ELECTRICAL ENGINEERING®

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USAB NEWS

CAPITAL GAINS BILL

In line with Institute policies urging increased support of research and development, USAB has initiated a campaign to promote consideration of capital gains tax bills in the current Congressional review of tax reform. Known as the Investment Incentive Act of 1978, the bills, H.R. 12111 and S.3065, would significantly lower tax rates on capital gains and would promote badly needed investment capital for small, high-technology companies to update and expand their facilities. In turn, research and innovation would be enhanced in those technologies in which the United States is losing its world-leadership role.

USAB has gained the cooperation of other engineering societies in its campaign. It has also urged IEEE members to send letters or mailgrams to their Congressional representatives to support reduction of tax rates.

To aid USAB's efforts to get constituent support, mailings were recently sent to Regional and Divisional Directors, who are asked to communicate the issue to their respective Section Chairmen or Society/Group Presidents. Using target mailing techniques for efficiency, the geographic areas that contain the Congressional districts of Representatives who may have some impact on the progress of legislation were identified for rapid and effective action.

A letter supporting legislation efforts to reduce the capital gains tax has been signed by IEEE President Ivan A. Getting and Electronic Industries Association president Peter F. McCloskey. The letter, which was submitted to the full membership of the House Ways and Means Committee on June 7, 1978, appears as an insert on pages 2A–2B of this issue.

EXPANDED LEGISLATIVE ACTIVITIES

USAB's legislative activities have expanded dramatically with the restructuring of its organization. A new capability has been established to monitor and influence pending legislation or regulations.

Expanded activities in the legislative and communications areas have also led to reactivation of the USAB Information Line, (202) 785-2180. The line now offers fast-breaking news and calls for action on specific legislation items. Most recorded messages will be of three-minute duration. The recorder will operate at all times, enabling members to take advantage of periodic low rates for long-distance calls. News will be updated weekly. Some news of USAB efforts and events will be heard, but the "hot line's" primary use will be as a legislative alert to urge members to act on specific bills of interest to them.

FOR WOMEN ENGINEERS

Special problem-solving sessions for women engineers were offered in conjunction with two technical conferences this month. COMPOW (the Committee on Professional Opportunities for Women), under the chairmanship of U.C.L.A.'s biomedical engineering specialist Thelma Estrin, invited women engineers and their male colleagues to a panel session entitled "Upward Mobility and Career Development for Women Engineer's," held as part of the professional program for ELECTRO '78; and, for computer specialists, COMPOW invited National Computer Conference attendants to participate in a panel session entitled "Designing and Debugging Careers for Women in the Computer Industry." Why offer special career sessions emphasizing women engineers? Dr. Estrin explains that for women to advance on the career ladder, both career planning and heightened awareness of sexist attitudes toward female engineers are important.

NEWS SUMMARY

BOARD & EXCOM ACTIONS

- The 1979 minimum income level was increased to $2500 for members applying for reduction in fees, dues, and assessments under the provisions of Bylaw 109.7.
- 1979 publication subscription rates were changed. Nonmember subscription rates for the *Proceedings* and Group/Society *Transactions* and *Journals* were increased by 5 percent. Member subscriptions for *Proceedings* were set at $10. Nonmember rates for *Spectrum* were set at $54.
- Optional inclusion of telephone numbers in the 1979 IEEE Membership Directory was approved.
- The Executive Committee approved establishment of the new *IEEE Transactions on Pattern Analysis and Machine Intelligence*. The publication of this new *IEEE Transactions*, under the auspices of the Computer Society, is tentatively scheduled to begin January 1979 and it will appear quarterly. Other interested Groups and Societies will be permitted to participate and to make this publication available to their members.

OTHER

- Walter F. Fee has resigned as Director of Division VII as of 12/31/78, following his promotion to executive vice president of the Northeast Utilities Service Co. A successor will be elected to serve for the unexpired term (the calendar year 1979).
- Total IEEE membership enrollment as of April 30 was 170 203, up 2.4 percent from the same period last year. As true for the last few years, overseas Regions grew at twice the pace of U.S. Regions.

Index of Inserts

IEEE FOUNDATION

IEEE members in U.S. and Canadian Regions have been sent a letter from IEEE President Ivan A. Getting, which asks that they consider a donation to the IEEE Foundation, Inc. The Foundation is a not-for-profit corporation established to further the scientific and educational purposes of the IEEE. Enclosed in the letter was an explanatory brochure describing the many awards and scholarships sponsored by the Engineering Foundation, which are important to the public's recognition of engineering as a vital profession.

"Unfortunately," Dr. Getting writes, "because of inflation, the IEEE Foundation funds from endowments are no longer sufficient to support and administer existing award and scholarship activities."

Gifts, which are tax deductible, may be in the form of money, property, stocks, securities, or other bequests. Those who make contributions will join their fellow members as "Friends of the IEEE Foundation" and will receive appropriate certificates suitable for framing.

