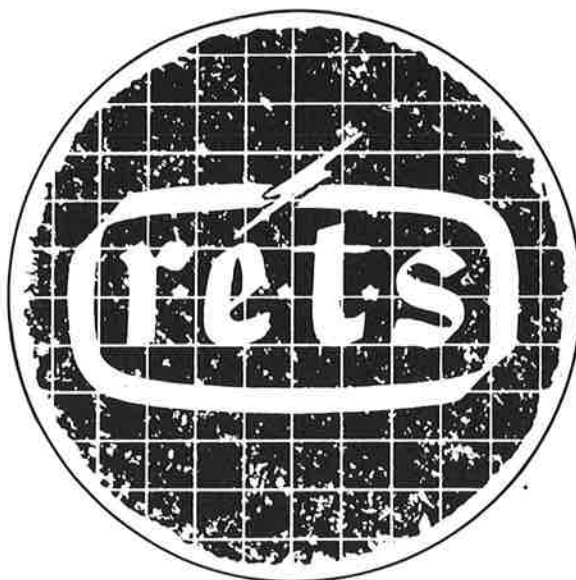


Training Specialists for Industry

Since 1935

Grand Rapids Division Established In 1955



**GENERAL
INFORMATION
and
COURSE
OUTLINES**

**R.E.T.S. ELECTRONIC SCHOOLS
OF WYOMING, INC.**

823 - 28th Street, S.W. • Wyoming, Michigan 49509

R.E.T.S. ELECTRONIC SCHOOLS OF WYOMING, INC.

OFFICERS

W. W. BAILEY
Vice President

D. L. WITHERS
President

L. R. HOWARD
Secretary

G. W. CARPENTER
Treasurer

ORGANIZATIONAL CHART WYOMING DIVISION

General Manager
E.J. ZBIKOWSKI

Educational Committee
**D. L. WITHERS, DON MAYO,
LEE HUDSON**

Placement Director and Financial Aid Director
MRS. YVONNE BOOT

Director of Admissions
JOHN ETHERIDGE

Chief Instructor, Full Time Courses
LEE HUDSON

Manager, Office and Administration
MRS. MARJORIE McCUBBIN

Chief Instructor, Part Time &
Home Study Courses
DON MAYO

Instructional Staff
Six Full Time Instructors
One Part Time Instructor from Industry

GENERAL INFORMATION

The International Headquarters for R.E.T.S. ELECTRONIC SCHOOLS is located at 1625 East Grand Boulevard, Detroit, Michigan, immediately East of the intersection with Mt. Elliott Avenue. The Edsel Ford Expressway provides direct access to the school from the Mt. Elliott ramps.

R.E.T.S. ELECTRONIC SCHOOLS was established in 1935 and has trained thousands of electronic specialists for employment in responsible positions throughout the world.

The R.E.T.S. training facility at the above address in Detroit is the parent school and International Headquarters of the R.E.T.S. Electronic Training Systems.

The Wyoming, Michigan school was established in 1955 to meet the growing need for trained, skilled personnel for the western Michigan electronics industry. The school is located at 823 28th Street, S.W., Wyoming, Michigan 49509. Our fully air conditioned facility is approximately 7,500 square feet divided into labs, lecture rooms, library, and office areas.

R.E.T.S. ELECTRONIC SCHOOLS of Wyoming, Inc. is accredited by the Accrediting Commission of the National Association of Trade and Technical Schools. The Accrediting Commission of the National Association of Trade and Technical Schools is listed by the U. S. Office of Education as a nationally recognized accrediting agency under the provisions of Chapter 33, Title 38, U. S. Code, and subsequent legislation. R.E.T.S. is also licensed by the Michigan Department of Education.

To Educate For Leadership In The Field Of Electronics

Dear Prospective Student:

R.E.T.S. Electronic Schools was established in 1935 as an expression of faith in the then embryonic electronics industry. From the very beginning, our policies have been directed toward the education of Electronic Engineering Technicians and Specialized Electronics Servicing Technicians both in the theoretical and practical phases of electronics. It was our belief that this young industry had an urgent need for professional personnel who could design and construct prototypes, as well as install, maintain, and sell the equipment.

R.E.T.S. has been built upon these policies. The contributions and accomplishments of our graduates to the electronics industry over the past 40 years have more than proven our convictions.

Among these accomplishments was the recommendation of over four hundred graduate engineers and technicians who were employed by Chrysler Missile. Many of these graduates have progressed to executive positions, including the chief engineer in charge of all Chrysler operations at Cape Canaveral.

The "Broadcast Engineers Journal," the official publication of Broadcast Engineers and Technicians, states in an article concerning R.E.T.S.: "The student learns early in his training the important element of job responsibility and is lectured on the important aspects of personality, dependability, and the art of getting along with people - his fellow workers and the employer, alike."

The article ends with the following statement: "That's the story behind R.E.T.S. and how they produce the rare combination of technical training and operational experience, the student with experience, and a real sense of responsibility to himself, his fellow workers, and his employer."

In the late 1930's and early 1940's R.E.T.S. personnel conducted valuable research programs in television and taught classes in this new means of communication. When commercial television burst upon the scene in the early post-war years, the school was in an excellent position to assume the responsibility for training young men as technicians and engineers to fill the many positions which resulted from television's explosive growth.

During these early years, most of our graduates were employed by the large television networks, as well as independent TV and radio stations. In recent years, however, R.E.T.S. graduates have been called upon to assume important technical positions in such rapidly expanding fields as aircraft, missiles, computers, automation, space exploration and industrial electronics.

Mankind has barely begun to unlock the wonders of the age of electronics. As we probe the secrets of the earth and outer space, the need for skilled technicians will become greater. R.E.T.S. is proud of its role in our progress this far and accepts the challenge of training future leaders in the field of electronics.

Sincerely,

R.E.T.S. Electronic School

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GENERAL INFORMATION

FULL TIME RESIDENT TRAINING PROGRAMS

ENTRANCE REQUIREMENTS. The school admits as regular students only those possessing a high school diploma or its generally recognized equivalent (GED). Those who have not completed their high school education may be admitted on a conditional basis upon a review of their records by the Credentials Committee, and by agreeing to complete and pass the General Education Development Test prior to entering the third quarter of training.

LENGTH OF COURSES. The Electronics and Communications Technology Course consists of 6 quarters of 12 weeks each. An additional three quarters of advanced post graduate training in Electronic Engineering Technology is regularly available and may be taken at the Detroit facility. It also may be made available at the local school, at the local school's option. The Specialized Electronics Servicing Course consists of four quarters of 12 weeks. Attendance for all full time resident courses is 5 clock hours per day, 5 days per week.

CREDIT HOUR. One credit hour represents two contact class hours per week for a period of twelve weeks plus outside assignments.

CLASS HOUR. A class hour is designated as a training hour of 50 minutes. The remaining 10 minutes out of each clock hour is reserved for changing classrooms.

TRANSFER OF CREDIT. Students successfully completing the 6 quarter Electronics & Communications Technology Course and the 3 quarter Electronic Engineering Technology course may, according to an Agreement of Articulation between Siena Heights College and R.E.T.S. Electronic Schools signed in March, 1974, transfer to Siena Heights with approximately senior status, leaving approximately 30 credit hours to complete before being awarded a Bachelor of Applied Science degree.

TUITION. Tuition rates are listed in the course outlines for the Electronics and Communications Technology Course, the Electronics Engineering Technology Course, and the Specialized Electronics Servicing Course.

CLASS SIZE. The average class size in our full time resident training programs at the time of the printing of this Bulletin was 25 students.

REFUND POLICY

A full refund of all funds paid will be made if the applicant is rejected by the school.

A full refund of any funds paid will be made, if this refund is requested by mail and postmarked within five days after the enrollment form was signed and monies paid.

All funds paid by the enrollee prior to the beginning of instruction shall be refunded if the enrollee

involved is involuntarily inducted into the Armed Services and does not enter school for this reason.

All funds paid by the enrollee prior to the beginning of instruction shall be refunded if the enrollee involved presents medical evidence of inability to participate in the program contracted for.

Any enrollee may cancel his or her enrollment by registered mail at any time after enrolling for any reason if such cancellation is more than 30 days prior to the beginning of instruction.

Any enrollee may cancel his or her enrollment by registered mail at any time for any reason within 10 days after enrolling even though less than 30 days may remain before the beginning of instruction.

In case of cancellation of enrollment as stated above, the enrollee's obligation to the school will in no case exceed \$50.00 and monies paid to the school in excess of \$50.00 will be refunded.

An enrollee not requesting cancellation as stated above is then classified as a student and, prior to the beginning of instruction, is only eligible for a refund of any amount paid toward registration, enrollment fee, and tuition in excess of \$100.00.

Any person who starts training, but terminates within the first week after starting the first quarter, will only receive a refund of any monies paid beyond 10% of the tuition for the course plus \$100.00. For those courses longer than 12 months, the tuition charges will be computed on 10% of the cost of one calendar year of training plus \$100.00, rather than on 10% of the full contract price of the course plus \$100.00.

If a student terminates training after one week but within the first quarter, the charge made by the school to the student shall be 25% of the contract price for the course plus \$100.00. For those courses longer than 12 months, the tuition charges will be computed on 25% of the cost of one calendar year of training plus \$100.00, rather than on 25% of the full contract price of the course plus \$100.00.

