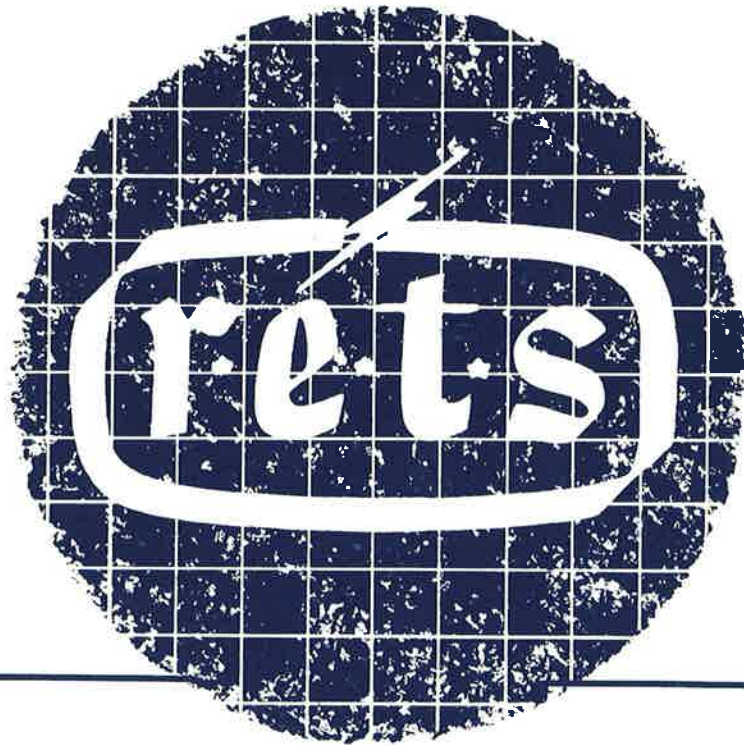


*Training Specialists for Industry Since 1935*

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**GENERAL  
INFORMATION**  
*and*  
**COURSE OUTLINES**

***R. E. T. S. ELECTRONIC SCHOOLS***

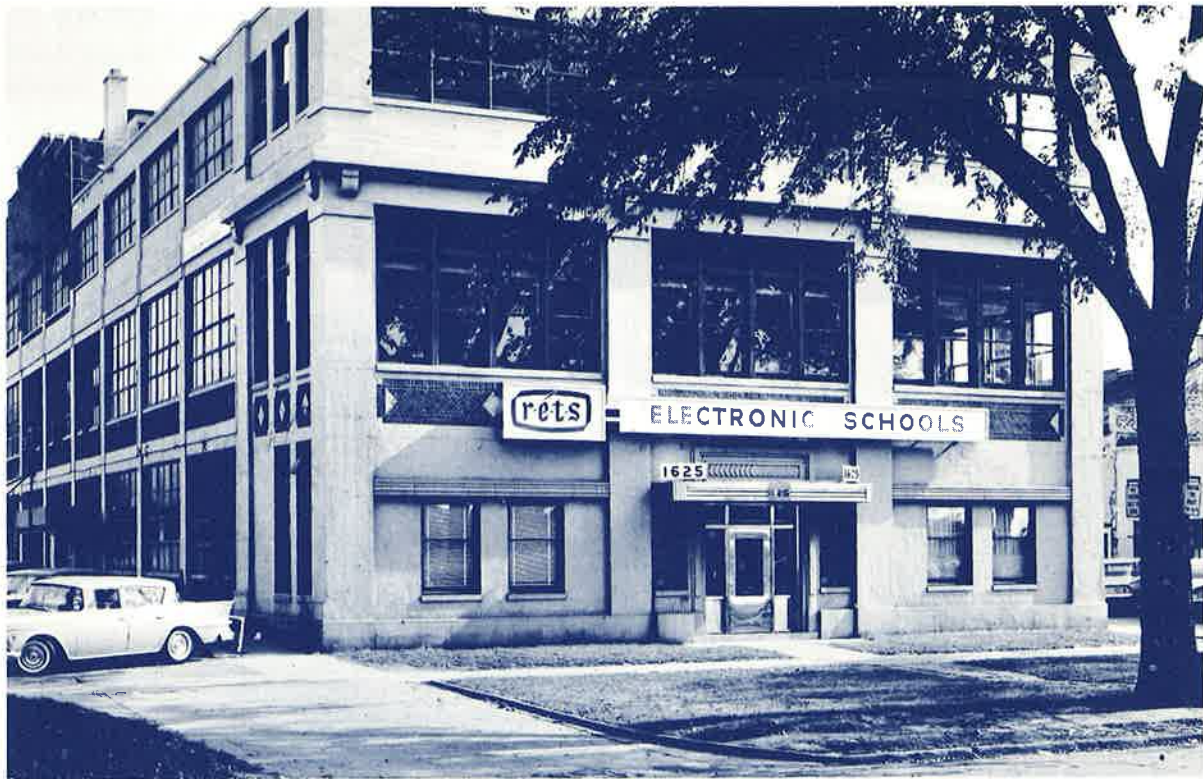
INTERNATIONAL OFFICES

**1625 E. Grand Blvd**



**Detroit 11, Michigan**

REVISED SEPTEMBER, 1967



# GENERAL INFORMATION

R.E.T.S. ELECTRONIC SCHOOLS is located at 1625 East Grand Boulevard, Detroit, Mich., immediately East of the intersection with Mt. Elliott Ave. 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 practical engineers and technicians for employment in responsible positions throughout the world.

R.E.T.S. has established training laboratories throughout the United States and Canada to assist the Electronic Industry in acquiring the added personnel that the rapid growth of Electronics has created.

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 school occupies approximately 28,000 sq. feet of floor space in a building completely renovated in 1962, to provide air-conditioned lecture and laboratory rooms. Ample free parking facilities are available in the immediate vicinity of the school.

