

# Randolph Industrial Education Center

Catalog  
1965-1966

Asheboro, N. C.



Randolph Industrial Education Center

STUDENT CALENDAR

(1965-1966)

SUMMER QUARTER

May 24, 25 (Monday, Tuesday)..... Registration  
May 26 (Wednesday)..... Classes begin  
May 28 (Friday 10:00 p. m.) ..... Spring Holidays begin  
June 3 (Thursday) ..... Classes resume  
June 7 (Monday)..... Last day to register, change, or add courses  
June 28 (Monday)..... Last day to withdraw from a course without receiving an "F"  
July 2 (Friday 10:00 p. m.)..... Summer vacation begins  
July 12 (Monday)..... Classes resume  
August 20 (Friday) ..... End of Summer Quarter

FALL QUARTER

September 7, 8 (Tuesday, Wednesday)..... Registration  
September 9 (Thursday)..... Classes begin  
September 16 (Thursday)..... Last day to register, change, or add courses  
October 7 (Thursday)..... Last day to withdraw from a course without receiving an "F"  
November 24 (Wednesday)..... End of Fall Quarter  
November 25, 26 (Thursday, Friday) ..... Thanksgiving Holidays

WINTER QUARTER

November 29, 30 (Monday, Tuesday)..... Registration  
December 2 (Thursday)..... Classes begin  
December 9 (Thursday)..... Last day to register, change, or add courses  
December 21 (Tuesday 10:00 p. m.)..... Christmas Holidays begin  
January 3 (Monday)..... Classes resume  
January 11 (Tuesday)..... Last day to withdraw from a course without receiving an "F"  
February 25 (Friday)..... End of Winter Quarter

SPRING QUARTER

March 2, 3 (Wednesday, Thursday) ..... Registration  
March 7 (Monday) ..... Classes begin  
March 14 (Monday)..... Last day to register, change, or add courses  
April 4 (Monday)..... Last day to withdraw from a course without receiving an "F"  
April 7 (Thursday 10:00 p. m.)..... Easter Holidays begin  
April 12 (Tuesday)..... Classes resume  
May 24 (Tuesday)..... End of Spring Quarter

SUMMER QUARTER

June 6, 7 (Monday, Tuesday)..... Registration  
June 8 (Wednesday)..... Classes begin  
June 15 (Wednesday)..... Last day to register, change, or add courses  
July 4 (Monday)..... Independence Day  
July 7 (Thursday)..... Last Day to withdraw from a course without receiving an "F"  
August 24 (Wednesday)..... End of Summer Quarter

# Randolph Industrial Education Center

Asheboro, North Carolina

**CATALOG** FOR SCHOOL YEAR 1965-1966



Randolph Industrial Education Center



**President Merton H. Branson**

## **A Message From The President**

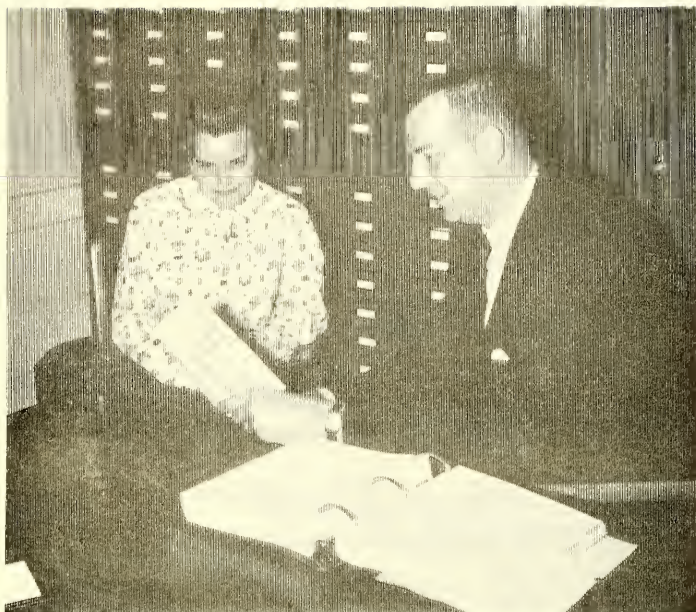
Randolph Industrial Education Center is an area vocational-technical school which accepts men and women for enrollment in a wide variety of subjects for the development of human resources. Each student is offered the type of education that will best provide for professional competence in his major field of study.

Training of highly skilled craftsmen and technicians is more important today than ever before because of the rapid industrialization of the South. New developments and higher standards of service go hand-in-hand with progress and change. In such a world, professional competence is of prime importance. If students are to take their places as fully contributing members of society, knowledge must be available at all levels.

Randolph Industrial Education Center recognizes this concept as one element of education, and programs offered by the I.E.C. will enable qualified youths and adults to successfully meet the challenges of our changing society. Demand for adequately trained students should far exceed the supply for many years to come. This Institution will continue to meet area situations by its growth and expansion. Courses and programs will be added as demands become apparent and trends are determined.

We hope this publication will be of value to you. Please study the various programs, and when you visit the Center, feel free to call on us for additional information. Finally, in serving as President of this institution, I would be remiss if I did not praise the work of our staff in their preparation of this material.

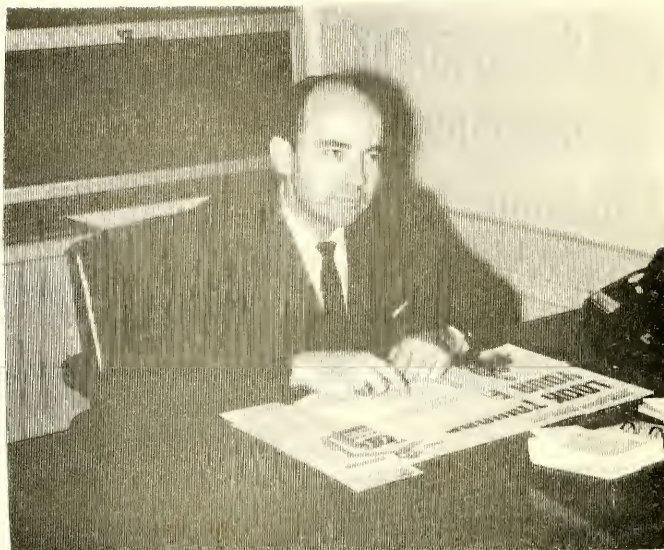
M. H. Branson, President



**Larry K. Linker**  
**Director of Technical-Vocational Program**

Under the authority of the President, the Director of Technical-Vocational Programs is responsible for administering the entire operation of the institution. It is the responsibility of the Director of Technical-Vocational Programs to maintain an understanding of and commitment to the unique nature and role of the institution, the importance of the different educational programs, their equal status, and the open door admission policy.

The Director of Technical-Vocational Programs further provides educational leadership in the areas of curriculum and instruction. Supervision of personnel, plant management, and all necessary requirements of curriculum students are in the scope of administrative duties assigned by the President.



**John L. Roberson**  
**Director of Evening Programs**

The Director of Evening programs is responsible for the operation and supervision of the wide variety of evening programs. Under the authority of the President the Evening Director provides educational leadership in all areas of instruction and coordinates the general adult and evening extension programs. It is the responsibility of the Director of Evening Programs to maintain the level of quality of the evening classes equally as high as the day classes.

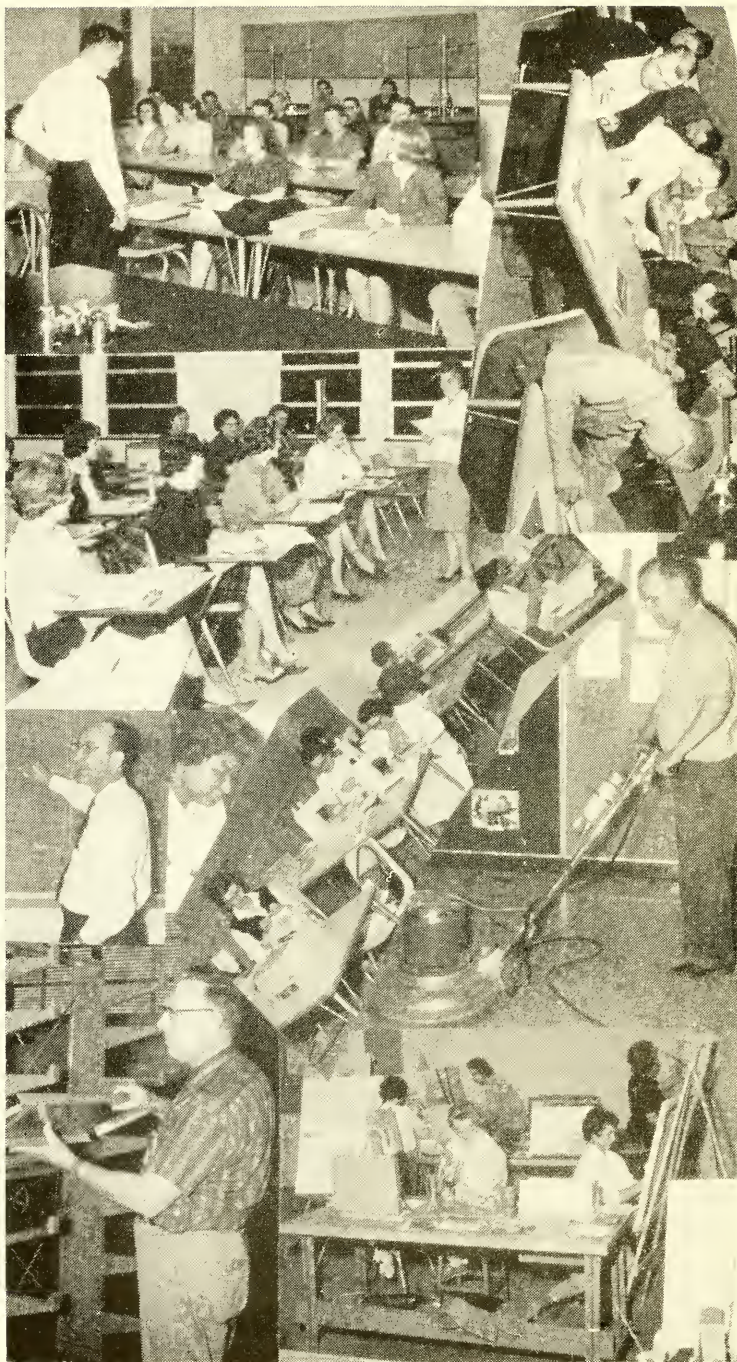
The Director of Evening Programs provides administrative ability and has an understanding of and commitment to the role of the institution.



**Iris Ragland, Bookkeeper**



**The President at Work**





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# Areas Of Study

## Technical

Much of the technical education is semiprofessional in nature, having more emphasis given to technical knowledge than is given in specialized vocational programs and with more emphasis placed on laboratories and development of skills than is given in advanced engineering education.

Technical training is especially planned for those wishing to qualify as engineering aides and technicians, such as laboratory supervisors, inspectors, junior draftsmen and designers, control instrument experts, foremen, chief maintenance men, and persons charged with responsibilities and skills of a semi-engineering nature. The technical curricula requires two years for completion.

Students desiring to enter a technical course must meet educational and aptitude requirements applicable to the individual course of their choosing. Students must have a well founded background in mathematics and science.

Students successfully completing the technical curricula will be prepared to offer prospective employers skills and education necessary to perform duties as a technician. In order to get full benefit of technical courses, it is recommended the student enroll full-time.

## Trade

Complexity in the trades increases each year due to scientific discovery and new engineering. We must not lose sight therefore of the ever growing need for skilled craftsmen. The Randolph Industrial Education Center offers training in the skilled trades with special emphasis on manual skills and proficiency in actual construction, operation, and maintenance jobs in the respective vocations. Trade courses require one full year of participation for students attending full-time. Applicants are urged to enroll in the craft areas on a full-time basis.

## Evening Program

An extended Evening Program provides an opportunity for working men and women to pursue technical or trade courses of their choice during the hours of 4:30 until 10:00 p. m.

Included in this evening program are short extension courses from 10 to 72 hours in length designed to meet the needs of those individuals desiring special training and upgrading of present skills and occupations. Also included in this program are Supervisory and Plant Management courses designed to meet the needs of individuals who desire to advance in the field of supervision. The I.E.C. is interested in working with industry in order that a suitable schedule may be offered to accommodate such students.

## **General Adult Education**

Those persons applying for entrance to the Randolph Industrial Education Center who do not meet the requirements for admission to the Trade and Technical programs, due to educational deficiencies, are urged to enroll in THE FUNDAMENTALS LEARNING LABORATORY. An individual has an opportunity to complete his high school education, prepare to enter our specialized programs, or study subjects of special interest. This program is open to any adult who wants to learn, regardless of previous education. Through the use of programmed materials, under the supervision of the counselor, the individual may progress at his own rate of study. This program is available at a nominal cost and offers courses in the following areas: English, Math, Science, History, Reading, Languages, and Psychology.

### **GENERAL ENTRANCE REQUIREMENTS**

Randolph Industrial Education Center is a co-educational institution open to any citizen provided he or she meets educational requirements and has the ability to enter into and progress in a course or program. All applicants must be eighteen years or older, in reasonably good health with no physical defects that would effect their ability to achieve in a certain field of work.

All applicants desiring to pursue a technical program must be high school graduates or equivalent. Technical applicants must have completed one year of Algebra and one year of Geometry. One unit of science is a desired prerequisite for entrance into the technical program. Deficiencies may be removed through the Learning Laboratory.

### **ADMISSION PROCEDURE**

Persons wishing to enroll in courses or programs at the Randolph Industrial Education Center must secure an application for admission. Application forms may be obtained in person or by writing or calling the Industrial Education Center located just off Highway 220 South, Asheboro, North Carolina. The telephone number is 629-1471.

Application for a given course may be made at any time preceding the enrollment date of courses. It is strongly recommended that this be done at least thirty days prior to the beginning of each quarter. Such time is required for the necessary testing, counseling and the proper evaluation of results.

All applicants desiring to pursue a technical or trade course will be required to take the General Aptitude Test Battery administered by the Employment Security Commission. Under special conditions, equivalent examinations may be given by the Industrial Education Center at the discretion of the administrative staff.