A student may withdraw at any time by notifying an official of the school. All financial obligations to R.E.T.S. must be paid in full before a satisfactory withdrawal will be granted. No transcript of official records will be furnished to, or for, any student with an unpaid financial obligation.

A student starting school, with the exceptions stated above, is responsible for the payment in full for any quarter entered.

FULL TIME RESIDENT TRAINING PROGRAMS

A student will be classified as terminated after seven consecutive days of absence. Re-entrance will require an interview by a School official. Each case will be judged on its own merits.

In no case shall any student be charged tuition for more than the number of quarters attended. Nor shall any student be charged for more than the contract price of the course.

FINANCIAL AID. R.E.T.S. Electronic Schools is approved by the United States Office of Education to participate in federal financial aid programs. R.E.T.S. currently participates in the Basic Educational Opportunity Grant, National Direct Student Loan, and Supplemental Educational Opportunity Grant programs. Further information regarding any of these programs may be obtained by contacting the Financial Aid Office of R.E.T.S. Electronic Schools. R.E.T.S. students are also eligible to participate in the Michigan Guaranteed Student Loan Program.

CREDIT FOR PREVIOUS TRAINING. Credit for previous experience or training is granted on an entrance examination basis only. The student may be advanced to that level of training indicated as a result of the successful completion of the examination.

SCHOOL CALENDAR. The School operates on a continuous schedule. The full-time classes are scheduled to start three times each year; fall, summer, and winter.

HOLIDAYS AND VACATIONS. The following legal holidays are observed: Memorial Day – Independence Day – Labor Day – Thanksgiving Day and the day following – Christmas Eve and Christmas Day – New Year's Eve and New Year's Day – Good Friday.

When the 4th of July falls on a Tuesday, the preceding Monday shall also be a holiday. When the 4th of July falls on a Thursday, the following Friday shall also be a holiday.

When Christmas Eve and New Year's Eve fall on a Tuesday, the preceding Monday shall also be a holiday. When Christmas Day and New Year's Day fall on a Thursday, the following Friday shall also be a holiday.

When Christmas Day and New Year's Day fall on a Sunday, or if the 4th of July falls on Saturday or Sunday, the following Monday shall also be a holiday.

Electronics & Communications Technology students are excused from classes on the last school day of Quarters I, II, IV and V. After the completion of Quarter III a week's vacation is scheduled.

Specialized Electronics Servicing students are excused from classes on the last school day of Quarters I and III.

After the completion of Quarter II a week's vacation is scheduled.

PROGRESS RECORDS. Student Periodic Progress Reports regarding grades, attendance, and an evaluation of the student's conduct will be furnished at the completion of each quarter to the student or to the person the student designates.

RELEASE OF INFORMATION. The school reserves the right to release information regarding the dates of your enrollment at this school, your address and phone number, and your last quarter completed to other schools and to employers. Your written permission is required by law before the school may release any other information.

GRADING. A letter-mark system of grading is used for recording student progress. A-Excellent, B-Good, C-Fair, D-Passing, E-Failure, INC-Incomplete.

A student who fails any subject in any quarter will not be permitted to enter the next quarter of training. He will be required to repeat the quarter of training he failed. Any student who receives a grade of INC (incomplete) for any subject in any quarter of training may be allowed to continue training on probation, provided arrangements are made to remove the incomplete grade within a reasonable period of time.

STUDENT COUNSELING: Educational objectives, grades, and attendance are reviewed prior to entering a new quarter of training by a member of the faculty other than the student's instructor. If a student desires counseling between quarters, the chief instructor should be contacted for an appointment.

REPEAT TIME. A student who elects or is required to repeat a quarter of training will be required to continue paying quarterly tuition. Should the student only repeat a portion of any quarter, the quarterly tuition will be pro-rated. All tuition paid toward repeat time will be applied to the total cost of the training program. The student will not be charged for more than the total number of quarters in the course regardless of the total amount of time it takes him to complete the course. Should a student terminate during his training program, tuition paid toward repeat time is non refundable.

OUTSIDE STUDY ASSIGNMENTS. All students are responsible for reading and studying materials issued by their instructors. Many times it is necessary for students to spend extra hours out of school studying assigned text material. Our instructors are aware that many students hold full-time jobs while attending school. Whenever possible outside assignments will be made prior to a weekend.

FULL TIME RESIDENT TRAINING PROGRAMS

GRADUATION REQUIREMENTS. To graduate, a student must complete all required assignments and class work with a D or better grade and maintain a 90% attendance record. Students satisfactorily completing their course will receive a diploma upon graduation.

PROBATION. Excessive absence and/or poor grades may cause a student to be admitted to a quarter on a probational basis or allowed to remain in his present quarter on a probational basis. If the student does not fulfill the terms of his probation he may be terminated or re-cycled at the discretion of the school.

LEAVE OF ABSENCE: A student may be granted a temporary leave of absence if a termination notice, form 26-7-75, has been signed which specifies the date of intended return. If the student does not return on or before the date specified, he will forfeit all attained scholastic credits and all monies paid. A leave of absence will only be granted for a maximum of two years. If the tuition rates are increased during the leave of absence, the student will be subject to the new rates after he re-enters. Additionally, a re-entering student who elects to review material that he has previously taken must pay tuition during the review period; however, any tuition paid during the review period will be credited to the final phase of the training program. Tuition paid during the review period will not be refunded if the student elects to discontinue training.

ATTENDANCE. R.E.T.S. believes that regular and punctual attendance is important to a high standard of work. In order to further this belief, the Office of the Director of Education has established the rule that all students must be in attendance a minimum of 90% of the scheduled class time. Any student whose absence falls below this minimum standard is liable for (1) an interruption for unsatisfactory attendance, (2) termination, or (3) re-cycling. All students are required to make a report to their instructor after each absence.

MAKE UP TIME: Regardless of grades or standing in class, a student must make up all missed time that is in excess of 10% of the scheduled class time. A student who misses more than 20% of the scheduled class time will not be permitted to enter the next quarter of training.

TARDINESS OR LEAVE EARLY. As we expect you to be here each day, so we expect you to be here on time. Tardiness or leave earlys are recorded in quarter-hour increments and are included in counting total absences. You make the record. We record it. Employers refer to it.

MAKE-UP WORK. The student is required to make up work missed as a result of his absence. The instructor will assign the work that is to be completed for each absence.

WEATHER EMERGENCIES: The school reserves the right to close the school during a weather emergency or other 'acts of God'. Under these conditions, the student will not be charged with an official absence. The material that would have been covered during the closed day will be made up during the quarter which ensures completion of the entire quarter's scheduled material. This make up may involve outside study assignments. Quarterly tuition adjustments will not be made when the school is closed for a weather emergency or other 'acts of God'.

PLACEMENT SERVICE. R.E.T.S. maintains a placement service that is available to all its students and graduates. This service is available not only during your attendance and at the time of graduation, but at any time to an alumnus. There is no charge for this service. This is not a guarantee of employment or a minimum starting salary. No one is authorized by the school to make such guarantees.

HOUSING. Assistance will be given to any out of town student in locating adequate rooming facilities or an apartment.

CONDUCT AND DISCIPLINE. Students are expected to behave with decorum, to obey the regulations of the Institution, and to pay due respect to its officers. Unethical or undesirable conduct, which is inconsistent with general good order, wherever it may occur, is held to be sufficient grounds for dismissal.

It is the purpose of the faculty to administer the discipline of the students so as to maintain a high standard of integrity and scrupulous regard for the truth. The attempt of any student to present as his own any work which he has not honestly performed or to pass any examination by improper means is regarded by the faculty as a most serious offense and renders the offender liable to immediate expulsion. The aiding and abetting of a student in any dishonesty is likewise held to be a grave breach of discipline.

Any student failing to conduct himself within the standards of the school according to attendance, conduct or discipline may be dismissed from the school. A review board consisting of the student's instructor, a school official and a school officer will conduct a hearing before the student is dismissed.

ATTIRE. As we are training you for a career in electronics, we expect you to come to school dressed as you would for your future career. Students are often sent directly from the school to an employment interview — the way you look is important.

GENERAL INFORMATION (Continued)

FULL TIME RESIDENT TRAINING PROGRAMS

Prospective employers frequently visit the school to interview graduating seniors. It is important for all of us to create a good impression; therefore, the school requires that the student refrain from wearing tank tops, shorts, hats, or any other unconventional attire during class.

VOCATIONAL REHABILITATION PROGRAM. The cooperative effort of R.E.T.S. and the Department of Vocational Rehabilitation in many states has resulted in the training and rehabilitation of a great number of persons afflicted with physical disabilities and their subsequent entry into the field of Electronics. There they are able to earn their livelihood and become an integral part of this nationally important industry. There

are many jobs in electronics that can be performed by the physically handicapped.

VETERANS. R.E.T.S. Electronic Schools is approved for training eligible veterans under Public Law 93-508, Chapters 34 and 35, Title 38, United States Code. Veterans, or children of veterans who are deceased, make application to the Veterans Administration prior to entering school.

PERSONAL PROPERTY. R.E.T.S. assumes no responsibility whatsoever for loss or damage to a student's personal property, or for any damage to any car; nor loss by theft of any vehicle or any of its contents, in, on, or adjacent to school property.

