

# There are at least 100 good reasons for attending Electro/77.

## Here are just ten of them.

**1** Electro puts the new electronics all together for you, at one time, in one place. (You can see *all* the new logic analyzers in action in the same afternoon, for example.)

**2** Electro presents a tough, realistic professional program "live"—and backs it up with full manuscript preprints and audio tapes, both available on-the-spot at the convention.

**3** Electro departmentalizes 550 exhibits by product category. You don't have to hunt-and-peck for the companies you want to see—nine times out of ten, you'll find them side-by-side in the same "department."

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**5** Electro takes you out of line and into the action quickly, with a computerized registration system that gives you an embossed plastic "credit card" for requesting technical information on the show floor.

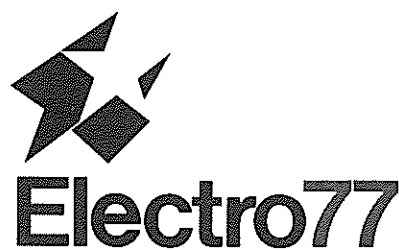
**6** Electro presents the 20 best new technical films available anywhere, shown every day in our Film Theater at no charge.

**7** When you ask questions about a new system at Electro, your answer comes from engineers who helped design the system, and who are there to discuss the performance capabilities with you.

**8** Electro is a show and convention system that aims to serve the working engineer-visitor—from the pre-published manuscripts to the cross-referenced directory, to the carpeted aisles. Electro is a non-profit presentation of regional elements of IEEE and ERA, and its only business is to promulgate the exchange of software and hardware information.

**9** Your Electro/77 registration card gives you a credential for the entire show and convention—all the exhibits, all the sessions, all the films, for all three days of Electro. IEEE members register for \$6; non-members for \$9. No extra charges or add-ons.

**10** With 27 hours of live product demonstration, 100 hours of good technical programming, and 18 hours of new technical motion pictures, Electro is your best information-transfer vehicle of the year in the eastern United States. Electro/77: The International Electronics Convention in New York.



New York Coliseum/Hotel Americana  
April 19-21, 1977

Sponsors: METSAC Sections, and the Central New England Council, Region I, IEEE; New York and New England Chapters, ERA.

Produced by Electrical and Electronics Exhibitions Inc., a non-profit corporation.

Further information: Electro/77, 999 North Sepulveda Boulevard, El Segundo, CA 90245 Telephone: (213)772-2965



The IEEE

# Newsletter

PUBLICATION OF THE NORTH JERSEY SECTION OF THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

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Deadline for receipt of material is the 1st of the month preceding the month of publication. All communications concerning editorial matter should be addressed to: Ray Vaccari, Editor, 236 Summit Road, Mountain-side, N. J. 07092. All communications concerning business matters, including advertising, should be addressed to: The Newsletter, c/o Girard Associates, Inc., 399 Howard Boulevard, Mt. Arlington, N. J. 07856.

Subscription: \$0.75 per year through dues for members; \$1.50 per year for non-members.

REPORT ALL ADDRESS CHANGES TO:  
IEEE Service Center  
445 Hoes Lane  
Piscataway, N. J. 08854  
(201) 981-0060

It is not necessary to inform the North Jersey Section when you change your mailing address. The NEWSLETTER and other section mailings use a list provided by IEEE's national headquarters in New York. This means the Section has no need to maintain a mailing list or addressing plates. Section membership records are changed when Headquarters notifies us.

#### SECTION OFFICERS

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Vice Chairman . . . . . Donald G. Bathke  
Treasurer . . . . . Ken Oexle  
Secretary . . . . . Alan H. Stolpen  
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Member-At-Large . . . . . Alex McPhee  
Member-At-Large . . . . . Jerry Uhrig  
Jr. Past Chairman . . . . . Robert E. McMillan

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at Mount Arlington, N. J.