## FULL TIME COURSES

**ENTRANCE REQUIREMENTS.** The applicant must have completed four years of secondary school or have an equivalent education that will be evaluated during a personal interview by a member of the Credentials Committee.

**ACADEMIC YEAR.** The academic year of the Institution comprises three 12-week semesters.

**SYSTEM OF CREDITS.** The credit hours (Units) for each subject indicate the number of hours spent each week in class and laboratory for one semester. Each subject is listed with two credit numbers, representing (1) Classroom Time (2) laboratory (or drawing) time. The division of time between lecture (or recitation), laboratory (or drawing) is shown in the Description of Subjects.

## PART TIME COURSES

**ENTRANCE REQUIREMENTS.** The applicant must have completed two years of secondary school or have an equivalent education that will be evaluated during a personal interview.

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

**TUITION.** Tuition rates are listed in the Course Outline on the following pages. Budget plans are available for payment of tuition.

**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 usually starting a class each month during the year. Advanced classes are scheduled as necessary according to the School Year progression.

Enrollment dates are announced 60 to 90 days prior to the starting date. The student may enroll for any scheduled date and a place is reserved for him in that particular class.

**THE FOLLOWING LEGAL HOLIDAYS ARE OBSERVED.** Decoration Day - Independence Day - Labor Day - Thanksgiving Day and the day following - day before Christmas and Christmas Day - day before New Year's and New Year's Day. Friday before Easter.

**PROGRESS RECORDS.** Student Periodic Progress Reports regarding grades, attendance, and an evaluation of the student's conduct, will be furnished to the persons he designates.

**STANDARDS OF PROGRESS. GRADING.** A standard system is used for recording student progress: (A) Excellent, (B) Good, (C) Fair, (D) Passing, (E) Failure, and (INC) Incomplete.

**MINIMUM PROGRESS.** To graduate, a student must complete all lecture assignments and practical laboratory work with a (D) rating or better.

**PROBATION & REPEATING.** The Director may place a failing student on probation for a period of 30 days. If his grades do not improve by the end of the probationary period, he may be dismissed from the school.

**ABSENCES.** A student is required to make a report to his instructor after each absence. If the absence is unexcused, the student is warned. Five

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# GENERAL INFORMATION CONTINUED

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unexcused absences result in the student being sent to a School Official at which time he is either dismissed from the school, or, if extenuating circumstances prevailed, given an opportunity to correct himself. If no improvement, AN INTERRUPTION FOR UNSATISFACTORY ATTENDANCE will result.

**TARDINESS.** Excused tardiness will be entered on the student's class record as excused. Unexcused tardiness will be entered as one hour's absence for tardiness. Excessive tardiness without an acceptable excuse will not be tolerated. In all cases the student is warned, but, after the third recurrence, he is either dismissed from the school or placed on probation.

**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 to his satisfaction. If the student is absent too many times and is unable to maintain the class progress, he will be put back a class.

**LEAVES.** When a student returns to School after a short leave to complete military reserve or national guard obligations he will be permitted to re-enter at a phase of training that is identical to the one he left. Earlier phases of training may be repeated at no additional tuition costs as determined by the School.

**PLACEMENT SERVICE.** R.E.T.S. maintains a placement service that is available to all graduates. This service is available not only at the time of graduation, but at any time to an alumnus. Assistance is also given to any student seeking employment while attending school.

**HOUSING.** The Detroit area provides, within a short distance of R.E.T.S., adequate apartments and rooming facilities. Assistance will be provided to any student, upon request, to locate such quarters.

**CONDUCT AND DISCIPLINE.** The Institution reserves the right to dismiss at anytime a student whom it deems unsatisfactory for any reason. 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 aim of the faculty so to administer the discipline of the school as to maintain a high standard of integrity and a 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.

**VOCATIONAL REHABILITATION PROGRAM.** The cooperative effort of R.E.T.S. and the Department of Vocational Rehabilitation in many states has resulted in the rehabilitation of a great number of persons afflicted with physical disabilities into the field of Electronics, where 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. This training may be taken in day or evening classes by either full-time or part-time attendance.

**FOREIGN STUDENTS.** The Immigration and Naturalization Service of the U.S. Department of Justice has approved R.E.T.S. as qualified to accept foreign students for full-time training in Electronics. Visas and compliance with the rules and regulations of the Immigration and Naturalization Service are the responsibility of the student. Prospective enrollees may apply for admission under the same entrance requirements as for domestic students.

**PARKING.** A marked-off area on the east side of the building is reserved for the use of Faculty and Visitors. An additional area, in this same location, is available to students. R.E.T.S. assumes no responsibility, whatsoever, for any damage to any car, nor by loss by theft of any vehicle or any of its contents.

## TO EDUCATE FOR LEADERSHIP IN THE FIELD OF ELECTRONICS

This Institution was created in the year of 1935 as an expression of faith in the, then embryonic, electronics industry; and from the very beginning our policies have been directed toward the education of Engineers and Technicians both in the theory and practical phases of electronics. It was our belief that this young industry had an urgent need for professional personnel, who could design, construct proto-types, and also install, maintain and sell the equipment.

R. E. T. S. has been built upon these policies. The contributions of our graduates to the electronic industry over the years have more than proved our convictions.

Among these accomplishments was the recommendation of over four hundred graduate engineers and technicians to Chrysler Missile when that concern received the contract to build the Redstone Missile. Many of these graduates have progressed to executive positions, including the chief engineer in charge of all Chrysler operations at Cape Kennedy.

The "Broadcast Engineers Journal," the official publication of Broadcast Engineers and Technicians, state in an article concerning R. E. T. S. as follows: "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 ended 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. engineers conducted valuable research programs in television and also taught classes in this new means of communication. When commercial television burst on 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 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.