RESIDENT COURSES (Full Time)

ELECTRONICS & COMMUNICATIONS TECHNOLOGY

PURPOSES AND OBJECTIVES

R.E.T.S. Electronic Schools is a private proprietary school, licensed by Michigan Department of Education. Our purpose is to offer education and training in electronic technology to any individual, regardless of race, sex, color, or creed, who expresses a sincere desire to undertake such training and possesses sufficient schooling together with the personal desire to successfully complete his training endeavor.

The educational objectives of R.E.T.S. Electronic Schools are:

To help students acquire knowledge and skills which are needed throughout the electronic industry and which can be utilized to gain entry level employment in that industry.

ADDITIONALLY

To aid students to further develop good personal habits and attitudes;

To help students develop communications skills;

To improve the individual's reasoning and logic capabilities;

To render personal services needed by the individual to enable him or her to achieve maximum potential.

The policies, rules, and regulations of R.E.T.S. Electronics Schools were designed with these objectives in view. Employment which will utilize the training course pursued should be the goal of every student.

OUTLINE OF TRAINING PROGRAM AND TUITION COST				
Quarter	Weeks	Credit Hours	Clock Hours	Cost
I	12	12.5	300	\$ 631.00
II	12	12.5	300	456.00
III	12	12.5	300	456.00
IV	12	12.5	300	456.00
V	12	12.5	300	456.00
VI	12	12.5	300	456.00
TOTALS 6	72	75.0	1800	\$2911.00*

*This includes all manuals, material, lab, and lecture fees. Budget plans are available.

RESIDENT COURSES (Full Time)

ELECTRONICS & COMMUNICATIONS TECHNOLOGY

COURSE OUTLINE

SUBJECT	CREDIT HOURS	
QUARTER I		
ELECTRONICS 101	5.0	
LABORATORY 101	5.0	
MATHEMATICS 101	<u>2.5</u>	
TOTAL		12.5
QUARTER II		
ELECTRONICS 102	5.0	
LABORATORY 102	5.0	
MATHEMATICS 102	<u>2.5</u>	
TOTAL		12.5
QUARTER III		
ELECTRONICS 103	5.0	
LABORATORY 103	4.0	
MATHEMATICS 103	2.5	
ENGINEERING DRAWING 101	<u>1.0</u>	
TOTAL		12.5
QUARTER IV		
ELECTRONICS 201	6.0	
LABORATORY 201	4.0	
MATHEMATICS 201	<u>2.5</u>	
TOTAL		12.5
QUARTER V		
ELECTRONICS 202	4.0	
LABORATORY 202	4.0	
MATHEMATICS 202	2.5	
ENGINEERING DRAWING 202	<u>2.0</u>	
TOTAL		12.5
QUARTER VI		
ELECTRONICS 203	4.0	
LABORATORY 203	4.0	
MATHEMATICS 203	2.5	
ENGINEERING DRAWING 203	1.0	
TECHNICAL WRITING 201	<u>1.0</u>	
TOTAL		<u>12.5</u>
TOTAL CREDIT HOURS UPON COMPLETION		<u>75.0</u>

ELECTRONICS & COMMUNICATIONS TECHNOLOGY

Course Descriptions

ELECTRONICS 101

5.0 Credit Hours

A study of the fundamental principles of electrical conduction which includes the effects of series and parallel resistors, capacitors and inductors on voltage, current and power. The principles of magnetism and electromagnetism will be explored through solenoids, alternators, generators and motors. The operating characteristics of rectifiers will be studied and applied to power supply circuits. Some of the electrical principles studied in this quarter will be illustrated with the automotive electrical system.

ELECTRONICS 102

5.0 Credit Hours

A comprehensive study of solid state principles and circuits which includes the static and dynamic characteristics of low and high frequency amplifiers. The operation and function of basic electronic circuits, such as AF amplifiers, RF amplifiers, detectors, AGC, various sinewave oscillators, various relaxation oscillators, mixers, antenna input circuits, FET amplifiers, and regulated power supplies, will also be studied. In addition, basic troubleshooting techniques will be presented.

ELECTRONICS 103

5.0 Credit Hours

This quarter is an introduction to the application of electronics in the industrial environment. The operating characteristics of vacuum tubes, gas-filled tubes, SCRs, UJTs, diacs, triacs and other switching devices are studied and applied to power control and timing circuits. Relays, relay logic, light-emitting and photosensitive devices, magnetic amplifiers, transducers, and all previously studied devices and circuits will be applied to motor controls, conversion devices, proximity controls, sequence timing, resistance welding, induction and dielectric heating, basic industrial instrumentation, temperature controls, synchros and servomechanisms.

ELECTRONICS 201

6.0 Credit Hours

A study of basic transmitter principles and circuits which includes amplitude and frequency modulation theory, modulators, transmitter oscillators, tuned RF power amplifiers, AF amplifiers and limiters, frequency multipliers, transmission lines, basic antenna theory, and test equipment for transmitters. This quarter also provides preparation for the 3rd and 2nd class FCC licenses.

ELECTRONICS 202

4.0 Credit Hours

Solid state, black and white TV is thoroughly examined by extensive analysis of television tuners, IF amplifiers, sound circuits, sync circuits, AGC circuits, video amplifiers, vertical and horizontal sweep circuits, vertical and horizontal output circuits, and low and high voltage supplies. This quarter also provides preparation for the 1st class FCC license and a study of CB, microwave, radar, and color transmitters and receivers.

ELECTRONICS 203

4.0 Credit Hours

A presentation of the building blocks of digital electronics which includes basic gates, encoders, decoders, flip-flops, counters, shift registers, multiplexers, demultiplexers, digital readouts, basic arithmetic units, and digital integrated circuits. Applications of digital electronics are also examined. In addition, design techniques for discrete solid state components are studied with emphasis on power supplies and amplifiers.

ELECTRONICS LABORATORY 101

5.0 Credit Hours

Resistors, capacitors and inductors are utilized to construct DC and AC circuits and then pertinent voltage, current and power measurements are performed. There are also laboratory projects to demonstrate the principles of electromagnetism and automotive electrical systems. Halfwave, fullwave, bridge and doubler power supplies are constructed. Appropriate test equipment, such as the oscilloscope and the volt-ohm-milliammeter, are used to either troubleshoot or analyze circuit conditions.

RESIDENT COURSES (Full Time)

ELECTRONICS & COMMUNICATIONS TECHNOLOGY

Course Descriptions

ELECTRONICS LABORATORY 102

5.0 Credit Hours

A solid state superheterodyne receiver is constructed which affords the student an opportunity to test and examine many of the circuits that are discussed in lecture. Besides the circuits in the radio, various other amplifiers, oscillators, and power supplies are constructed and pertinent measurements are performed. Practical troubleshooting techniques that utilize the signal generator, oscilloscope and VOM are emphasized throughout this quarter.

ELECTRONICS LABORATORY 103

4.0 Credit Hours

Industrial circuits and systems are constructed with solid state components on the same day that they are discussed in lecture. When applicable, gas-filled tubes are utilized. The student is also provided many supplementary laboratory projects to illustrate variations in industrial control circuits. Logical test procedures and troubleshooting techniques are emphasized throughout this quarter.

ELECTRONICS LABORATORY 201

4.0 Credit Hours

Transmitter principles are illustrated through a stage-by-stage construction of a solid state transmitter. During the transmitter's construction and after its completion, the student becomes familiar with the following test and/or monitor equipment: Q meters, beat frequency meters, SWR meters, watt meters, grid-dip meters, and wave absorption meters, lecher lines, modulation meters, deviation meters and frequency counters.

ELECTRONICS LABORATORY 202

4.0 Credit Hours

During this quarter, the students are furnished a solid state TV. The laboratory projects are designed to produce an understanding of the function and operation of the circuits within the television. This is accomplished by static and dynamic analysis of the TV's circuits with appropriate test equipment, such as DVMs, triggered sweep oscilloscopes, dot bar generators, and sweep and marker generators. In addition, there are projects to demonstrate the fundamentals of radar, microwave and CB.

ELECTRONICS LABORATORY 203

4.0 Credit Hours

In the first half of the quarter, all of the digital circuits discussed in lecture are constructed during lab with integrated circuits. In the last half of the quarter, the students construct and troubleshoot the power supplies, single stage amplifiers and cascaded amplifiers that they have designed.

MATHEMATICS 101

2.5 Credit Hours

Provides the necessary background for the higher mathematics in this course. The basic fundamentals of arithmetic, which includes addition, subtraction, multiplication, division, fractions, decimals, powers, roots, scientific notation, ratio and proportion, are reviewed and applied to Ohm's Law, the power formulas, voltage divider theorems, and the reactance formulas. The calculator and its applications are also presented in this quarter.

MATHEMATICS 102

2.5 Credit Hours

This quarter applies the Pythagorean theorem to resistive-capacitive, resistive-inductive, and resistive capacitive-inductive circuits. Basic algebra is reviewed and applied to linear equations, graphs, factoring, exponents and radicals which provides preparation for comprehension of advanced electronic formulas. The techniques for proper utilization of the slide rule are also studied this quarter.

RESIDENT COURSES (Full Time)

ELECTRONICS & COMMUNICATIONS TECHNOLOGY

Course Descriptions

MATHEMATICS 103

2.5 Credit Hours

The techniques for solving linear equations and story problems are emphasized through a continuation of basic algebra. The trigonometric functions are introduced and applied to simple and complex AC circuits. The mathematics of tube amplifiers is also studied this quarter which includes calculation of input and output impedances, maximum input and output signal, harmonic distortion, the value of load resistors, the value of bias resistors, and the value of bypass capacitors.