### Activities Reminder: Clip To Calendar

March 9 — Socio-Econ. Exec. Comm. Meet 7:30 PM, ITT; Nutley  
March 16 — Materials Evaluation  
March 16 — High Density Bubble Devices  
March 24 — Communications Transmission Seminar  
March 30 — Earth Station Tour  
March 31 — Rossoff Addresses Socio-Econ Meeting  
April 5 — NJ PES Past Chairman Dinner  
April 18 — One Day Microprocessor Seminar  
April 19-21 — Electro '77  
April 21 — Microwave Ferrites

### Earth Station Tour

The N. J. Section Communication Society is planning a tour of the Western Union Glenwood Satellite Earth Station. The earth station is one of five W.U. earth stations which are used to access the W.U. Westar Communication Satellites. There will be a limited number of people allowed on the tour; to make reservations and get directions call either A. N. Favorito at (201) 529-6422 or H. Mills at (201) 529-6429.

Time: 8 PM, Wednesday, March 30, 1977.

Place: Western Union Glenwood Earth Station, Vernon, N.J.

you a credential for the entire show and convention—all the exhibits, all the professional sessions, all the films, for all three days of Electro, April 19-21, 1977.

Electro will be held in the New York Coliseum and Hotel Americana, N.Y.C. Sponsored by the METSAC Sections, and the Central New England Council, Region I, IEEE, and the New York and New England Chapters, ERA, Electro is the merger of the former IEEE Intercon and NEREM. It was held for the first time in Boston in May 1976, and will be held alternately in Boston and New York.

### FREE Electro Tickets To All Section Members

The North Jersey Section of the IEEE is providing FREE TICKETS TO ELECTRO to all its members.

Inserted in this issue of *The Newsletter*, you will find a pink prepaid registration card. Just fill in your name, address, company affiliation, and area of interest, and drop the card in a mailbox. Even the postage is prepaid.

To receive your Electro badge in advance, mail the prepaid registration form before March 21. Or, you may bring your completed card to the typist in the registration area during Electro. Either way, you get in free.

Your Electro registration card gives

### North Jersey IEEE Meeting: Microwave Ferrites

The North Jersey MTT/AP chapter will host a discussion on Microwave Ferrites & Applications by Dr. John Pippin, of Electro-magnetic Sciences, Atlanta, Ga. This fifth meeting of the MTT/AP chapter will be held on April 21, 1977 at 8 PM in the ITT auditorium, Nutley, N.J.

For further information, contact E.W. Niemiec, ITT DCD, Nutley, at (201) 284-2323 or (201) 239-4389 (home).

Time: 8 PM, Thursday, April 21, 1977.

Place: ITT auditorium, 500 Washington Ave., Nutley, N.J. 07110.

Pre-Meeting Dinner: 6 PM, Ramada Inn, Rt. 3, Clifton, N.J. (eastbound).

North Jersey IEEE Meeting:  
Rossoff To Address

The Socio Economic Committee of the North Jersey Section is proud to present Arthur L. Rossoff as the guest speaker at its March 31 meeting. Employed at Polytechnic Institute of New York, he is presently serving as IEEE Region I Director.

Mr. Rossoff earned his B.E.E. from City College of New York in 1943 and his M.E.E. from Polytechnic Institute of Brooklyn in 1947, where he also was employed in microwave research. His principal subsequent experience was with

the General Instrument Co., where he rose from project engineer in 1950, to chief engineer, to Director of the Advanced Development Laboratory, to Vice President and Director of Marketing of its Electronic Systems Division. During that period, he pioneered in transistor development and authored a widely used text, "Transistor Electronics," for which contributions he was awarded the Fellow grade. He joined Grumman Aerospace, where he was staff to the engineering director of the Lunar Module program. In 1972 he was awarded the New York State Professional Engineer's license by "eminence." He has recently

One-Day Seminar On  
Microprocessors

An all-day seminar on microprocessor technology and applications will be held on Monday, April 18, 1977, from 9AM to 5 PM at the N.Y. Hilton Hotel.