CALL FOR NOMINATIONS

The Nominations and Appointments Committee solicits from individual members and all IEEE organizational units the nomination of candidates to be considered for the following elective offices of the Institute.

- Candidates to be elected by the voting membership:

  President, 1980
  Executive Vice President, 1980

- Candidates to be elected by the Annual Assembly for the 1980 Term:

  Vice President—Educational Activities
  Vice President—Professional Activities
  Vice President—Publication Activities
  Vice President—Regional Activities
  Vice President—Technical Activities
  Secretary–Treasurer

The general qualifications for service to IEEE are the same as those for any other position of leadership responsibility and trust: competence, experience, willingness to take on the task, availability of time to participate, enthusiasm, and vigor. Recommendations may be submitted at any time before September 29, 1978, to the Staff Secretary of the Nominations and Appointments Committee at Headquarters.

ELECTRICAL ENGINEERING is a management newsletter on IEEE operations intended to encourage communication among all organizational entities and the staff. ELECTRICAL ENGINEERING is published bimonthly by The Institute of Electrical and Electronic Engineers, 345 East 47 Street, New York, N.Y. 10017—telephone (212) 644-7562.

ELECTRICAL ENGINEERING is sent without cost beyond dues to officers of IEEE Boards, Committees, Divisions, Societies, Groups, Technical Councils, Conferences, Regions, Regional Councils, Sections, Subsections, Chapters and Branches. Second-class postage is paid at Piscataway, N.J.

Names and assignments of IEEE staff members referred to in ELECTRICAL ENGINEERING are listed on page 4 of IEEE SPECTRUM.

TAB NEWS

CALL FOR PAPERS

A call for papers has been issued by the World Telecommunications Forum for TELECOM '79, to be held September 23–26, 1979, in Geneva, Switzerland. In the U.S. and Canada, one-page abstracts (100–200 words) of proposed papers should be sent, before the September 30, 1978, deadline, to: Amos E. Joel, Jr., Past President, IEEE Communications Society, Bell Labs, Room 2C-632, Holmdel, N.J. 07733.

POPOV SOCIETY CONGRESS

Three papers on communications were presented by IEEE members of the 1978 delegation to the Popov Society Congress in Moscow in May. The IEEE delegation, led by George Jacobs, director of research and engineering of the Board for International Broadcasting, also toured research centers in Leningrad, Kiev, and Lvov during their two-week stay in the Soviet Union.

CHINESE ELECTRONICS SOCIETY VISIT

On May 5, a 12-man delegation from the Chinese Electronic Society (CES) of the People's Republic of China arrived in San Francisco, Calif., to begin a three-week stay in the U.S. Cities visited were San Francisco, Los Angeles, Washington, D.C., Boston, and New York. The delegation saw several universities, research centers, and industries, as well as many tourist sites. The itinerary was planned in conjunction with the TAB Transnational Relations Committee and IEEE host committees in all five cities. The visit of the CES completed the first phase of the mutual technical exchange between the CES and IEEE. More exchanges are in the offing.

ENGINEERING FOUNDATION GRANT

The Engineering Foundation Board has approved an award of $10 000, under the Engineering Foundation Research Initiation Grant, to C. Richard Johnson, Jr., of Virginia Polytechnic Institute and State University, and Joseph L. LoCicero of the Illinois Institute of Technology.

The grant will be available again next year (1979–80) and will be increased to $11 000. Guidelines and further application information will be published in the next issue of *EE*.

U.N. DEVELOPMENT CONFERENCE

As reported by Staff Director Neil Pundit at TAB's May meeting, the IEEE will participate in the 1979 U.N. Conference on Science and Technology for Development, to be held in Vienna, Austria. The IEEE is exploring ways in which it can aid in the goals of the Conference, particularly in the expanding of technical exchange programs with developing nations and the expediting of rapid information dissemination.

ELECTRICAL HISTORY FELLOWSHIP

The first IEEE Fellowship in Electrical History is to be awarded to Terry Kay Rockefeller, a history student at Johns Hopkins University. The Fellowship carries a stipend of $8500 for full-time graduate study and research during the 1978–79 academic year. Ms. Rockefeller, who received an M.A. degree in American history from Johns Hopkins in 1977, will undertake research on the political and social impacts of electric light and power in the state of New York between the two World Wars. She expects this research to lead to a doctorate in American history in 1979.

Contact: Jack Kinn

United States Activities Board

Joint Statement by the
Institute of Electrical and Electronics Engineers and
Electronic Industries Association to the
House Ways and Means Committee on the
Investment Incentive Act of 1978

Sent to the membership of the House Ways and Means Committee

Currently pending before the House Ways and Means Committee is H.R.12111, which would repeal the 1969 amendment to the U.S. Tax Code regarding capital gains tax and reinstate a reduced rate of taxation on capital gains which was in effect in 1969. The Institute of Electrical and Electronics Engineers (IEEE) and the Electronic Industries Association (EIA) jointly endorse this legislation and urge your support for it.

