Mech. 33 .....	5	3	Heat and Air Conditioning
Mech. 34 .....	0	6	Mechanical Laboratory
Mech. 35 .....	0	3	Welding
Mech. 36 .....	5	3	Refrigeration
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	15	15	

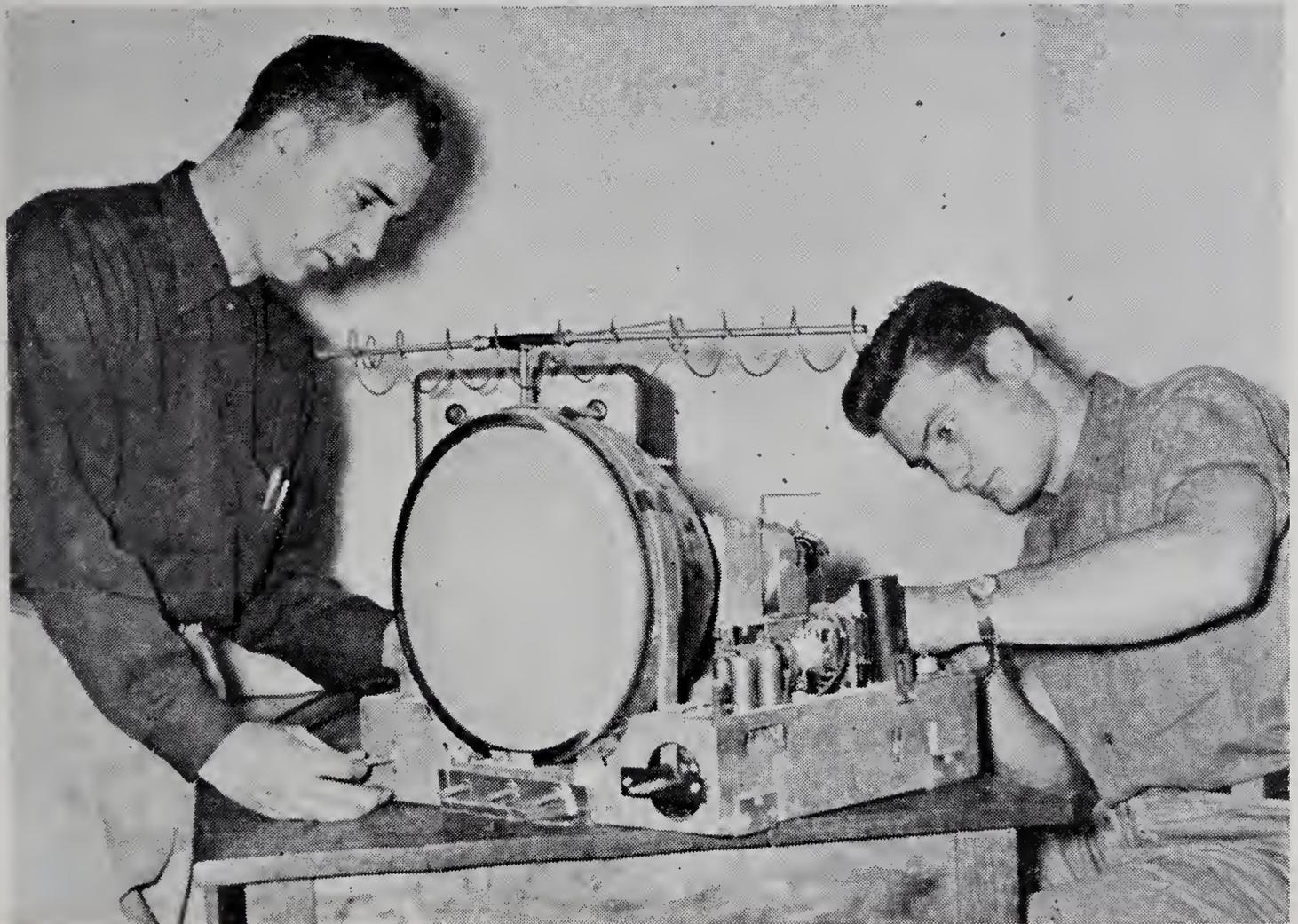


*Gasoline Engine Laboratory*

## RADIO AND TELEVISION TECHNOLOGY

This is a course with a two-fold purpose. Students completing the course satisfactorily will have sufficient technical information to qualify for first class Radio-Telephone Operators licenses.