MATHEMATICS 201

2.5 Credit Hours

This quarter provides a thorough study of common logarithms and their applications. Logarithms are used to solve multiplication, division, roots and power problems. They are also extensively applied to voltage, current and power calculations through decibel problems.

MATHEMATICS 202

2.5 Credit Hours

This quarter provides additional study in algebra which includes transposition, binomial and trinomial factoring, and solution of multi-variable linear equations. The fundamentals of trigonometry and j operators are reviewed and utilized to perform the calculations for antenna radiation patterns.

MATHEMATICS 203

2.5 Credit Hours

The binary, octal and hexadecimal numbering systems with conversion techniques between the systems are studied this quarter. Digital arithmetic and codes are also covered including Boolean algebra and Karnaugh mapping. In addition, the Thevenin, Norton and Superposition theorems are studied and applied to electronic circuit analysis. The mathematics of solid state amplifier and power supply design is also covered this quarter.

ENGINEERING DRAWING 201

1.0 Credit Hours

A study and application of basic drafting techniques which includes graphic symbols, basic lines and line weights, lettering, geometrical constructions, various types of views and projections, dimensioning, notes, and a familiarization with JEC standards.

ENGINEERING DRAWING 202

2.0 Credit Hours

This quarter applies the basic drafting techniques that were studied in Drawing 101 to schematic diagrams. Schematics of solid state devices are emphasized.

ENGINEERING DRAWING 203

1.0 Credit Hours

The basic drafting techniques that were previously studied are applied to the layout and design of printed circuit boards. Emphasis is placed on both the quality and the size of the design.

TECHNICAL WRITING 201

1.0 Credit Hours

The basic principles of grammar, punctuation, sentence and paragraph construction are reviewed in preparation for technical report writing.

RESIDENT COURSES *(Full Time)*

ELECTRONIC ENGINEERING TECHNOLOGY

Course Description

PREREQUISITES for this training program are satisfactory completion of the Electronic and Communications Technology Course or the equivalent amount of formal training from another institution as determined by testing.

THE OBJECTIVE of this training program is to prepare the graduate to gain entry level skills for the many fields of Electronic Engineering Technology, including Communications, Telecasting, Broadcasting, Industrial, Medical, Computers, Automation, Space and Radar.

THIS TRAINING PROGRAM IN ELECTRONIC ENGINEERING TECHNOLOGY COMPRISES THREE QUARTERS. EACH QUARTER CONSISTS OF TWELVE WEEKS OF TRAINING.

This Course is available on a regular basis at the Detroit facility, and at the option of the Director, at the local facility.

TRAINING PROGRAM SCHEDULE				
Quarters	Weeks	Credit Hours	Clock Hours	Costs
I	12	12.5	300	\$ 456.00
II	12	12.5	300	456.00
III	12	12.5	300	456.00
TOTALS 3	36	37.5	900	\$1368.00*

*This includes all manuals, material, lab, and lecture fees. Budget plans are available.

RESIDENT COURSES (Full Time)

ELECTRONIC ENGINEERING TECHNOLOGY

COURSE OUTLINE

SUBJECT		CREDIT HOURS
PREREQUISITE		
Electronics and Communications Technology Course		75.0
QUARTER I		
ELECTRONICS 301	4.0	
LABORATORY 301	4.0	
TECHNICAL WRITING 301	2.5	
PHYSICS 301	<u>2.0</u>	
TOTAL		12.5
QUARTER II		
ELECTRONICS 302	4.0	
LABORATORY 302	4.0	
MATHEMATICS 301	2.5	
COMMUNICATIONS 301	<u>2.0</u>	
TOTAL		12.5
QUARTER III		
ELECTRONICS 303	4.0	
LABORATORY 303	4.0	
MATHEMATICS 302	2.5	
COMMUNICATIONS 302	<u>2.0</u>	
TOTAL		<u>12.5</u>
		<u>37.5</u>
TOTAL CREDIT HOURS UPON COMPLETION		112.5

RESIDENT COURSES (Full Time)

ELECTRONIC ENGINEERING TECHNOLOGY

Course Descriptions

ELECTRONICS 301

4.0 Credit Hours

This quarter provides an extensive study of linear integrated circuits and their applications, such as active filters, comparators, differentiators, function generators, IC timers, inverting amplifiers, non-inverting amplifiers, oscillators, phase locked loop, regulated power supplies, and summing amplifiers. Manufacturers' data sheets and application notes are thoroughly discussed and interpreted. This quarter also examines the common digital and analog transducers that are used to sense pressure, heat, force, movement, and moisture. In addition, digital-to-analog and analog-to-digital conversion techniques are presented and applied to analog-digital devices, such as the DVM and a basic numerical control system.

ELECTRONICS 302

4.0 Credit Hours

A study of digital computer principles which includes the operation, function and typical circuitry of the arithmetic unit, the control unit, the input/output units, and the memory. Machine language is thoroughly explored and applied. This quarter also provides a comprehensive study of computer peripherals which includes the theory and operation of card punches, card readers, cassettes, data communications equipment, disk packs, floppy disks, line printers, magnetic recording devices, magnetic tape stations, modems, printing devices, selectrics, time sharing concepts, TTY terminals, typewriters and video terminals.

ELECTRONICS 303

4.0 Credit Hours

The theory and operation of microprocessors and minicomputers are thoroughly examined. Basic and Assembly language programming with program debugging techniques are also studied. The computer is then applied to such systems as sequential and numerical controllers. This quarter also provides an introduction to biomedical electronics which includes terminology, special safety considerations and circuit analysis of typical medical instruments, such as defibrillators, electrocardiograph equipment, oxygen tents, spectrophotometers, ultrasonic, and video heart monitors.

ELECTRONICS LABORATORY 301

5.0 Credit Hours

During this quarter, the student constructs and troubleshoots most of the circuits discussed in lecture. In addition, a list is issued to each student that identifies the function of many analog-digital devices. The student must design circuits from application notes and other references to perform the functions of these devices. Passive components, transistors, digital ICs and linear ICs are available for this purpose.

ELECTRONICS LABORATORY 302

4.0 Credit Hours

The students breadboard digital circuits that are representative of the individual sections of the computer. Hands-on experience with computer hardware is achieved through extensive examination and troubleshooting of various on-site computers. Practical experience is also gained through exposure to on-site computer peripherals.

ELECTRONICS LABORATORY 303

4.0 Credit Hours

During this quarter, the students program the various on-site computers and they practice troubleshooting with the aid of programs. Practical laboratory projects are used to develop a familiarization with the microprocessor. Microcomputer operation is explored by combining the microprocessor with IC RAMs, IC ROMs, IC asynchronous communications interface adapters, IC peripheral interface adapters, and various on-site peripheral devices. In addition, the students examine and troubleshoot biomedical equipment.

RESIDENT COURSES (Full Time)

ELECTRONIC ENGINEERING TECHNOLOGY

Course Descriptions

MATHEMATICS 301

2.5 Credit Hours

This quarter provides an introduction to calculus which includes algebraic graphs, functions, limits, increments and derivatives. These early principles of calculus are applied to average and instantaneous rate of change problems including transient waveform analysis.

MATHEMATICS 302

2.5 Credit Hours

This quarter provides additional studies in calculus with emphasis on differentiation and integration. The terminal objective of this quarter is to enable the student to pursue advanced electronics theory.

PHYSICS 301

2.0 Credit Hours

This quarter explores the basic principles of force, motion, work, energy, power, friction, rotation, torque, gears, and pulleys which provides preparation for the mechanical aspects of electronic devices. The nature of light and the principles of optical instruments are also studied.

TECHNICAL WRITING 301

2.5 Credit Hours

During this quarter, the student will study the fundamentals of technical writing which includes methods for logical organization of ideas and a format for technical reports. Experience is achieved in this area by submitting technical reports on the laboratory projects that are conducted throughout the quarter.

COMMUNICATIONS 301

2.0 Credit Hours

This course emphasizes the accurate and effective communication by written word of data and/or ideas. Resumes, technical and business correspondence are also studied during this quarter.

COMMUNICATIONS 302

2.0 Credit Hours

The basic principles of oral expression are explored during this quarter. The students receive experience in this area by giving oral presentations on technical topics. Particular emphasis is given throughout the quarter to communications within the work environment beginning with the employment interview.

SPECIALIZED ELECTRONICS SERVICING COURSE



OBJECTIVE: The Specialized Electronics Servicing Course was developed by R.E.T.S. Electronics Schools to meet the continuing demand for entry level personnel trained to maintain and repair entertainment electronic equipment, such as color television, high-fidelity sound systems, tape recorders, stereo multiplex and electronic organs. Since the terminal objective of the course is employment in the service industry, the course is of an extremely practical nature. The ability of the graduate should be such that he will be immediately profitable to his employer with very little "on-the-job" training.

This is NOT a design engineering course. The mathematics included in the course is limited to that required to understand the operation of practical circuits and systems, allowing as much as possible of the available time to be devoted to practical subject matter.

OUTLINE OF TRAINING PROGRAM AND TUITION COST			
Quarters	Weeks	Clock Hours	Cost
I	12	300	\$631.00
II	12	300	456.00
III	12	300	456.00
IV	12	300	456.00
TOTALS			
4	48	1200	\$1999.00*

*This includes all manuals, material, lab, and lecture fees. Budget plans are available.

