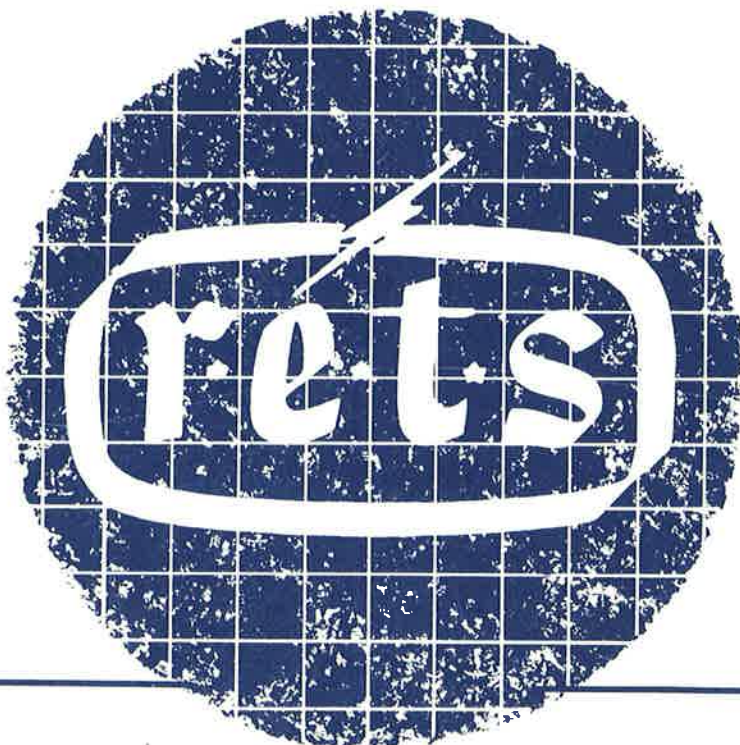


Training Specialists for Industry Since 1935



**GENERAL
INFORMATION**
and
COURSE OUTLINES

R. E. T. S. ELECTRONIC SCHOOLS

INTERNATIONAL OFFICES

1625 E. Grand Blvd



Detroit 11, Michigan



GENERAL INFORMATION

B U L L E T I N

1. R.E.T.S. ELECTRONIC SCHOOLS is located at 1625 East Grand Boulevard, immediately East of the intersection with Mt. Elliott Ave. The Edsel Ford Expressway provides direct access to the school at 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.

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

3. 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.

4. THE FOLLOWING LEGAL HOLIDAYS ARE OBSERVED. Decoration 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 also Friday before Easter.

5. 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.

6. 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, of course, 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.

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

8. REFUND POLICY. If the student interrupts for any reason, he will be charged only for the portion of the course which he has completed on a pro rata basis in addition to the non-refundable enrollment fee.

9. CONDUCT. Students are required to maintain the ordinarily accepted rules for gentlemanly conduct. Students who do not do so are required to discontinue their training.

GENERAL INFORMATION *CONTINUED*

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

11. 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.

12. 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.

When there are employment complications causing the student to arrive late or leave early, his schedule may be adjusted to add one-half hour to the normal schedule.

13. 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.

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.

14. 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.

15. PLACEMENT SERVICE. (a) Unemployed students in training at R.E.T.S. are provided Employment Services to aid them in getting work to continue their education until graduation.

(b) Graduating students and Alumnae will be provided employment opportunities with the Electronic Industry through their representatives and the School's liaison with the industry. In the past, 34 nationally known electronics companies have sent their representatives to interview the graduating classes at R.E.T.S.

16. 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.

17. HOUSING. Assistance will be given where possible. The Detroit area provides, within walking distance of R.E.T.S. Electronic Schools, adequate furnished apartment and rooming facilities as described in local newspapers. It is suggested that out-of-town students establish their residence or reservation at least two weeks in advance of their class starting dates.

PRACTICAL ELECTRONICS and COMMUNICATIONS ENGINEERING COURSE

Total Weeks 108

Total Hours 2700

TRAINING PROGRAM SCHEDULE			
School Year	Semester	Weeks	Hours
1	I	18	450
	II	18	450
	Totals	36	900
2	III	18	450
	IV	18	450
	Totals	36	900
3	V	18	450
	VI	18	450
	Totals	36	900