The course also contains lecture and laboratory work on the maintenance and repair of radio and television equipment, consequently students interested in this phase of radio will be prepared for work in their chosen field. This course is sponsored by the North Carolina Association of Broadcasters.



*Television Laboratory*

# RADIO AND TELEVISION TECHNOLOGY

## FIRST TERM

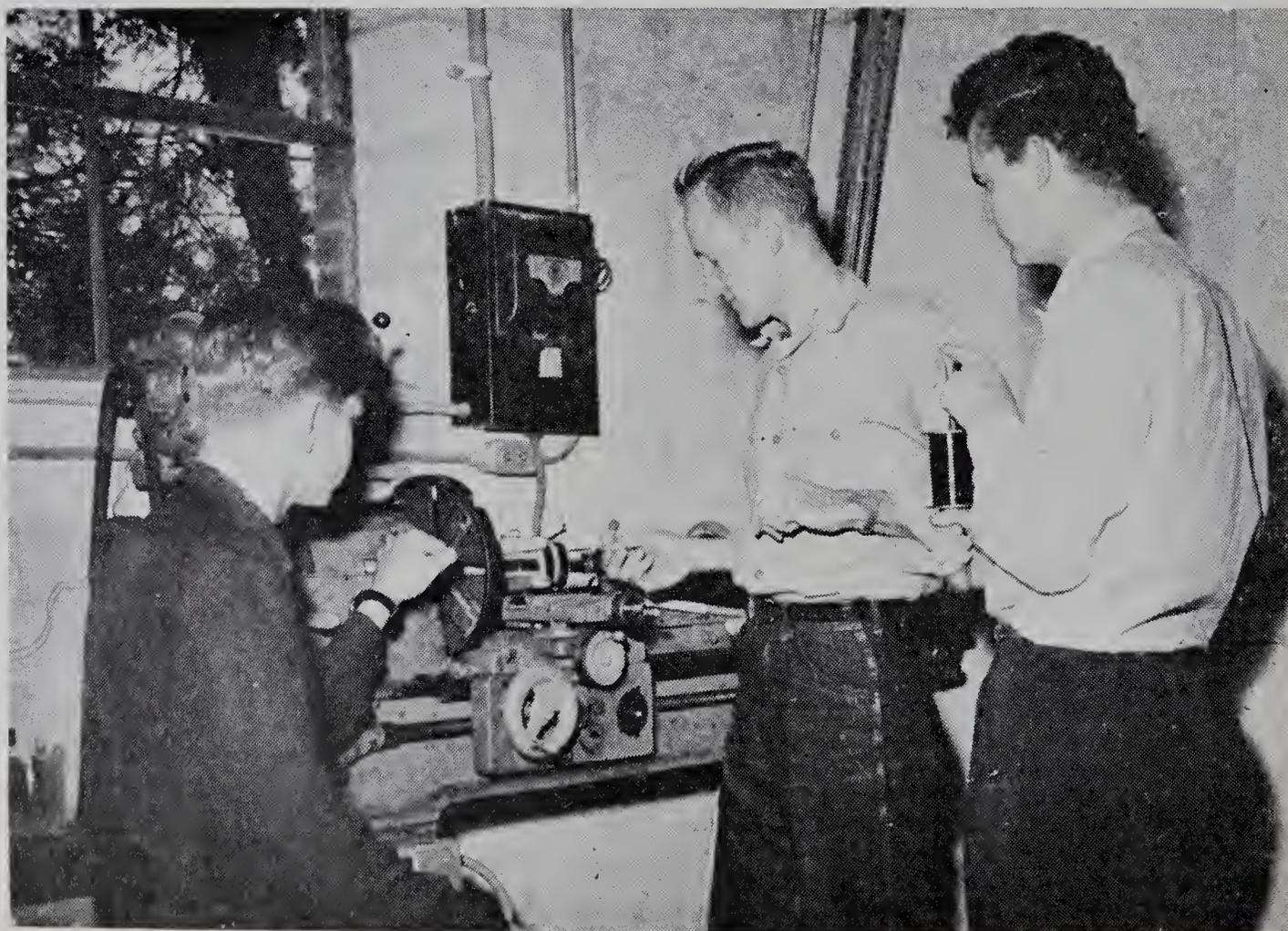
SYMBOLS	R	L	SUBJECT TITLE
Eng. Dwg. 11 .....	0	6	Engineering Drawing
Math 11 .....	5	0	Algebra
Phys. 11 .....	5	3	Physics
Elect. 11 .....	2	3	Electrical Measurements
Rdo. 11 .....	0	3	Radio Laboratory
Rdo. 12 .....	3	0	F. C. C. Rules and Regulations
	<hr style="width: 100%;"/>	<hr style="width: 100%;"/>	
	15	15	

