A. F. Stanonis

AMERICAN TELEVISION INSTITUTE

Curriculum
for the Degree
Bachelor of Science in Television Engineering

AMERICAN TELEVISION INSTITUTE

General Information for the Degree Program

Admission to the School

A. By certificate

Admission will be granted upon formal application and certification to the Admissions Committee of high school graduation or its equivalent.

B. By examination

An applicant not eligible for admission by certificate may be admitted upon demonstration of competance, by examination, to undertake the prescribed course.

C. By transfer

An applicant may be admitted from another institution by presenting to the Admissions Committee a statement of academic standing and honorable termination in addition to the other required credentials.

Advanced standing may be granted such students provided the courses taken are equivalent to the courses given at American Television Institute. Such transfer credit is finally evaluated only after a candidate has been accepted for admission.

Admission to Candidacy for Degree

Each candidate for a Degree must have met the following requirements in addition to those specified in the school admission section:

1. Completed a balanced program of studies, or work, combinations thereof to insure a well rounded background of knowledge in basic fields.
2. Developed proficiency in the use of the English language in reading, writing and speaking.
3. Acquired proficiency in basic mathematical skills.
4. Developed effective study skills and work habits.
5. Developed an adequate intellectual, moral and social maturity.
6. Developed a sincere interest in further formal education.
7. Successfully completed the first semester of the course with no grade lower than "C".

The Educational Committee will determine, by examination and interview, if the above requirements are met by prospective candidates.

Requirements for Graduation:

Degree candidates must have fulfilled the following requirements to the satisfaction of the Educational Committee in order to be eligible to receive the Degree of Bachelor of Science in Television Engineering:

1. Been in attendance at the American Television Institute for a minimum of three semesters.

2. Successfully completed 144 semester hours of work (129 semester hours of required subjects and 15 semester hours of elective subjects) with an average grade of "C" or higher.
3. Have made the required number of inspection trips and turned in the corresponding reports.
4. Written an acceptable senior thesis.
5. Attended the required seminar sessions.
6. Completed sufficient elective study so that he:
    a. Has a better understanding of the world and the society in which he lives.
    b. Appreciates more fully the basic values upon which civilization and culture rest and through which they may be improved.
    c. Perceives and accepts his responsibilities as an active participant in social groups -- the family, occupation, community, democratic state, and the world.

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First Year (36 weeks)

First Semester

Electronics I	3	A
Physics I	2	A
Applied Math I	3	A
Laboratory I	3	B
	11	

Second Semester

Radio I a	4	A
Television I a	3	B
Applied Math II a	3	A
Laboratory II a	3	C
	13	

Second Year (36 weeks)

First Semester

Radio I b	3	A
Television I b	4	B
Applied Math II b	5	A
Laboratory II b	3	C
	15	

Second Semester

Radio II a	5	A
Radio III a	3	A
Applied Math III a	6	A-
Laboratory III a	3	C
Inspection trips	0	
	17	

Third Year (36 weeks)

First Semester

Radio II b	3	A
Radio III b	2	A
Television II	4	B
Physics II	2	B
Applied Math III b	4	A
Laboratory III b	3	C
	18	

Second Semester

Radio IV	4	B-
Television III	4	B
Television V	3	C-
Physics III a	2	B
Applied Math IV a	4	B
Inspection trips	0	
	17	

Fourth Year (36 weeks)

First Semester

Radio V a	2	A-
Television IV a	2	A-
Electronics II	3	B-
Physics III b	2	A-
Applied Math IV b	2	B
Laboratory IV	2	C
Engineering II a	4	A-
English I a	3	B
	20	

Second Semester

Radio V b	4	A-
Television IV b	3	A-
Laboratory V	2	C
Engineering I	2	B-
Engineering II b	4	B-
English I b	3	B
Seminar	0	
Thesis	0	A
	18	

elective subjects

Semantics	B	5
Math statistics	A	5
Vector Analysis	B	5
		15

Elective Subjects

(15 semester hours total required)

Typical electives:

Survey of Literature
Survey of Social Sciences
Survey of Fine Arts
History of Mankind
History of Science
Applied Psychology
General Chemistry
Modern Physics
Introduction to Philosophy
Business Management
Marketing
General Semantics
Languages
Engineering Problems
Engineering Shop
Modern Government

COURSE DESCRIPTIONS

Electronics I ("Electronic Fundamentals")

This course consists of classroom lectures and demonstrations on basic electronic theory, units, measurements, electron tubes, power supplies, amplifiers, detection, and an introduction to receiver circuits. Special consideration is given to circuit theory, testing, and repair and maintenance of electronic devices. Emphasis is placed on the applications to radio and television.