PRACTICAL ELECTRONICS  
and  
COMMUNICATIONS ENGINEERING COURSE

THIS TRAINING PROGRAM IN ELECTRONICS  
ENGINEERING COMPRISES THREE ACADEMIC  
YEARS OF TRAINING. EACH ACADEMIC YEAR  
IS OF THIRTY-SIX WEEKS DURATION AND IN-  
CLUDES THREE, TWELVE WEEK, SEMESTERS.

TRAINING PROGRAM SCHEDULE				
ACADEMIC YEAR	SEMESTER	WEEKS	CREDIT HOURS (UNITS)	CLOCK HOURS
I	I	12	25	300
	II	12	25	300
	III	12	<u>25</u>	<u>300</u>
	TOTALS			75
II	IV	12	25	300
	V	12	25	300
	VI	12	<u>25</u>	<u>300</u>
	TOTALS			75
III	VII	12	25	300
	VIII	12	25	300
	IX	12	<u>25</u>	<u>300</u>
	TOTALS			75
GRAND TOTALS				
3	9	108	225	2700

# OUTLINE OF TRAINING PROGRAM AND TUITION COSTS

## FIRST ACADEMIC YEAR Semesters One, Two and Three

SEMESTER I	CLASS ROOM	UNITS LAB.
PHYSICS <sub>1</sub>	10	
MATHEMATICS REVIEW	5	
PHYSICS LABORATORY		10
SEMESTER II		
ELECTRONICS <sub>1</sub>	10	
ALGEBRA <sub>1</sub>	5	
ENGINEERING DRAWING <sub>1</sub>		5
ELECTRONICS LABORATORY <sub>1</sub>		5
SEMESTER III		
ELECTRONICS <sub>2</sub>	10	
ALGEBRA <sub>2</sub>	5	
ENGINEERING DRAWING <sub>2</sub>		5
ELECTRONICS LABORATORY <sub>2</sub>		5
	45	30
	TOTAL 75	

Cost: (\$365.00) First Semester and (\$240.00) for each succeeding Semester - includes  
 (a) Text Material, (b) Lab. Fees, (c) Tuition

OUTLINE OF TRAINING PROGRAM AND TUITION COSTS

Continued

SECOND ACADEMIC YEAR  
Semesters Four, Five and Six

SEMESTER IV	UNITS	
	CLASS ROOM	LAB.
ELECTRONICS <sub>3</sub>	7.5	
COLLEGE ALGEBRA AND TRIGONOMETRY <sub>1</sub>	5	
ENGLISH <sub>1</sub>	5	
ELECTRONICS LABORATORY <sub>3</sub>		7.5
SEMESTER V		
ELECTRONICS <sub>4</sub>	7.5	
COLLEGE ALGEBRA AND TRIGONOMETRY <sub>2</sub>	5	
ENGLISH <sub>2</sub>	5	
ELECTRONICS LABORATORY <sub>4</sub>		7.5
SEMESTER VI		
ELECTRONICS <sub>5</sub>	5	
PHYSICS <sub>2</sub>	5	
GEOMETRY	5	
ENGLISH <sub>3</sub>	5	
ELECTRONICS LABORATORY <sub>5</sub>		5
	55	20
	TOTAL 75	

Cost: (\$240.00) for each Semester, includes  
(a) Text Material, (b) Lab. Fees, (c) Tuition



# OUTLINE OF TRAINING PROGRAM AND TUITION COSTS

## THIRD ACADEMIC YEAR Semesters Seven, Eight and Nine

	UNITS CLASS ROOM	LAB.
<b>SEMESTER VII</b>		
ELECTRONICS <sub>6</sub>	5	
CALCULUS AND ANALYTIC GEOMETRY <sub>1</sub>	5	
PHYSICS <sub>3</sub>	5	
POLITICAL SCIENCE <sub>1</sub>	5	
ELECTRONICS LABORATORY <sub>6</sub>		5
<b>SEMESTER VIII</b>		
ELECTRONICS <sub>7</sub>	5	
CALCULUS AND ANALYTIC GEOMETRY <sub>2</sub>	5	
PSYCHOLOGY <sub>1</sub>	5	
POLITICAL SCIENCE <sub>2</sub>	5	
ELECTRONICS LABORATORY <sub>7</sub>		5
<b>SEMESTER IX</b>		
ELECTRONICS <sub>8</sub>	5	
CALCULUS AND ANALYTIC GEOMETRY <sub>3</sub>	5	
PSYCHOLOGY <sub>2</sub>	5	
ECONOMIC PRINCIPLES	5	
ELECTRONICS LABORATORY <sub>8</sub>		5
	60	15
	TOTAL	75

DESCRIPTIONS  
ELECTRONICS ENGINEERING COURSE

**ELECTRONICS<sub>1</sub>      TEN UNITS      (Basic electronics)**

Two element electronic devices, rectifiers, power supplies and their application, multi-element electronic devices, triodes, pentodes, voltage amplifiers, power amplifiers and their applications, oscillators and oscillator circuits, mixer operations. Measuring equipment.

**ELECTRONICS<sub>2</sub>      TEN UNITS      (Electronics in industrial systems)**

Power supplies for industrial equipment, vacuum tubes in industry, gas filled tubes and phase shift devices, circuit characteristics, sequence timing, motor controls, photoelectric devices, resistance welding, conversion devices and proximity controls, induction and dielectric heating, saturable reactors, magnetic amplifiers, automation, switching logic, ultrasonics, syncro devices and servo mechanisms, industrial controls and closed circuit radio and television systems.