## SECOND TERM

E. Dft. 21 .....	0	6	Electrical Drafting
Engl. 21 .....	5	0	English
Math 22 .....	5	0	Plane Trigonometry
Elect. 23 .....	5	3	Electricity and Electronics
Rdo. 23 .....	0	6	Radio Servicing
	<hr style="width: 100%;"/>	<hr style="width: 100%;"/>	
	15	15	

## THIRD TERM

Engl. 32 .....	5	0	English
Rdo. 34 .....	5	3	Radio Theory
Rdo.-Tel. 35 .....	5	3	Television Theory
Rdo.-Tel. 36 .....	0	6	Television Servicing
Rdo.-Tel. 37 .....	0	3	Transmitter Laboratory
	<hr style="width: 100%;"/>	<hr style="width: 100%;"/>	
	15	15	



*Electrical Laboratory*

## DESCRIPTION OF COURSES

### Electricity II (Electrical Measurement)

2-3

Introduction to laboratory techniques; as they apply to the use of electrical measuring equipment, tools, and materials common to the electrical and electronic trades. Application of basic electricity and magnetism.

### Electricity 12 (Electrical Wiring)

3-3

A practical study of the techniques of electrical construction, or wiring for lighting and power circuits, in structures of limited size and at ordinary voltages under 600. Rules and the application of rules of the National Electrical Code are studied.

### Electricity 23 (Electricity and Electronics)

5-3

DC and AC circuit calculations, Ohm's Law, Kirchoff's laws, power, power factor, reactance, impedance and transformer ratios. An introduction to vacuum tube theory and basic rectifier, detector, and amplifier circuits.

### Electricity 24 (Electric Motor Repair)

0-6

Rewinding of field coils of DC motors and generators; stator winding of single-phase and three-phase motors; replacement of bearings, starting switches, and brushes; and rewinding of small transformers.

### Electricity 35 (Industrial Electronics)

5-3

Electronic theory, study of specific circuits using electron tubes. Audio amplification, photoelectric and timing circuits, and motor speed controls.



*Radio Laboratory*

**Electrical Machines 36**

5-6

DC motors and generators. Single phase and polyphase alternators, synchronous motors, induction motors, selection of machines for particular application. Lectures, problems, and laboratory work.

**Electricity 37 (Estimating Wiring)**

0-3

Preparation of labor, and material quantity surveys of electrical jobs for residential, commercial and industrial applications.

**Electricity 38 (Electrical Controls)**

0-3

Study of mechanical, electrical, and electromagnetic control equipment for commercial and industrial uses. These include such items as solenoids, dimmers, motor starters, and all types of switches.

**Electrical Drafting 21 (Electrical Drafting)**

0-6

Standard symbols, freehand sketching, schematic and wiring diagrams, and tracing electrical drawings for blueprinting.