This seminar will provide a tutorial on currently available microprocessor devices and system design concepts used to develop a viable computer system. Hardware and software aspects of microprocessor systems design will be presented from both conceptual and practical viewpoints. Emphasis will be on hardware/software interaction.

Topics which will be covered include: (1) CHIP architecture, (2) Interfacing (bus structure), (3) Parallel microprocessor systems, (4) Software aids and systems, and (5) Programming considerations.

-----  
Mr. John Vitale  
Port Authority of NY  
1 World Trade Center  
Room 62W  
New York, N.Y. 10048

Enclosed is my check ☐ Money Order ☐

for \$\_\_\_\_\_, for Microprocessor seminar April 18, 1977.

Name \_\_\_\_\_

Home Address \_\_\_\_\_

Firm \_\_\_\_\_

Business Address \_\_\_\_\_

Phone No. \_\_\_\_\_ IEEE No. \_\_\_\_\_

Make checks payable to: Power Society, NY Section, IEEE.  
For more information Call: Mr. Kurt Herzog at (212) 466-4203.

The lectures are designed to give a broad insight into the concepts and trade-offs that dominate current micro-computer design.

Registration fee is: (in advance) \$100 for IEEE members and \$125 for others; (at the door) \$120 for members and \$150 for others.

Speakers will include:  
Mel Morris, Application Mgr. — Intersil;  
Dr. Lee Wu, Application Mgr. — Rockwell;  
Richard Fabri, Application Eng. — Signetics;  
Ron Davidson, Application Eng. — Natl. Semi-Conductor;  
Jay Rogoff, Application Eng. — AMI;  
Jan LeNier, Application Eng. — Motorola;  
Dennis Block, Application Eng. — RCA;  
Mel Kutzin, Dir. of Micro Proc. — Schweber;  
Jay Berman, Application Eng. — Schweber;  
and Bob Glassman, Application Eng. — Schweber.

devoted himself to the professional interests of engineers through committee activities in IEEE, AIAA and NSPE.

IEEE Activities (S'42-A'44-SM'54-F'71)—Committees: Professional Activities, 1972; United States Activities Board, 1974-75; USAC/PAC Coordinating Chairman, 1974; USAB Ethics and Employment Practices, 1972-75, Chairman, 1975; USAB Government Relations, 1974; USAB Professional Opportunities for Senior Engineers, Chairman, 1974. Councils: Metropolitan Sections Advisory Council, 1971-73. Sections: Long Island: Chairman, 1970-71, Vice Chairman, 1969-70, Secretary, 1968-69, Program Chairman, 1967-68, Student Activities Chairman, 1966-67. Representative: Inter-Society Committee on Professional Employment Guidelines, Liaison. 1972-75.

His vast experience in IEEE matters makes him an authority on the organization and operation of the IEEE. His discussion on this subject should be very informative.

Time: 7:30 PM, Thursday, March 31, 1977.  
Place: ITT Conference Center, 500 Washington Ave., Nutley, N. J.  
Socio-Economic Committee Meetings are held on the 2nd Wednesday of each month at the above address.

Prospective Slate Of  
Officers For 1977-78

The following nominations are submitted by the Nominations Committee for North Jersey IEEE officers for next year—this does not preclude additional petition nominations signed by not fewer than 25 voting members of the North Jersey Section of IEEE and an accompanying certification that the nominee will serve if elected. Deadline for such nominations is April 7, 1977. (Kindly also include a resume.)

For the office of:  
Chairman: Frank Gialanella  
Vice Chairman-1: Don Bathke  
Vice Chairman-2: Ken Oexle  
Treasurer: Alan H. Stolpen  
Secretary: Alex McPhee\*

For three Member-at-Large positions (alphabetically listed):  
Alex T. Brown\*  
Sid Markowitz  
Frank Relotto  
Jerome L. Uhrig\*

\*Currently Members-at-large.

North Jersey IEEE Meeting:  
Materials Evaluation

A joint meeting of the North Jersey IEEE Reliability Group and the American Society of Quality Control will be held on March 16, 1977, at the ITT Avionics auditorium. The meeting topic will be "The Use of Materials Evaluation Laboratory Services in a Manufacturing Environment."