Applicants will be required to complete the following steps:

1. Make application
2. Deposit a \$2.00 registration fee
3. Submit a transcript of school records
4. Complete GATB test
5. Arrange for an interview with Industrial Education Center Personnel

Upon completion of the preceding steps, each application will be evaluated. Notification of acceptance will be made within two weeks after the above requirements have been completed. No application will be considered complete until all required information has been submitted to the Registrar.

## **GRADES AND REPORTS**

Grades will be issued to all students at the end of each quarter. Students enrolled in either the technical or trade program will be graded by the following numerical system:

A—93-100	Excellent
B—85-92	Above Average
C—77-84	Average
D—70-76	Passing
E—Below 70	Failing
I—	Incomplete

## **ATTENDANCE**

All students will be expected to attend classes according to their arranged schedule. Unexcused absences will be marked as "O" for daily work. Three consecutive unexcused absences will subject a student to dismissal. An accumulation of unexcused absences will also subject a student to dismissal.

## **STUDENT CONDUCT**

Students will be expected to conduct themselves at all times as mature adults. Students who do not respect the rights and privileges of other students and fail to demonstrate a high regard for school facilities, property, and personal effects of others will be subject to dismissal.

## **TRANSFER STUDENTS**

The Randolph Industrial Education Center will accept credit for work completed in other Industrial Education Centers, Technical Institutes, and Colleges. Transfer students will be required to make formal application and submit transcripts of previous work which will be evaluated. Final acceptance of transfer credit will be at the discretion of the administration.

## **WITHDRAWALS**

Any student who must withdraw because of illness or personal hardship may, if his work is deemed satisfactory at the time of withdrawal, re-enter the immediate next offering of the course.

A student may be dismissed from school for failure to achieve a passing grade for two grading periods or for infraction of the rules that apply to student conduct. Re-entrance of dismissed students will be at the discretion of the chief administrator. A failing grade for one report period will automatically place the student upon probationary standing for the following report period.

## **STUDENT SERVICES**

### **Counseling and Testing**

The Center conducts a service of counseling and guidance for the benefit of students enrolled at the Center and for applicants desiring professional assistance in the selection of a program of learning. Students who are having difficulties with grades or personal problems should seek counsel with the Director of Student Personnel.

The Director of Student Personnel is especially trained to assist in personal counseling, study habits, and interpreting rules and regulations pertaining to the Center. He will be your friend while attending the Center.

### **Library**

As an educational institution the I. E. C. constantly stresses the use of its library and attempts to put forth an unflinching effort in the development of its library facilities. A modern technical library is maintained by the Randolph Industrial Education Center for use by students and faculty. The library contains trade and technical periodicals in all the fields offered by the Center and has reference material on engineering, technical, and trade levels of education. The library is open to all students participating in the various programs of the Center.

### **Placement**

Randolph Industrial Education Center operates a placement service in cooperation with local industry and the North Carolina Employment Security Commission to secure jobs for graduates of trade and technical programs.

## **GRADUATION REQUIREMENTS**

### **Diplomas**

Student completing a prescribed course in either the technical or trade division will be granted an institutional diploma upon the successful completion of all prescribed courses within a curriculum. Successful completion means all grades must be passing or better. Students who fail individual courses will be required to make up such deficiencies before a diploma will be granted.

### **Certificates**

Certificates of completion will be granted for all students successfully completing short term classes.



**Counselor With Adult**



**Henry L. Groome, Jr.  
Co-Ordinator**



**Vernon S. Felton  
Co-Ordinator**



**Introducing Adult Education**

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## **The Fundamentals Learning Laboratory**

The Fundamentals Learning Laboratory of the Randolph Industrial Education Center opened its doors in January, 1964, with an enrollment of two adult students. Within a period of one year the learning lab has enrolled a total of 401 adult students.

The primary purpose for which the learning lab was set up was to provide all necessary materials and facilities for adults to obtain their high school equivalency diplomas. However, the desire among adults has been to use the learning lab for upgrading oneself, prepare for college and for the enjoyment of learning new things which would be helpful to the individual.

A registration fee of \$2.00 is paid by the applicant upon registering. The only necessary materials for the applicants to furnish are pencil and paper.

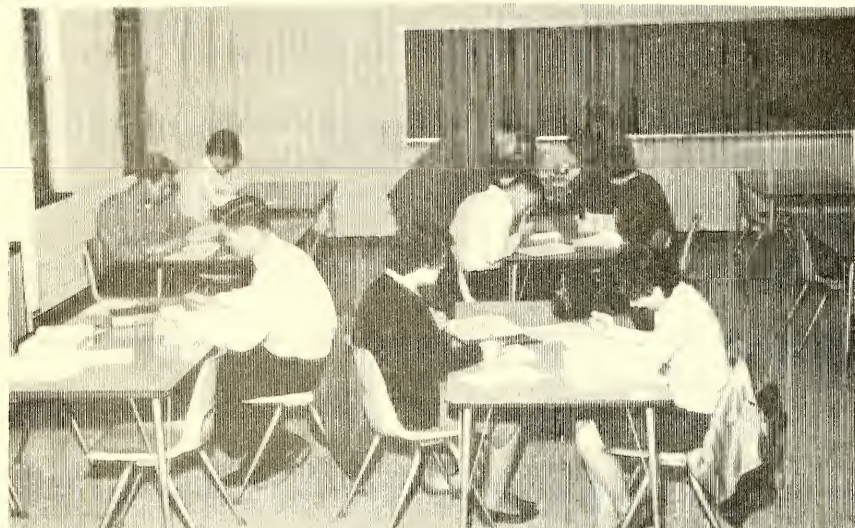
The learning lab is open from 8:00 A. M. until 10:00 P. M., Monday through Thursday and from 8:00 A. M. until 5:00 P. M. on Friday. The doors to the learning lab are opened so that any individual may come at his convenience and study any course of his choosing.

There are no requirements for applicants, except the minimum age is 18 years old. The learning lab invites all persons, regardless of previous educational training, to enroll as soon as possible.

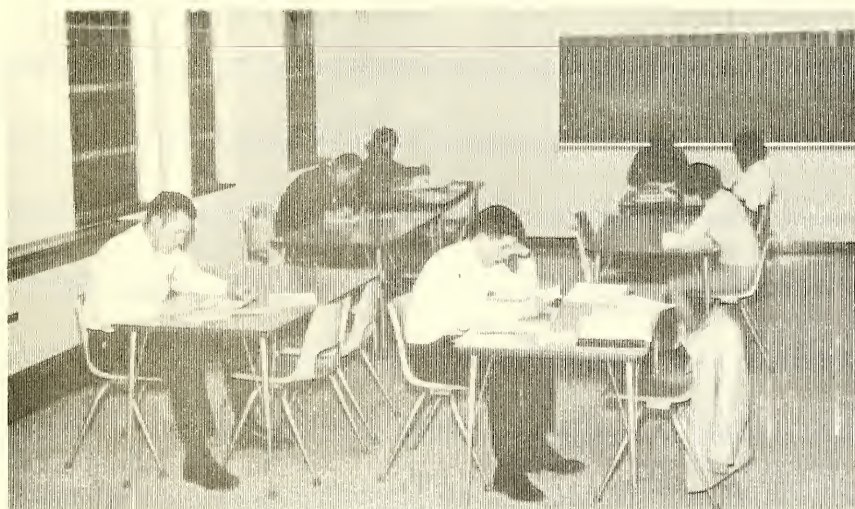
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**Striving for High School Diploma**



# Technical Curriculums

## ADMISSION REQUIREMENTS — TECHNICIAN PROGRAM

### Minimum Admission Requirements

Requirements for admission of a candidate to the regular two-year technology program include the following qualifications. The candidate:

1. Must be a high school graduate or have a State approved equivalent education.
2. Must have high school credit for two units of mathematics, one of which is in algebra and the other in plane geometry or an equivalent in modern mathematics. Competence may be determined by appropriate tests. Those who fail to meet the accepted standards for technical mathematics will be required to complete successfully a prerequisite mathematics course to remove the deficiency. **A student with deficiencies may be admitted only when there is strong indication of probable success.**
3. Should have completed one unit of physical science with laboratory.
4. Must submit the transcripts of high school and post-high school education.
5. Must demonstrate aptitude for technician training as determined by standard tests. These tests will aid in student selection, placement, and guidance. Institution guidance and counseling will be available to the student throughout his education, not just at the time of his enrollment.
6. Must be in acceptable condition of physical and mental health. Medical examination may be required at the discretion of the administration.
7. Must have an interview with a designated representative for discussing enrollment plans and lifetime career goals.

### CONTACT HOURS AND CREDIT HOURS

These curriculums are to be offered on the basis of an average load of twenty-five contact hours per five-day week, eleven weeks per quarter, for six quarters. **Students enrolled in a part-time program will be scheduled, based on class needs, to accomplish this average load, but over a longer period of time.**

Quarterly credit hours are awarded to students on the following arrangement:

Credit of one quarter hour for each hour of class work per week for eleven weeks.

The average hour of class will require two hours of assigned homework, for an average student.

Credit of one quarter hour for each two hours of laboratory work per week for eleven weeks. One hour of assigned homework will accompany an average laboratory period of two hours.

Credit of one quarter hour for each three hours of shop practice for eleven weeks.

No outside work will ordinarily be assigned to accompany this shop period.

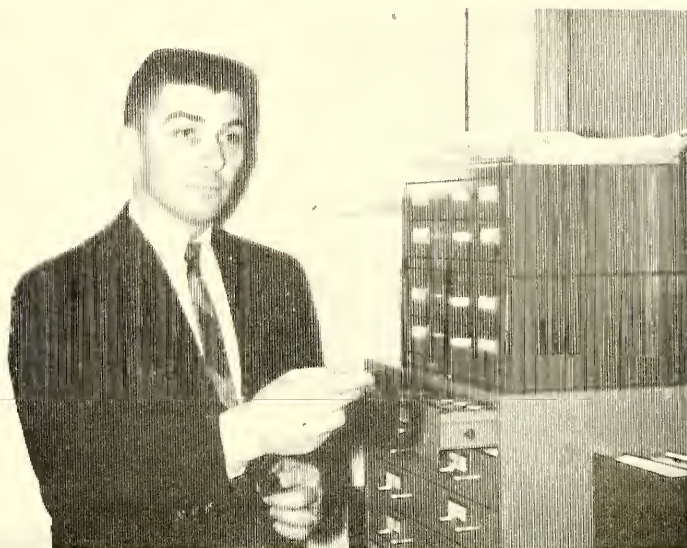
The following definitions will explain the foregoing terms:

“Class work” is lecture and other classroom instruction.

“Laboratory” involves demonstration by instructor, experimentation and practice by students.

“Shop practice” involves development of manual skills and job proficiency.

## Agriculture Technology



**Clay B. Bollinger, Instructor**



**Ag. Students at Work**

# **Agriculture Technology - Business**

## **PURPOSE OF CURRICULUM**

Rapid technological changes in farming and related agricultural businesses have given rise to the need for more technically trained people. A variety of agricultural businesses and industries employ persons to assist in marketing, processing, and distributing of farm products and providing services to the farmer. Many responsible positions in agricultural businesses and industries require technical training not available in high schools or in four-year colleges.

The Agriculture Technology-Business Curriculum is designed to help students acquire knowledge, understandings, and abilities in the broad field of agricultural business. It combines knowledge of agriculture with business training to prepare the graduate for one of the many varied employment opportunities in agricultural business. The specific objectives of the Agricultural Business Curriculum are to develop the following student competencies:

1. Understanding of the principles of organization and management in agricultural businesses, industries and farm operations.
2. Understanding of the basic principles of our economic system, marketing, credit, price concepts and governmental policies and programs relating to agriculture.
3. Understandings and skill in effective communication for agricultural business.

## **JOB DESCRIPTION**

As agricultural, business and industrial firms expand in size and number they are experiencing rapid changes in technologies of production, sales, and management, in an increasingly competitive environment. Future employees of such firms must be prepared to understand these changes and adapt themselves accordingly. Successful completion of this curriculum should enable a person to assume responsibilities in an agricultural firm and should enable him to advance within such a business.

Upon graduation from this curriculum an individual should qualify for various jobs in agricultural business and industry such as salesman or store manager in farm supply stores; agricultural field serviceman; salesman, demonstrator or plant manager of feed and food companies; farm products inspector; salesman, or office managers of farm products marketing firms.