The Institute of Electrical and Electronics Engineers, founded in 1884, is the world's largest technical professional engineering society. One hundred and fifty thousand of our members reside in the United States. Our members are volunteers with expertise in the engineering aspects of power, energy, communications, transportation and biomedicine, as well as numerous related fields. The purposes of the Institute, as defined by its constitution, are scientific, educational, and professional. Historically the IEEE has promoted electrical engineering, electronics, and related fields. In 1973 the Institute established the United States Activities Board (USAB), a mechanism through which the IEEE provides its perspective on socioeconomic, political, and professional interests.

The Electronic Industries Association, organized in 1924, is a voluntary trade organization representing 285 U.S. electronic manufacturers of consumer, telecommunications, industrial, and government electronics products together with associated parts and services therefore. Gross 1977 domestic sales by the industry amounted to 45.9 billion dollars. The 1977 export sales by the industry amounted to 25 percent of the domestic total or 11.5 billion dollars. In 1977, the industry directly and indirectly employed 1.2 million American workers.

As you may know, in recent years the U.S. has been experiencing the loss of its technical leadership in the world marketplace due in part to the decline in research and development in this country. We have seen other nations outpace and virtually eliminate U.S. production of monochrome televisions and citizens-band radio equipment, as well as numerous other products of the electrotechnological sector of our economy. Most recently U.S. world leadership in computer science is being challenged, as our competitors establish government-funded academic and industrial consortiums to upgrade their products in competition with the United States. The IEEE and EIA are concerned that measures necessary to reverse these trends are not being taken.

A substantial growth of our country's technical achievements in the last twenty years have stemmed from the efforts of relatively small organizations often established to develop and market a new invention. Microcircuitry, the principal component used in computers and calculators, and laser technology are two examples of innovations originating from such small companies. The viability of these companies is highly related to their ability to attract investment capital so that they can transform the results of their research and development into commercial products.

As a result of the Tax Reform Acts of 1969 and 1976, the maximum tax on capital gains has doubled from 25 percent in 1969 to 49 percent today. This increased taxation on capital gains has resulted in a decrease in individual investors supporting new ventures directly or through the stock market, a major source of primary investment capital for these small, high technology organizations. A recent study

of the American Electronics Association documents that high technology firms established in the 1971 to 1975 period raised less capital per firm (in constant 1972 dollars) than any other time in the last twenty years. Such constraints on primary investment capital mean that companies must rely more heavily on foreign sources of capital or debt, rather than equity capital, further limiting the growth of the industrial sector on which the U.S. is dependent for high technology innovations. Foreign capital often implies transfer of know-how or technology to a foreign industry which ultimately competes with the U.S. in the export market. Not only do other major industrial nations tax capital gains at reduced rates, but our primary competitors in the high technology sector provide tax exempt individual capital gains from portfolio investments.

These circumstances have several adverse implications for the U.S. economy. First, as our production facilities can no longer remain competitive, we witness the elimination of badly needed employment opportunities, such as has occurred in the hi-fi, television, and citizens-band radio equipment industries. Secondly, as these industrial sectors within our economy remain viable, there is an increase in the dependency of the United States on foreign manufacturing facilities for the products we take for granted in our daily lives. This also affects our defense mobilization capability within the U.S.A. Thirdly, the posture of the nation's balance of trade has been inextricably linked to the level of technical sophistication of its exported manufactured products, since we cannot readily expand the export of raw material. As the world markets in these high technology fields are cornered by our foreign competitors, we become more dependent upon importing these technologically sophisticated products at the cost of our own ability to achieve and sustain a favorable balance of trade. A typical example is the video tape recorder. Accordingly, the drain of dollars impairs the health of our economy and the value of the dollar, promoting unemployment and inflation at home and undermining confidence in the United States abroad.

The Institute of Electrical and Electronics Engineers and the Electronic Industries Association jointly believe that the Investment Incentive Act of 1978 will do much toward alleviating these circumstances. The reduction in capital gains taxes for individuals to the 1969 rates of 25 percent maximum, will promote investment in small ventures and the stock market, both of which are leading sources of capital formation for small electronics corporations. Further, the reduction in capital gains taxes for corporations will better enable all companies to invest equity capital rather than debt capital, providing new incentives to update and expand their facilities. This in turn will increase productivity, reduce inflation, provide jobs and new equipment, and nurture the necessary innovation to facilitate U.S. competition in the world market of high technology products.

A recent study prepared by Michael K. Evans of Chase Econometric Associates, Inc., has outlined the specific positive effects of the provisions of H.R.12111. Were this legislation to be effective January 1, 1980, the rate of growth in constant-dollar GNP for 1980 to 1985 would increase from a 3.4 percent annual growth rate to 3.6 percent. It is estimated that this would provide an additional 440,000 jobs by 1985. Estimated expenditures for facilities would rise from 4.7 percent to 5.7 percent per year in constant prices. Further, while the tax revenue raised per capital gain dollar would decrease, increased investment promoted by reduced taxation should more than compensate lost revenues because of the expanded tax base.