Speakers will be Mr. Anthony J. Marino and Mr. John Carlatto. Mr. Marino has a B.S. in chemistry and physics from Muhlenberg College, Allentown, Pa., M.S. in metalurgy from Stevens Institute of Technology, and M.S., ceramics engineering, from Rutgers University. He is presently working on his Ph.D. thesis in ceramics engineering. He is manager of the Materials Evaluation Lab. at ITT Avionics. Mr. Carlatto holds a B.S., chemistry, from American International College, Springfield, Mass., M.S., organic chemistry, from Fordham University, and M.B.A. from Rutgers. He is a senior member of the ITT technical staff.

Time: 7:30 PM, Wednesday, March 16, 1977.  
Place: ITT Avionics Div. (auditorium), 500 Washington Ave., Nutley, N.J.

North Jersey IEEE Meeting:  
NJ PES Holds 5th Annual  
Past Chairman Dinner

The North Jersey Section of the Power Engineering Society will hold its Fifth Annual Past Chairman's Dinner on April 5, 1977. Mr. Robert Weiner, administrative hearing officer for the N.J. Division of Consumer Affairs, will be the guest speaker.

Mr. Weiner was formerly bureau chief of the Office of Consumer Protection. He is a counsellor at law of N.J. and was in private practice for many years. He has also served as a senior trial attorney for the federal government.

He has been adviser to the N.J. Legislature on Consumer Affairs and has been instrumental in the drafting of current regulations pertaining to advertising, warranties and guarantees, prevention of deceptive practices, and many other precedent laws currently in use in N.J.

Mr. Weiner will discuss the organizational structure of the Division of

Consumer Affairs and comment on several antidotes concerning consumer complaints.

The meeting will be held at the Rock Spring Inn on 481 Northfield Ave., in West Orange, N.J. The cocktail hour will begin at 6 PM followed by the dinner at 6:30. The cost will be \$5.50 each.

Tickets can be obtained from Anne Giedlinski, chairman, 366-1100; John Langenfeld, vice-chairman, 753-1100; or Sy Salowe, program chairman, 465-2938.

Time: 6 PM, Tuesday, April 5, 1977.  
Place: Rock Spring Inn, 481 Northfield Ave., West Orange, N.J.

High Density  
Bubble Devices

A meeting of the Magnetics Chapter of the Princeton Section of the IEEE will be held at 8:15 PM on Wednesday, March 16, 1977, in the Auditorium of the Administration Bldg. of the Allied Chemical Corp., Columbia Rd. and Park Ave., Morristown, N.J. The pre-meeting dinner will be at the Wedgewood Inn, 217 South St. in Morristown at 6 PM, with arrival at 5:30 PM for the bar.

At the meeting, Dr. Mark H. Kryder of the IBM Watson Research Center will give a talk titled "Approaches to High Density Bubble Devices."

Communications  
Transmission Seminar

The third annual Communications Transmission Seminar will be held March 24, 1977 at Princeton University. The theme for this year's Seminar is "Digital Transmission and Switching Techniques."

Supporting this theme, the following topics will be discussed by eminently qualified speakers: Digital Switching for Telephony, Digital Satellite Transmission, Applications of Microprocessors to Digital Data Switching, Hybrid Circuit and Packet Switching and Transmission, Maintenance Aspects of Digital Lines and Terminals, Low Bit-Rate Speech Transmission, and Fiber Optics Transmission.

This one-day seminar is sponsored by the New Technical and Scientific Activities Committee (New York Section IEEE), IEEE Communications Society (Jersey Coast Chapter), Princeton Section IEEE and Princeton University.

For further information contact: D. G.

Messerschmitt, Seminar Chairman, at 949-2310, B. D. DeMarinis, Program Committee, at (201) 747-9393.