Outline of Training Program and Tuition Cost

FIRST SCHOOL YEAR (Semesters I and II) SUBJECTS & HOURS

SEMESTER I

I. Electronics Theory - I Electrical Characteristics & Measuring Equipment Tube Testing, Resistance & Resistance Measurements Electron Tubes & Transistors Inductance & Capacitance Basic Mathematics	Lecture Math	60 hours 30 hours
II. Electronics Theory - II Generators & Motors Rectifiers, Power Supplies & Their Applications Electromagnetic Waves & Wave Propagation Electronic Tubes Mathematics - Logarithms	Lecture Math	60 hours 30 hours
III. Electronics Theory - III Alternating Current Circuits Characteristics of Reactive Circuits A. M. Detector Circuits Oscillators & Oscillator Circuits & Mixer Operations Measuring Equipment, Resistance & Current Measurements Mathematics - Logarithms, Slide Rule & Fundamentals of Algebra	Lecture Math	60 hours 30 hours
IV. Electronics Laboratory Electronic Measurements Construction Techniques Radio Receiver Servicing	Lab	180 hours 450 hours
Semester I Total		180 hours 450 hours

Outline of Training Program and Tuition Cost

CONTINUED

SEMESTER II

V. Communications Theory			
Introduction to Frequency Modulation Systems & Television			
F. M. Detector & Audio Amplifier Circuits			
Conversion of Light Energy to Electrical Energy			
Operation of Broadcast & Industrial TV Receivers & Equipment			
Wide Band Signal Circuits			
Television & Industrial Electronic Servicing			
Fundamentals of Electronic Reporting	Lecture		45 hours
Mathematics - Fundamentals of Algebra	Math		20 hours
VI. Communications Circuit Analysis - I			
The Video Signal			
RF Tuners for TV Reception			
IF Amplifiers in Broadcast & Industrial Television			
Intercarrier Sound Circuits			
Sync Separation & DC Restoration			
Vertical Oscillators & Deflection Circuits			
Low Voltage Power Supplies for Electronic Equipment			
Fundamentals of Electronic Reporting (Continued)	Lecture		45 hours
Mathematics - Trigonometry	Math		20 hours
VII. Communications Circuit Analysis - II			
Horizontal Oscillator & AFC Circuits			
Horizontal Deflection Circuits			
Wide Band Detectors			
AGC Circuits & Testing			
Cathode Ray Display Devices			
Television Receiver Servicing - RF & IF Alignment			
Electromagnetic Waves & VHF Antennas			
Fundamentals of Electronic Reporting (Continued)	Lecture		45 hours
Mathematics - Trigonometry	Math		20 hours
VIII. Industrial Electronics - I			
Diagrams & Rectifiers; Regulated Supplies			
Instrumentation			
Vacuum and Gas-Filled Tubes; Phase Shift Devices			
Timing and Sequence Timing Circuits			
Photocell Amplifiers			
Control Circuits			
Mathematics - Advanced Algebra	Lecture		50 hours
	Math		25 hours
IX. Communications Laboratory			
Television Receiver Servicing			
Industrial Systems Analysis	Lab		180 hours
Semester II Total			450 hours
First School Year Total			900 hours
Total cost of School Year 1 (\$648.00) includes			
(a) Textbooks, (b) Lab Fees, (c) Tuition			

Outline of Training Program and Tuition Cost

CONTINUED

SECOND SCHOOL YEAR (Semesters III & IV) SUBJECTS & HOURS

SEMESTER III

I. Radio Receivers		
Amplitude Modulated Receivers		
Frequency Modulated Receivers		
Engineering Report Writing		
Applied Physics	Lecture	80 hours
Mathematics of Alternating Current Circuits	Math	30 hours
II. Radio Transmitters		
Reactive Circuits		
Vacuum Tube Amplifiers & Classes of Operation		
Oscillators		
Power Supplies		
Transmitter Circuits		
Amplitude Modulation Systems		
Frequency Modulation Systems		
Audio Frequency Speech Amplifiers		
Audio Frequency Voltage and Power Amplifiers		
Applied Physics	Lecture	100 hours
Mathematics of AC Circuits and Vacuum Tube Parameters	Math	45 hours
III. Antenna Systems & Transmission Lines	Lecture	20 hours
Mathematics of Antenna & Transmission Line Systems	Math	10 hours
IV. Generators & Motors		
FCC Question Review	Lecture	20 hours
V. Electronics Laboratory		
Mobile Transmitters & Receivers		
Electronic Drafting	Lab	145 hours
	Semester III Total	450 hours

SEMESTER IV

VI. The Communications Field		
Requirements		
The Federal Communications Commission	Lecture	20 hours
VII. Federal Communications Commission (FCC) Rules		
FCC Regulations		
FCC Elements One, Two, Three, and Four	Lecture	100 hours
VIII. Advanced Electronics		
Semiconductor Devices		
Radar & Microwave Techniques		
Computers & Computer Systems		
Industrial Electronics - II	Lecture	100 hours
Mathematics - Functions & Graphs, Differentiation & Integration	Math	50 hours