**ELECTRONICS<sub>3</sub>      SEVEN & ONE HALF UNITS      (Solid State Technology)**

The development of the transistor, early applications, detailed analysis of the physics of the atom, the role of the atom in the formation of intrinsic and extrinsic semiconductor materials, fabrication and processing methods, the transistor as a circuit element, development and use of hybrid parameters, design of transistor circuits, transistor biasing, stability, feedback requirements, noise considerations, small signal amplifiers, power amplifiers, cascade amplifiers, oscillators, digital switching circuits.

**ELECTRONICS<sub>4</sub>      SEVEN & ONE HALF UNITS      (Communications)**

Communications receivers, (AM & FM), transmitters (AM&FM), reactive circuits, vacuum tube amplifiers, classes of operation, oscillators, power supplies, audio frequency amplifiers, antenna systems and transmission lines, motors, generators, batteries, FCC regulations and preparation for commercial radio telephone license, image transmission and reception systems, VHF and UHF oscillators and amplifiers, electromagnetic wave propagation.

**ELECTRONICS<sub>5</sub>      FIVE UNITS      (Radar, Micro Wave Techniques and  
Computer Systems)**

Propagation at micro wave frequencies, micro wave transmission systems, (wave guides), cavity resonators, micro wave/radar oscillators, receivers for micro wave communications and radar, antennas for microwave and radar, non-sinusoidal (pulse) wave forms, pulse generators, clippers, clampers, limiters,

DESCRIPTIONS CONT.  
ELECTRONICS ENGINEERING COURSE

integrating circuits, radar systems, instruments and measurements, timing circuits, narrow and wide band amplifiers, radar equation and radar target properties, radar indicators and presentation of radar data, functional block and data flow description of digital and analog computers, digital computer applications, Boolean algebra fundamentals, logic arithmetic, binary number system, computer arithmetic, computer number systems and codes, computer hardware (logic), computer software (system analyses and programs).

ELECTRONICS<sub>6</sub>      FIVE UNITS      (Intermediate and Advanced Computer Technology)

Computer arithmetic, Boolean algebra, computer logic, major subdivisions of a general purpose computer, active and passive electronic components, logic elements, basic building blocks of computer functional and operational units, analysis of the "state of the art" hardware items, programming fundamentals, software requirements of several well known commercial computers.

ELECTRONICS<sub>7</sub>      FIVE UNITS      (Electronics in Automation)

Internal and external diameter inspection and sorting; surface finish inspection; electronic measurement of runout, lash, etc.; numerical control of machines such as: millers, boring machines, contour (Keller, etc.); position indication and feedback as applied to automatic machines and processes; electronic variable-speed motor drives and clutches; electrical and electronic control of hydraulic equipment, precision gauging equipment using laser interferometer as standard; pre-programmed and automatic (feedback) "sequence of events" control for machines and processes; electronically-controlled batching and insertion; routing and rejection devices and techniques for automatic inspection; automatic control of grinding machines; electronic dynamic balancing; favored techniques in the application of electronics to inspection and fabrication.

ELECTRONICS<sub>8</sub>      FIVE UNITS      (Engineering Thesis)

Thesis developed through study and research in any of the following electronics areas: computer, industrial automation, telemetry, miniaturization, communications, broadcast systems. Thesis to be supported by drawings, charts, tables, exhibits, foot notes and bibliographies, all to be included in a technical manual.

DESCRIPTIONS CONT.  
ELECTRONICS ENGINEERING COURSE

PHYSICS LABORATORY      TEN UNITS

Fundamental electrical quantities, voltage, current, power resistance, induction, measuring instruments, volt-ohm-meter, vacuum tube voltmeter, oscilloscope, wave form effects, AC measurements, magnetic field.

ELECTRONICS LABORATORY<sub>1</sub>                      FIVE UNITS

Static and dynamic characteristics of electron tubes, half wave power supplies, full wave power supplies, basic amplifier circuits, voltage and power amplifiers, oscillators, tuned circuits, amplifier circuit analysis.

ELECTRONICS LABORATORY<sub>2</sub>                      FIVE UNITS

Power supplies, special vacuum tubes, gas filled tubes, sequence timing, motor controls, syncro devices, servo mechanisms, industrial controls, saturable reactors, phase shift devices, induction heating.

ELECTRONICS LABORATORY<sub>3</sub>                      SEVEN & ONE HALF UNITS

Adjusting transistor voltages and currents, distortion and temperature effects, compensation input impedance, bias, transistor amplifiers, coupling, amplifier circuit measurements, oscillators, characteristic curves.

ELECTRONICS LABORATORY<sub>4</sub>                      SEVEN & ONE HALF UNITS

Commercial communications receivers, commercial communications transmitters, modulation systems, high frequency oscillators, high frequency measurements, amplifier in communications equipment, communications systems (visual and audio), closed circuit systems.

ELECTRONICS LABORATORY<sub>5</sub>                      FIVE UNITS

Broad band amplifiers, high frequency amplifier circuits, display devices, timing oscillators, high voltage power supplies, synchronizing circuits, radar systems, computer patch boards, logic system boards.

DESCRIPTIONS CONT.  
ELECTRONICS ENGINEERING COURSE

ELECTRONICS LABORATORY<sub>6</sub> FIVE UNITS

Flip flow circuits, memory circuits, functional diagram and logic system design, electronic calculators, storage resistors, counters, binary counters, flow charts (programs and systems), automatic and logic switching.

ELECTRONICS LABORATORY<sub>7</sub> FIVE UNITS

Commercial industrial electronic equipment, inspection, sorting, measuring, control, position indicating, precision gauging, routing and rejection, numerical control circuits.

ELECTRONICS LABORATORY<sub>8</sub> FIVE UNITS

Charts, data, circuits, drawings, tables for thesis.

DESCRIPTIONS CONT.  
ELECTRONICS ENGINEERING COURSE

MATHEMATICS REVIEW                      FIVE UNITS

Basic fundamentals of arithmetic; fractions, decimals, powers and roots, square root, ratio and proportion. Operations of addition, subtraction, division, and multiplication with whole numbers, decimal numbers and fractions. Scientific notation (powers of ten) and slide rule.