Electronics II ("Industrial Electronics")

Included in this course are such subjects as DC and AC rotating machines, motor control, welding control, X-ray equipment, photo cell circuits, color detection, automatic and remote control systems, relays, Selsyn and servosystems, and applications of electron tubes to chemistry, physics, medicine, process engineering, and navigation. Experiments and demonstrations are included in the course.

Radio I a and b ("Principles of Radio")

Classroom lectures and demonstrations are given on radio receiver circuits and servicing, oscillators, r.f. power amplifiers, operation of radio telegraph and telephone transmitter circuits, modulation methods, frequency modulation equipment, wave propagation, transmission lines, antennas, and the Federal Communications Commission requirements for broadcast stations and operators.

Radio II a and b ("Radio Engineering Design")

This course consists of a study of the fundamentals of engineering circuit analysis and design. It involves the calculation and design of circuit components, coupled circuits, networks, voltage and current amplifiers, power supplies and oscillators. Particular attention is given to television applications and requirements. A five thousand word term paper is required in this course.

Radio III a and b ("Radio Engineering Measurements")

A detailed study is made of the procedures and equipment used in modern radio engineering laboratories. Resistance, inductance, capacitance, tube constants, amplifier performance, power supply characteristics, laboratory oscillators, wave form and phase analysis, and receiver and transmitter measurements are comprehensively covered. This material parallels the lectures in the Radio Engineering Design course.

Radio IV ("Radio Receiver and Transmitter Engineering")

A study is made of modulation, detection, receiver design, transmitter design, receiver and transmitter measurements, studio design, control room equipment, wave propagation, and an introduction to antenna and transmission line theory.

Radio V a and b ("Ultra High Frequency and Microwave Techniques")

This course considers radiation phenomena, transmission lines, microwave tube circuits, wave guides, horns, parabolic reflectors, pulse modulation, radar techniques, microwave receivers and transmitters and microwave relay systems.

Television I a and b ("Principles of Television")

This course deals with the development of television systems, cathode ray tubes, pulse circuits, keying circuits, wide-band amplifiers, high voltage power supplies and modern television receiver circuits and practice. Color projection television systems are also discussed. Television test equipment and its use in receiver testing and repair is emphasized.

Television II ("Television Engineering")

A course dealing primarily with television image analysis, camera action, pickup tubes, scanning circuits, wide-band amplifiers, the video signal, wave form analysis, differentiating and integrating circuits, pulse and keying networks, synchronizing circuits and signals, and television standards and practice.

Television III ("Television Receiver and Transmitter Engineering")

This course parallels "Radio Receiver and Transmitter Engineering", but is entirely concerned with television circuit theory and design. Such topics as power supplies, band pass and compensating networks, ghost elimination, mixer problems, vestigial sideband systems, camera control equipment, receiver and transmitter design, and measurements are discussed. A five thousand word term paper is required in this course.

Television IV ("Special Television Circuits")

This course covers projection television systems, color television systems, intra-tel systems, industrial applications of television, television relay and network considerations, and facsimile systems. Modern commercial practice and the associated engineering problems are also studied.

Television V ("Television Studio Techniques")

Included in this course are considerations of studio equipment, camera and control room techniques, lighting and sound requirements, scene design, and an introduction to television production problems and studio practice. Actual work in the studio is included in the course. Commercial studio equipment operation is also a part of this course.

Applied Math I ("Elements of Algebra and Trigonometry")

The subject matter of this course includes the fundamental operations of algebra, solution of linear equations, factoring, fractional equations and complex fractions, exponents, solution of right triangles, use of trigonometric functions and tables in solving right triangles, and applications of mathematics to direct and alternating current circuit calculations and to vacuum tube circuit problems.

Applied Math II a and b ("College Algebra and Plane Trigonometry")

A course in introductory College mathematics including complex numbers, logarithms, quadratic equations, determinants, binomial theorem series and progressions, oblique triangles, trigonometric identities and equations, exponential equations, graphs, and functional methods; applications to wire size problems, complex DC networks, Kirchoffs' Laws, AC networks, decibels, wave shaping circuits, modulation wave form analysis, and television circuit problems.

Applied Math III a and b ("Plane Analytical Geometry, Differential and Integral Calculus")

Subjects covered in this course include: The straight line, circle, conics, translation and rotation of axes, polar coordinates, functional notation, limit theory, differentials, parametric equations, indefinite integrals, constant of integration and the definite integral. Applications of these subjects to circuit theory, design, mechanics, optics, and acoustics are taught.