**Engineering Drawing 11**

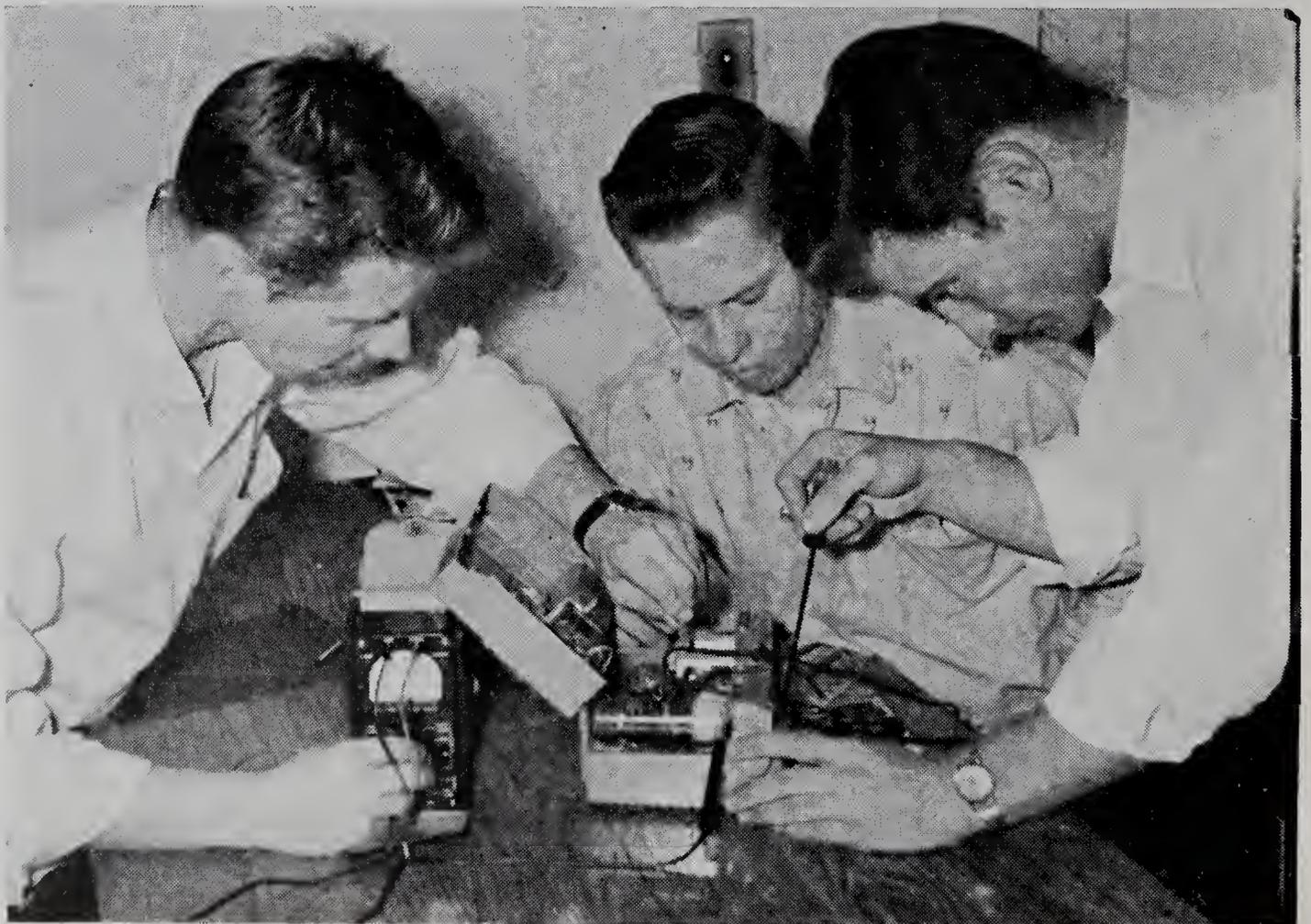
0-6

The beginner is taught the use and care of instruments, geometric constructions, orthographic and auxiliary projection, sketching, and lettering techniques.