# Curriculum By Quarters

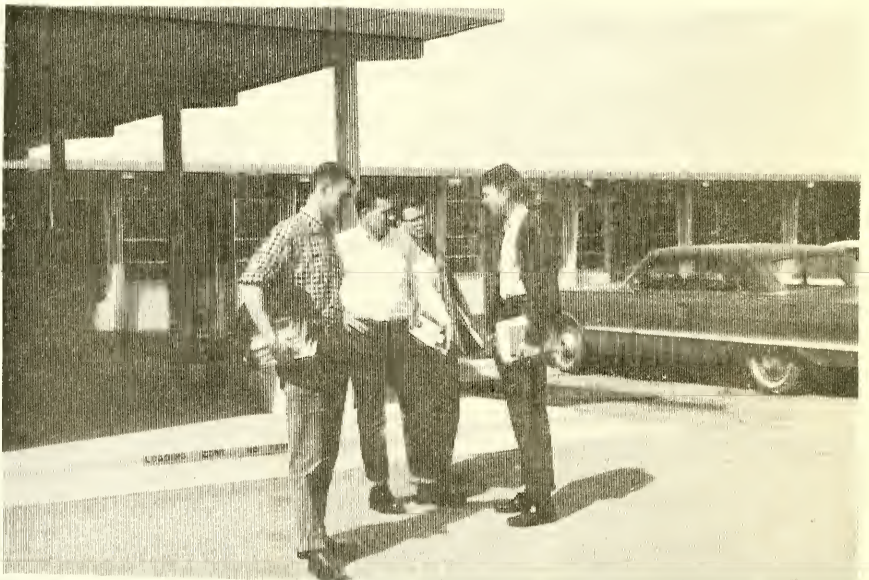
## SIX QUARTERS . . . . EIGHTEEN MONTHS

C — Class hours per week    L — Lab hours per week    Q — Quarter hours of credit

<b>FIRST QUARTER</b>		<b>C</b>	<b>L</b>	<b>Q</b>
ENG 302	Communicative Skills: English .....	3	0	3
BUS 301	Introduction to Business .....	3	0	3
BUS 317	Sales Development .....	3	0	3
MA 310	Business Mathematics .....	3	0	3
AG 370	Animal Science .....	5	2	6
		17	2	18
<b>SECOND QUARTER</b>				
AG 490	Soil Science and Fertilizers .....	5	2	6
ENG 305	Communicative Skills: Report Writing .....	3	0	3
BUS 320	Accounting .....	5	2	6
AG 310	Introduction to Agricultural Economics .....	3	2	4
		16	6	19
<b>THIRD QUARTER</b>				
BUS 355	Interpreting Accounting Records .....	3	0	3
BUS 360	Office Machines .....	2	2	3
AG 312	Agricultural Marketing .....	5	2	6
AG 420	Plant Science .....	5	2	6
		15	6	18
<b>FOURTH QUARTER</b>				
BUS 364	Business Finance .....	3	0	3
BUS 366	Budget and Record Keeping .....	3	0	3
AG 314	Farm Business Management .....	5	2	6
AG 326	Agricultural Programs and Agencies .....	3	2	4
Elective**	.....	--	--	3
		14	4	19
<b>FIFTH QUARTER</b>				
ENG 304	Communicative Skills: Speech .....	2	0	2
SOC 310	Applied Psychology .....	3	0	3
AG 322	Agricultural Prices .....	3	0	3
AG 306	Farm Chemicals .....	5	2	6
Elective*	.....	--	--	3
		13	2	17
<b>SIXTH QUARTER</b>				
BUS 368	Taxes .....	3	0	3
BUS 372	Principles of Supervision .....	3	0	3
AG 380	Livestock Diseases and Parasites .....	3	2	4
AG 342	Farm Mechanization .....	3	2	4
Elective*	.....	--	--	3
		12	4	17



**Public Speaking**



**Ag. Students Take Break**

# Electrical Technology

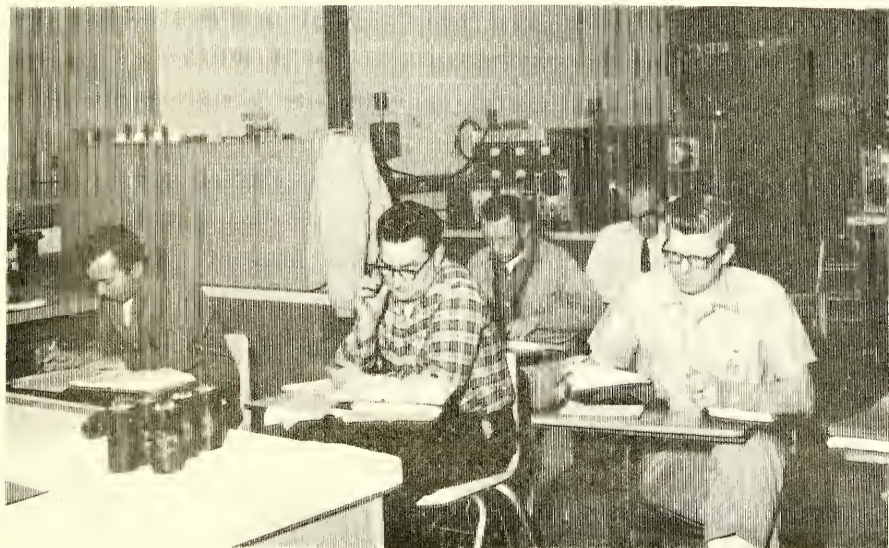
## INTRODUCTION

### Purpose of Curriculum

Electricity has influenced the design of machines for industry. It has increased manufacturing capabilities, and has provided for labor-saving devices in business, industry, and home. Experiments in electricity produced the telegraph and telephone, the electric generator and motor, the electric light bulb and vacuum tube, and more recently the transistor and tunnel diode. The requirement for electrical service has steadily increased each year because of the greater availability of home appliances, the increase of business machines and the trend to automate within industry.

The explosion of technical knowledge within the last 20 years has created a demand for competently trained technicians capable of utilizing these electrical principles in today's complex industrial situations. It has also placed a demand upon educational institutions such as the Industrial Education Centers and Technical Institutes, to adequately train technicians for jobs in areas of research, design, development, production, maintenance and sales.

The Electrical Technician may work as a laboratory technician, or as an engineering aide in research, design, or development in direct support of an engineer or as a liaison between the engineer and the skilled craftsman. He may accept a position in maintenance or sales work requiring a strong background in electrical equipment design and operation. His training, although similar in content to that of an engineer, is in less theoretical depth but in greater practical application.



Electrical Technology

# Curriculum By Quarters

## SIX QUARTERS . . . . EIGHTEEN MONTHS

C — Class hours per week    L — Lab hours per week    Q — Quarter hours credit

### FIRST QUARTER

			C	L	Q
MA	301	Technical Math .....	5	0	5
PHY	301	Properties of Matter .....	3	2	4
ENG	301	Reading Improvement .....	2	0	2
DD	307	General Drafting .....	2	3	3
ELEC	310	Direct Current Theory & Lab .....	5	6	8
			17	11	22

### SECOND QUARTER

MA	302	Technical Math .....	5	0	5
PHY	302	Physics: Work, Energy, Power .....	3	2	4
ENG	302	Communicative Skills: English .....	3	0	3
ELEC	311	Alternating Current Theory & Lab .....	5	6	8
			16	8	20

### THIRD QUARTER

MA	303	Technical Math .....	5	0	5
ENG	303	Technical Writing .....	3	0	3
SOC	301	Human Relations .....	2	0	2
DD	308	General Drafting .....	2	3	3
ELEC	312	Electrical Machines .....	5	4	7
			17	7	20

### FOURTH QUARTER

MA	304	Technical Math .....	3	0	3
PHY	304	Physics: Light and Sound .....	3	2	4
ENG	304	Speech .....	2	0	2
ELN	306	Basic Electronics .....	3	4	5
ELEC	313	Electrical Controls & Circuits .....	3	4	5
			14	10	19

### FIFTH QUARTER

ISc	301	Industrial Organization & Management .....	3	0	3
ELN	307	Industrial Electronics .....	4	4	6
ELEC	314	Planning Electrical Installations .....	3	4	5
ELEC	315	Electrical Instrumentation .....	3	4	5
			13	12	19

### SIXTH QUARTER

SOC	302	Economics .....	3	0	3
ELN	308	Industrial Electronics .....	3	6	6
ELEC	316	Electrical Power Systems .....	3	4	5
ELEC	317	Electrical Analysis & Maintenance .....	3	2	4
			12	12	18

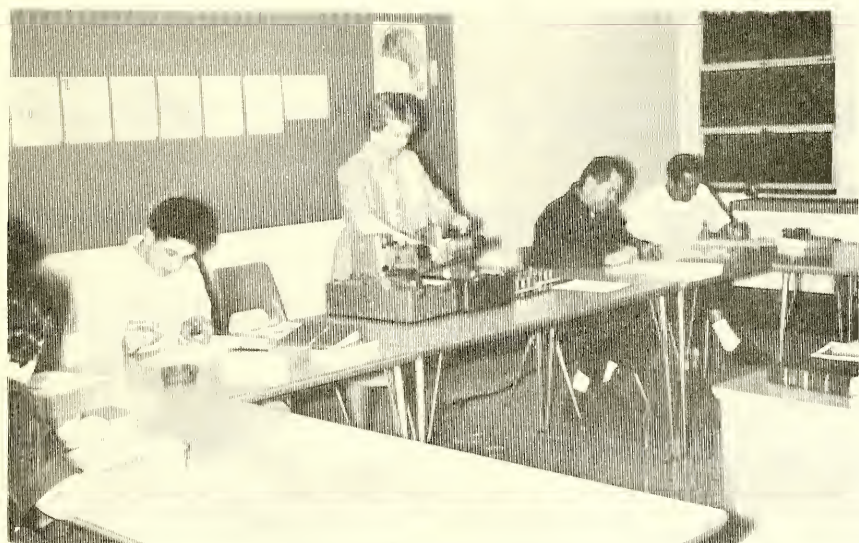




**Adam P. Hunt**  
**Math Instructor**



**Clyde V. McKinney**  
**Physics Instructor**



**Speed Reading Class**

# Electronics Technology

## INTRODUCTION

### Purpose of Curriculum

The field of electronics has developed at a rapid pace since the turn of the century. For many years the major concern of electronics was in the area of communications. Developments during World War II and in the period since have revolutionized production techniques. New industries have been established to supplement the need and demand for electronics equipment.

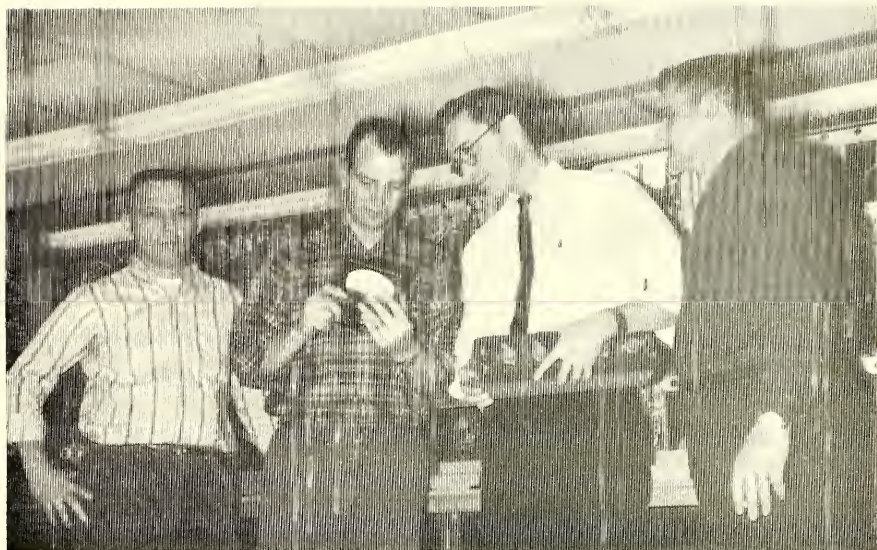
Many opportunities exist for men and women with a technical education in electronics. This curriculum provides a basic background in electronic related theory with practical applications of electronics for business and industry. Courses are designed to develop competent electronics technicians who may take their place as assistant to an engineer, or as a liaison between the engineer and the skilled craftsman.

### Job Description

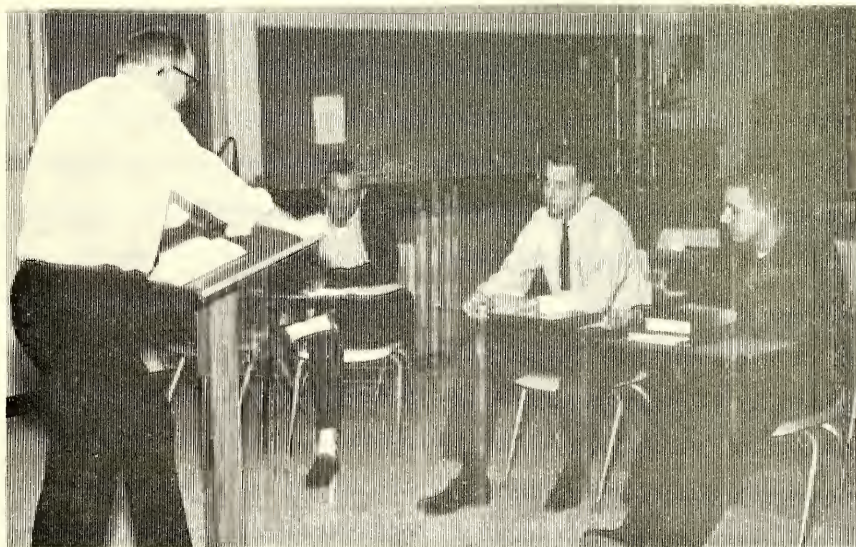
The electronics technician will start in one or more of the following areas: research, design, development, production, maintenance or sales. He may be an assistant to an engineer, an engineering aide, laboratory technician, supervisor or equipment specialist. His training is similar to that of an engineer, but in less depth and more in practical application. He can function as a liaison between an engineer and the skilled craftsman.