Outline of Training Program and Tuition Cost

CONTINUED

IX. Electronics Laboratory			
Transistor Circuits			
Industrial Systems			
Computers & Calculators - Circuit Analysis	Lab		180 hours
Semester IV Total			450 hours
Second School Year Total			900 hours

Total cost of School Year 2 (\$648.00) includes
 (a) Textbooks, (b) Lab Fees, (c) Tuition

THIRD SCHOOL YEAR (SEMESTERS V and VI) SUBJECTS & HOURS

SEMESTER V

I. Semiconductor Devices			
Parameters, Equivalent Circuits & Characteristic Curves			
Transistor Analysis	Lecture		30 hours
Mathematics of Semiconductor Parameters & Circuits	Math		15 hours
II. Television Circuit Analysis & Communications Engineering			
Joint Circuit Analysis of:			
Television Systems			
Radar & Microwave Systems	Lecture		70 hours
Mathematics of Systems Analysis	Math		35 hours
III. Color Television Systems and Engineering			
Circuit Analysis & Testing:			
Chroma, Burst, IF and RF Amplifier Circuits			
Color Analysis and Reception			
Frequency Spectrum & Bandpass Studies			
Color Picture Tubes			
Matrix Circuits	Lecture		60 hours
Mathematics of Color Television Systems	Math		30 hours
IV. Industrial Electronics - III			
Closed Circuit Radio & Television Systems			
Resistance Welding			
Industrial Electronic Maintenance			
Mathematics of Industrial Circuits	Lecture		20 hours
V. Engineering Laboratory - I			
Systems Development, Measurements & Servicing	Math		10 hours
	Lab		180 hours
Semester V Total			450 hours

SEMESTER VI

VI. Preliminaries for Technical Manual Research & Construction			
Electronics Field Orientation			
Advanced Technical Reporting Techniques			
Advanced Technical Manual Research	Lecture		80 hours
Applied Mathematics - Differentiation and Integration	Math		20 hours

Outline of Training Program and Tuition Cost

CONTINUED

VII. Engineering Thesis developed through

Research, Study and Analysis to include the utilization of Magnetic Amplifiers, Transistorized Circuits, Printed Circuits and Miniaturized materials wherever needed and proper. Thesis will be supported by drawings, charts, tables, exhibits, footnotes and bibliographies when developing Electronic Circuit Designs, Construction, and Testing Techniques. The result of the Student's effort will permit the production of a Technical Manual as an integral part of one of the following Electronic areas.

- a. Communications
- b. Telemetry
- c. Industrial Automation
- d. Computers
- e. Broadcast Systems

Laboratory development toward Thesis

Applied Mathematics 300 hours

VIII. Class Presentation of Engineering Reports & Critiques 50 hours

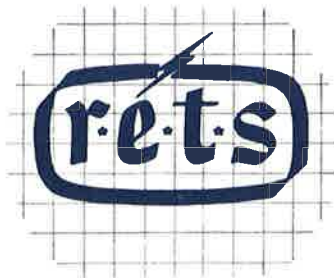
Graduation Exercises

Semester VI Total 450 hours
Third School Year Total 900 hours

Total cost of School Year 3 (\$648.00) includes
(a) Textbooks, (b) Lab Fees, (c) Tuition

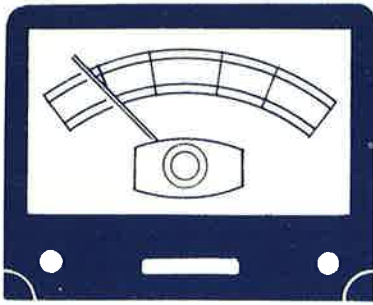
ELECTRONIC TECHNICIAN COURSE

Total Weeks 75



A specialized training program in Electronics is available under the R.E.T.S. combination resident and home study system. This program is especially planned for the student who must remain fully employed while in training and consists of approximately 20 hours of home study each week and one evening (or morning) of attendance each week for laboratory work. This course covers Basic Electronics, TV Servicing, and Industrial Electronics. The outline of the material covered in these training programs will be found on the following pages.

The student pays an enrollment fee of \$77.50 and \$8.00 weekly, starting with his second week of attendance, for the number of weeks included in the course. The cost includes all lab fees, text materials, and supplies.