RESIDENT COURSES (Full Time)

SPECIALIZED ELECTRONICS SERVICING

COURSE OUTLINE

QUARTER ONE -- Electricity, Electronics and Radio Construction

- I. Basic electricity
 - Lighting circuits
 - Basic instruments
 - Motors and generators
 - Signaling circuits (burglar alarms, fire alarms, etc.)
 - Fundamentals of house wiring
 - Meter reading – Voltmeter, Ohmmeter, and Milliammeter
 - Meter circuit applications
 - Oscilloscope applications
 - Servicing instruments and their application
 - Basic arithmetic review

- II. Basic electronics
 - Components
 - Manufacturer's codes
 - Series, parallel, and compound circuits
 - Tubes and transistors
 - Capacitance
 - Inductance
 - Reactance
 - Electronic power supplies
 - Mathematics as required to understand the above subjects

QUARTER I TOTALS: Lecture 180 hours
Laboratory 120 hours

QUARTER TWO – AM & FM Radio

- III. Block Diagram, Transmitters and receivers
 - Low frequency amplifiers
 - Detectors
 - High frequency amplifiers
 - Sinewave oscillators
 - Mixers
 - Antennas & input circuits
 - Service of AM receivers
 - Specialized service instruments
 - Regulated power supplies
 - Mathematics as required to understand the above subjects

- IV. Field effect transistors
 - Relaxation oscillators
 - Variations in sinewave oscillators
 - Specialized solid state devices
 - Vacuum tube amplifiers
 - Servicing audio equipment
 - AM receivers
 - FM receivers
 - Auto radios
 - Mathematics as required to understand the above subjects

QUARTER II TOTALS: Lecture 180 hours
Laboratory 120 hours

RESIDENT COURSES (Full Time)

SPECIALIZED ELECTRONICS SERVICING

QUARTER THREE – Monochrome Television

- V. Monochrome television fundamentals
 - Television systems
 - Cathode ray devices
 - Deflection oscillators
 - Deflection amplifiers
 - Video amplifiers
 - Wideband solid state systems
 - Intercarrier sound systems
 - Television tuners
 - Low voltage power supply and distribution
 - Sync separators
- VI. Fundamentals of solid state monochrome television
 - Solid state VHF & UHF tuners
 - Solid state signal circuits
 - Solid state ground circuits
 - Gated automatic gain control systems
 - Sync circuits
 - Solid state sweep oscillators
 - SCR & transistorized sweep outputs
 - IC chips
 - Service of solid state television receivers

QUARTER III TOTALS: Lecture 180 hours
Laboratory 120 hours

QUARTER FOUR – Color Television Systems, Hi-Fi Systems, and Service Practice

- VII. Color television fundamentals
 - Complete color television block diagram
 - Color purity set-up
 - Color television gray scale set-up
 - Color cathode ray tube static convergence
 - Color cathode ray tube dynamic convergence
 - Chroma amplifiers
 - Chroma demodulators
 - Color difference amplifiers
 - 3.58 mc oscillator
 - Color killer circuits
- VIII. Color sync section
 - Picture tube blanking circuits
 - Picture tube input circuits
 - Color sync alignment procedures
 - Reel-to-reel tape recorders
 - Cartridge tape decks
 - Record players
 - Hi-Fi systems
 - Electronic organs
 - Service practice
 - Mathematics as required to understand the above subjects

QUARTER IV TOTALS: Lecture 180 hours
Laboratory 120 hours

GENERAL INFORMATION

PART TIME RESIDENT TRAINING PROGRAMS

ENTRANCE REQUIREMENTS. The applicant must have completed two years of secondary school or have an equivalent education that will be evaluated by a member of the Education Committee.

LENGTH OF COURSE. The Color Television Servicing Course consists of four phases of 13 weeks each. Classes are held 4½ class hours per day, two days per week. The Technician Course in Communications Electronics consists of two phases of 13 weeks each. Classes are held 4½ hours per day, two days per week.

CLASS HOUR. A class hour is designated as a training hour of 50 minutes. The remaining 10 minutes out of each clock hour is reserved for changing classrooms.

TUITION. Tuition rates are listed in the course outlines for the part-time courses.

CLASS SIZE. The average class size at the time of printing of the Bulletin was 25 students.

REFUND POLICY:

A full refund of all funds paid will be made if the applicant is rejected by the school.

A full refund of any funds paid will be made, if this refund is requested by mail and postmarked within five days after the enrollment form was signed and monies paid.

All funds paid by the enrollee prior to the beginning of instruction shall be refunded if the enrollee involved is involuntarily inducted into the armed services and does not enter school for this reason.

All funds paid by the enrollee prior to the beginning of instruction shall be refunded if the enrollee involved presents medical evidence of inability to participate in the program contracted for.

Any enrollee may cancel his or her enrollment by registered mail at any time after enrolling for any reason if such cancellation is more than 30 days prior to the beginning of instruction.

Any enrollee may cancel his or her enrollment by registered mail at any time for any reason within 10 days after enrolling even though less than 30 days may remain before the beginning of instruction.

In case of cancellation of enrollment as stated above, the enrollee's obligation to the school will in no case exceed \$50.00 and monies paid to the school in excess of \$50.00 will be refunded.

An enrollee not requesting cancellation as stated above is then classified as a student and, prior to beginning of instruction, is only eligible for a refund of any amount paid toward registration, enrollment fee, and tuition in excess of \$100.00.

Any student who starts training is only responsible for the payment of tuition for the total number of weeks he

enters. Absenteeism of one or two days in any week is not grounds for missing a tuition payment. Both the time and tuition for this absenteeism must be made up.

A student may withdraw at any time by notifying an official of the school. All financial obligation to R.E.T.S. must be paid in full before a satisfactory withdrawal will be granted. No transcript of official records will be furnished to, or for, any student with an unpaid financial obligation.

A student will be classified as terminated after one week's absence. Re-entrance will require an interview by a School official. Each case will be judged on its own merits.

CREDIT FOR PREVIOUS TRAINING. Credit for previous experience or training is granted on an entrance examination basis only. The student may be advanced to that level of training indicated as a result of the successful completion of the examination.

HOLIDAYS AND VACATIONS. The following legal holidays are observed: Memorial Day — Independence Day — Labor Day — Thanksgiving Day and the day following — Christmas Eve and Christmas Day — New Year's Eve and New Year's Day — Good Friday.

When the 4th of July falls on a Tuesday, the preceding Monday shall also be a holiday. When the 4th of July falls on a Thursday, the following Friday shall also be a holiday.

When Christmas Eve and New Year's Eve fall on a Tuesday, the preceding Monday shall also be a holiday. When Christmas Day and New Year's Day fall on a Thursday, the following Friday shall also be a holiday.

When Christmas Day and New Year's Day fall on a Sunday, or if the 4th of July falls on Saturday or Sunday, the following Monday shall also be a holiday.

When a holiday occurs on a scheduled day of training, the school reserves the right to change the class schedule to another day during the same week.)

WEATHER EMERGENCIES: The school reserves the right to close the school during a weather emergency or other 'acts of God'. Under these conditions, the student will not be charged with an official absence. The material that would have been covered during the closed day will be made up during the phase which ensures completion of the entire phase's scheduled material. This make up will involve your required attendance on a previously unscheduled day. There will be no phase tuition adjustments made due to the school's closing for a weather emergency.

PROGRESS RECORDS. Student Periodic Progress Reports regarding grades, attendance, and an evaluation of the student's conduct will be furnished at the completion of each phase to the student or to the person the student designates.

GENERAL INFORMATION (Continued)

PART TIME RESIDENT TRAINING PROGRAMS

RELEASE OF INFORMATION. The school reserves the right to release information regarding the dates of your enrollment at this school, your address and phone number, and your last phase completed to other schools and to employers. Your written permission is required by law before the school may release any other information.

STUDENT COUNSELING: Educational objectives, grades, and attendance are reviewed prior to entering a new phase of training by a member of the faculty other than the student's instructor. If a student desires counseling between phases, the chief instructor should be contacted for an appointment.

GRADING. A letter-mark system of grading is used for recording student progress. A-Excellent, B-Good, C-Fair, D-Passing, E-Failure, INC-Incomplete.

A student who fails any subject in any phase will not be permitted to enter the next phase of training. He will be required to repeat the phase of training he fails. Any student who receives a grade of INC (incomplete) for any subject in any phase of training may be allowed to continue training on probation, provided arrangements are made to remove the incomplete grade within a reasonable period of time.

Students will be required to pay weekly tuition during repeat time. However, all tuition paid toward repeat time will be applied to the total cost of the training program. The student will not be charged for more than the total number of weeks in the course regardless of the total amount of time it takes him to complete the course. Should a student terminate during his training program, tuition paid toward repeat time is non refundable.

OUTSIDE STUDY ASSIGNMENTS. All students are responsible for reading and studying materials issued by their instructors. Part-time students will find that it is necessary for them to spend extra hours out of school studying assigned text material. Our instructors are aware that many students hold full-time jobs while attending school. They have been informed to make outside assignments on weekends only.

ATTENDANCE. R.E.T.S. believes that regular and punctual attendance is important to a high standard of work. In order to further this belief, the Office of the Director of Education has established the rule that all students must be in attendance a minimum of 90% of the scheduled class time. Any student whose absence falls below this minimum standard is liable for (1) an interruption for unsatisfactory attendance, (2) termination, or (3) recycling. All students are required to make a report to their instructor after each absence.