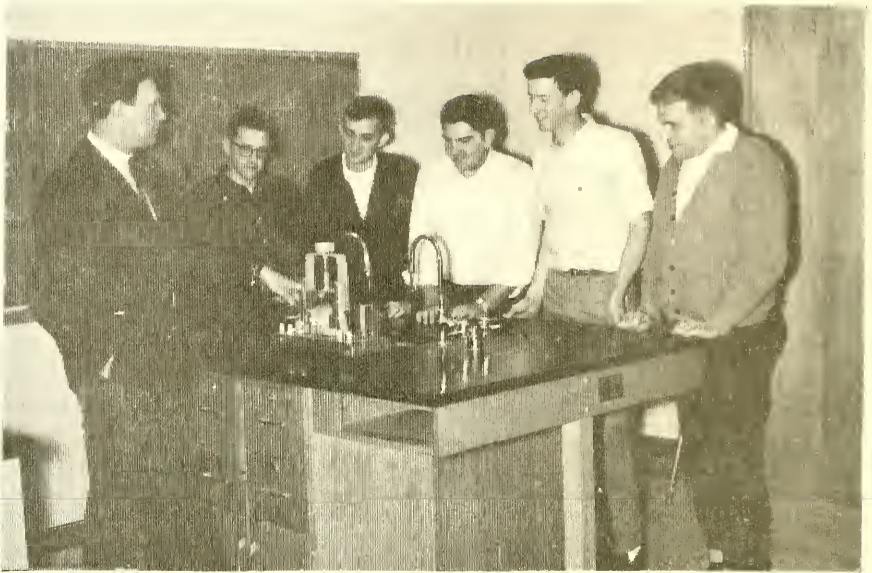
**Edgar P. Stacy, Instructor**



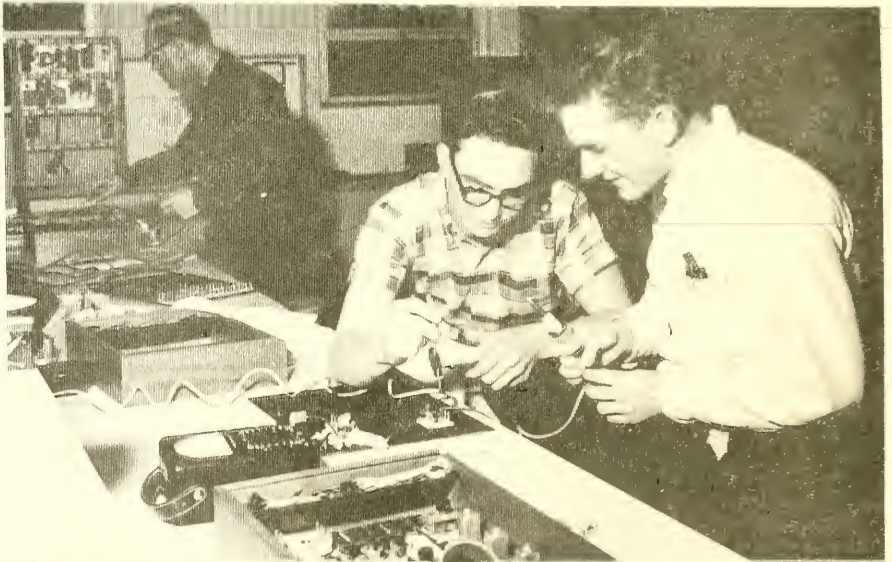
**Checking It Out**



**Crucial Studying**



**Analyzing It**



**Study It — Build It — Test It**

# Curriculum By Quarters

## SIX QUARTERS . . . . EIGHTEEN MONTHS

C — Class hours per week    L — Lab hours per week    Q — Quarter hours credit

### FIRST QUARTER

	C	L	Q
MA 301 Technical Math .....	5	0	5
PHY 301 Properties of Matter .....	3	2	4
ENG 301 Reading Improvement .....	2	0	2
DD 307 General Drafting .....	2	3	3
ELEC 310 Direct Current Theory & Lab .....	5	6	8
	17	11	22

### SECOND QUARTER

MA 302 Technical Math .....	5	0	5
PHY 302 Physics: Work, Energy Power .....	3	2	4
ENG 302 Communicative Skills: English .....	3	0	3
ELEC 311 Alternating Current Electricity .....	5	6	8
	16	8	20

### THIRD QUARTER

MA 303 Technical Math .....	5	0	5
ENG 303 Technical Writing .....	3	0	3
SOC 301 Human Relations .....	2	0	2
ELN 312 Electronics I .....	5	8	9
	15	8	19

### FOURTH QUARTER

MA 304 Technical Math .....	3	0	3
PHY 304 Physics: Light and Sound .....	3	2	4
ENG 304 Communicative Skills: Speech .....	2	0	2
ELN 313 Electronics II .....	8	8	12
	16	10	21

### FIFTH QUARTER

ISc 301 Industrial Organization & Management .....	3	0	3
ELN 316 Transistor Applications .....	5	4	7
ELN 317 Communications & Ultra High Frequency .....	2	4	4
ELN 318 Special Circuitry .....	5	4	7
	15	12	21

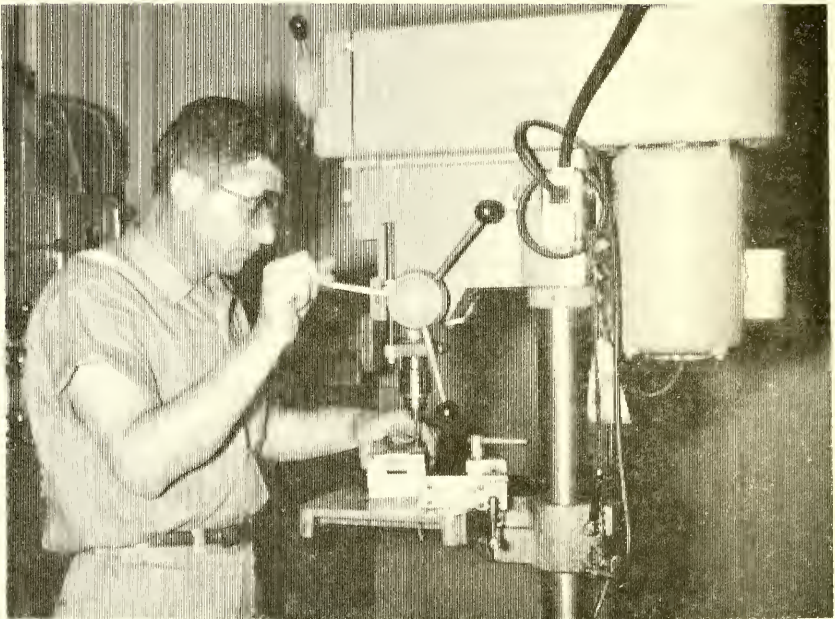
### SIXTH QUARTER

SOC 302 Economics .....	3	0	3
ELN 319 Instrumentation .....	5	6	8
ELN 320 Circuit Analysis & Maintenance .....	5	6	8
	13	12	19

# Trade Programs

AT

## Randolph Industrial Education Center



**It's Good Experience**

## Trade Program

The following are minimum admission requirements to the regular one-year trade preparatory curriculums and vocational programs:

### Minimum Admission Requirements

A candidate for admission to the regular trade-vocational training programs must meet the following qualifications:

1. Must be at least 18 years of age and have the ability to enter into or make advancement in the area in which enrolled.
2. Must have satisfactorily completed a minimum of eight (8) units of accredited secondary school work. **Those who have not successfully completed eight (8) units of such work will be required to take other standard and/or local institution tests.**
3. Must demonstrate aptitude for trade-vocational training as determined by standard and/or local institution tests to insure ability to meet job requirements in the desired trade.
4. Must have one (1) unit of secondary school algebra or an equivalent in modern mathematics. Those who have deficiencies will be required to remove the deficiency before completing their training.

**Provisional admittance may be granted at the discretion of the Center Administration.**

5. Must have a personal interview with designated school representative.
6. Must be in acceptable condition of physical and mental health to meet qualifications for a given occupation.

### CONTACT HOURS AND CREDIT HOURS

These curriculums are to be offered on the basis of an average load of twenty-five contact hours per five-day week, eleven weeks per quarter, for four quarters. **Students enrolled in a part-time program will be scheduled, based on class needs, to accomplish this average load, but over a longer period of time.**

Quarterly credit hours are awarded to students on the following arrangement:

Credit of one quarter hour for each hour of class work per week for eleven weeks.

The average hour of class will require two hours of assigned homework, for an average student.

Credit of one quarter hour for each two hours of laboratory work per week for eleven weeks. One hour of assigned homework will accompany an average laboratory period of two hours.

Credit of one quarter hour for each three hours of manipulative laboratory for eleven weeks. No outside work will ordinarily be assigned to accompany this shop period. Manipulative laboratories will be indicated by an asterisk.

The following definitions will explain the foregoing terms:

“Class work” is lecture and other classroom instruction.

“Laboratory” involves demonstration by instructor, experimentation and practice by students.

“Manipulative laboratory” involves development of manual skills and job proficiency.



**Lowell Whatley, Instructor**



**And Ladies Too!**



## **AUTOMOTIVE 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 automotive 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.



**Future Mechanics**



**The Real Thing!**

# Curriculum By Quarters

## FOUR QUARTERS . . . . TWELVE MONTHS

C — Class hours per week    L — Lab hours per week    S — Shop hours per week

Q — Quarter hours credit

### FIRST QUARTER

			C	L	S	Q
AUTO	121	Automotive Engines .....	3	0	12	7
MA	120	Fundamentals of Mathematics .....	5	0	0	5
ENG	101	Reading Improvement .....	2	0	0	2
PHY	104	Applied Physics I .....	1	2	0	2
			11	2	12	16

### SECOND QUARTER

AUTO	122	Automotive Electrical & Fuel Systems .....	3	0	12	7
PHY	105	Applied Physics II .....	1	2	0	2
ENG	102	Communication Skills .....	2	0	0	2
DD	121	Blueprint Reading .....	3	0	0	3
			9	2	12	14

### THIRD QUARTER

AUTO	123	Automotive Chassis & Suspensions .....	3	0	12	7
AHR	101	Automotive Air Conditioning .....	3	0	0	3
SOC	101	Human Relations .....	2	0	0	2
MECH	112	Welding .....	0	0	3	1
PHY	106	Applied Physics III .....	1	2	0	2
			9	2	15	15

### FOURTH QUARTER

AUTO	124	Automotive Power Train System .....	3	0	9	6
SOC	103	Management Procedures .....	3	0	0	3
AUTO	125	Automotive Servicing .....	3	0	9	6
			9	0	18	15



**William R. Hudson, Instructor**



**Practical Skills**

# Architectural Drafting

## INTRODUCTION

### Purpose of Curriculum

This curriculum is designed to prepare students to enter the field of architectural drafting. The first two quarters contain courses basic to all fields of drafting. The third and fourth quarters contain specialization and related courses that prepare one to enter architectural 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

**Draftsman.** Prepares 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 dimension 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.

**Architectural draftsman.** Performs duties of draftsman but specializes in organizing and drawing of working drawings from final preliminary sketches from the architectural designer, with mechanical and structural drawings included.

# Curriculum By Quarters

## FOUR QUARTERS . . . . TWELVE MONTHS

C — Class hours per week    L — Lab hours per week    S — Shop hours per week  
Q — Quarter hours credit

<b>FIRST QUARTER</b>				<b>C</b>	<b>L</b>	<b>S</b>	<b>Q</b>
DD	131	Drafting	.....	3	0	12	7
MA	121	Geometry	.....	3	0	0	3
ENG	101	Reading Improvement	.....	2	0	0	2
PHY	104	Applied Physics I	.....	1	2	0	2
DD	105	Drafting Analysis	.....	2	0	0	2
				11	2	12	16
<b>SECOND QUARTER</b>							
DD	132	Drafting	.....	3	0	12	7
MA	124	Algebra	.....	5	0	0	5
ENG	102	Communication Skills	.....	2	0	0	2
PHY	105	Applied Physics II	.....	1	2	0	2
DD	135	Descriptive Geometry	.....	1	4	0	3
				12	6	12	19
<b>THIRD QUARTER</b>							
DD	131	Drafting	.....	3	0	12	7
MA	126	Trigonometry	.....	3	0	0	3
PHY	106	Applied Physics III	.....	1	2	0	2
DD	144	Architectural Materials & Methods	.....	4	0	0	4
DD	143	Architectural Mechanical Equipment	.....	3	0	0	3
				14	2	12	19
<b>FOURTH QUARTER</b>							
DD	142	Architectural Drafting	.....	3	0	12	7
DD	145	Specifications and Contracts	.....	3	0	0	3
CIV	101	Surveying	.....	2	0	3	3
SOC	101	Human Relations	.....	2	0	0	2
ISc	102	Industrial Organizations	.....	3	0	0	3
				13	0	15	18

# Mechanical Drafting

## Purpose of Curriculum

This curriculum is designed to prepare students to enter the field of mechanical drafting. The first two quarters contain courses basic to all fields of drafting. The third and fourth quarters contain specialization and related courses that prepare one to enter mechanical 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

**Draftsman.** Prepares 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 dimension 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 drawing tools. Lays tracing paper on drawing and traces drawing. 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.

**Mechanical Draftsman.** Performs duties of Draftsman but specializes in making rough drafting sketches of proposed mechanical devices, and then drawing necessary details. Prepares accurate scale drawings of parts or machines from specifications.

## (MECHANICAL OPTION)

### THIRD QUARTER

DD	171	Mechanical Drafting .....	3	0	12	7
MA	126	Trigonometry .....	3	0	0	3
PHY	106	Applied Physics III .....	1	2	0	2
MECH	113	Shop Processes .....	2	2	0	3
MECH	115	Metallurgy .....	2	2	0	3
			11	6	12	18

### FOURTH QUARTER

DD	172	Mechanical Drafting .....	3	0	12	7
SOC	101	Human Relations .....	2	0	0	2
ISc	102	Industrial Organization .....	3	0	0	3
MECH	114	Shop Processes .....	2	2	0	3
MECH	116	Metallurgy .....	2	2	0	3
			12	4	12	18

# **Electrical Installation And Maintenance**

## **Purpose of 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 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 and Requirements**

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 current 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.