COURSE OUTLINE

ELECTRONIC

TECHNICIAN

SUBJECTS COVERED

Introduction to Modern Electronics

Simple Characteristics of Electricity

Measuring Equipment

Characteristics of Resistance

Electronic Tubes

Capacitance

Inductance

Rectifiers

Power Supplies

Power Supplies for Modern Electronic Equipment

Waves

Electromagnetic Waves and The Broadcast System

Triodes, Tetrodes and Pentodes

Voltage and Power Amplifiers

Resistance, Capacitance & Inductance in AC Circuits

Simple Characteristics of Reactive Circuits

Detectors

Coupling of Circuits

Test and Measuring Equipment

Resistance & Current Measurements

Oscillators and Oscillator Circuits

Mixer Operation and Input Circuits

Signal Tracing and Electronic Servicing

Transistors

Servicing Transformers and General Trouble Shooting Methods

Introduction to Frequency Modulation (FM)

Frequency Modulation - II

Amplifier Circuits

Conversion of Light Energy To Electrical Energy and Electrical Energy to Light Energy

Broadcast and Industrial Electronic Television Receivers

Operation of Broadcast & Industrial Electronic TV Equipment

Principles of Wide-Band Circuits

Television and Industrial-Electronic Servicing

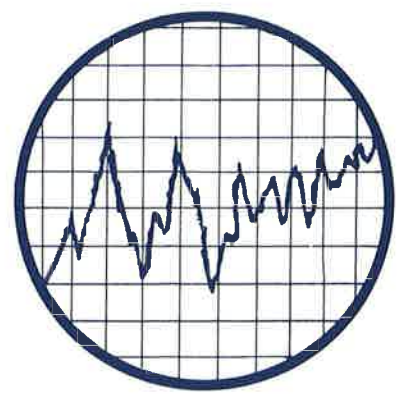
The Video Signal

Low Voltage Power Supplies for Electronic Equipment

RF Tuners for Television Reception

IF Amplifiers in Broadcast & Industrial-TV Reception

INCLUDING...
BASIC ELECTRONICS
CLOSED CIRCUIT TV
TV SERVICING
INDUSTRIAL APPLICATION



SUBJECTS COVERED

Wide-Band Detectors in Electronic Equipment

Cathode-Ray Display Devices

Intercarrier Sound Circuits

Sync Separation and D-C Restoration

Vertical Deflection and Vertical Oscillator Circuits

Horizontal Oscillator and AFC Circuits

Horizontal Deflection Circuits

AGC Circuit Operation and Test

Television Receiver Servicing

RF and IF Alignment

Wide Band Alignment Procedures

Very High Frequency (VHF) Antennas

How Electromagnetic Waves are Radiated

UHF Receiving Equipment

Practical Service Procedures

Generalized Television Service Procedures

Industrial Electronic Symbols

Instrumentation

Alternating Current

Vacuum Tubes in Industry

Gas Filled Tubes and Phase-Shift Devices

Sequence Timing

Regulators and Regulated Power Supplies

Motor Controls

Photoelectric Devices

Resistance Welding

Conversion Devices & Proximity Controls

Induction & Dielectric Heating

Saturable Reactors & Magnetic Amplifiers

Automation & Logic Switching

Ultrasonics

Synchro Devices & Servomechanisms

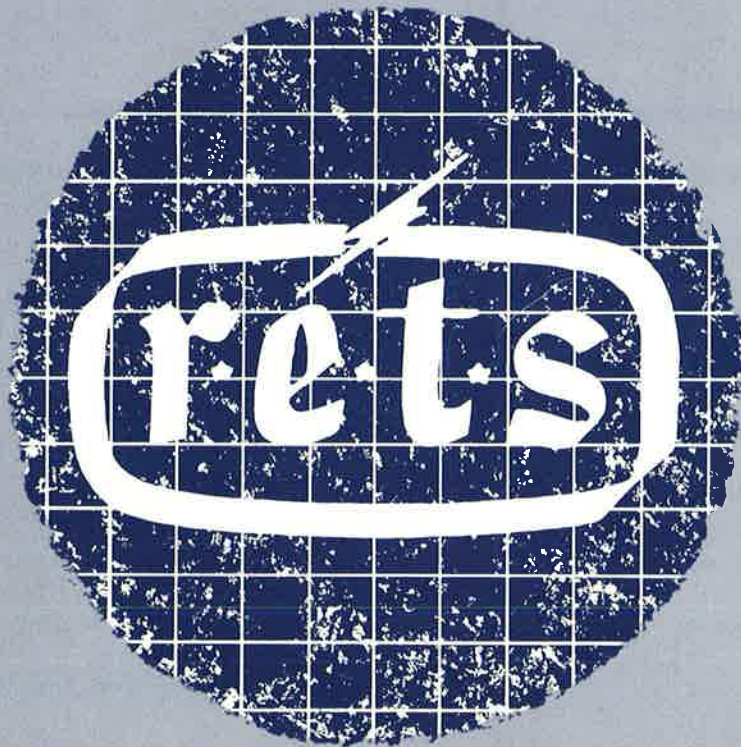
Temperature Controls

Closed Circuit Radio & Television Systems

Inspection & Sorting Controls

Counting Controls

Industrial Electronic Maintenance



World's Largest Resident Electronic Training Organization