Applied Math IV ("Advanced Calculus")

This course covers such subjects as radius of curvature, arc length, series, hyperbolic functions, partial differentiation, multiple integration, ordinary differential equations, Bessel's functions and Fourier Series. Direct applications to radio, television, and physics are used for examples.

Physics I ("Elements of Physics")

This course includes a study of the fundamental concepts of matter, energy, work, force, physical units and measurements, electrostatics, magnetostatics, direct and alternating current electricity, and elementary electronic theory. Numerous applications to electronic circuits and television are included.

Physics II ("Mechanics,Optics and Acoustics")

The fundamentals of mechanics, optics, and acoustics are treated in this course. Topics covered include motion, energy, work, force, power, wave motion, sound production and propagation, sound measurements, acoustics of rooms, studio design, light interference, resonance, reflection and refraction, diffraction, instruments, aberrations, photography, and camera action. Laboratory experiments and classroom demonstrations constitute a portion of this course.

Physics III ("Mechanics of Fluids and Heat")

Liquid pressure, Pascal's Law, hydrodynamics, Archimedes' Principle, Boyle's and Charles' Laws, Kinetic theory, Brownian motion, Hookes' Law, molecular forces, heat production, specific heat, fusion, vaporization, and an introduction to thermodynamics are given in this course. The general concept of radiation is also taught.

Laboratory I ("Electronics and Radio")

The experiments performed in this laboratory are used as an adjunct to the information obtained in the classroom. Visual and aural proofs of theory are indicated by a variety of experiments employing modern electronic equipment. The student builds and tests various electronic circuits and is taught to become familar with circuit faults and trouble shooting. Experiments are performed covering the following: basic physics, direct and alternating current electricity, vacuum tube principles and applications, measurements, and testing.

Laboratory II a and b ("Radio and Television")

Laboratory experiments are conducted on fundamental receiver circuits, the analysis, trouble shooting and repair of radio and television circuits, cathode ray tubes, pulse and keying circuits, oscillators, frequency modulation circuits, transmitter circuits, and modern television receiver systems. A thorough study is made of the test equipment used to indicate faults in television receivers. Commercial television receivers are analyzed, tested and serviced.

Laboratory III a and b ("Radio and Television Engineering Measurements")

A series of laboratory experiments are performed, using modern precision test equipment, to familiarize the student with commercial methods of direct current, alternating current, audio, radio and video frequency laboratory techniques. Wave form analysis, mutual coupling, network constants, response characteristics, amplifier distortion, cathode-follower and video circuit characteristics, receiver and transmitter characteristics and measurements are among the experiments performed.

Laboratory IV ("Television Circuits")

~~Experiments on~~ television receiver and transmitter ~~circuits~~, relay systems, cameras, synchronous generators, camera links, and studio equipment ~~are performed in this laboratory~~. Iconoscope, Orthicon, and Image Orthicon equipment ~~are studied~~. Projection and color principles are also covered in detail.

Laboratory V ("Advanced Radio Communication")

Antennas, telephone and telegraph circuits, transmission lines, microwave oscillators, wave guides, horns, parabolic reflectors, pulse circuits, f.m. networks, portable communication equipment, radar systems, direction finders, sonar, and navigational aids ~~are typical subjects for the experiments in this section~~.

Engineering I ("Engineering and Electrical Drawing")

This course consists of lectures and practical drafting room projects in lettering, layout, drafting techniques, freehand sketching, projections, tracing, photostating, blueprinting, materials of construction, symbols, electrical drafting, and electronic circuit drawing.

Engineering II a and b ("Engineering Correlation")

The course is designed to provide training in industrial engineering methods, commercial and patent law, fundamentals of economics, accounting practice, and business origanization. All topics are presented with emphasis on applications to engineering.

English I a and ("Technical English")

Included in this course are subjects such as technical report writing, engineering writing, preparation of technical papers, business correspondence, and public speaking. The basic principles of rhetoric are stressed. Library research is an integral part of this course.

Inspection Trips

Three inspection trips are required to be made during the last two years of the course and inspection reports are to be written for each. Trips are conducted to such places as broadcast and television studios and transmitter sites, electronic manufacturing plants and laboratories, the Museum of Science and Industry, the Chicago Lighting Institute, the Underwriters Laboratories, power plants, telephone exchanges, etc.

Seminar ("Current Electronic Developments")

Papers are presented by both students and faculty members on recent developments in the electronic field. Current literature is reviewed and discussed. Discussion and papers are limited to topics having some application to television or radio. Attendance is limited to faculty members and advanced engineering students.

Courtesy of Tom Stanonis