**Engineering Drawing 22**

0-6

Continuation of Drawing 11 devoted to drafting room practices, threads, gears, and cams, working and assembly drawing, dimensions and sections, and lettering.



*Radio Laboratory*

**English 21**

5-0

Grammar review and practice in composition. Directed supplementary reading collateral with class study. Conferences.

**English 32**

5-0

A practical course designed to apply the principles of composition to effective business correspondence and technical reports. Term paper. Directed supplementary reading. Experience in extemporaneous speeches.

**Internal Combustion Engines 11 (Gasoline)**

3-3

A basic course in internal combustion engines embracing the physical aspects of engine operation and automotive application. The course includes engine design, construction, and disassembly, fuels, and lubricants.

**Internal Combustion Engines 12 (Fuel Systems and Carburetion)**

2-3

The physical aspects of fuels and carburetors, disassembly and rebuilding of carburetors, installation and testing.

**Internal Combustion Engines 22 (Overhaul)**

0-3

A laboratory course in which disassembling, inspecting, and reassembling are followed by operating and adjusting the automobile engines.

**Internal Combustion Engines 23 (Ignition and Electrical System)**

2-3

Basic electricity and application to electrical circuits of the automobile. Repair and servicing of the electrical circuits.

**Internal Combustion Engines 24** 2-3

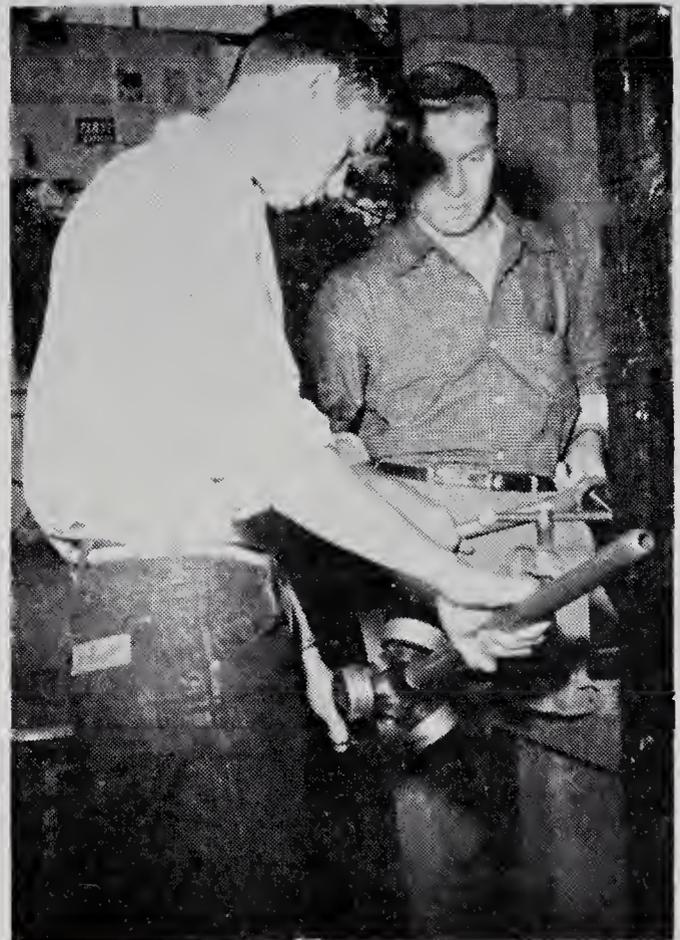
Classroom and laboratory work on complete drive line; clutches, differentials, conventional sliding gear transmission, and automatic transmission.

**Internal Combustion Engines 25 (Shop Management)** 1-0

Shop planning, efficiency, cost estimating, work scheduling, records and personnel supervision. The class work is supplemented by visits to nearby establishments.

**Internal Combustion Engines 34 (Operation and Maintenance)** 2-3

Diagnosis of engine trouble. Use of tune-up equipment.