Microprocessor  
Short Course Set

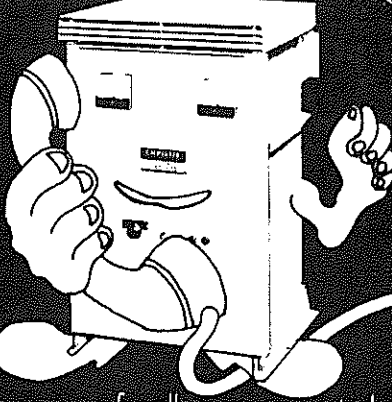
The New York, North Jersey, and Long Island Joint Chapter Instrumentation and Measurements is sponsoring a two day tutorial short course on microprocessors on May 13 and 14, 1977 (Friday and Saturday), from 9 AM to 4:30 PM, at the Holiday Inn in Parsippany at the junction of Rts. 46 and 80.

The Seminar is being offered to introduce engineers, engineering management and students, involved in logic and digital design, to the intricate and flourishing field of microprocessors.

Registration for IEEE members is \$105, non-members \$140 and students \$50, and includes coffee breaks and lunches. Further information can be obtained from Mr. Ted Barabutes at (201) 465-2293, or Mr. Dave Roberts at (212) 422-4800, ext. 8224.

Time: 9 AM to 4:30 PM, Friday and Saturday, May 13-14, 1977.  
Place: Holiday Inn, Rts. 46 and 80, Parsippany, N. J.

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Special Course  
ONE DAY TUTORIAL ON  
COMPUTER NETWORKS

SATURDAY, June 4, 1977, 9:00 A.M. to 4:30 P.M.  
Ramada Inn  
Rochelle Park, New Jersey

**FOR WHOM INTENDED:** For systems analysts, engineers, engineering managers and others who need a better understanding of the operation, utilization and management of contemporary computer networks including problems associated with planning, procuring, designing and operating such networks.

**COURSE OBJECTIVE:** Today's computer communications networks facilitate computer-to-computer and terminal-to-computer communications on a scale previously impossible. While many networks are already fully operational, extensive continuing research and development activities are underway that promise even greater efficiencies and capabilities. The interconnection of dispersed data processing centers and other locations requiring such services, through computer networks, opens new opportunities but also poses difficult problems for designers and managers.

This course provides a user-oriented introduction to computer networks. Knowledge of such networking issues as topological design alternatives, common carrier communications services, value-added networks, hardware and software networking technology, cost factors, regulatory issues and network administrative practices will enable the participant to make intelligent decisions concerning the value of different network approaches.

**COURSE INSTRUCTOR:** Dr. Marshall Abrams, National Bureau of Standards

**COURSE OUTLINE**

- (1) **INTRODUCTION**—The topic of computer networks is introduced by first examining common networks. Different types of computer networks are then discussed, from the point of view of the different components and different configurations employed.
- (2) **NETWORK UTILIZATION**—Networks are used in a variety of ways and for a variety of applications. The discussion will focus on the range of benefits to be gained from the use of networks. Problems to be faced with the use of networks are also introduced.
- (3) **BASIC COMMUNICATIONS**—A brief review of the basics of data communications is presented, including discussion of circuits, modulation and modems, terminals, multiplexors and concentrators, and communications control software. This material is one of the basic building blocks for computer networks.
- (4) **NETWORK TECHNOLOGY**—Network technology is organized into four main areas: computing, switching, routing and control. These concepts are explained and illustrated with reference to actual networks. Alternatives are evaluated, and some guidelines provided for selecting the best approach to particular problems.
- (5) **REGULATION**—Networks are partially regulated and partially not. The current situation is explained, and user alternatives are discussed.
- (6) **NETWORK MANAGEMENT**—Networks pose more severe managerial problems than most types of computing systems.
- (7) **FUTURE DEVELOPMENTS**—Some trends in the future development and of computer networks are explored.

**FOR ADDITIONAL INFORMATION,** call or write Gary Golinski, Chairman Education Comm., North Jersey IEEE, 155 Ridge St., Newark, New Jersey 07104; (201) 484-3500.