As we expect you to be here each day, so we expect you to be here on time. Tardiness is recorded in quarter-hour

increments and is included in counting total absences. You make the record. We record it. Employers refer to it.

MAKE UP TIME: Regardless of grades or standing in class, a student must make up all missed time that is in excess of 10% of the scheduled class time. A student who misses more than 20% of the scheduled class time will not be permitted to enter the next phase of training.

ATTIRE. As we are training you for a career in electronics, we expect you to come to school dressed as you would for your future career. Students are often sent directly from the school to an employment interview – the way you look is important.

Prospective employers frequently visit the school to interview graduating seniors. It is important for all of us to create a good impression; therefore, the school requires that the student refrain from wearing tank tops, shorts, hats, or any other unconventional attire during class.

CONDUCT AND DISCIPLINE. Students are expected to behave with decorum, to obey the regulations of the Institution, and to pay due respect to its officers. Unethical or undesirable conduct, which is inconsistent with general good order, wherever it may occur, is held to be sufficient grounds for dismissal.

It is the purpose of the faculty to administer the discipline of the students so as to maintain a high standard of integrity and scrupulous regard for the truth. The attempt of any student to present as his own any work which he has not honestly performed or to pass an examination by improper means is regarded by the faculty as a most serious offense and renders the offender liable to immediate expulsion. The aiding and abetting of a student in any dishonesty is likewise held to be a grave breach of discipline.

Any student failing to conduct himself within the standards of the school according to attendance, conduct, or discipline may be dismissed from the school. A review board consisting of the student's instructor, a school official and a school officer will conduct a hearing before the student is dismissed.

LEAVE OF ABSENCE: A student may be granted a temporary leave of absence if a termination notice, form 26-7-75, has been signed which specifies the date of intended return. If the student does not return on or before the date specified, he will forfeit all attained scholastic credits and all monies paid. A leave of absence will only be granted for a maximum of two years. If the tuition rates are increased during the leave of absence, the student will be subject to the new rates after he re-enters. Additionally, a re-entering student who elects to review material that he has previously taken must pay tuition during the review period; however, any tuition

PART TIME RESIDENT TRAINING PROGRAMS

paid during the review period will be credited to the final phase of the training program. Tuition paid during the review period will not be refunded if the student elects to discontinue training.

GRADUATION REQUIREMENTS. To graduate, a student must complete all required assignments and class work with a D or better grade and maintain a 90% attendance record. Students satisfactorily completing their course will receive a certificate upon graduation.

PLACEMENT SERVICE. R.E.T.S. maintains a placement service that is available to all its students and graduates. This service is available not only during your attendance and at the time of graduation, but at any time to an alumnus. There is no charge for this service. This is not a guarantee of employment or a minimum starting salary. No one is authorized by the school to make such guarantees.

VOCATIONAL REHABILITATION PROGRAM. The cooperative effort of R.E.T.S. and the Department of Vocational Rehabilitation in many states has resulted in the training and rehabilitation of a great number of

persons afflicted with physical disabilities and their subsequent entry into the field of Electronics. There they can earn their livelihood and become an integral part of this nationally important industry. There are many jobs in Electronics that can be performed by the physically handicapped.

VETERANS. R.E.T.S. Electronic Schools is approved for training eligible veterans under Public Law 93-508, Chapters 34 and 35, Title 38, United States Code. Veterans, or children of veterans who are deceased, make application to the Veterans Administration prior to entering school.

PERSONAL PROPERTY. R.E.T.S. assumes no responsibility whatsoever for loss or damage to a student's personal property, or for any damage to any car; nor loss by theft of any vehicle or any of its contents, in, on, or adjacent to school property.

RESIDENT COURSES (Part Time)

COLOR TELEVISION SERVICING

OBJECTIVE: The objective of the Color Television Servicing Course is to prepare the student to enter the field of Television Servicing, both in black and white and color television sets; and to prepare him in electronic instrumentation so that he can qualify for entry level employment requiring a knowledge of electronic instrumentation.

COST OF COURSE

Registration	\$ 150.00
Tuition per Week	\$ 24.00
Total Cost	\$1398.00

This includes all manuals, materials, lab and lecture fees.

COURSE OUTLINE	Weeks	Home Study Hours	Resident Training Hours
PHASE ONE –	13	156	117
Basic Electronics			
Generation of electricity			
Units & symbols			
Electrical laws			
Series & parallel circuits			
Measuring equipment			
Fundamentals of AC & oscilloscopes			
Inductance			
Capacitance			
Reactance			
Power supplies			
Radio fundamentals			
Soldering techniques			
PHASE TWO –	13	156	117
Tube Type & Solid State Radio Circuits			
Audio amplifiers			
Detectors			
Filter circuits			
IF amplifiers			
Mixer & oscillators			
Signal tracing & Radio service			
FETS			
Regulated power supplies			
Blocking oscillators & Multivibrators			
Vacuum tubes			
F.M. systems			
Hi fidelity systems			

RESIDENT COURSES (Part Time)

COLOR TELEVISION SERVICING

COURSE OUTLINE – CONTINUED

	Weeks	Home Study Hours	Resident Training Hours
PHASE THREE –	13	156	117
Tube Type & Solid State Black & White T.V.			
T.V. system			
Block diagrams			
R.F. tuners			
Stagger – tuned circuits			
Video amplifiers			
Sync circuits			
Vertical circuits			
Horizontal circuits			
Solid state tuners			
Wide band solid state amplifiers			
Solid state sweep circuits			
Black & white T.V. service			
PHASE FOUR –	13	156	117
Color T.V.			
Color signal characteristics			
Setup procedures			
Color generators			
Video signal circuits			
Color signal circuits			
Color sync circuits			
Color picture tubes & associated circuits			
Alignment of video circuits			
Alignment of color circuits			
Specialized T.V. service equipment			
Focus & convergence circuits			
Tube type color T.V. service			
Solid state color T.V. service			
Totals	52	624	468

RESIDENT COURSES *(Part Time)*

COMMUNICATIONS ELECTRONICS

OBJECTIVE: The objective of this course is to prepare the student for the examination for an F.C.C. license. Entry level employment is possible in telecasting, broadcasting, CB repair and other activities necessitating an F.C.C. license. The prerequisite for entry is successful completion of the Color Television Servicing Course or its equivalent.

COST OF COURSE

Registration Fee	\$150.00
Tuition per week	\$ 24.00
Total cost	\$774.00

This includes all manuals, material, lab and lecture fees. Budget plans are available.

COURSE OUTLINE	Weeks	Home Study Hours	Resident Training Hours
PHASE ONE –	13	156	117
Advanced Electronics Systems DC theory review AC theory review Math as applied to AC & DC theory Resonance & filters Low & high frequency amplifiers Solid state devices Power supply theory Measuring devices Oscillators Basic transmitters Amplitude modulation systems Frequency modulation systems Motors & Generators			
PHASE TWO –	13	156	117
Transceiver Theory & Repair Antennas & transmission lines Transmitter frequency measuring methods CB (citizen band) installation & S.W.R. checks Broadcast station logs & equipment F.C.C. (Federal Communications Commission) regulations Frequency synthesis & phase lock loops CB power & frequency measurements CB repair techniques Television broadcasting & receiving Microwave systems			
Totals	26	312	234

GENERAL INFORMATION

HOME STUDY TRAINING PROGRAMS WITH LABORATORY PRIVILEGES

Specialized training programs in Electronics are available under the R.E.T.S. combination resident and home study system. These programs are specially planned for the student who must remain fully employed while in training and consist of approximately 6 hours of home study each lesson assignment together with 4½ hours of laboratory privileges for each assignment.

ENTRANCE REQUIREMENTS. The applicant must have completed two years of secondary school or have an equivalent education that will be evaluated by the Education Committee.

SYSTEM OF CREDITS. Credits are computed on a clock hour basis and home assignments.

CREDIT FOR PREVIOUS TRAINING. Credit for previous experience or training is granted on an entrance examination basis only. The student may be advanced to that level of training indicated as a result of the successful completion of the examination.

TUITION. Tuition rates are listed in the Course Outlines for the Electronic Service Specialist Course and the Industrial Electronics and Automation Courses.

RESIDENT ATTENDANCE PRIVILEGES. All students enrolled in a Home Study program are assigned a predetermined number of hours of laboratory privileges. Students must demonstrate proficiency in the practical aspects of their training program prior to completion.

WEATHER EMERGENCIES: The school reserves the right to close the school and cancel that day's resident training privileges during a weather emergency or other 'acts of God'. A student who would normally fulfill his resident training on a day when the school is closed will be automatically scheduled to another day.

GRADES. The minimum grade acceptable on Home Study assignments and required closed book examinations is 65%. At the completion of the required training program a certificate will be issued.

REFUND POLICY:

A full refund of all funds paid will be made if the applicant is rejected by the school.

A full refund of any funds paid will be made, if this refund is requested by mail and postmarked within five days after the enrollment form was signed and monies paid.

All funds paid by the enrollee prior to the beginning of resident training privileges, shall be refunded if the enrollee involved is involuntarily inducted into the Armed Services and does not enter school for this reason.

All funds paid by the enrollee prior to the beginning of scheduled resident training privileges shall be refunded if the enrollee involved presents medical evidence of inability to participate in the program contracted for.