Therefore, we strongly urge your support of this legislation as it comes before the House Ways and Means Committee for consideration. We would be most interested in discussing these issues with you further at your convenience and look forward to a favorable response from your office.

Sincerely,

Peter F. McClosky, President
Electronic Industries Association

Ivan A. Getting, President
Institute of Electrical and
Electronics Engineers

Contact: Emma White

Educational Activities Board

VIDEO TAPE SHORT COURSES

Offered for the first time by the IEEE, the video cassette series of engineering subjects is designed for showing to small groups of engineers in a learning situation. The Institute's Educational Activities Board feels that this program will be of especial interest to local Sections and Chapters for presentation of a series of educational courses to the membership. The program is applicable also to In-House scheduling.

FORMAT: Each course consists of five or more 3/4" color video cassettes averaging 30 minutes in length. Equipment required is any standard 3/4" video cassette playback unit and monitor. An accompanying study guide is essential for each student.

FEE: The cost for rental will include a workbook, if required by the course, for each participant. For example, rental of a 10-tape course with 20 attendees will cost about $500.00. The recommended textbook may be purchased separately from the publisher.

AVAILABILITY: The courses in the program are available on a first-come, first-serve RENTAL basis. A flexible schedule can be arranged to meet your requirements -- to offer the entire course as a complete package, or to spread out the lectures over a period of time. Although every effort will be made to meet the first-choice dates of each user, we ask that six weeks lead-time be allowed. To facilitate honoring all scheduled dates, we ask the cooperation of each user in returning each tape, or set of tapes, immediately after showing, and no later than one week.

GUARANTEE: The IEEE feels it is obligated to deliver first-quality tapes on a pre-arranged schedule. The user is requested to guarantee the return of the tapes promptly and to assume the full cost of reproduction if the material is damaged or lost. Users are cautioned that the taped material is copyrighted by the originator and must not be duplicated without prior permission.

The following courses will be available for programming your Fall sessions starting with September 1978 --

MANUFACTURING QUALITY CONTROL - Course No. VTC 90178

The Manufacturing Quality Control course presents the essentials of a modern quality control problem for a manufacturing company. Topics include control charts, acceptance sampling plans, specifications and tolerances, and product liability. The course is designed to be used either as an initial introduction to the fundamentals of manufacturing quality control or as a review of principal topics for those who have had some practical experiences with Q.C. or who wish instruction on the application of a particular quality control plan.

Lessons: Manufacturing Quality Control is presented in a set of 10 video cassette tapes by Associate Professor Sanford B. Thayer of the Mechanical Engineering Department, Colorado State Univeristy. Each lesson is 30 minutes in length and covers the subjects listed:

1 - Control Charts for Mean and Range
2 - Control Charts for Percent Defective
3 - Concepts of Acceptance Sampling Plans
4 - Dodge-Roming Sampling Plans
5 - Attribute Sampling (MIL-STD-1050)
6 - Variable Sampling (MIL-STD-414)
7 - Continuous Sampling Plans
8 - Vendor Certification and Rating
9 - Specifications and Tolerances
10- Product Liability

Study Guide: The color video cassettes are accompanied by a Study Guide containing reproductions of all the visual aids used in the lectures. Copies of the visual aids minimize the drudgery of notetaking and allow the viewer to concentrate his attention on the concepts. 150 pp.

The textbook for the course is Statistical Quality Control by Eugene L. Grant and Richard S. Leavenworth, McGraw-Hill, 1972.

ENGINEERING ECONOMY -- Course No. VTC 90278

Engineering Economy is concerned with the economic analysis of investment alternatives. Frequently there are several technically feasible alternatives which will satisfy the functional requirements of the task, but only one of these is the most economically attractive alternative. This subject presents the principles of analysis of investment alternatives.

Lessons: Engineering Economy is presented in a set of 10 video cassette tape lessons by Associate Professor Sanford B. Thayer of the Mechanical Engineering Department, Colorado State University. Averaging 25 minutes in length, the lessons are available in color video cassettes and cover the following subjects:

1 - Introduction
2 - Uniform Annual Cash Flow Method
3 - Breakeven Analysis
4 - Present Worth Method
5 - Rate of Return Method
6 - Benefit/Cost Method
7 - Cost-Effectiveness Method
8 - Effects of Income Taxes
9 - Replacement Studies
10- Source of Funds

Study Guide: A study guide of 10 chapters plus appendices accompanies the lectures. Each of the chapters corresponds to a lecture and includes a written exposition of the lecture topic, an example problem, copies of the visuals used in the lecture, and homework problems to be worked by the students. Appendices contain detailed solutions to the homework problems and interest tables. 250 pp.