*Electrical Laboratory*

**Internal Combustion Engines 35 (Diesel Fuel Systems)**

2-3

Fuel injection, construction and operation.

**Internal Combustion Engines 36**

3-3

Hydraulic laws and their application. Types, adjustments, and repair of brakes. Front and rear end suspension. The use of alignment equipment.

**Internal Combustion Engines 37**

3-3

Operation of both two-stroke and four-stroke-cycle diesel engines. Study of combustion chambers, fuels, and fuel consumption. The disassembly and reassembly of motors, general repairs.

**Internal Combustion Engines 38**

0-3

Laboratory work including general shop procedures and safety rules. The use and maintenance of the necessary equipment for well-planned working conditions. An introduction to machine shop and welding.

**Mathematics 11 (Algebra)**

5-0

Fundamental operations: factoring; radicals; fractional exponents; solution of simple equations of one or more unknown; quadratics. One hour per week will be given to introduction to slide rule; use of fundamental scales; multiplication; division; squaring a number; taking square root of numbers.

**Mathematics 22 (Plane Trigonometry) 5-0**

Review of law of exponents. Logarithms; six ratios defined; use of tables; solution of right triangles; functions of any angle; solution of oblique triangle. (Practical applications.)

**Mechanical 11 (General Machine Shop) 3-3**

An introduction to the proper use of hand and power tools. Materials of construction, and standards. Blueprint reading and engine lathe.

**Mechanical 22 (Heat and Fluids) 5-3**

Measurement of heat. Study of fuels, gases, specific heat, and temperature. Flow of air and water, venturi, orifice, manometers, pressure drop, and combustion.

**Mechanical 33 (Heating and Air Conditioning)**

5-3

Introduction to heating and cooling systems. Hot water, and warm air heating. Heating and cooling load calculations. Air ducts and pipes. Convectors and radiators. Laboratory work on fuels, heat transfer, radiator and boiler efficiency.

**Mechanical 34 (Mechanical Laboratory)**

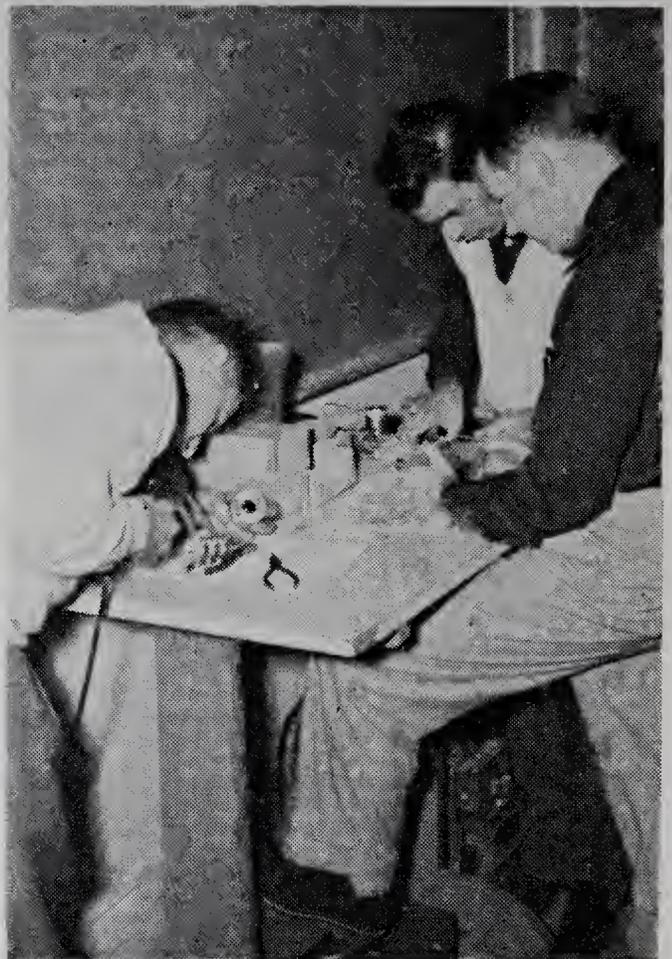
0-6

Application of the principles learned in mechanics, heat, and hydraulics. Experiments with pumps, blowers, fuels, and metals. Testing procedure and standards of industry.