**REGISTRATION FORM**

Mail to: Mrs. K. Doktorski, IEEE, 445 Hoes Lane, Piscataway, N.J. 08854  
Make checks payable to IEEE.

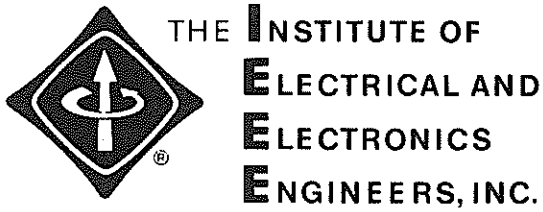
Please enroll me in SPECIAL COURSE: ONE DAY TUTORIAL ON COMPUTER NETWORKS.

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Address: \_\_\_\_\_ City, State, ZIP: \_\_\_\_\_

Phone: \_\_\_\_\_

Fee: \$65.00 IEEE Members; (\$60.00 course fee & \$5.00 for lunch)  
\$85.00 Non-IEEE Members; (\$80.00 course fee & \$5.00 for lunch)



NORTH JERSEY  
IEEE  
EDUCATIONAL PROGRAM  
SPRING 1977

Study Group No. 1  
MICROPROCESSORS AND MICROCOMPUTERS

Study Group No. 2  
ELECTRICAL DESIGN FOR  
WATER AND SEWAGE TREATMENT FACILITIES

Special Course  
ONE DAY TUTORIAL ON  
COMPUTER NETWORKS

**TAX DEDUCTION FOR EDUCATIONAL EXPENSES**

Treasury regulations 1.162-5 permits an income tax deduction for educational expenses (registration fees and cost of travel, meals and lodging) undertaken to: (1) maintain or improve skills required in one's employment or other trade or business, or (2) meet express requirements of an employer or a law imposed as a condition to retention of employment, job status or rate of compensation.

Study Group No. 1  
MICROPROCESSORS AND MICROCOMPUTERS

TUESDAYS, 7:00 P.M. to 9:00 P.M., Starting March 29, 1977  
I.T.T. Avionics Auditorium (at foot of tower)  
500 Washington Avenue  
Nutley, New Jersey 07110  
Group Sponsor: Gerry Koch, Solar, 201-944-1667  
Richard Padget, Westinghouse, 201-465-2512

Speaker: Mr. Frank Relotto, GTE Sylvania  
For Whom Intended: The practicing engineer who wants to acquire or increase understanding of micros.  
Course Objective: Microprocessor hardware and software will be taught with the aid of working microcomputer development systems for hands on experience. Through the use of working machines the student has the opportunity to observe how hard-ware and software integrate into a complete system. Laboratory sessions are included to give the student a chance to try his hands at programming a microprocessor. A text is included to supplement lectures. Previous knowledge of micros and pro-gramming, although helpful, is not necessary.

(1) March 29—INTRODUCTION & DEMONSTRATIONS—What is a Microprocessor, history, buzzwords, number systems. We will be disassembling a working system and discussing the hardware parts.  
(2) April 5—COMPUTER ARITHMETIC—Decimal, binary, octal, and hexadecimal number systems. Binary arithmetic and boolean algebra will be discussed.  
(3) April 12—DISCUSSION ON MICROPROCESSOR MEMORY—Memory and memory organization, memory addressing, static and dynamic memory uses, words, bytes, character and instruction codes.  
(4) April 19—HARDWARE CONSIDERATIONS ON THE MICROPROCESSOR—Interfacing the micro to memory, clocks, power requirements, registers, status flags, ALU operation.  
(5) April 26—LOGIC BEYOND THE CPU—Instruction timing, ROM's, PROMS, RAM's, DMA, Real Time  
(6) May 3—LOGIC BEYOND THE CPU (cont.)—I/O—Parallel I/O, serial I/O, Synchronous and Asynchronous data transfer, parity, start-stop bits, baud rates, terminals, modems, differences between RS232, TTL, TTY interfacing.  
(7) May 10—PROGRAMMING THE MICROPROCESSOR—Flow charting, object programs, monitors, text editors, assemblers, high level languages for the microcomputer.  
(8) May 17—ADDRESSING THE MICROCOMPUTER—Memory addressing, implied addressing, direct addressing, the use of the stack.  
(9) May 24—PROGRAMMING-LAB SESSION—Three operating computers will be available—each varying in complexity. (1) Basic unit with operators panel and 1K of memory; (2) Unit with monitor on ROM and text editor and assembler in RAM. This machine has 16K of usable memory. CRT terminal will be used for programming; (3) Microcomputer with floppy disc operating system. Unit has all the above plus OEM Basic hi-level language at instant call. CRT used for programming.  
(10) May 31—LAB SESSION—With computers as described above.