ALGEBRA<sub>1</sub>                      FIVE UNITS

General numbers, processes of Algebra, Algebraic expressions, simple and multiple expressions, products, factors, coefficients, powers and exponents, formulas, evaluation of formulas. Fundamental principle concerning equations, solution of equations, Algebraic representations, formulas made from statements. Addition and subtraction of signed numbers. Addition and subtraction of Algebraic expressions, parentheses.

ALGEBRA<sub>2</sub>                      FIVE UNITS

Multiplication of signed numbers division of signed numbers, numerical reductions, evaluation of Algebraic expressions, multiplication of monomials, multiplication of multinomials, division of monomials, division of multinomials by a monomial, division of multinomials, transposition, general solution of linear equations, factoring, binomial factors, simple trinomial factors.

COLLEGE ALGEBRA AND TRIGONOMETRY<sub>1</sub>                      FIVE UNITS

Fractions, equations of the first degree, exponents, roots and radicals, graphic methods, quadratic equations, systems involving quadratic equations, angles, trigonometric functions, tables of functions, solution of right triangles.

COLLEGE ALGEBRA AND TRIGONOMETRY<sub>2</sub>                      FIVE UNITS

Ratio, variation, inverse variation, proportion, binomial theorem, logarithms, common logarithms, logarithmic computations, exponential equations, progressions, periodic functions, elementary plane vectors, vector algebra.

DESCRIPTIVE GEOMETRY                      FIVE UNITS

Point, line, plane, theorems on lines and planes, skew lines, intersection of planes, intersection of lines and planes, perpendicular relationships; lines and planes, dihedral angle, angle between line and plane, revolution, development

DESCRIPTIONS CONT.  
ELECTRONICS ENGINEERING COURSE

of; prism, right pyramid, oblique pyramid, right circular cylinder, oblique cylinder, right circular cone, oblique cone. Transition rectangular to circular, vector geometry.

**CALCULUS AND ANALYTIC GEOMETRY<sub>1</sub>**

**FIVE UNITS**

Coordinates, direct line segments, slope of a straight line, functions and graphs, slope of a curve, velocity and rates, properties of limits, polynomial functions and their derivatives, rational functions; implicit relations and their derivatives, increment of a function, differentials  $dx$  and  $dy$ , curve plotting, maxima and minima theory, Rolle's Theorem, Mean Value Theorem, indefinite integral, differentiation and integration of sines and cosines, definite integral, Fundamental Theorem of integral calculus, applications of the definite integral.

**CALCULUS AND ANALYTIC GEOMETRY<sub>2</sub>**

**FIVE UNITS**

Trigonometric functions, derivatives of the inverse trigonometric functions, natural logarithm, exponential function, differential equations, powers of trigonometric functions, integration by the method of partial fractions, integration by parts, integration of rational functions, improper integrals, determinants of order 3, determinants of order  $n$ , expansion by cofactors, solution of simultaneous linear equations, curves and equations, tangents and normals, equations of loci, second degree curves, hyperbolic functions, polar coordinates, vectors and parametric equations.

**CALCULUS AND ANALYTIC GEOMETRY<sub>3</sub>**

**FIVE UNITS**

Solid geometry and vectors, partial differentiation, multiple integrals, infinite series, Taylor's Theorem, Fourier Series, complex numbers and functions, The Argand diagram, complex variable, derivatives, differential equations; first order-variable separable, homogeneous, linear, exact. Second order equations, Poisson probability distribution.

DESCRIPTIONS CONT.  
ELECTRONICS ENGINEERING COURSE

ENGINEERING DRAWING<sub>1</sub>                      FIVE UNITS

Basic drafting equipment, geometry of lines, construction of straight lines, construction of curved lines, line weights and conventions, use of scales, freehand lettering, graphic presentation of engineering data, orthographic projection, third angle projection, views, circles, ellipses, and surfaces, auxiliary views, section views, isometric drawing, graphic symbols, schematic diagrams, connection or wiring diagrams.

ENGINEERING DRAWING<sub>2</sub>                      FIVE UNITS

Engineering standards and specifications, chassis and their components, block diagrams, wiring harnesses, dimensioning, tolerancing, working drawing problems.

PHYSICS<sub>1</sub>                      (Electricity and Magnetism)                      TEN UNITS

Fundamental laws of electricity and magnetism and some of their applications. Electrostatics, direct and alternating current, magnetic fields and induced electromotive forces.

PHYSICS<sub>2</sub>                      (Electromagnetism)                      FIVE UNITS

Fundamental laws of electricity and magnetism presented from the standpoint of field theory, static and dynamic properties of electromagnetic fields, interaction of the field with charges and currents, dielectric and magnetic media, Maxwells equations.

PHYSICS<sub>3</sub>                      FIVE UNITS

Force and motion, work, energy and power, analysis of basic machines, friction, torque, power transmission. Force and pressure, transmission of liquid pressure, hydraulic press, Archimes' Principle, density and specific gravity, fluids in motion, Bernoulli's Principle, water pumps; centrifugal pumps, turbine pumps, viscosity, volatility.



DESCRIPTIONS CONT.  
ELECTRONICS ENGINEERING COURSE

PSYCHOLOGY<sub>1</sub>                      FIVE UNITS

Psychology as a behavioral science; growth and development; motivated and emotional behavior; the perception of objects and events, the sensory basis of perceiving; the nature of learning, remembering and forgetting, the management of learning; thinking, language, and problem-solving.

PSYCHOLOGY<sub>2</sub>                      FIVE UNITS

Individuality and personality, statistical methods and measurement, ability testing and intelligence, heredity and environment, personality appraisal, theories of personality; conflict and adjustment, mental health and psychotherapy; social behavior, vocational and professional applications of psychology.