# Curriculum By Quarters

## FOUR QUARTERS . . . . TWELVE MONTHS

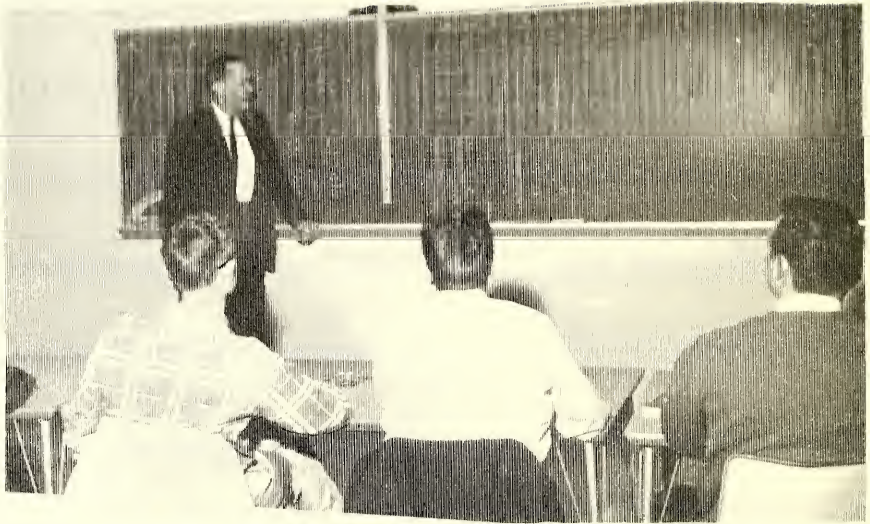
C — Class hours per week    L — Lab hours per week    S — Shop hours per week  
Q — Quarter hours credit

<b>FIRST QUARTER</b>				<b>C</b>	<b>L</b>	<b>S</b>	<b>Q</b>
MA	125	Electrical Math .....		5	0	0	5
ELEC	122	Direct & Alternating Current .....		7	8	3	12
ENG	101	Reading Improvement .....		2	0	0	2
				14	8	3	19

<b>SECOND QUARTER</b>							
ELEC	123	Alternating & Direct Current: Machines and Controls .....		5	10	0	10
DD	120	Building Trades Blueprint Reading and Sketching .....		5	0	0	5
ENG	102	Communication Skills .....		2	0	0	2
SOC	101	Human Relations .....		2	0	0	2
				14	10	0	19

<b>THIRD QUARTER</b>							
ELEC	124	Residential Wiring .....		5	0	9	8
ELN	118	Industrial Electronics I .....		4	4	0	6
SOC	103	Management Procedures					
		or					
ISc	102	Industrial Organizations .....		3	0	0	3
				12	4	9	17

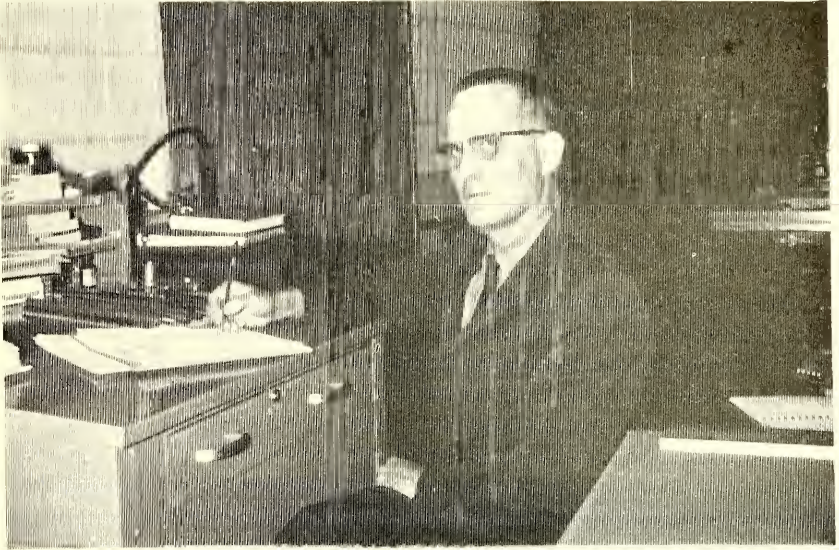
<b>FOURTH QUARTER</b>							
ELEC	125	Commercial & Industrial Wiring .....		5	0	9	8
ELN	119	Industrial Electronics II .....		5	6	0	8
				10	6	9	16



**Mathematics with Mr. Hunt**



**The Slide Rule with Mr. Ron Biddle**



**C. M. Frazier, Instructor**



**Future Machinists**

# Machinist Trade

## 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 guide 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. It is comprised of the joint views of committees responsible for its development.

## 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 required 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.

This skilled worker must be able to set up and operate most types of machine tools. The machinists 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 steel into an intricate, precise part.



# Curriculum By Quarters

## FOUR QUARTERS . . . . TWELVE MONTHS

C — Class hours per week    L — Lab hours per week    S — Shop hours per week  
Q — Quarter hours credit

### FIRST QUARTER

			C	L	S	Q
MECH	121	Machine Shop Theory and Practice .....	3	0	12	7
MA	120	Fundamentals of Mathematics .....	5	0	0	5
DD	122	Blueprint Reading .....	5	0	0	5
ENG	101	Reading Improvement .....	2	0	0	2
			15	0	12	19

### SECOND QUARTER

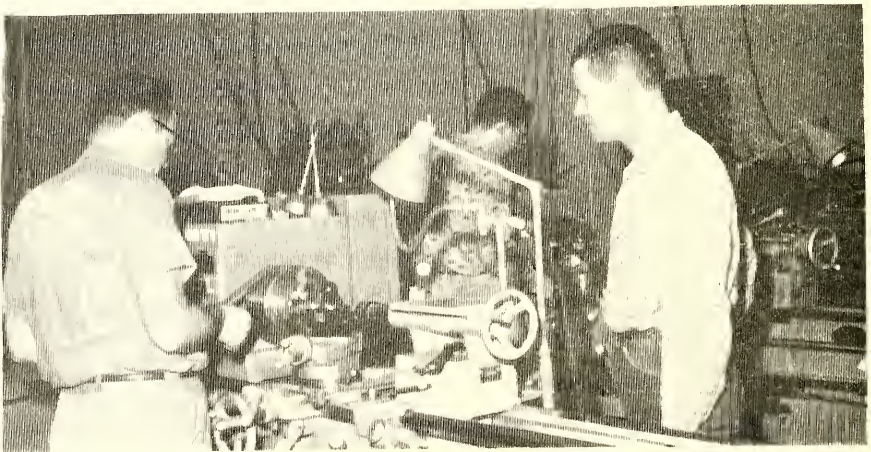
MECH	122	Machine Shop Theory and Practice .....	3	0	12	7
MA	123	Machinist Mathematics .....	5	0	0	5
DD	123	Blueprint Reading .....	3	0	0	3
PHY	104	Applied Physics I .....	1	2	0	2
ENG	102	Communication Skills .....	2	0	0	2
			14	2	12	19

### THIRD QUARTER

MECH	123	Machine Shop Theory and Practice .....	3	0	12	7
MECH	124	Structure of Metals .....	3	2	0	4
PHY	105	Applied Physics II .....	1	2	0	2
SOC	101	Human Relations .....	2	0	0	2
			9	4	12	15

### FOURTH QUARTER

MECH	125	Machine Shop Theory and Practice .....	3	0	12	7
ISc	101	Industrial Specifications .....	2	0	0	2
MECH	111	Oxyacetylene Welding .....	2	0	3	3
MECH	126	Heat Treating Practice .....	0	0	3	1
ISc	102	Industrial Organizations .....	3	0	0	3
			10	0	18	16



Hubert Causey, Instructor

# Welding

## Purpose of Curriculum

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

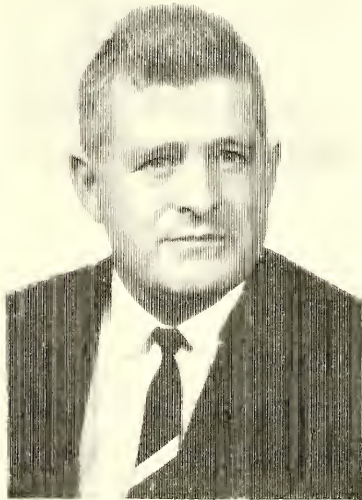
The content of this curriculum is designed to give students sound understanding of the principles, methods, techniques and skills essential for successful employment in the welding field and metals industry.

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

Welders join metals by applying intense heat, and sometimes 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 welder 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.



**Paul H. Newby, Instructor**

# Welding

## CURRICULUM BY QUARTERS

### THREE QUARTERS . . . . NINE MONTHS

C — Class hours per week    L — Lab hours per week    S — Shop hours per week  
Q — Quarter hours credit

#### FIRST QUARTER

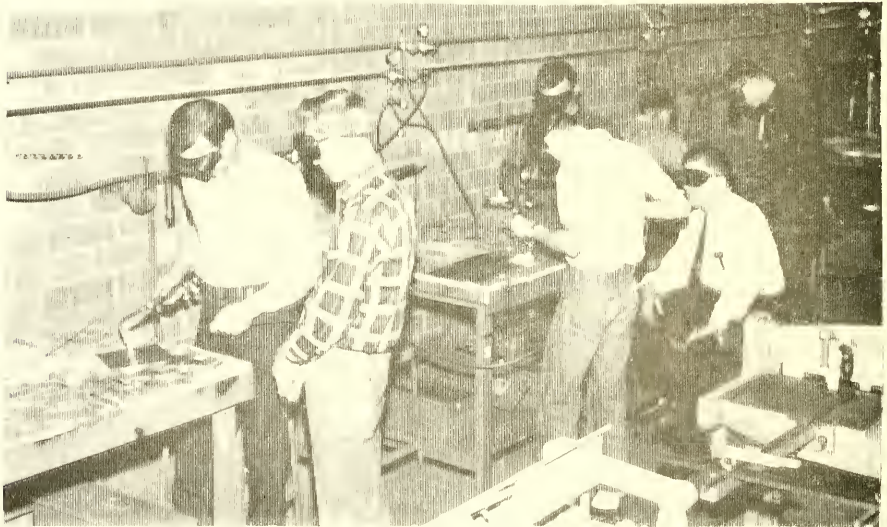
			C	L	S	Q
MA	120	Fundamentals of Mathematics	5	0	0	5
MECH	124	Structure of Metals	3	2	0	4
WELD	110	Hand and Power Tools	0	0	3	1
DD	122	Blueprint Reading	5	0	0	5
WELD	120	Oxyacetylene Welding and Cutting	3	0	9	6
			16	2	12	21

#### SECOND QUARTER

ENG	101	Reading Improvement	2	0	0	2
MA	121	Geometry	3	0	0	3
DD	127	Blueprint Reading	3	0	0	3
ELEC	117	Basic Electricity	3	0	0	3
WELD	111	Arc Welding	3	0	12	7
			14	0	12	18

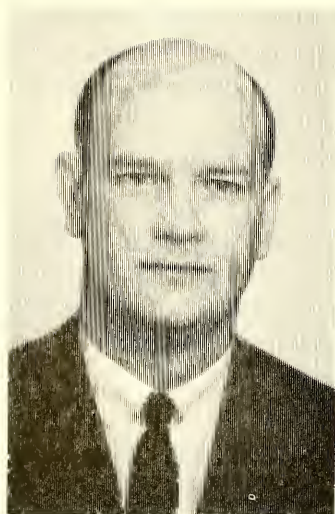
#### THIRD QUARTER

WELD	112	Mechanical Testing and Inspection	0	0	6	3
SOC	101	Human Relations	2	0	0	2
WELD	113	Inert Gas Welding	1	0	3	2
WELD	114	Introduction to Pipe Welding	3	0	12	7
SOC	105	Industrial Economics	3	0	0	3
			9	0	21	17



Welders at Work





**Mr. George Michie, Jr.**  
**Director of General Adult Education**



**Mrs. Nancy Hurst**  
**Supervisor of Basic Adult Education**

## General Adult Education

General Adult Education is basically designed to give the public an opportunity to improve their standard of living through continued education in a wide variety of areas. Hundreds of people in Randolph County are taking courses for pleasure, improvement, and profit at the Randolph Industrial Education Center in subjects that range from art to slide rule.

Most classes meet once or twice weekly for two to three hours each meeting and courses usually last from six to ten weeks. Costs are small, ranging from \$2 to \$11

Some courses, such as sewing, millinery, and cooking, attract mostly women; while some courses, as electrical code, auto repair, and machine repair, appeal more to the men. However, many courses draw both, for many men and women are enrolled in furniture refinishing, houseplanning, and law for the layman.

Continuing education has significantly changed the lives of many people. In some cases people have used the training to start their own businesses, to upgrade a present job, or to meet the needs of either a job promotion, or a new job.

Many people simply want to learn new things. Others like the stimulating atmosphere and people found in these classes. A wide range of courses are available in this area. For example, one may be interested in a discussion group on current events; how to speak a foreign language, as French or Spanish, or how to get the most for your money.

Anything which interests an adult could be included under General Adult Education. The Randolph Industrial Education Center offers a wide range of courses in this field. Announcement will be made several days prior to their starting date as to the type of course offered. The Randolph Industrial Education Center will be glad to arrange almost any course in which 10 or more people are interested.

## The Library

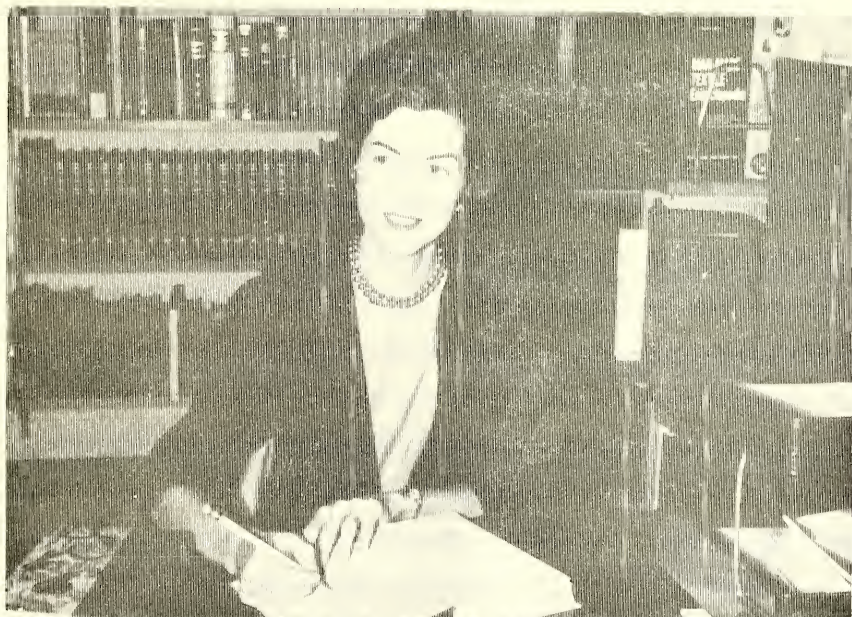
The library of the Randolph Industrial Education Center is located in the west wing of the building and is open Monday through Friday.

The Center's library has developed an excellent collection of technical books. These include scientific, engineering, cultural, and technological volumes as well as related fields. Numbering approximately 5,000 volumes, these books cover both basic and advanced phases of study. New volumes are continuously being added in order to keep up with technological advancements.

In addition, the library subscribes to more than 35 periodicals and three newspapers. The books, pamphlets, and magazines may be borrowed for home use. It also combines facilities for research and leisure reading for both students and faculty.



