The IEEE Newsletter

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

MARCH HIGHLIGHTS INSIDE

North Jersey Section PACE:

How To Find Money In Your 1040

At the March 10, 1994 meeting of the North Jersey Section's Professional Activities Committee for Engineers, the topic will be "How To Find Money In Your 1040." The speaker will be Edward Landau.

About The Talk

Each year taxpayers invest time, and often money, preparing their 1040 tax return, only to file it away after they've paid their dues to Uncle Sam. Make a change and use your completed 1040 to combat increasing tax liabilities.

Participants will be given overlay sheets to use with their own returns that highlight key areas of concern for this tax year's calculations.

Various ways to improve compensation and benefits package at work may be discovered. Participants will look at ways to minimize taxes, increase investment return and protect purchasing power. Thousands of taxpayers loan money to Uncle Sam each year, with no interest gained. Mr. Landau will be available for a question and answer period at the end of the discussion.

About The Speaker

Edward Landau is a Personal Financial Planner with American Express Service Corporation. As a financial planner, he is licensed by the National Association of Securities Dealers in addition to holding NJ Insurance and Securities licenses.

Before becoming a financial planner, Mr. Landau spent over twenty years as an RF Design Engineer, Consultant and Engineering Manager.

Time: 7:30 PM, Thursday, March 10, 1994.
Place: JCP&L Co., 300 Madison Avenue and Punch Bowl Road, Morristown, N.J.
Further Information: Robert Sinusas (201) 228-3941.

MARCH, 1994

NEWSLETTER STAFF

Editor......................................M.M. Perugini
Business Manager.................... A.M. Beattie

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Piscataway, N.J. 08854-1331
(908) 981-0060

It is not necessary to inform the North Jersey Section when you change your mailing address. "The IEEE 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.

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Dave Dietsche
Richard Estock

The North Jersey Section Executive Committee usually meets the first Wednesday (except holidays and December) of each month at 7 PM. These meetings are open to all members. Information on meeting agenda is available from Mel Lewis, Section Secretary at (914) 968-2500, ext. 2304.

Elected Section Officers are listed above.

New Jersey Section Instrument Society of America and the
Industrial Applications Society — NJ Section, IEEE
ELECTRICAL SAFETY IN HAZARDOUS LOCATIONS

Eight sessions, Wednesday evenings
March 2, 9, 16, 23, 30 and April 6, 13, 20 - 7:00 to 9:00 PM
Automatic Switch Co. (ASCO) Training Room
50-60 Hanover Rd., Florham Park, N.J. (Near Route 10, east of Route 287)

Designing the installation of electrically operated instruments in hazardous areas can be a source of confusion and doubt, resulting in a tendency towards misapplication and unnecessary expense. ISA, NFPA, and NEC codes and standards exist, but you need to understand the basics before you can interpret them in a cost effective and accurate way.

This 8-session course will provide participants with in-depth presentations on the theory and practice of safe electrical installations in classified locations. Purging, explosion proof techniques and intrinsic safety will be covered. Weekly topics are listed below.

The course instructor will be Mr. Ernie Magison, world renowned author and instructor of ISA short courses, the Manager of Regulatory Affairs, Honeywell, Inc. 1.6 Continuing Education Units (CEUs) will be awarded upon satisfactory completion. The ISA text, "Electrical Instruments in Hazardous Locations," by Mr. Magison will be the course text.

March 2 -	Historical background, the National Electric Code, area classification, material classification.
March 9 -	Theory of explosions and the ignition of gases and vapors by electrical sources.
March 16 -	The methods of hazard reduction - overview, explosion proof enclosures.
March 23 -	Principles of intrinsically safe and nonincendive systems and equipment.
March 30 -	Design of intrinsically safe and nonincendive systems and equipment.
April 6 -	Pressurization, continuous dilution, sealing and encapsulation.
April 13 -	Dust hazards, flame arrestors, human safety.
April 20 -	Installation, inspection, and maintenance.

When:	Wednesday evenings, March 2, 9, 16, 23, 30 and April 6, 13, 20
Time:	7:00 - 9:00 PM
Where:	Automatic Switch Co., (ASCO) Training Room 50-60 Hanover Rd., Florham Park, N.J.
Fee:	$350 IEEE/ISA Members
	$405 Non-Members (includes 1 year ISA Membership)

Registration Form
"Electrical Safety in Hazardous Locations"

To Course Registrar: Mr. Stan Rogacki, P.E., New Jersey ISA Education Chairman
143 Mountain Ave., West Caldwell, NJ 07006
Phone: (W) (201) 316-3369   (H) (201) 228-8841   FAX: (201) 228-6272

Name _____   IEEE/ISA No. _____

Company _____   Title _____

Company Address _____

_____

Company Phone _____   FAX No. _____

My check is enclosed for $ _____ payable to "ISA New Jersey Section"

No refunds after a class begins. Call for directions.

No. NJ Consultants' Network:
Setting Consulting Fees: Issues And Available Options

At the March 31, 1994 meeting of the IEEE Consultants' Network of Northern NJ there will be a presentation on "Setting Consulting Fees: A Range Of Issues And Available Options." The speaker will be Vikas A. Tipnis.

About The Topic

Vikas will present observations on prevalent fee setting practices and principles in a wide spectrum of consulting establishments, from independents to the Big 6's. Based on his personal experience and research on the topic, he will discuss: How to determine the value of one's expertise to prospective clients; What fee structures are available to consultants, e.g. retainers, time and materials, flat-rate on turn-key projects, etc.; When does one "give it away for free"?; How to track trends in the marketplace.