POLITICAL SCIENCE<sub>1</sub>              FIVE UNITS

The study of government, the cultural setting for politics, the American idea of democracy, ground rules for government, federalism, the ideology of industrial individualism and the social service state, the political process, the voter and political parties.

POLITICAL SCIENCE<sub>2</sub>              FIVE UNITS

Nominations and elections, election campaigns, public leadership, congress at work, the presidency, administration and bureaucracy, the law and the judiciary.

ECONOMIC PRINCIPLES<sub>1</sub>           FIVE UNITS

Basic economic concepts and national income: central problems of every economic society, price functioning of a "mixed" capitalistic enterprise system, supply and demand, business organization and income, individual and family income, labor and industrial relations, the economic role of government: expenditure, regulation and finance; federal taxation and local finance, national income and product.

DESCRIPTIONS CONT.  
ELECTRONICS ENGINEERING COURSE

ENGLISH<sub>1</sub>            FIVE UNITS

Principles of English: grammar, punctuation, sentence and paragraph composition.

ENGLISH<sub>2</sub>            FIVE UNITS

Effective organization and presentation of ideas; fundamentals of technical writing.

ENGLISH<sub>3</sub>            FIVE UNITS

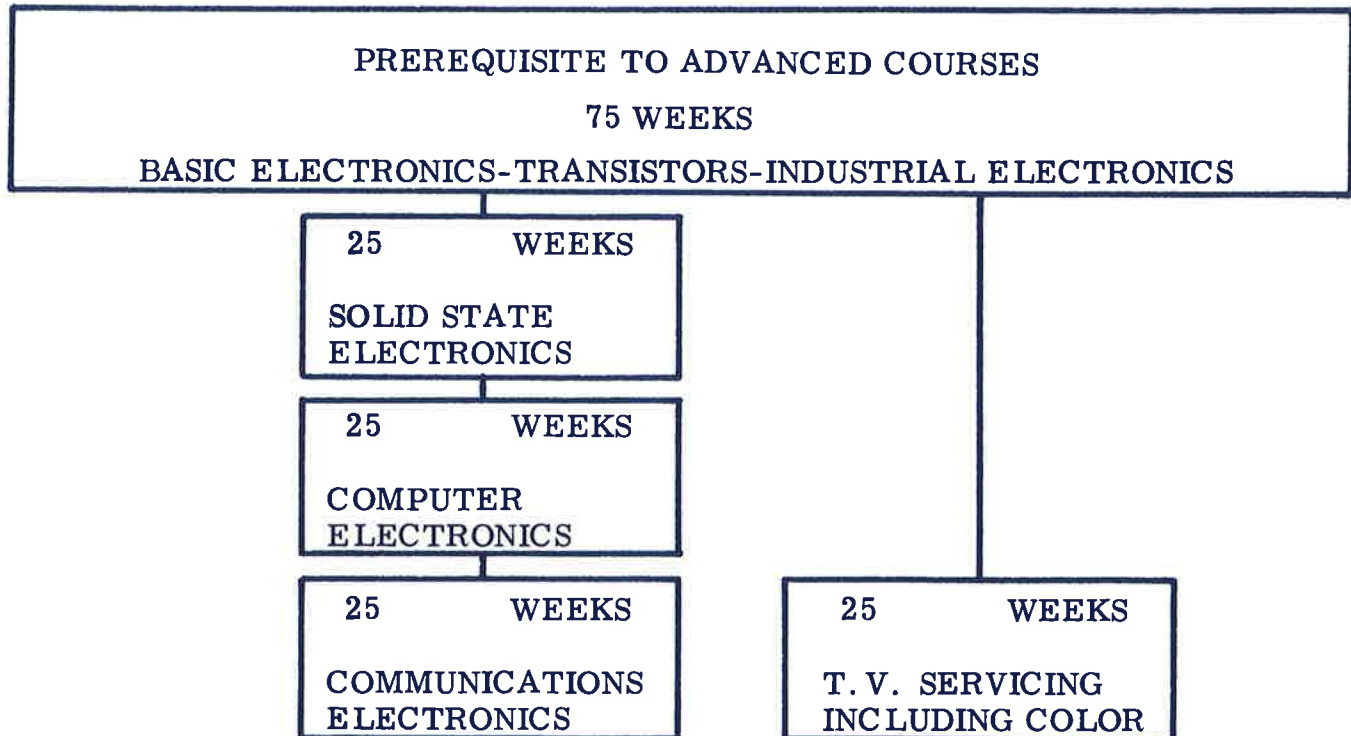
Technical writing; preparation, organization, and communication of engineering data; presentation of technical papers.

# Part Time Training Program

## ELECTRONIC TECHNICIAN COURSES



Specialized training programs in Electronics are available under the R. E. T. S. combination resident and home study system. These programs are especially planned for the student who must remain fully employed while in training and consist of approximately 12 hours of home study each week and one evening (or morning) of attendance (4 hours) each week for laboratory work. The following chart shows the courses available under the "R. E. T. S. Specialized Training Program" and the sequence in which these courses may be taken.



## Electronics Technology Course in

### BASIC ELECTRONICS - TRANSISTORS - INDUSTRIAL ELECTRONICS

#### OUTLINE OF TRAINING PROGRAM AND TUITION COSTS

75 Week Training Program				
TRAINING PROGRAM SCHEDULE				
Phase	Weeks	Resident	Home Assignments	Total Clock Hours
One	25	100 hours	300 hours	400
Two	25	100 hours	300 hours	400
Three	25	100 hours	300 hours	400
Totals	75	300 hours	900 hours	1200

#### PHASE ONE - Electricity & Electronics (Subjects & Hours)

##### I. Basic Electricity

Introduction to Electricity & Modern Electronics  
Units & Symbols  
Electrical Laws  
Electrical Circuits  
Magnetism & Electromagnetism  
Generators  
Motors  
Signalling Circuits  
Applied Electricity  
Basic Math Review

##### II. Basic Electronics

Simple Characteristics of Electricity - I  
Measuring Equipment - I  
Simple Characteristics of Electricity - II  
Characteristics of Resistance  
Fundamentals of AC  
Oscilloscopes  
Electronic Tubes  
Introduction to Transistors  
Capacitance  
Math as required to understand the above subjects.