**Mr. Jerry Owens  
Director of Extension Service**



**Mrs. Barbara Hill, Librarian**

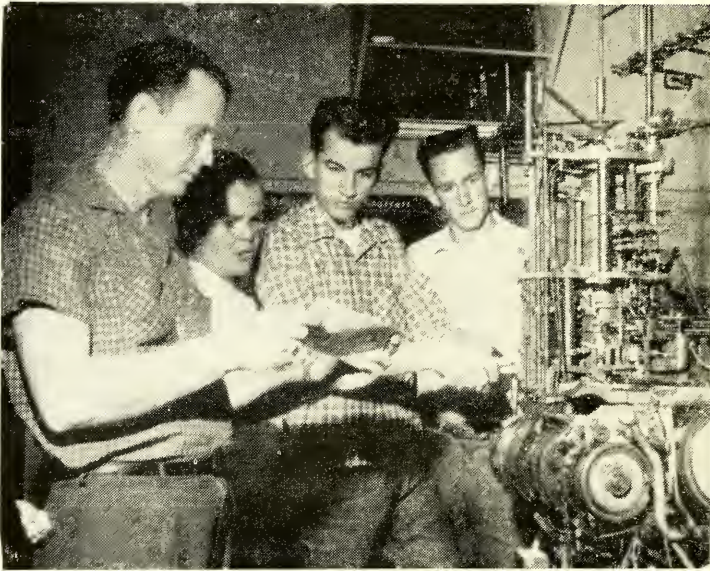
## Extension Education

Extension courses are an important part of the technical-vocational educational picture. The technician attends them to keep abreast of new developments or to prepare himself for a more advanced job in his field. The skilled craftsman who finds his job changing from a craft to a technical occupation attends extension classes to prepare himself for the changed work that lies ahead. The semi-skilled worker in a low-level technical job attends classes to get himself ready for more complicated work.

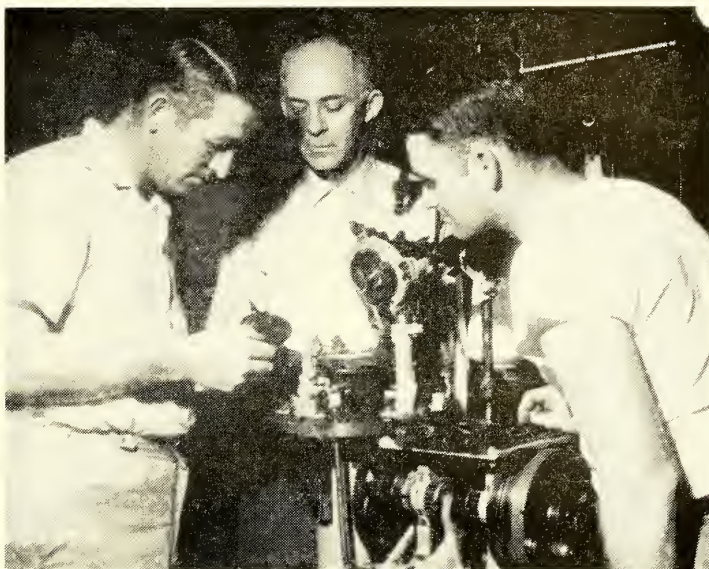
Extension programs are usually available in the evening from the hours of 6:30 to 10:00 p. m. These evening programs are open to any mature worker who can profit from the instruction and who is capable of handling the work of the course satisfactorily, irrespective of the individual's former educational background.

Some courses are free, but most involve a nominal charge of \$2.00 to \$12.00. Typical course offerings in the area of extension are listed on the next page.

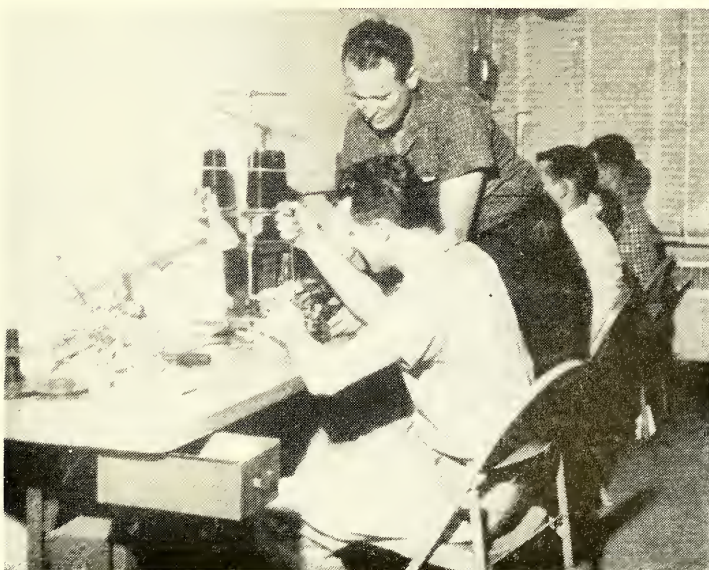
### Knitter And Seamer Fixing Extension Unit In Troy, North Carolina



**This Is Its Diagram**



**See How It Works**



**Putting It Back Together Again**

## General Adult And Extension Courses

Advanced Arc Welding  
Advanced Oxyacetylene Welding  
Automotive Electrical System  
Automotive Mechanics  
Automotive Transmission  
Basic Arc Welding  
Basic Oxyacetylene Welding  
Business, Effective Letter Writing  
Cabinet Making  
Commercial Art and Design  
Dressmaking and Design  
Electrical Code  
Electrical Controls and Circuits  
Electronics  
Family Budgeting  
Fire Service Training  
Income Tax  
Interior Design and Decorations  
Machine Design  
Machine Shop Operation  
Practical Electrical Wiring  
Practical Electronics  
Radio and TV Repair and Servicing  
Sheet Metal  
Slide Rule  
Small Appliance and Service Repair  
Small Business Income Tax  
Small Gasoline Engine Repair  
Speed Reading  
Supervisory Developmental Training  
Upholstery  
Welding



## Description Of Courses Offered

### AGRICULTURE (AG)

#### **AG 306 Farm Chemicals**

A study of farm chemical pesticides, their ingredients, formulation, and farm application, with emphasis on the effective and safe use of chemicals in agricultural pest control. Prerequisite: None. Credit 6.

#### **AG 310 Introduction to Agricultural Economics**

An introduction to economics, the functions of the economic system and agriculture's role in the economy. A review of the functions of the manager and an introduction to the principles he uses in making decisions to adjust to changing conditions. Analysis of the main sources of change which affect agricultural firms. Prerequisite: None Credit 4.

#### **AG 312 Agricultural Marketing**

An analysis of the functions of marketing in the economy and a survey of the problems marketing faces. A review of the market structure and the relationship of local, terminal, wholesale, retail and foreign markets. Problems in the operations of marketing firms including buying and selling, processing, standardization and grading, risk taking and storage, financing, efficiency, and cooperation. Discussion of procedures of marketing such commodities as grain, cotton, livestock and tobacco. Prerequisite: AG 310. Credit 6.

#### **AG 314 Farm Business Management**

A review of the functions of the manager of a business firm and the problems he faces. Development of the concept of planning by both partial and complete budgeting. Review of the concepts of costs and the length of run in production. Practice in preparing enterprise budgets as an aid in choosing what to produce. Use of partial budgeting to find the least cost production procedure. Analysis of production data to select the level of production that yields the most revenue. Relationship between size, efficiency and income of a farm. Review of procedures for evaluating the efficiency of the manager. Prerequisite: AG 310. Credit 6.

#### **AG 322 Agricultural Prices**

An introduction to the functions of prices in our economic system and the effects of changing price levels. The influence consumer demand has on prices through price and income elasticities. A review of the influence of cycles and timing of production along with an examination of the use of future commodity contracts. Application of the principles of price analysis to price control and parity programs. Familiarization with the various tools widely used in historical analysis and forecasting. Prerequisite: None. Credit 3.



**AG 326 Agricultural Programs and Agencies**

A review of the public agriculture programs and agencies that provides services for agricultural producers. The objectives, organization, functions and services of these organizations. Prerequisite: AG 310. Credit 4.

**AG 342 Farm Mechanization**

A study of farm machinery management and labor-saving devices. The economics of selection and operation of farm machinery. Study and evaluation of feed grinders and mixers, storage facilities, materials handling systems and other labor-saving devices. Prerequisite: None. Credit 4.

**AG 370 Animal Science**

Basic principles of zoology and genetics as related to farm animals. The scientific study of all commercially important classes of farm animals. Prerequisite: None. Credit 6.

**AG 380 Livestock Diseases and Parasites**

A course in animal health with emphasis on livestock sanitation practices and procedures and management factors relating to disease and parasite prevention. The cause, damage, symptoms, and treatment of the most prevalent livestock diseases and parasites in North Carolina. Prerequisite: None. Credit 4.

**AG 420 Plant Science**

An introductory general botany and crop science course covering the fundamental principles of the reproduction, growth, functions, and development of seed bearing plants with application to certain commercially important plants in North Carolina. Prerequisite: None. Credit 6.

**AG 490 Soil Science and Fertilizers**

Soil types: Basic principles of efficient management of soils and the growing of crops; care and cultivation of the soil, fertilization and conservation of soil fertility. Prerequisite: None. Credit 6.

## Automotive

**AHR 101 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. Prerequisite: PHY 105. Credit 3.

### **AUTO 121 Automotive Engines**

Development of a thorough knowledge and ability in using, maintaining, and storing 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. Prerequisite: None. Credit 7.

### **AUTO 122 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. Prerequisite: AUTO 121. Credit 7.

### **AUTO 123 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. Prerequisite: AUTO 122. Credit 7.

### **AUTO 124 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. Prerequisites: PHY 105, PHY 106, AUTO 123. Credit 6.

### **AUTO 125 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. Prerequisite: AUTO 123. Credit 6.

## **Business**

### **BUS 301 Introduction to Business**

A survey of the business world with particular attention devoted to the structure of the various types of business organizations, methods of financing, internal organization and management. Prerequisite: None. Credit 3.

**BUS 317 Sales Development**

A study of retail, wholesale and specialty selling. Emphasis is placed upon mastering and applying the fundamentals of selling. Preparation for and execution of sales demonstrations required. Prerequisite: None. Credit 4.

**BUS 320 Accounting**

Principles, techniques and tools of accounting, for understanding of the mechanics of accounting—collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises to include practical application of the principles learned. Prerequisite: None. Credit 6.

**BUS 355 Interpreting Accounting Records**

Designed to aid the student in developing a “use understanding” of accounting records, reports and financial statements. Interpretation, analysis, and utilization of accounting statements. Prerequisite: BUS 320. Credit 3.

**BUS 360 Office Machines**

A general survey of the business and office machines. Students will receive training in techniques, processes, operation and application of 10-key adding machine, full-keyboard adding machine, calculator, posting and accounting machines, card punch, and card verifier. Prerequisite: None. Credit 2.

**BUS 364 Business Finance**

Financing of business units, as individuals, partnerships, corporations, and trusts. A detailed study is made of the organization, management, and financing of businesses. Prerequisite: None. Credit 3.

**BUS 366 Budget and Record Keeping**

The basic principles, methods, and procedures for preparation and operation of budgets. Special attention is given to the involvement of individual departments and the role they play. Emphasis on the necessity for accurate record keeping in order to evaluate the effectiveness of budget planning. Prerequisite: BUS 320. Credit 3.

**BUS 368 Taxes**

Application of Federal and State taxes to various businesses and business conditions. A study of the following taxes: income, payroll, intangible, capital gain, sales and use, excise, and inheritance. Prerequisite: None. Credit 3.

**BUS 372 Principles of Supervision**

Introduces the basic responsibilities and duties of the supervisor and his relationship to superiors, subordinates, and associates. Emphasis on securing an effective work force and the role of the supervisor. Methods of supervision are stressed. Prerequisite: None. Credit 3.

# Drafting

## **CIV 101 Surveying**

Basic instrumentation and topography will be studied together with field trips and drafting room application of site surveying. Prerequisite: MA 104. Credit 3.

## **DD 105 Drafting Analysis**

The trainee will make an analysis of the various drafting field options offered in the Center. This analysis will include selected reading assignments concerning the options. A study of the job descriptions concerning those areas in the **Dictionary of Occupational Titles**, a study of blueprints in the option fields, and preparation of sketches illustrating major differences in the types of drawings. Prerequisite: None. Credit 2.

## **DD 120 Building Trades Blueprint Reading and Sketching**

Principles of interpreting blueprints and trade specifications common to the building trades. Development of proficiency in making three view and pictorial sketches. Prerequisite: None. Credit 5.

## **DD 121 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. Prerequisite: None. Credit 3.

## **DD 131 Drafting**

An introduction to drafting and the study of drafting practices. Instruction is given in the selection, use and care of instruments, singlestroke 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. Prerequisite: None. Credit 7.

## **DD 132 Drafting**

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 drawings 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. Prerequisite: DD 131. Credit 7.

**DD 135 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. Prerequisite: DD 131. Credit 3.

**DD 141 Architectural Drafting**

An introduction to architectural drafting. Further development of techniques in lettering, dimensioning, freehand sketching and instrument drawing. Drawings of construction details, using appropriate material symbols and conventions. Working drawings, including plans, elevations, sections, scale details and full-size details will be prepared from preliminary sketches. Prerequisite: DD 132. Credit 7.

**DD 142 Architectural Drafting**

Individual and group participation in the preparation of complete working drawings for a complex architectural structure. Study of drafting room organization and relationships of personnel within the architectural office. Prerequisites: DD 141, DD 143, DD 144. Credit 7.

**DD 143 Architectural Mechanical Equipment**

General study of heating, air conditioning, plumbing and electrical equipment, materials and symbols. Building code requirements pertaining to residential and commercial structures. Reading and interpretation of working drawings by mechanical engineers. Prerequisite: DD 132. Credit 3.

**DD 144 Architectural Materials and Methods**

Materials used in the construction of architectural structures will be studied. Their economic values and limitations affected by locality, budget and codes. Field trips to construction sites and study of manufacturer's specifications for materials. Standard sizes of structural materials and modular construction techniques. Prerequisite: None. Credit 4.