Any enrollee may cancel his or her enrollment by registered mail at any time after enrolling for any reason if such cancellation is more than 30 days prior to the beginning of scheduled resident training privileges.

Any enrollee may cancel his or her enrollment by registered mail at any time for any reason within 10 days after enrolling even though less than 30 days may remain before the beginning of scheduled resident training privileges.

In case of cancellation of enrollment as stated above, the enrollee's obligation to the school will in no case exceed \$50.00 and monies paid to the school in excess of \$50.00 will be refunded.

An enrollee not requesting cancellation as stated above is then classified as a student and, prior to the beginning of scheduled resident training privileges, is only eligible for a refund of any amount paid toward registration, enrollment fee, and tuition in excess of \$100.00.

Once a student starts the scheduled resident training privileges he or she is only responsible for the total number of sessions attended. Absence from a scheduled session is not grounds for nonpayment for that session. Both the payment and material must be made up if the student intends to continue.

A student who elects or is required to repeat any part of his resident training will be required to continue weekly payments during this repeat time. In no case, however, shall any student be charged tuition for more than the number of weeks attended. Nor shall any student be charged for more than the contract price of the course.

REFUND POLICY FOR VETERANS ENROLLED UNDER PUBLIC LAW 93-508 V.A. REGULATION TITLE 38 CHAPTERS 34 AND 35. "If a veteran should fail to enter the course, or withdraw or is discontinued therefrom at any time prior to completion, the refund will be an approximate pro rata portion of the charges that the length of the completed portion of the course bears to its total length. In the event of cancellation, a \$10.00 fee will be retained by the School in lieu of a registration fee to cover registration costs."

HOLIDAYS AND VACATIONS. The following legal holidays are observed: Memorial Day – Independence Day – Labor Day – Thanksgiving Day and the day following – Christmas Eve and Christmas Day – New Year's Eve and New Year's Day – Good Friday.

HOME STUDY TRAINING PROGRAMS WITH LABORATORY PRIVILEGES

When the 4th of July falls on a Tuesday, the preceding Monday shall also be a holiday. When the 4th of July falls on a Thursday, the following Friday shall also be a holiday.

When Christmas Eve and New Year's Eve fall on a Tuesday, the preceding Monday shall also be a holiday. When Christmas Day and New Year's Day fall on a Thursday, the following Friday shall also be a holiday.

When Christmas Day and New Year's Day fall on a Sunday, or if the 4th of July falls on Saturday or Sunday, the following Monday shall also be a holiday.

When a holiday occurs on a scheduled day of resident training privileges, the school reserves the right to change the class schedule to another day during the same week.

A student may withdraw at any time by notifying an official of the school. All financial obligations to R.E.T.S. must be paid in full before a satisfactory withdrawal will be granted. No transcript of official records will be furnished to, or for, any student with an unpaid financial obligation.

CONDUCT AND DISCIPLINE. Students are expected to behave with decorum, to obey the regulations of the Institution, and to pay due respect to its officers. Unethical or undesirable conduct, which is inconsistent with general good order, wherever it may occur, is held to be sufficient grounds for dismissal.

It is the purpose of the faculty to administer the discipline of the students so as to maintain a high standard of integrity and scrupulous regard for the truth. The attempt of any student to present as his own any work which he has not honestly performed or to pass any examination by improper means is regarded by the faculty as a most serious offense and renders the offender liable to immediate expulsion. The aiding and abetting of a student in any dishonesty is likewise held to be a grave breach of discipline.

Any student failing to conduct himself within the standards of the school according to attendance, conduct or discipline may be dismissed from the school. A review board consisting of the student's instructor, a school official and a school officer will conduct a hearing before the student is dismissed.

ATTIRE. As we are training you for a career in electronics, we expect you to come to school dressed as you would for your future career. Students are often sent directly from the school to an employment interview — the way you look is important.

Prospective employers frequently visit the school to interview graduating seniors. It is important for all of us to create a good impression; therefore, the school

requires that the student refrain from wearing tank tops, shorts, hats, or any other unconventional attire during class.

VOCATIONAL REHABILITATION PROGRAM. The cooperative effort of R.E.T.S. and the Department of Vocational Rehabilitation in many states has resulted in the training and rehabilitation of a great number of persons afflicted with physical disabilities and their subsequent entry into the field of Electronics. There they are able to earn their livelihood and become an integral part of this nationally important industry. There are many jobs in Electronics that can be performed by the physically handicapped.

VETERANS. R.E.T.S. Electronic Schools is approved for training eligible veterans under Public Law 93-508, Chapters 34 and 35, Title 38, United States Code. Veterans, or children of veterans who are deceased, make application to the Veterans Administration prior to entering school.

PERSONAL PROPERTY. R.E.T.S. assumes no responsibility whatsoever for loss or damage to a student's personal property, or for any damage to any car; nor loss by theft of any vehicle or any of its contents, in, on, or adjacent to school property.

PLACEMENT SERVICE. R.E.T.S. maintains a placement service that is available to all its students and graduates. This service is available not only during your attendance and at the time of graduation, but at any time to an alumnus. There is no charge for this service. This is not a guarantee of employment or a minimum starting salary. No one is authorized by the school to make such guarantees.

PROGRESS RECORDS. Student Periodic Progress Reports regarding grades, attendance, and an evaluation of the student's conduct will be furnished at the completion of each phase to the student or to the person the student designates.

RELEASE OF INFORMATION. The school reserves the right to release information regarding the dates of your enrollment at this school, your address and phone number, and your last phase completed to other schools and to employers. Your written permission is required by law before the school may release any other information.

HOME STUDY TECHNICIAN COURSE

ELECTRONIC SERVICE SPECIALIST

**BASIC ELECTRICITY – BASIC ELECTRONICS – INTEGRATED CIRCUITS
– INDUSTRIAL ELECTRONICS – INSTRUMENTATION –
BLACK & WHITE & COLOR TELEVISION**

OUTLINE OF TRAINING PROGRAM AND TUITION COSTS

140 LESSON TRAINING PROGRAM SCHEDULE				
PHASE	HOME STUDY ASSIGNMENT	HOURS OF RESIDENT PRIVILEGES	HOURS OF HOME ASSIGNMENT	TOTAL CLOCK HOURS
One	25	112.5 hours	150 hours	262.5
Two	25	112.5 hours	150 hours	262.5
Three	25	112.5 hours	150 hours	262.5
Four	32	144.0 hours	192 hours	336.5
Five	33	148.5 hours	198 hours	346.5
Totals	140	630.0 hours	840 hours	1470.0

Electronic Service Specialist. The objective of this course is to prepare the student for the sales, installation, and repair of radios, amplifiers, tape players, and black and white and color television. This course will also prepare the student for entry level employment in Industrial Electronics.

COURSE OUTLINE:

PHASE ONE – 25 Lessons – Basic Electronics

- I. Basic Electricity
 - Introduction to electricity
 - Units & symbols
 - Electrical laws
 - Use of the VOM
 - Characteristics of resistance
 - Applied electricity
 - Instrumentation I

- II. Basic Electronics
 - Fundamentals of AC
 - Basic oscilloscope use
 - Inductance
 - Capacitance
 - R-C circuits
 - Series reactance
 - Parallel reactance
 - Impedance

- III. Active Devices
 - Solid state & tube rectifiers
 - Power supply filters
 - Power supply circuits

HOME STUDY TECHNICIAN COURSE

ELECTRONIC SERVICE SPECIALIST

COURSE OUTLINE – CONTINUED

Solid state devices
Static characteristics of solid state amplifiers
Dynamic characteristics of solid state amplifiers
Configurations of solid state amplifiers
Classes of solid state amplifiers
Frequency response in solid state amplifiers

Phase One Totals:	Resident Training	112.5 hours
	Home Assignments	150.0 hours

PHASE TWO – 25 Lessons – Introduction to Industrial Electronics

IV. Solid State Devices

Information carriers & detection
High frequency solid state amplifiers
Sinewave oscillators
Frequency conversion
Signal injection testing methods
Field effect transistors
Regulated power supplies
Relaxation oscillators
High & low pass filters
Pulse circuits

V. Industrial Electronics Circuits

Specialized solid state devices
Vacuum tubes used in industry
Gas-filled tubes used in industry
AC & DC motors & starters
Relays & Relay logic
Phase shift power control
Industrial electronics symbols
Sequence timing

VI. Digital Electronics Fundamentals

Saturable reactors & Magnetic amplifiers
Automation & Logic switching
Basic gates
Binary arithmetic
And – Or – Inverter logic
NAND gate circuits
Logic families
Arithmetic units

Phase Two Total:	Resident Training	112.5 hours
	Home Assignments	150.0 hours

HOME STUDY TECHNICIAN COURSE

ELECTRONIC SERVICE SPECIALIST

COURSE OUTLINE – CONTINUED

PHASE THREE – 25 Lessons – Digital Electronic Applications

- VII. Logic Circuit Arrangement
 - Multivibrators
 - Flip Flops
 - Shift registers
 - Digital readouts
 - Digital multiplexing
 - Digital comparators
 - Digital applications
 - Transducers

- VIII. Analog
 - Differential amplifiers
 - Constant current sources
 - Operational amplifiers
 - Summing amplifiers
 - Differentiators
 - Integrators
 - Active Filters
 - IC timers
 - Phase lock loops

- IX. Integrating Digital & Analog systems
 - A to D converters
 - D to A converters
 - NC Concepts
 - Closed loop control systems
 - Zero voltage crossing
 - Induction & Dielectric heating
 - Resistance welding
 - Conversion devices & proximity controls
 - Programmable controllers

Phase Three Totals: Resident Training 112.5 hours
Home Assignments 150.0 hours

HOME STUDY TECHNICIAN COURSE

ELECTRONIC SERVICE SPECIALIST

COURSE OUTLINE – CONTINUED

PHASE FOUR – Tube Type & Solid State (Black & White T.V.)