Electronics Technology Course in

BASIC ELECTRONICS - TRANSISTORS - INDUSTRIAL ELECTRONICS

Continued

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III. Electronic Components

Inductance

Characteristics of Reactance

Solid State & Tube Rectifiers

Power Supplies

Power Supplies for Modern Electronic Equipment

Waves

Electromagnetic Waves & The Broadcast System

Triodes, Tetrodes & Pentodes

Voltage & Power Amplifiers

Math as required to understand the above subjects.

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Phase One Totals:	Resident Training	100 hours
	Home Assignments	300 hours

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PHASE TWO - Circuit Configurations & Systems Analysis (Subjects & Hours)

IV. Circuit Configurations

Resonant Principles

Detectors

High Frequency Amplifiers

Oscillator Circuits

Mixer Circuits

Practical Application for Test Equipment

Lab Requiring the wiring and appropriate service tests on the above.

Math as required to understand the above circuit arrangements.

V. Systems Analysis

Communications Systems

Tape Recorders

Wide Band Amplifiers

Solid State Electronics

Lab requiring the service of the above systems.

VI. Solid State Electronics & Industrial Applications

Solid State Amplifiers

Grounded Emitter, Base & Collector Circuits

Solid State Oscillators

High Frequency Amplifiers

Service Techniques for Transistors

Introduction to Industrial Electronics

Symbols & Terminology

Oscilloscope, Volt-ohm-milliammeter, & Signal Generator

Applications in Measurements

Math as required.

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Phase Two Totals:	Resident Training	100 hours
	Home Assignments	300 hours

Electronics Technician Course in

ELECTRONICS TECHNOLOGY

Continued

PHASE THREE - Electronics in Industrial Systems (Subjects & Hours)

VII. Industrial Electronics - I

Introduction to Graphical Symbols and Terminology  
Power Supplies for Industrial Equipment - Regulated Supplies  
Instrumentation  
Alternating Current  
Vacuum Tubes in Industry  
Gas-filled Tubes and Phase Shift Devices  
Circuit Characteristics - Sequence Timing  
Lab Projects Requiring Circuit Development & Testing

VIII. Industrial Electronics - II

Motor Controls  
Photoelectric Devices  
Resistance Welding  
Conversion Devices & Proximity Controls  
Induction & Dielectric Heating  
Saturable Reactors and Magnetic Amplifiers  
Automation and Switching Logic  
Transistors  
Lab Projects Requiring Circuit Development & Testing

IX. Industrial Electronics - III

Ultrasonics  
Synchro Devices & Servomechanisms  
Temperature Controls  
Inspection & Sorting Controls  
Counting Controls  
Closed Circuit Radio & Television Systems  
Industrial Electronics Systems Maintenance  
Lab Projects Requiring Circuit Development & Testing

Phase Three Totals:	Resident Training	100 hours
	Home Assignments	300 hours
Course Totals:	Resident Training	300 hours
	Home Assignments	900 hours

Cost: (\$302.50) for Phase I, Phase II and III (\$225.00) each - includes  
(a) Textbooks, (b) Lab Fees, (c) Tuition  
Budget Plans Available

Advanced Electronic Technician Courses in

SOLID STATE ELECTRONICS

25 Week Training Program			
TRAINING PROGRAM SCHEDULE			
Weeks	Resident Training	Home Assignments	Total Hours
25	100 hours	300 hours	400

OUTLINE OF TRAINING PROGRAM AND TUITION COSTS

Solid State Devices, Math for Electronics, Physics and Advanced Electronic Theory (Subjects & Hours)

I. Solid State Devices & Mathematics for Electronics

Transistor Physics  
Transistors - Type & Construction  
Junction Transistors  
Basic Transistor Amplifier Circuits  
Biasing of Transistors  
Basic Engineering Math as Applied to Electronics

II. Transistors & Advanced Electronic Theory

Transistor Power Amplifier & Phase Inverters  
Cascade Amplifiers  
High Frequency Junction Transistors  
Transistor Logic Circuits  
Applied Physics (Power, Work & Efficiency)  
Magnetism & Magnetic Circuits  
Inductance & Capacitance Design Characteristics

III. Solid State Devices & Advanced Electronic Theory

Transistor Oscillator Circuits  
Transistor Multivibrators  
Solid State Regulated Power Supplies  
Silicon Controlled Rectifiers  
Tunnel Diodes  
Trigonometry as Applied to AC Circuits  
Vector Analysis of AC Circuits

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Course Totals:	Resident Training	100 hours
	Home Assignments	300 hours

Cost: (\$225.00) includes

(a) Text Material, (b) Lab Fees, (c) Tuition  
Budget Plans Available



Advanced Electronic Technician Course in  
COMPUTERS

25 Week Training Program			
TRAINING PROGRAM SCHEDULE			
Weeks	Resident Training	Home Assignments	Total Hours
25	100 hours	300 hours	400

OUTLINE OF TRAINING PROGRAM AND TUITION COSTS

Computers, Advanced Electronic Theory, Drafting & Fundamentals of Electronic Reporting (Subjects & Hours)

I. Computers, Advanced Electronic Theory & Drafting

Introduction to Computers  
Analog & Digital Computers  
Application of Computers  
Special Purpose & General Purpose Computers  
Computer Number Systems  
Vector Analysis of AC Circuits  
Resonant Circuits  
Electronic Drafting