REGISTRATION FORM

Mail to: Gary Golinski, Bussmann Mfr., 501 Doremus Ave., Glen Rock, N.J. 07452  
Make checks payable to "North Jersey IEEE"

Please enroll me in MICROPROCESSORS AND MICROCOMPUTERS

Name: \_\_\_\_\_ Company: \_\_\_\_\_  
Address: \_\_\_\_\_ City, State, ZIP: \_\_\_\_\_  
Phone: \_\_\_\_\_

Fee: \$60.00 IEEE Members \$70.00 Non-IEEE Members

Study Group No. 2  
ELECTRICAL DESIGN FOR  
WATER AND SEWAGE TREATMENT FACILITIES

WEDNESDAYS, Starting April 6, 1977, 7:00 to 9:00 P.M.  
Jersey Central Power & Light  
Madison Ave. & Punchbowl Road  
Morristown, New Jersey 07960  
Group Sponsor: John Domorski, Automatic Switch Co., 201-966-2456  
David Kazin, S. E. Design, 201-589-8030

This course is intended to acquaint the design Engineers and Contractors in the design of Treatment Facilities.

- (1) April 6—INTRODUCTION—Basic process design in conjunction with Environmental Protection Agency requirements (and design criteria for) these plants.  
(2) April 13—POWER DISTRIBUTION—Two sessions will cover switchgear and switchboard design. They will also cover a selection of cable sizes and insulation. Design Criteria for Emerging Power requirements will be discussed.  
(3) April 20—POWER DISTRIBUTION (continued)  
(4) April 27—MOTORS & PUMPS—This session will cover sizing types, voltage protection, and variable speed drives.  
(5) May 4—LIGHTNING SURGE PROTECTION—Two sessions will deal with design requirements needed. Proper selection and location of this equipment is extremely important.  
(6) May 11—LIGHTNING SURGE PROTECTION—(continued)  
(7) May 18—INSTRUMENTATION AND PROCESS CONTROL I & II—This is the heart of all Water Treatment and Sewage Treatment Facilities. Selection and coordination of this type of equipment is critical for proper operation.  
(8) May 25—INSTRUMENTATION AND PROCESS CONTROLS—(continued)  
(9) June 1—OVERCURRENT PROTECTION FOR WATER & SEWAGE TREATMENT FACILITIES—Code and industry standards, electrical protection for switchboards, motors, motor control centers, cables and transformers, cost analysis and future expansion, as well as how to apply this information within the system.  
(10) June 8—ESTIMATING—After reviewing a selection of the various equipment needed budget estimating is extremely im-portant and also required.

REGISTRATION FORM

Mail to: John Domorski, Automatic Switch Company, 6 Watessing, N.J.  
Make checks payable to: North Jersey IEEE

Please enroll me in ELECTRICAL DESIGN FOR WATER AND SEWAGE TREATMENT FACILITIES.

Name: \_\_\_\_\_ Company: \_\_\_\_\_  
Address: \_\_\_\_\_ City, State, ZIP: \_\_\_\_\_  
Phone: \_\_\_\_\_

Fee: \$60.00 IEEE Members  
\$70.00 Non-IEEE Members