The recommended textbook is Principles of Engineering Economy, by Eugene L. Grant and W. Grant Ireson, 5th Edition, 1970, Ronald-Press.

COOLING OF ELECTRONIC EQUIPMENT - Course No. VTC 90378

All electronic equipment needs cooling, whether it uses a few low power transistors or many high power tubes. In most equipment, the cooling design is as important as the electronic design itself. This is a practical course, designed for electronic engineers and covers all the important methods of cooling used in electronic equipment. Each of the lectures begins with an example of a typical electronic component cooled by the method being discussed. The necessary design formulas for making calculations with this method of cooling are then discussed. When auxiliary equipment is required, available equipment and their capabilities are discussed. Sample calculations of the cooling design of actual electronic equipment are then worked to illustrate the use of the design formulas and homework problems are assigned. The course concludes with a discussion of how to make thermal measurements in electronic equipment, and the most suitable measurement equipment is demonstrated.

Lessons: Cooling of Electronic Equipment is presented in a set of 6 one-hour video cassette tapes narrated by the author of the related textbook, Allan W. Scott. The lessons cover the following subjects:

1 - Conduction
2 - Radiation and Natural Convection
3 - Forced Air Cooling
4 - Forced Liquid Cooling
5 - Liquid Evaporation
6 - Heat Pipes

Study Guide: A workbook containing homework problems and solutions is required for each participant.

The recommended textbook for the course is Cooling Electronic Equipment, Allan W. Scott, John Wiley, 1974.

TO REQUEST SCHEDULING OF ANY OF THE PROGRAMS fill in the form below and mail to IEEE Headquarters.

IEEE
Educational Registrar
345 East 47th Street
New York, New York 10017

We are interested in offering the following course(s):

VTC 90178 Manufacturing Quality Control ☐
VTC 90278 Engineering Economy ☐
VTC 90378 Cooling of Electronic Equipment ☐
VTC 90478 Modern Control Theory-System Analysis ☐

Preferred Scheduling Date is: _____ 1st, _____ 2nd _____ 3rd choice.

We agree to reimburse the Institute the full cost of replacement of the tapes in case of loss or damage.

Name_____ Title_____

Organization_____

Address_____

_____
City State Zip Code

Telephone_____
Please Show Area Code

MODERN CONTROL THEORY -
SYSTEM ANALYSIS Course No. VTC 90478

Modern Control Theory is an engineering discipline which deals with specific analytical and algorithmic methods which can be used to control complex stochastic dynamic systems so as to optimize their performance. These tools have found wide applicability in aerospace and defense systems, industrial control systems, transportation, power and biological systems. In addition to the theory a set of computer subroutines has been developed to analyze an important class of practical problems and to design suitable control systems. The basic prerequisite for this course is a working knowledge of vectors and matrices and their operations as well as an exposure to the notion of eigenvalues and eigenvectors.

Lessons: Modern Control Theory-System Analysis consists of 11 color video cassettes developed by Michael Athans, Professor of Electrical Engineering and Computer Science at MIT and Director of the Electronic Systems Laboratory. Each lecture is 30 to 60 minutes in length. The following subjects are covered:

1 - Introduction to Optimal Control and Estimation Methods (1) and (2)
2 - The General Notion of the State of a Dynamical System
3 - Linear Continuous Time Dynamical Systems
4 - Dynamic Linearization for Continuous Time Systems
5 - Discrete-Time Dynamical Systems
6 - Linear Time Invariant Dynamical Systems
7 - The Relation of Transfer Functions and State Variable Representations
8 - From Transfer Functions to State Variable Representations
9 - Controllability and Observability
10 - Computer Routines for Linear System Analysis

Study Guide: Reproductions of Overhead transparencies, comments, readings, problems and problem solutions. One per student is required. 192 pp.

Recommended textbook is Optimal Control, M. Athans and P. L. Falb, McGraw-Hill, 1966. In addition it is recommended that each participant purchase an especially written manual of computer subroutines, 208 pp., and a Computer Card Deck consisting of punched cards in Fortran for implementing programs described in the Computer Manual.

AVERAGE PRICING SCHEDULE

Average cost for rental of the tapes and accompanying Study Guides will be approximately:

No. of Students	Total Cost
10	$350
15	$425
20	$500
25	$575
30	$655

OTHER VIDEO CASSETTE COURSES UNDER CONSIDERATION FOR FUTURE OFFERINGS ARE --

- Designing with Microprocessors
- Designing with the 6800
- Solar Energy
- Digital Communications

IEEE

Contact: Vincent Giardina

Continuing Education Services

1007-MICROPROCESSOR PROGRAMMING

A new intensive "hands on" Microprocessor course featuring a "take home" Microprocessor (Motorola MEK6800D2 Unit) and Power Supply. This course of study has been specifically designed for:

- Those who need to learn microprocessor systems and programming.
- Those who oversee development of microprocessor based systems and need better understanding.
- Programmers who want to learn how to program a microprocessor.