**Mechanical 35 (Welding)**

0-3

Use of oxyacetylene welding torches, laying a bead, cutting techniques. AC and DC arc welding.



*Radio Laboratory*

**Mechanical 36 (Refrigeration)**

5-3

Introduction to the principles of refrigeration. Includes a study of refrigerants, compressors, evaporators, condensers, valves, and controls. Laboratory work consists of experiments relating to the classroom work.

**Physics 11**

5-3

Basic electrical theory, Ohm's law in simple DC and AC circuits. Measurements, heat, mechanics of (gasses, liquids and solids), forces, motion, energy, light and sound.

**Radio 11 (Radio Laboratory)**

0-3

Construction of radio and test equipment.

**Radio 12**

3-0

A study of the laws pertaining to radio communications and of the Federal Communications Commission's rules and regulations applying to radio broadcasting. (Elements one and two of F. C. C. license examination).

**Radio 23 (Radio Servicing)**

0-6

Troubleshooting, replacement of parts, and alignment of AM and FM radio receivers.

**Radio 34 (Radio Theory)**

5-3

Radio receiver and transmitter theory and circuits, antennas, and wave propagation. This course is designed to enable students to pass elements three and four of F. C. C. license examinations.

**Radio-Television 35 (Television Theory)**

5-3

Television receiver and transmitters and their special circuits that distinguish them from radio equipment. The course also includes color television theory and ultra high frequency circuits and techniques.

**Radio-Television 36 (Television Servicing)**

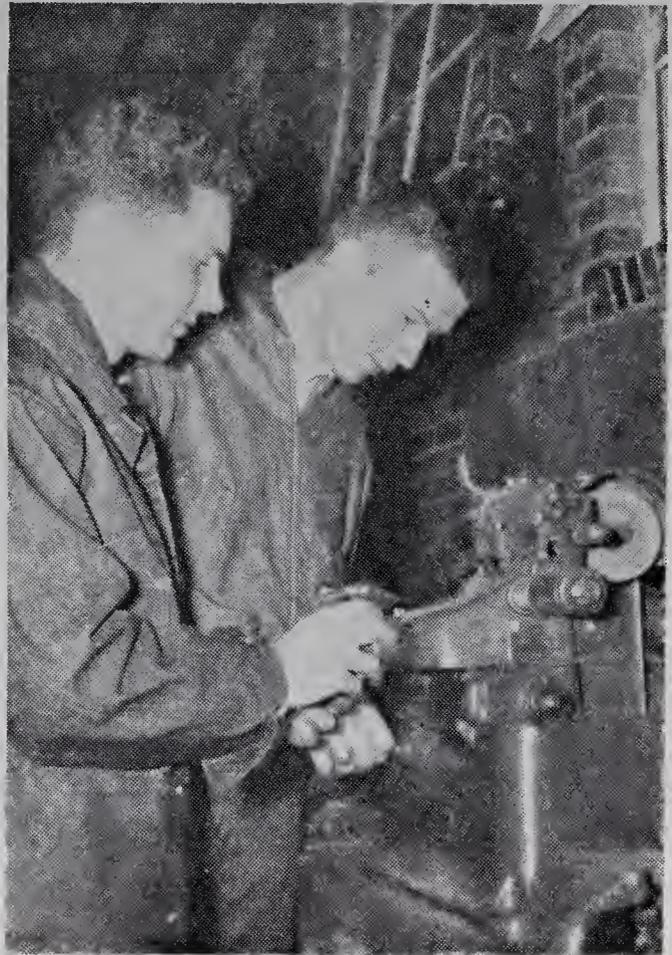
0-6

Troubleshooting, use of special television test equipment, and alignment of black-and-white and color television receivers.