II. Computers, Advanced Electronic Theory & Drafting

Computer Logic Circuits  
Computer Systems Analysis  
Computer Programming  
Computer Flow Charts  
Filter Circuits  
Advanced Vacuum Tube Theory & Design Characteristics  
Electronic Drafting

III. Computers, Advanced Electronic Theory, Drafting & Fundamentals of Electronic Reporting

Computer Control Circuits  
Computer Arithmetic Unit  
Computer Memory Unit  
Filter Circuits  
Power Supply Circuitry & Design Characteristics  
Electronic Drafting  
Electronic Reporting

Course Totals:	Resident Training	100 hours
	Home Assignments	300 hours

Cost: (\$225.00 includes  
(a) Text Material, (b) Lab Fees, (c) Tuition  
Budget Plans Available

Advanced Electronic Technician Course in

COMMUNICATIONS ELECTRONICS

25 Week Training Program			
TRAINING PROGRAM SCHEDULE			
Weeks	Resident Training	Home Assignments	Total Hours
25	100 hours	300 hours	400

OUTLINE OF TRAINING PROGRAM AND TUITION COSTS

Receiving Equipment, Transmitting Equipment, Microwave, Radar, and F.C.C. Preparation (Subjects & Hours)

I. Mobile & Standby Power Supplies, Propagation of Radio Waves, Receiving Equipment, and F.C.C. Preparation

Generators  
Motors  
Propagation of Radio Waves  
Squelch & Limiting Circuits  
Crystal Filters  
BFO's  
AM Receivers  
FM Receivers  
F.C.C. Preparation

II. Transmitters & F.C.C. Preparation

Studio Equipment  
Oscillators  
Transmitter Circuits  
Modulation  
Sidebands A.M.  
Frequency Modulation  
Radio Frequency Power Amplifiers  
F.C.C. Preparation

III. Transmitters, Microwave, Radar, and F.C.C. Preparation

Transmission Lines  
Antennas  
Principles of Radar  
Radar Timer & Modulator  
Waveguides  
Magnetrons & Duplexers  
F.C.C. Preparation

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Course Totals:	Resident Training	100 hours
	Home Assignments	300 hours

Cost: (\$225.00) includes

(a) Text Material, (b) Lab Fees, (c) Tuition

Budget Plans Available

TELEVISION SERVICING  
BLACK AND WHITE AND COLOR

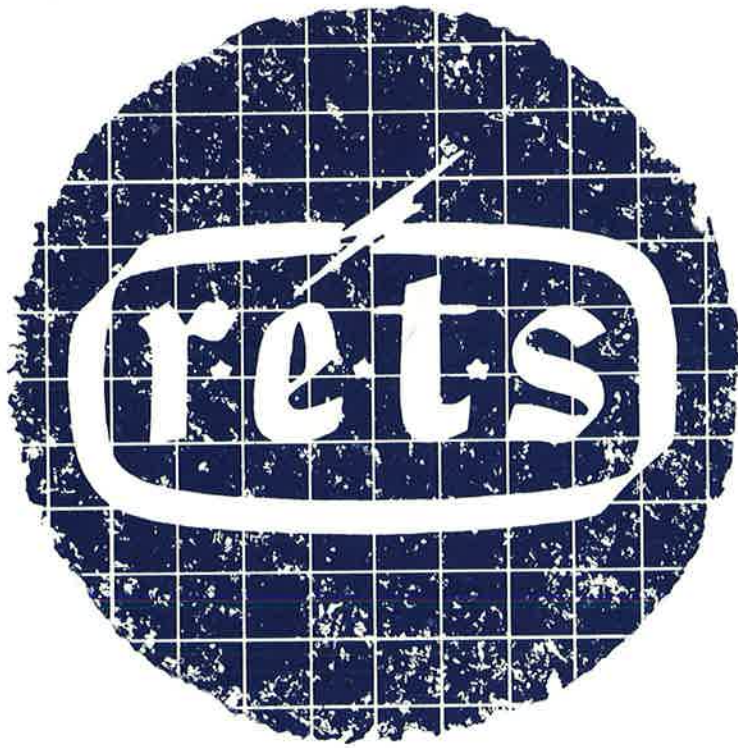
TRAINING PROGRAM SCHEDULE			
Weeks	Resident Training	Home Assignments	Total Hours
25	100 hours	300 hours	400

OUTLINE OF TRAINING PROGRAM AND TUITION COSTS

- I. Television Systems
  - Cathode Ray Devices
  - Color Picture Tube Convergence
  - Deflection Oscillators and A. F. C.
  - Deflection Amplifiers
  - High Voltage Power Supplies
  - Sync Separators and DC Restoration
  - Color Synchronization Circuits
  
- II. Principals of Color Demodulation
  - Chromo and Luminance Matrices
  - Wide Band Solid State Circuits
  - Video Amplifiers and Frequency Distribution
  - IF Amplifiers and Wide Band Detectors
  - Automatic Gain Control Circuit Operation
  - Intercarrier Sound Circuits
  - RF Tuners for Television Reception
  
- III. Low Voltage Power Supplies and Distribution
  - Television Receiver Servicing I (Monochrome)
  - Television Receiver Servicing II (Solid State)
  - Television Receiver Servicing III (Color)
  - Color A. F. P. C. Adjustments
  - Color Bandpass and Demodulation Alignment
  - Solid State Adjustment and Alignment
  - Practical Television Servicing Procedures
  - Generalized Television Servicing Procedure

Total Cost of Television Servicing Course \$290.00 - includes  
(a) Textbooks, (b) Lab Fees, (c) Tuition

Budget Plans Available



*World's Largest Resident Electronic Training Organization*