VII. Introduction to T.V.

- AM radio review
- Signal tracing & Electronic servicing
- Introduction to FM
- High fidelity fundamentals
- Tape recorder
- Cathode ray oscilloscopes
- Oscilloscope timers
- Visual monitoring systems
- Wide-band amplifiers
- Deflection systems

VIII. Monochrome Circuits

- High and low voltage power supplies
- The video signal
- T.V. pattern generators
- Low voltage power supplies for electronic equipment
- RF tuners for television reception
- IF amplifiers in broadcast & Industrial T.V. reception
- Wide-band alignment procedures
- Wide-band detectors in electronic equipment
- Cathode-ray display devices
- Intercarrier sound circuits

IX. Monochrome Service

- Sync separation & DC restoration
- Vertical deflection & Vertical oscillator circuits
- Horizontal oscillator & AFC circuits
- Horizontal deflection circuits
- AGC circuit operation & test
- RF & IF alignment
- Television receiver servicing – II
- Practical service procedures
- Generalized television
- VHF antennas
- UHF receiving equipment
- REVIEW

Phase Four Totals: Resident Training 144 hours
Home Assignments 192 hours

HOME STUDY TECHNICIAN COURSE

ELECTRONIC SERVICE SPECIALIST

COURSE OUTLINE – CONTINUED

PHASE FIVE – Tube Type & Solid State (Color T.V.)

X. Solid State T.V. Circuits

- Transistor applications in television receivers
- Solid state T.V. tuners
- Solid state video I-F and detectors
- Solid state video amplifiers
- Solid state AGC – horizontal & vertical SYNC
- Solid state vertical – sweep systems
- Solid state horizontal – AFC & oscillators
- Solid state horizontal – output & high voltage sections
- Solid state intercarrier sound & audio
- Service of solid state receivers

XI. Introduction to Color T.V.

- Electronic color translation
- Setup procedures
- The dot-bar generator
- Colorimetry
- Make-up of the color picture signal
- Color RF and I-F circuits
- Band-pass amplifier, color SYNC, & color-killer circuits
- Color demodulator
- The matrix
- Color picture tube and associated circuits

XII. Color T.V. Service

- Aligning the color receiver
- Trouble shooting the color receiver
- Servicing the tuner – video I-F circuitry
- Servicing the SYNC separator & video amplifier
- Servicing the chroma – sound – automatic fine tuning circuitry
- Servicing the vertical – AFC – horizontal oscillator circuitry
- Basic & detailed horizontal output circuit service
- Focus & convergence service
- Power supply service
- Color T.V. service
- Solid state color circuits
- Module T.V. concepts
- Module T.V. service

Phase Five Totals: Resident Training 148.5 hours
Home Assignments 198.0 hours

Total Cost of Electronic Service Specialist Course \$2450.00 – includes (a) Textbooks, (b) Lab Fees.

HOME STUDY TECHNICIAN COURSE

INDUSTRIAL ELECTRONICS AND AUTOMATION

**BASIC ELECTRICITY – BASIC ELECTRONICS – INTEGRATED CIRCUITS (I.C.'s)
INDUSTRIAL ELECTRONICS CIRCUITS – APPLICATION OF DIGITAL PRINCIPLES
INTEGRATION OF DIGITAL AND ANALOG SYSTEMS**

OUTLINE OF TRAINING PROGRAM AND TUITION COSTS

OBJECTIVE: The objective of the course is to prepare the student for the industrial application of electronics and the digital circuitry used in automated devices.

75 LESSON TRAINING PROGRAM SCHEDULE				
PHASE	HOME STUDY ASSIGNMENTS	HOURS OF RESIDENT PRIVILEGES	HOME ASSIGNMENT HOURS	TOTAL CLOCK HOURS
One	25	112.5 hours	150 hours	262.5 hours
Two	25	112.5 hours	150 hours	262.5 hours
Three	25	112.5 hours	150 hours	262.5 hours
Totals	75	337.5 hours	450 hours	787.5 hours

COURSE OUTLINE:

PHASE ONE – 25 Lessons – Basic Electronics

I. Basic Electricity

Introduction to electricity
Units & symbols
Electrical laws
Electrical circuits
Use of the VOM
Characteristics of resistance
Applied electricity
Instrumentation I

II. Basic Electronics

Fundamentals of AC
Basic oscilloscope use
Inductance
Capacitance
R-C circuits
Series reactance
Parallel reactance
Impedance I

HOME STUDY TECHNICIAN COURSE

INDUSTRIAL ELECTRONICS AND AUTOMATION

COURSE OUTLINE – CONTINUED

III. Active Devices

- Solid state & tube rectifiers
- Power supply filters
- Power supply circuits
- Solid state devices
- Static characteristics of solid state amplifiers
- Dynamic characteristics of solid state amplifiers
- Configurations of solid state amplifiers
- Classes of solid state amplifiers
- Frequency response in solid state amplifiers

Phase One Totals: Resident Training 112.5 hours
Home Assignments 150.0 hours

PHASE TWO – 25 Lessons – Introduction to Industrial Electronics

IV. Solid State Devices

- Information carriers & detection
- High frequency solid state amplifiers
- Sinewave oscillators
- Frequency conversion
- Signal injection testing methods
- Field effect transistors
- Regulated power supplies
- Relaxation oscillators
- High & low pass filters
- Pulse circuits

V. Industrial Electronics Circuits

- Specialized solid state devices
- Vacuum tubes used in industry
- Gas-filled tubes used in industry
- AC & DC motors & starters
- Relays & Relay logic
- Phase shift power control
- Industrial electronics symbols
- Sequence timing

VI. Digital Electronics Fundamentals

- Saturable reactors & Magnetic amplifiers
- Automation & Logic switching
- Basic gates
- Binary arithmetic
- And – Or – Inverter logic
- NAND gate circuits

HOME STUDY TECHNICIAN COURSE

INDUSTRIAL ELECTRONICS AND AUTOMATION

PHASE TWO – CONTINUED

VI. Digital Electronics Fundamentals – Continued

Logic families
Arithmetic units

Phase Two Total: Resident Training 112.5 hours
Home Assignments 150.0 hours

PHASE THREE – 25 – Digital Electronic Applications

VII. Logic Circuit Arrangements

Multivibrators
Flip Flops
Shift registers
Digital readouts
Digital multiplexing
Digital comparators
Digital applications
Transducers

VIII. Analog

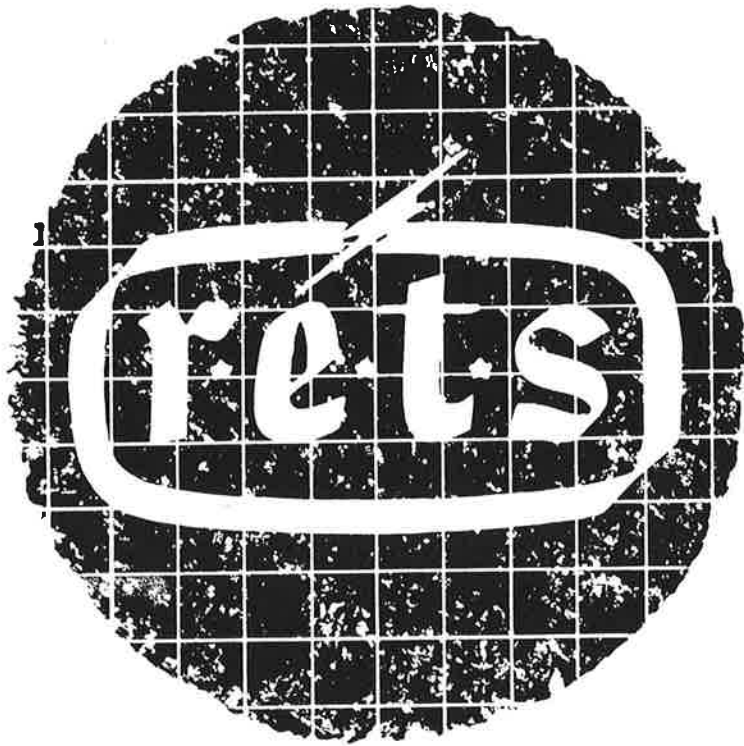
Differential amplifiers
Constant current sources
Operational amplifiers
Summing amplifiers
Differentiators
Integrators
Active filters
IC timers
Phase lock loops

IX. Integrating Digital & Analog systems

A to D converters
D to A converters
NC Concepts
Closed loop control systems
Zero voltage crossing
Induction & Dielectric heating
Resistance welding
Conversion devices & proximity controls
Programmable controllers

Phase Three Totals: Resident Training 112.5 hours
Home Assignments 150 hours
Course Totals: Resident Training 337.5 hours
Home Assignments 450 hours

Cost: \$1,200.00 -- Budget Plan -- \$150.00 Enrollment Fee and \$14.00 weekly for a period of 75 weeks. This includes all manuals, materials, lab and lecture fees.



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