They will acquire state-of-the art information and specifically:

- How to use microprocessors as replacements for wired logic and as controllers.
- How to design systems involving microprocessors.
- How to program microprocessor in machine language and apply this knowledge to other systems.

The emphasis is "total immersion that will enable you to acquire much knowledge in a short period of time.

1012-INTEGRATED CIRCUITS

A one-to-five-day course (depending on the exact content desired) for those who intend to design or use IC's and wish to understand the strength and limitations as applied to chosen spectrum of circuit families and applications. It will provide an up-to-date survey of advances in solid state IC's tailored to your spectrum of design or application interests. You should obtain a practical understanding of what is achievable and a repertoire of circuit techniques compatible with the present state of the technology.

POWER

A bevy of courses designed to provide latest developments in Power.

POWER SYSTEMS PLANNING
covers topics of planning for long and medium term design and short operations.

POWER SYSTEMS INTERCONNECTIONS
covers organization of power pools, benefits of interconnection, analytical planning and operating studies.

POWER SYSTEMS RELAYING
Protective relaying fundamentals and analysis of simplest to most sophisticated relay systems.

PROTECTION & GROUNDING OF DISTRIBUTION SYSTEMS
covers fundamentals of system grounding and influence on system protection.

INTRODUCTION TO SOLID STATE
covers modern solid-state power switching devices and introduces electronic power converters and controls.

FUNDAMENTALS OF APPLICATIONS OF PROTECTIVE RELAYS
covers fundamentals of protective relay and reviews protection techniques and application.

PRACTICAL APPLICATIONS OF SYMMETRICAL COMPONENTS
a review and study course on practical applications.

TRANSIENT PHENOMENA in POWER SYSTEMS
provides a fundamental appreciation of transients, their analysis and corrective action.

1030-FIBER OPTICS

A course for communication planners that introduces them to the new Optical Waveguide Digital Communication technology via intuitive and non-mathematical notions.

1061-COMMUNICATION SATELLITE SYSTEMS

A two day course that provides a broad overview of space communications for those wishing to achieve a working knowledge of the field. It will cover state-of-the-art as well as future trends.

1014-INTRODUCTION TO APPLIED MAGNETISM

A well-designed two-or three-day course for those having interest in the practical application of concepts in the field of magnetism. The course will introduce applied magnetism and will help you understand the behavior of magnetic material and the operation of magnetic systems and devices.

1029-FUNDAMENTAL MECHANICS FOR ELECTRICAL APPLICATIONS ENGINEERS

This course has been designed for engineers involved in applications, manufacturing, design and research activites having a familiarity with motors and controls. The successful application of electric motors to industrial machinery requires much more knowledge of motor design and operating characteristics. The most important phase of the additional information required is a thorough knowledge of fundamental mechanics. This course will bridge the gap between fundamentals and practical applications.

1015-OSHA ELECTRICAL

This course is aimed at engineers who are responsible for electrical installations, their safety, maintenance, and operation. It deals with the Occupational Safety and Health Administrative (OSHA) Section of the U.S. Department of Labor and its interpretation of the National Electric Code (NEC).

HOME STUDY & VIDEO PROGRAMS

HS 9001–TECHNICALLY WRITE!

Have you ever wondered how you could transmit technical and business information more clearly, efficiently, and persuasively? If, like many engineers, you have difficulty in putting your thoughts into compelling action-provoking words there is now something you can do about it.

TECHNICALLY WRITE! is an all-new IEEE Home Study Course that offers an interaction between you and a professional instructor who appraises your work and sends you a practical critique.

Eleven broad topic packages of instruction are included, that, on the average, can be completed in 3 1/2 months. You will learn exactly where the difference lies between ignored, misinterpreted, or on-target communications, including occurrence reports, field trip reports, letter writing, job descriptions, resumes, technical paper presentations and many others.

HS 9002–PROJECT LEARN

This speed learning self-instructional reading program consists of 4 cassettes, 3 workbooks, and 5 paperbacks, all of which are geared to develop more efficient reading-learning skills.

The course approaches reading as a thinking process (as opposed to the so-called speed reading techniques which espouses eye-movement, muscle exercises) and utilizes a seven-step, skill-building process which builds comprehension, retention and speed.

HS 9003–CDC PLATO® SYSTEMS

A multi-media computer based educational system, the CDC PLATO management courses are a version of the PLATO RESEARCH SYSTEM developed at the Computer-based Education Research Laboratory, University of Illinois (CERL).

A. **HS 9003.1–FINANCIAL MANAGEMENT**

1. Accounting Fundamentals-to help identify manager financial responsibilities.
2. Cost Analysis & Reporting-understanding its elements, concepts, and techniques.
3. Planning and Budget Control-for managers involved with various financial levels.
4. Financial Analysis-to help you understand financial analysis techniques.