**DD 145 Specifications and Contracts**

The purpose and writings of specifications will be studied along with their legal and practical application to working drawings. Contract documents will be analyzed and studied for the purpose of client-architect-contractor responsibilities, duties and mutual protection. Prerequisites: DD 141, DD 143, DD 144. Credit 3.

**DD 171 Mechanical Drafting**

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. Prerequisite: DD 132. Credit 7.

## **DD 172 Mechanical Drafting**

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. Prerequisite: DD 171. Credit 7.

## **DD 307 General Drafting**

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, lettering, geometrical constructions, freehand sketching, and describing objects orthographically with principal views. Freehand sketchings and orthographic reading are to be emphasized. Prerequisite: None. Credit 3.

## **DD 308 General Drafting**

The student continues the study of orthographic projection with applications to orthographic instrument drawing. Dimensioning procedures and practices are emphasizing complex objects with auxiliary views and/or sections and conventions are taught. Prerequisite: DD 307. Credit 3.

# **Industrial Science**

## **ISc 102 Industrial Organizations**

Methods, techniques, and practices of modern management in planning, organizing and controlling operations of a manufacturing concern. Introduction to the competitive system and the factors constituting product cost. Prerequisite: None. Credit 3.

## **ISc 301 Industrial Organization and Management**

Organizational structure for industrial management; operational and financial activities, including accounting, budgeting, banking, credit and industrial risk, forecasting of markets, selection and layout of physical facilities; selection, training and supervision of personnel as found in typical industrial organizations. Prerequisite: None. Credit 3.

# **Mathematics**

## **MA 120 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. Prerequisite: None. Credit 5.

**MA 121 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. Prerequisite: None. Credit 3.

**MA 124 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. Prerequisite: None. Credit 5.

**MA 125 Electrical Math**

A study of fundamental concepts of algebra; basic operations of addition, subtraction, multiplication, and division; solution of first order equations, use of letters and signs, grouping, factoring, exponents, ratios, and proportions; solution of equations, algebraically and graphically; a study of logarithms and use of tables; an introduction to trigonometric functions and their application to right angles; and a study of vectors for use in alternating current. Prerequisite: None. Credit 5.

**MA 126 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. Prerequisites: MA 121, MA 124. Credit 3.

**MA 301 Technical Mathematics**

The real number system is developed as an extension of natural numbers, integers, and rational numbers. Insight into the processes of arithmetic and algebra is provided. Additional topics include sets, equations, number bases, number lines, coordinate systems, trigonometry of the right triangle, vectors, dimensional analysis, and the derivative. Prerequisite: None. Credit 5.

**MA 302 Technical Mathematics**

Algebraic operations are applied to linear, quadratic, and polynomial functions and special equations of second degree. Complex numbers are introduced and the study of the derivative is continued. Selected applications involving rates of change, maxima and minima, approximation, areas, and volumes are considered. Prerequisite: MA 301. Credit 5.

**MA 303 Technical Mathematics**

Ideas of algebra are used in a study of trigonometric, logarithmic and exponential functions. Selected applications of calculus reinforce this approach. Polar coordinates are introduced and their applications expanded. Complex numbers, vectors, coordinate systems and their applications constitute other areas of study. Prerequisite: MA 302. Credit 5.

### **MA 304 Technical Mathematics**

A further study of analytical geometry, algebra, and calculus: the binomial expansion, arithmetic and geometric progressions, polynomial functions and methods of solution, integration techniques and use of integral tables, polar equations, and an introduction to solid analytical geometry. Prerequisite: MA 303. Credit 3.

### **MA 310 Business Mathematics**

This course stresses the fundamental operations and their application to business problems. Topics covered include payrolls, price marking, interest and discount, commission, taxes, and pertinent uses of mathematics in the field of business. Prerequisite: None. Credit 3.

## **Mechanics**

### **WELD 110 Hand and Power Tools**

Designed to introduce the students to the correct use of hand tools found in the metal working 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. Prerequisite: None. Credit 1.

### **WELD 111 Arc Welding**

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. Prerequisite: WELD 110. Credit 7.

### **WELD 112 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. Prerequisite: WELD 111. Credit 3.

### **WELD 113 Inert Gas Welding**

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. Prerequisite: WELD 112. Credit 2.



**MECH 113 Shop Processes**

Study of practices used in metalworking shops: introduction to how materials can be utilized, and to the processes of shaping, forming and fabricating of metals. Demonstration of the metalworking lathes, grinders, drills, milling machines, shapers, planers, saws, broachers, gear cutting machines and finishing machines. A study of the capabilities of these machines. Prerequisite: None. Credit 3.

**MECH 114 Shop Processes**

Comparison of the unit-production and mass-production systems. Casting, forging and allied processes, welding and sheet metal working processes are demonstrated and discussed. Mass-production methods are studied in relationship to precision dimensional control. Prerequisite: MECH 113. Credit 3.

**WELD 114 Introduction to Pipe Welding**

Designed to provide practice in the welding of pressure piping in the horizontal, vertical, and horizontal fixed position using shielded metal arc welding processes according to Section IX of the ASME code. Prerequisite: WELD 111. Credit 12.

**MECH 115 Metallurgy**

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. Prerequisite: None. Credit 3.

**MECH 116 Metallurgy**

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. Powder metallurgy, titanium, zirconium, indium and vanadium are included in this course. Prerequisite: MECH115. Credit 3.

**WELD 120 Oxyacetylene Welding and Cutting**

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. Prerequisite: None. Credit 6.

**MECH 124 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. Prerequisite: None. Credit 4.

# Electricity

## **ELEC 117 Basic Electricity**

Study of the basic theories of electricity, types of electricity, methods of production, and the transmission and transforming of electricity. The course includes the following topics: electron theory, electricity by chemical action, friction and magnetism, induction, voltage, horsepower, amperage, wattage, transformers, wiring, and resistance. Prerequisite: None. Credit 3.

## **ELEC 122 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. Prerequisite: None. Credit 12.

## **ELEC 123 Alternating Current and Direct Current Machines and Controls**

Provides fundamental concepts in single and polyphase alternating current circuits, voltages, currents, power measurements, transformers, and motors. Instruction in the use of 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, timers, or sequencing switches. Prerequisite: ELEC 122, MA 125. Credit 10

## **ELEC 124 Residential Wiring**

Provides instruction and application in the fundamentals of blueprint reading, planning, layout, and installation of wiring in residential applications, such as: services, switchboards, lighting, fusing, wire sizes, branch circuits, conduits, National Electrical Code regulations in actual building mock-ups. Prerequisites: ELEC 123, DD 120. Credit 8.

## **ELEC 125 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. Prerequisite: ELN 118, ELEC 124. Credit 8.

## **ELEC 310 Direct Current Electricity**

Basic electricity subjects include: structure of matter, electrical terminology and symbols, electron theory of current flow, magnets and magnetic fields. Rigerous mathematical analysis of direct current resistive circuits. Ohm's Law, Kirchhoff's Laws, Thevenin's Theorem, Norton's Theorem, the Superposition Principle and loop current method. Solution of complex resistive networks. Fundamental principles of inductors, capacitors, and time constants circuits are introduced. Prerequisite: None. Credit 8.

**ELEC 311 Alternating Current Electricity**

Alternating current and voltage; alternating current theory. Mathematical analysis is made of both sine and non-sine wave forms. Inductive reactance, capacitive reactance, and impedance characteristics of alternating current circuits are investigated. The use of vector and complex numbers in circuit impedance. Series and parallel resonant circuit conditions are compared and practical application of these conditions explained. Prerequisites: ELEC 310, MA 301, PHY 301. Credit 8.

**ELEC 312 Electrical Machines**

Principles of direct-current generators and motors, types and characteristics; alternating-current generators, transformers, three-phase motors, synchronous motors and single-phase motors. Prerequisites: MA 302, PHY 302, ELEC 311. Credit 7.

**ELEC 313 Electrical Controls and Circuits**

An introduction to control systems for acceleration, speed, and braking. Alternating current contactors and relays, drum controllers, wye-delta starters, overload and overvoltage protection and sensing devices. Typical control systems; motor control, field control; controls for air-conditioning, refrigeration and heating. Prerequisites: MA 303, PHY 302, ELEC 312. Credit 5.

**ELEC 314 Planning Electrical Installations**

A familiarization with the National Electrical Code; the power requirements and typical design of industrial and commercial installations. Design and calculation of illumination and electric heating systems. Prerequisites: ELEC 311, ELEC 313. Credit 5.

**ELEC 315 Electrical Instrumentation**

Electrical meters and their movements; indicating, integrating, recording; instrument transformers; and special metering applications. Care, operation, calibration and maintenance of electrical meters and instruments. Prerequisite: ELEC 311. Credit 5.

**ELEC 316 Electrical Power Systems**

A familiarization with power plants, switch gear and circuit breakers, plant distribution, transmission lines and lightning protection. Prerequisite: ELEC 314. Credit 5.

**ELEC 317 Electrical Analysis and Maintenance**

An introduction to troubleshooting techniques of the common problems of direct current and alternating current machines, transformers, circuit breakers and regulators. Emphasis will be on scheduling of maintenance, lubrication; and principles of plant maintenance. Prerequisites: ELEC 312, ELEC 316. Credit 4.

## Electronics

**ELN 118 Industrial Electronics I**

Basic theory, operating characteristics, and application of vacuum tubes, such as: diodes, triodes, tetrodes, pentodes, and gaseous control tubes. An introduction to amplifiers using triodes, power supplies using diodes, and other basic applications. Prerequisite: ELEC 123. Credit 6.

### **ELN 119 Industrial Electronics II**

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 of systems commonly found in most industries. Prerequisite: ELN 118. Credit 8.

### **ELN 306 Basic Electronics**

Fundamental concepts of electron flow, thermionic emission, characteristics of diodes, triodes, tetrodes and pentodes. Practical circuits of power supplies; voltage and power amplifiers and feedback circuits. Introduction to semi-conductors and transistors. Prerequisites: MA 303, PHY 302, ELEC 311. Credit 5.

### **ELN 307 Industrial Electronics**

Electronic control in industrial processes; fundamental operation of gaseous rectifiers, thyratrons, saturable reactors, timers, counters, computers, and their circuits. Prerequisites: ELN 306, ELEC 313. Credit 6.

### **ELN 308 Industrial Electronics**

Electronics as applied to a production system; rectification; electronically controlled rectifiers, servomechanisms, motors; magnetic amplifiers; ultrasonic cleaning; and variable strobe light. Prerequisite: ELN 307. Credit 6.

### **ELN 312 Electronics I**

A treatment of electron tubes, semi-conductors and their associated circuitry; thermionic emission; diode, triode, tetrode and pentode characteristics. Theory of semi-conductor diode and transistor operation is studied in detail. Application of vacuum tubes and semi-conductors in power supplies, voltage amplifiers, power amplifiers, and the advantages and disadvantages of each considered. Prerequisites: ELEC 310, MA 301, PHY 301. Credit 9.

### **ELN 313 Electronics II**

Design and analysis of vacuum tube and transistor oscillators, radio frequency analysis and intermediate frequency amplifiers. Frequency response, stage gain, distortion, noise characteristics and frequency stability will be explored. Prerequisites: ELN 312, MA 303. Credit 12.

### **ELN 316 Transistor Applications**

Transistor circuitry and design problems. Junction diodes, transistor triodes, tunnel and zener diodes with associated circuitry. Temperature variation, transit time, and frequency response are studied in detail. Prerequisites: ELN 313, MA 304. Credit 7.

### **ELN 317 Communications and Ultra High Frequency**

Application of previously studied circuits to the broad field of communications and ultra high frequency. Amplitude and frequency modulated transmitters, receivers, wave guides, cavity resonators; klystron, magnetron and traveling wave tubes are discussed. Prerequisite: ELN 313. Credit 4.

**ELN 318 Special Circuitry**

The design and analysis of special circuitry: wave shaping, pulse techniques, broad-band amplifiers, diode switches, multivibrators, gates, magnetic amplifiers, chopper amplifiers, clipper and clamping circuits, synchro and servo systems, photo control devices, step counters and other specific application circuitry. Prerequisites: ELN 314, ELN 316. Credit 7.

**ELN 319 Instrumentation**

A basic study of sensory devices for detecting changes in pressure, temperatures, sound, light and electricity; the associated circuitry and indicating devices. Prerequisites: ELN 316, ELN 318. Credit 8.

**ELN 320 Circuit Analysis and Maintenance**

Systematic analysis of complex circuitry. Methods of locating and correcting malfunctions. Troubleshooting by voltage measurements; resistance measurements, and waveform observations. Schematic reading and interpretation. Prerequisites: ELN 319, MA 304, PHY 304. Credit 8.

## English

**ENG 101 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. Prerequisite: None. Credit 2.

**ENG 102 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. Prerequisite: None. Credit 2.

**ENG 301 Communicative Skills: 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. Prerequisite: None. Credit 2.

**ENG 302 Communicative Skills: English**

Designed to aid the student in the improvement of self-expression in business and technical composition. Emphasis is on grammar, diction, sentence structure, punctuation, and spelling. Prerequisite: None. Credit 3.

**ENG 303 Communicative Skills: Technical Writing**

The fundamentals of English are utilized as a background for the organization and techniques of modern technical writing. Exercises in developing typical technical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length technical report is required of each student at the end of the term. Prerequisite: None. Credit 3.

**ENG 304 Communicative Skills: Speech**

Technical speech to develop the speaking skills with emphasis on the dual role of communications as both a speaking and listening skill. Stress is placed on growth in poise and confidence of the student. Practice through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development. Prerequisite: ENG 302. Credit 2.

**ENG 305 Communicative Skills: Report Writing**

A study and practice in the fundamentals of report writing, including style and mechanics in preparing reports of various types, which are most likely to be used by people engaged in business and the professions. Prerequisite: ENG 302. Credit 3.

## Sociology

**SOC 101 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. Prerequisite: None. Credit 2.

**SOC 103 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. Prerequisite: None. Credit 3.

**SOC 301 Human Relations**

Principles of interpersonal relations including a consideration of motivation, feelings, emotions, and learning with reference to their applications to on-the-job situations; personal and group dynamics and self-adjustment. Prerequisite: None. Credit 7.

**SOC 302 Economics**

The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, and consumption both in relation to the individual enterprise and to society at large. Prerequisite: None. Credit 3.