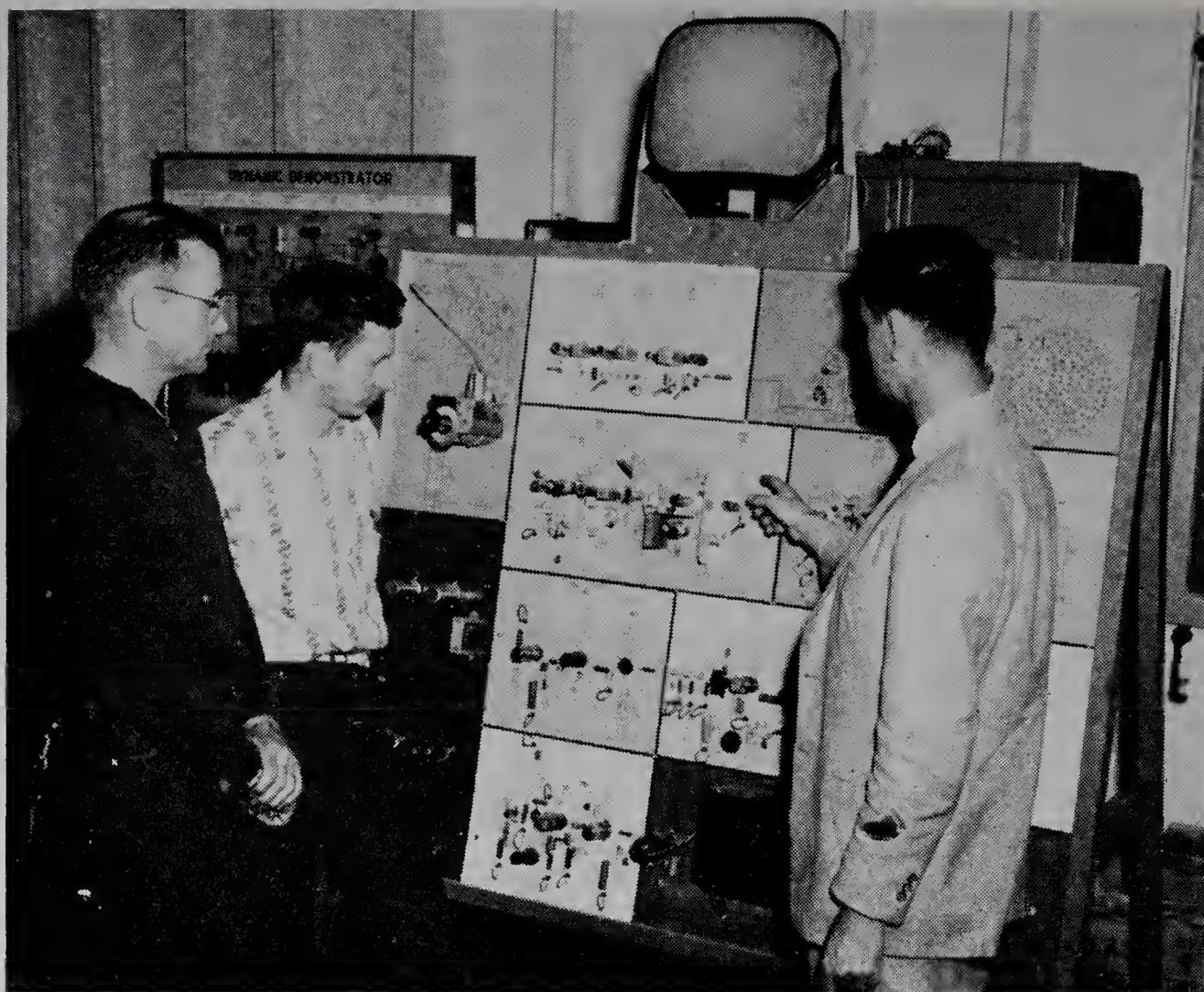
**Radio-Television 37 (Transmitter Laboratory)**

0-3

Practical adjustment, troubleshooting, and repair of transmitters.



*Engine Laboratory*



*Television Laboratory*



*Radio-Television*