B. **HS 9003.2–PROBLEMS ANALYSIS AND DECISION MAKING** for managers desiring to learn how to analyze operational problems.

HS 9004–CREATIVE LIFE/WORK PLANNING

A course specifically designed to help you develop goals and to find ways to reach those goals. It emphasizes principles and techniques on how to: collect information about yourself: go out and meet people; "improve your odds" with analysis of information collected and proceed toward goal.

NEW IEEE

VIDEO-TAPE SHORT COURSES

Schedule NOW for these courses to be available to groups beginning September 1978: 1. Designing With Microprocessors; 2. Modern Control Theory—Systems Analysis; 3. Heating & Cooling of Electrical Equipment; 4. Engineering Economics; 5. Manufacturing Quality Control.

Courses feature outstanding instructors on industrial-type 3/4 in. video cassettes supplied by IEEE on a rental basis. Duration varies between 6 and 16 hours and fee includes a course workbook for each student.

These are excellent courses in a modern format—ideal for IEEE Sections, Chapters, and in-plant presentation. Prepare now. Contact IEEE today.

Continuing Education Service

We recommend, as a first step, that you select the programs that will interest your members. Then, complete the application below and mail it to Vincent J. Giardina, 445 Hoes Lane, Piscataway, New Jersey 08854. He will provide you with the assistance you need.

☐ I am interested in scheduling the following short course:

_____

☐ I would like to introduce the following Home Study Program in my Section:

_____

☐ I am interested in renting a Video Cassettee Course. Please send information to:

NAME_____ ADDRESS_____

CITY_____ STATE_____ ZIP_____

RAB NEWS

GOALS OF RAB

The Priorities and Planning Committee, at RAB's May 20 meeting, outlined the following key goals of RAB: (1) to expand IEEE membership worldwide; (2) to increase membership involvement and awareness; (3) to emphasize international development for growth; (4) to improve Region and local organization and communication; (5) to promote Senior-Member and Fellow-grade membership.

The Committee views IEEE's geographic units as marketing mechanisms that assess and identify the needs of members, then develop and deliver programs and activities to satisfy those needs. The Committee will be making recommendations on how RAB can be of assistance to all units in meeting RAB's key goals.

MEMBERSHIP INVOLVEMENT IDEAS

The *Ad Hoc* Committee on Membership Involvement, chaired by Region 6 Director John Thatcher, is seeking good ideas on the ways individual Sections, Chapters, Councils, and Branches can get the membership involved in IEEE programs and activities. Send ideas to Field Services Director Robert Asdal at Headquarters.

MEMBERSHIP SALE DAYS

The next two months represent opportunities to bring friends and associates into IEEE at 50 percent of regular dues. Members applying after September 1 pay full dues for membership through December 31, 1979. Applications are available from local Membership Development Chairmen or from Mark Lucas at Headquarters.

GUIDE BOOK AVAILABLE

The Field Service Department has made available a new *Guide to Field Services,* which describes Headquarter's services to the geographic units. The guide is designed for officers and is used primarily in Region/Area workshops. It can be obtained upon request from Robert Asdal at Headquarters.

NEW SECTIONS

IEEE Sections have now been established in 48 countries, contributing to the growth and expanding worldwide preeminence of the Institute. As of June 1, 1978, the total number of Sections was 234, and the total number of Chapters in all Sections was 538.

GEOGRAPHIC STRUCTURE

The RAB *Ad Hoc* Committee on Councils is developing proposals on how Councils relate to the overall structure of existing geographic units. Three forms of Councils currently exist: metropolitan, statewide, and country-wide. The Committee is also trying to create clear definitions that describe the existing units, and to make organizational and operational recommendations to RAB that will contribute to IEEE's effectiveness in serving its members.

MID-YEAR OFFICERS

As a reminder, Sections changing officers in the May–July period should report names to the Field Services Department on Standard Forms L4, L5, and L6, within 20 days of elections. For further information, contact Robert Asdal at Headquarters.

STUDENT NEWS

To increase participation in the student paper contests, thanks to IEEE Life Members, the Student Services Department will create a special promotional program to begin this fall. The Life Member Fund Committee, at its May meeting, provided $2500 to support this promotional program designed to get more students involved.

On the theme of Branch planning, officers and counselors should note: October 15 is the deadline for receipt of Annual Plans; November 15 is the deadline for receipt of Bendix proposals. Promotional material for all Branches will be mailed in August, so that an active promotional campaign can be planned to begin at fall registration. For help, write to Richard Aseltine, Manager of Student Services, at Headquarters.

The Student Activities Committee wants volunteers who have a particular interest in helping the IEEE Student Program. If you or a colleague are interested, write to Richard Aseltine at Headquarters, and an information package will be sent.