**SOC 310 Applied Psychology**

This course stresses the procedures of building an efficient, enthusiastic business team and deals with the nature of the problems which arise in business organizations. The individual and his behavior are discussed, as well as the problems of influence and authority. Prerequisite: None. Credit 3.

# Physics

## **PHY 104 Applied Physics I**

Introductory physics and its applications. Systems of measurement, theory of matter, properties of solids, liquids, and gases. Prerequisite: None. Credit 2.

## **PHY 105 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. Prerequisite: PHY 104. Credit 2.

## **PHY 106 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. Prerequisites: PHY 104, MA 120. Credit 2.

## **PHY 301 Physics: Properties of Matter**

A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids in motion, gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are part of this course. Prerequisite: None. Credit 4.

## **PHY 302 Physics: Work, Energy, Power**

Major areas covered in this course are work, energy, and power. Instruction includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their applications are a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas. Prerequisites: MA 301, PHY 301. Credit 4.

## **PHY 304 Physics: Light and Sound**

A study of sound and wave motion and its technical applications to industry and related fields. Light and illumination. Principles of optical instruments. Practical aspects are emphasized. Prerequisites: MA 303, PHY 302. Credit 4.

# Practical Nurse Education

## INTRODUCTION

The accelerated growth of population in North Carolina and rapid advancement in medical technology demand an increased number of well-trained personnel for health services. Realizing this need, the State Department of Community Colleges, in conjunction with local hospitals, administers programs of practical nurse education in local school systems, community colleges, technical institutes and in industrial education centers throughout the state.

The aim of the Practical Nurse Education Program is to make available to qualified persons the opportunity to prepare for participation in care of patients of all ages, in various stages of dependency, and with a variety of illness conditions.

Students are selected on the basis of demonstrated aptitude for nursing as determined by pre-entrance tests, interviews with faculty members, high school record, character references, and reports of medical and dental examination.

Throughout the one-year program the student is expected to grow continuously in acquisition of knowledge and understandings related to nursing, the biological sciences, the social sciences and in skills related to nursing practice, communications, interpersonal relations, and use of good judgment. Evaluation of student performance consists of tests on all phases of course content, evaluation of clinical performance, and evaluation of adjustment to the responsibilities of nursing. A passing score is required on all graded work, plus demonstrated progress in application of nursing skills to actual patient care.

Graduates of accredited programs of practical nurse education are eligible to take the licensing examination given by the North Carolina Board of Nursing. This examination is given twice each year, usually in April and September. A passing score entitles the individual to receive a license and to use a legal title "Licensed Practical Nurse." The license must be renewed annually. The Licensed Practical Nurse can apply for licensure in other states on the basis of a satisfactory examination score, without repeating the examination.

The LPN is prepared to function in a variety of situations: hospitals of all types, nursing homes, clinics, doctors' and dentists' offices and, in some localities, public health facilities. In all situations the LPN functions under supervision of a registered nurse and/or licensed physician. This supervision may be minimal in situations where the patient's condition is stable and not complex; or it may consist of continuous direction in situations requiring the knowledge and skills of the registered nurse or physician. In the latter situation, the LPN may function in an assisting role in order to avoid assuming responsibility beyond that for which the one-year program can prepare the individual.

Job requirements for the Licensed Practical Nurse include suitable personal characteristics, ability to adapt knowledge and understandings of nursing principles to a variety of situations, technical skills for performance of bedside nursing, appreciation for differences of people and for the worth of every individual, a desire to serve and help others, and readiness to conform to the requirements of nursing ethics and hospital policies.



# Practical Nurse Education

## SUGGESTED CURRICULUM BY QUARTERS

Course Title	Course Hours Per Week			Quarter Hours Credit
	Class	Lab	Clinic	
<b>FIRST QUARTER</b>				
Practical Nursing I	18	2	3	20
<b>SECOND QUARTER</b>				
Practical Nursing II	12	2	21	20
<b>THIRD QUARTER</b>				
Practical Nursing III	10	2	24	19
<b>FOURTH QUARTER</b>				
Practical Nursing IV	10	2	24	19
				—
				78

### PRACTICAL NURSING I

#### Objectives:

To assist beginning students in practical nursing to acquire basic knowledge from nursing and from related areas of learning and to begin to develop the skills needed for safe and effective bedside care of patients whose health deviation has created a state of despondency in matters of daily living.

#### Course Material:

Nursing—History

Introduction to patient care

Health—Personal, physical and mental

Family

Community

Basic Science—Body structure and function

Bacteriology

Basic nutrition

Vocational Adjustments—Introduction to ethics and legal aspects of nursing

Communications and Human Relations

**Classroom activities** are planned to assist students in development of knowledge, understanding, appreciations, and attitudes basic to effective nursing of patients of all ages and backgrounds with nursing needs arising both from the individuality of the patient and from inability for self-care as a result of a health deviation. The student is encouraged to develop beginning skills in analysis of patient needs, both through classroom study of hypothetical patient situations and through planned patient experiences in the clinical environment. Beginning skills in nursing methods

are developed through planned laboratory experiences, followed by related practice in actual patients' care.

**Clinical activities** provide introduction to actual patient care through selected clinical assignments requiring application of current classroom and laboratory learnings.

**Prerequisite:**

Admission requirements.

## PRACTICAL NURSING II

**Objectives:**

To assist practical nursing students to acquire further knowledge and understanding and to develop further skills needed for rendering safe and effective care to patients of all ages.

**Course Material:**

Medical-Surgical Nursing—Patient care

Therapeutic Methods, including administration of oral medication.

Introduction to Maternity Nursing

Introduction to Nursing the Sick Child

Communications and Human Relations

**Classroom activities** center around analysis of nursing needs as viewed in perspective with the needs arising from the individuality of the patient and from the illness condition. Related information is presented as it is relevant to the student's understanding of and ability to meet nursing needs of patients.

**Clinical activities** provide selected experiences in patient care in order for the student to develop skill in applying classroom learnings to a variety of patient situations.

**Prerequisite:**

Practical Nursing I

## The Nurses — A Lecture

## PRACTICAL NURSING III

**Objectives:**

To assist practical nursing students to acquire knowledge of common disease conditions and to develop beginning skills in rendering safe and effective nursing care to patients of all ages with specific needs arising from the illness and/or therapy.

**Course Material:**

Common Medical-Surgical Conditions

Care of the Subacutely Ill Child

Care of Maternity Patient and Newborn Infant With Complications

**Classroom activities** center around analysis of nursing needs arising from the specific illness condition and the medical plan.

**Clinical activities** consist of guided experiences in nursing patients with conditions which illustrate classroom learnings.

**Prerequisite:**

Practical Nursing II.

## **PRACTICAL NURSING IV**

**Objectives:**

To assist advanced practical nursing students to acquire knowledge of needs of patients who are seriously ill, to develop beginning skills in assisting the registered nurse and/or physician in complex nursing situations, and to make the transition to the role of graduate practical nurse.

**Course Material:**

Needs of the Seriously Ill Patient

Needs of Patients in Immediate Post-Operative Period

Needs of the Labor Patient

Needs of the Seriously Ill Child

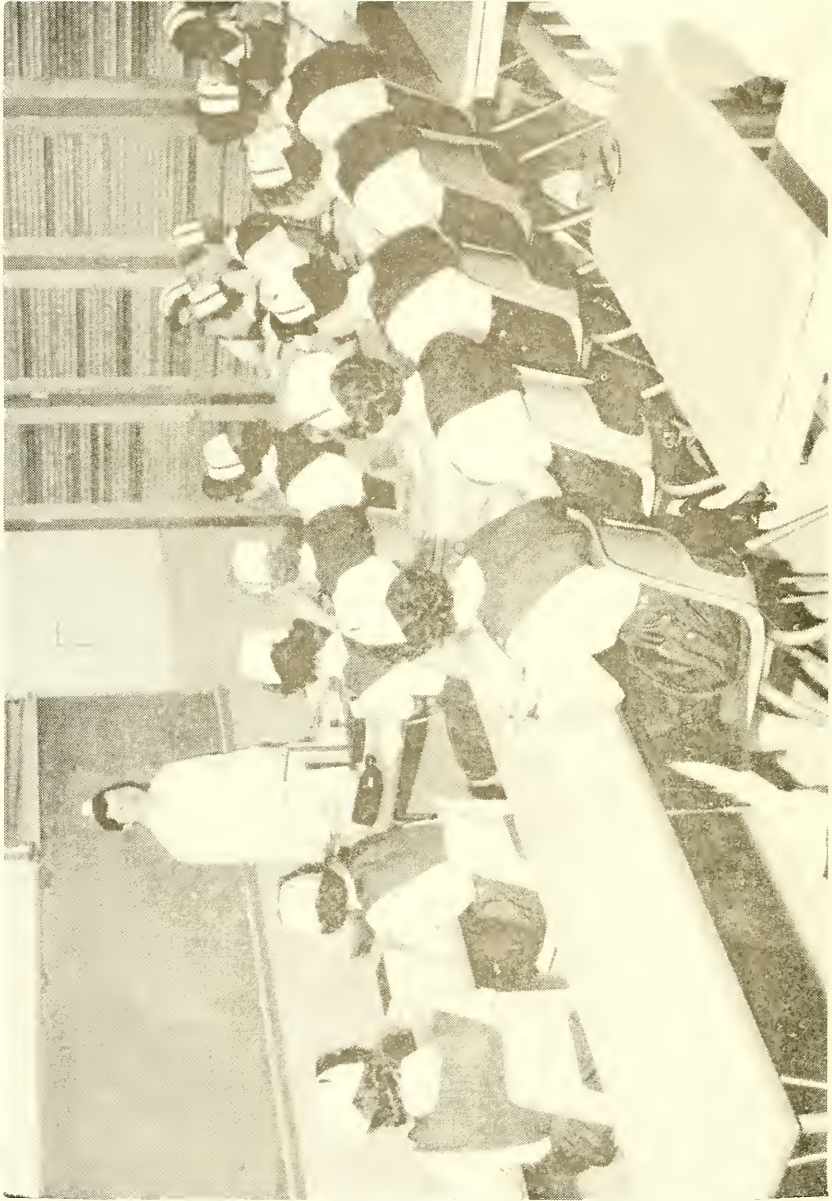
Assuming the Role of Graduate Practical Nurse

**Classroom activities** center around the needs of seriously ill patients of all ages, of labor patients, and of patients immediately following surgery.

**Clinical activities** consist of guided experiences in the care of seriously ill patients, labor patients, and surgery patients, and is planned to parallel classroom learnings whenever possible.

**Prerequisite:**

Practical Nursing III.



The Nurses — A Lecture

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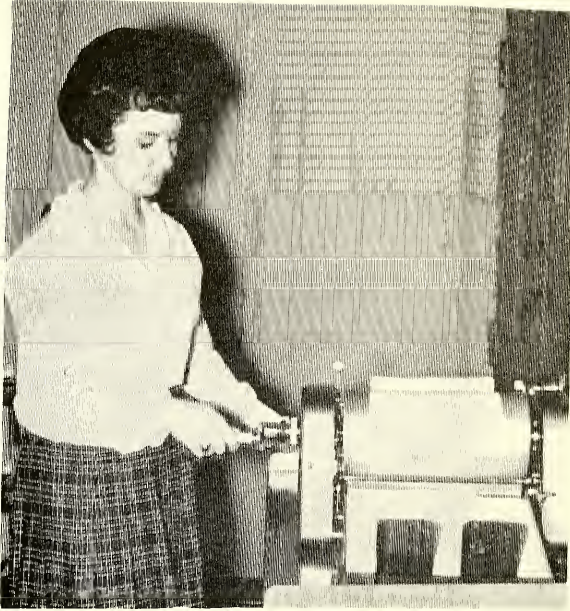
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 Clarksburk Business College  
 Thirty-two years experience in knitting machines
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 B. S., Queens College, Charlotte, N. C.  
 Presbyterian Hospital School of Nursing, Charlotte, N. C.
- Coggins, N. P. .... Knitter and Seamer Fixing  
 Seventeen years experience
- Edwards, W. A. .... Agricultural Technology  
 B.S., North Carolina State University at Raleigh, N. C.
- Felton, Vernon S. .... Fundamentals Learning Lab  
 B.S., Appalachian State Teachers College, Boone, N. C.  
 M.A., Appalachian State Teachers College, Boone, N. C.
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 Machinist, thirty-two years of experience
- Groome, Henry L., Jr. .... Fundamentals Learning Lab  
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 B.S., I.A.T.O., North Carolina State University at Raieigh, N. C.
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 A.B., High Point College, High Point, N. C.
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 B.S., Appalachian State Teachers College, Boone, N. C.
- Newby, Paul H. .... Welding  
 I.C.S., Metallurgy, Structural Blueprint, Scranton, Pa.
- Stacy, Edgar P. .... Electronics  
 A.S., Southern Tech, Marietta, Ga.
- Whatley, Lowell McKay .... Auto Mechanics  
 North Carolina State University at Raleigh, N. C.

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Ashley, W. W.	Electronics
Biddle, Ron	Drafting, Math
Bolton, H. H.	Electrical Maintenance
Bondurant, H. C.	Fire Service
Boyd, E. L.	Pesticides
Bristow, D. C.	Art
Brower, H. C.	Drafting
Brown, R. D.	Electrical Technology
Byers, R. A.	Auto Mechanics
Causey, C. H.	Machine Shop
Deaton, D. C., Jr.	Fire Service
Gordon, W. H.	Electronics
Gwyn, G. S.	Interior Decorating
Hill, B. B.	Librarian
Holland, D. M.	Art
Hurst, N. G.	Basic Adult Education
Jarrett, D. S., Jr.	Spanish
Johnson, M. W.	Domestic Sewing
Macon, B. W.	Electrical Code
Monroe, E. C.	Public Nursing Education
Neely, A. B.	Domestic Sewing
Ryckman, W. D., Jr.	Electrical Technology
Sawyer, M. H.	Fire Service
Schneebeli, E.	Weaving and Design
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Taylor, F. F.	English and Speed Reading
Turner, R. K.	Ornamental Horticulture





Class of 1964-1965