At RAB's May meeting in Boston, Region 3 Student Representatives Julie Ellis articulated the professional needs of students. She reported that among engineering students professional awareness is low. They need information on factors related to first-job possibilities as well as on professional responsibilities of engineers. A strong need is also felt for more Student Branch/Section interaction. Julie Ellis' report related to a SAC proposal, now under study, for increasing the professional awareness of students.

PUB NEWS

IEEE PRESS

The IEEE Press has announced the publication of *Reflector Antennas*, edited by A. W. Love. This 440-page book containing 65 reprinted papers brings together the most important and most referenced journal literature on reflector technology spanning a number of years. It will be a valuable companion to the 1976 IEEE Press book, *Electromagnetic Horn Antennas*, also edited by A. W. Love. Sponsored by the Antennas and Propagation Society, the volume is priced at $14.95 for the paperbound member editon, $29.95 clothbound ($22.45 for members). It can be ordered postpaid from the IEEE Service Center, 445 Hoes Lane, Piscataway, N.J. 08854.

SPECTRUM

Technological innovation, R&D funding, engineers' jobs—these will be the topics of a special October issue of *Spectrum* devoted to productivity. Many engineers and scientists are concerned about what they see as a decline in U.S. productivity in relation to that of Japan and certain of the European nations. The fear is that jobs are being, or will be, lost if the trend continues. *Spectrum*'s task will be to probe such concerns, identifying the factors that appear to affect productivity, from Government regulation and funding of research, to the policies and attitudes of the corporate sector, to the matter of human motivation. Turning to expert authors, *Spectrum* will also canvass the electrical/Electronics industries to determine how technologies such as robotics and batch processing can improve productivity.

Fifty-seven hundred contestants have entered *Spectrum*'s "Amazing Micro-Mouse Maze Contest," and judging from the questions and correspondence from entrants, a great number are serious contenders. The contest maze to date has been kept under tight security. It will be unveiled for the first trial runs, slated for broadcast on KNXTV, Los Angeles, during the National Computer Conference at Disneyland Hotel in California this month. Plans now call for additional preliminary runs around the country to accommodate the unexpectedly large number of contestants.

COMPUTER MAILINGS

It is important for all of the Institute's volunteer management units, no matter how small, to supply prompt notification of changes of officers, or changes of address, to their respective staff representatives at Headquarters. Changes can then be swiftly funneled into the computer mailing system. This is the only way to ensure that officers will receive all appropriate mailings, and thus keep abreast of information vital to the performance of their functions.

IDEA CORNER

Electrical Engineering readers have suggested that *EE* run a series of short articles on campaigns that have created effective local conferences, workshops, meetings, or other member-oriented activities. The idea is to share techniques learned at the local level. Articles would describe strategies, ideas, and plans that have been enthusiastically received by members. Information helpful to the creation of this series is eagerly requested by the Editor of *Electrical Engineering* at Headquarters.

CONFERENCE RECORDS ON MICROFICHE

The various IEEE Groups, Societies, and Councils publish approxmately 150 conference records each year. Henceforth, all records will be available on microfiche at the same price listed for the printed editions. The microfiche records are mailed first class; this assures prompter delivery than for printed copies, which are mailed at book rate. Conference records, in printed or microfiche editions, may be ordered from the IEEE Service Center, 445 Hoes Lane, Piscataway, N.J. 08854.

NATIONAL INVENTORS HALL OF FAME

Nominations for the National Inventors Hall of Fame will be accepted until August 1. The Hall of Fame was established in 1973, with Thomas Edison the first inventor honored. Among other members are Goodyear, Fermie, De Forest, Morse, Pasteur, and Tesla. Nomination forms may be obtained from J. Ralph King, National Inventors Hall of Fame, Suite 201, Building 1, 20001 Jefferson Davis Highway, Arlington, Va. 22202.

IEEE's impressive 50-foot information center at ELECTRO '78 in Boston attracted hundred of show attendees. Samples of all IEEE publications were on display along with take-home literature describing each IEEE product and service. Headquarters personnel on hand to answer questions and enroll new members were (left to right): Hendrik V. Prins, J. Dudley Broderick, Renee N. Panero, Francis X. Timmons, and Mark M. Lucas.

CHAPTER/SECTION NEWS

The Industry Applications Chapter of the Miami Section was established.

The Madras Section of the All-India Council was formed.

The Acoustics, Speech and Signal Processing Chapter of the Florida West Coast Section was established.

The Joint Power Engineering/Industry Applications Chapter of the Oklahoma City Section was formed.

The Joint Chapter of the Industry Applications/Engineering Management Societies in the Spokane Section was established.

The Pike's Peak Subsection of the Denver Section was elevated to the status of Pike's Peak Section.

The Karachi Subsection of the Pakistan Section was established.

The Malaysia Section was established.

The Reliability Chapter of the Syracuse Section was dissolved.

The Communications Chapter of the Germany (West) Section was dissolved.