About The Speaker

Vikas A. Tipnis is a business systems analyst with over 17 years of experience in business systems requirements, definition, modeling, and process re-engineering. He has acquired extensive, and progressively sophisticated expertise with methodologies, and CASE tools. Over the years he has also applied his technical and presentation skills in teaching, training, and writing. In 1985 he left an internal consultant's position at Mobil Corporation to practice independently.

About The Consultants' Network

The IEEE Consultants' Network of Northern NJ was founded in April 1992 to encourage and promote the use of independent technical consultants by business and industry. Meetings are held on the last Thursday of each month at GEC-Marconi. The Network's second annual Directory of Consultants is now available. To receive a complimentary copy, call Alex Richardson (201) 992-0448.

Optional Pre-Meeting Dinner

Members are invited to get together at the Steak and Ale Restaurant in the American Way Mall on Rte 46 Eastbound, (right next to Bennigans—after Passaic Ave. and before Willowbrook Mall), in Fairfield, N.J. For directions, call (201) 227-2134. For reservations (REQUIRED), call Frank Scholten (201) 994-9819.

Time: 7:30 PM, Thurs. March 31, 1994.
Place: GEC-Marconi Facility, 150 Parish Drive, Wayne, NJ.
Information: For directions or up-to-date meeting status call (201) 736-0771 (Walker Elec. Services 24hr VOICE MAIL). For meeting information or other questions call Jim Boyd (201) 584-0329.

IEEE North Jersey Section Seminar Advanced C Programming for PC's
Thursdays, March 24 - June 2, 1994   6:30-9:00 PM
Jersey Central Power & Light Co., 300 Madison Avenue, Morristown, N.J.

The North Jersey Section IEEE is offering an evening course entitled "Advanced C Programming for PC's." This course is intended for those who are already C programmers and who have an idea for some program that would be of use to other PC users. You may even have created such a program. Now you need to turn it into a program that is modern enough and adaptable enough to run on a range of different PCs, and is a documented, supportable product. The focus of the course is application and extension of your C programming skills to produce a product that you would be proud to have others use on their IBM or compatible personal computer.

There will be 8 weekly lectures and each will be followed by a short work session. Homework will be assigned and corrected. C programming training and/or experience is a prerequisite and this is not a C programming course, although it will provide practice and training in C programming methods. The topics listed below will be covered. The instructor is Dr. Edward (Ted) Byrne, owner of a local software consultant business.

(1) - Almost every program today has an interactive (window-like) interface. We will learn how to produce this by using graphic screen modes for output, extended polled keyboard and mouse inputs, and an interactive program organization.

(2) - Almost every program needs to invoke DOS commands and interrupts. We will learn how to use existing software, handle various PC functions, and do device, disk and file management.

(3) - For many applications it is necessary for a program to send commands to and receive status information from PC ports and devices. We will learn how to do this using, as examples, an H-P compatible printer (PCL language), and a special board (e.g. analog-digital converter).

(4) - When producing a large software package we need to follow good development techniques to keep track of the source, bugs, changes and tests. We will study how to control development with the make utility, how to archive and delta source files and how to automate testing.

(5) - There are capabilities that every software package must have, beyond what it does functionally, in order to be usable by others. We will study how to produce context sensitive help, how to administer temporary work space while executing, and how to determine the processor type, monitor type, environmental variables and DOS version.

The course will focus mainly on the C programming language and the DOS operating system to be compatible with all PC type computers, but will also stress the similarities and extensions to convert these concepts to C++ and to MS windows.

Class Size will be limited to a maximum of 25 with a minimum registration of 15. Early registration is recommended. Phone Reservations will not be accepted. Reservations accepted after March 10, 1994 will require an additional late fee of $25. No reservations will be accepted after March 17, 1994.

Where: Jersey Central Power & Light Co., 300 Madison Avenue, Morristown, N.J.
When: Eight sessions, Thursday evenings, starting March, 1994 from 6:30-9:00 PM. (Dates: March 24, 31, April 7, 14, May 5, 12, 19, 26, June 2, 1994.)
Cost: With Text Books and compiler, IEEE Members $260; non-IEEE Members $340
With Text Books only, IEEE Members $180; Non-IEEE Members $260.
Contact: Mr. John A. Baka at (201) 455-8534 (Business)

Registration "Advanced C Programming for PC's"

To: Mr. John Baka, Distribution Engineering, JCP&L Company, 300 Madison Avenue, Morristown, NJ 07962-1911

Name _____ IEEE No._____

Affiliation_____ Phone No. _____

Address_____

_____

Check if Compiler is needed or not Yes [ ] No [ ]

Please enclose required fee made payable to "North Jersey Section IEEE"

Signature_____

North Jersey MTT-S:
Transistor Models For GaAs MMIC

The topic at the IEEE North Jersey Section Microwave Theory and Techniques Society chapter meeting on March 9, 1994, will be "Transistor Models For GaAs MMIC Design And Simulation." the speaker will be Walter R. Curtice.

About The Talk
It is a significant challenge for microwave scientists to develop large-signal models for the GaAs transistors, since the models must be simple enough to execute rapidly in circuit simulation software but sufficiently sophisticated to accurately describe the complex behavior of these devices. The purpose of this presentation is to review the small-signal and large-signal, equivalent circuit transistor models developed for simulation and for design of GaAs MMICs. These models include: GaAs MESFETs and HEMTs; GaAs/A1GaAs HBTs.

About The Speaker
Walter R. Curtice joined the Raytheon Company in 1962 where he worked on linear-beam and cross-field devices. In 1973, Dr. Curtice joined RCA Laboratories, Princeton, N.J., as a Member of the Technical Staff in the Microwave Technology Center. From 1987 to 1989 he was with Microwave Semiconductor Corp., Somerset, N.J., as manager of Computer-Aided Design and Modeling. He is now an independent consultant.

Dr. Curtice has written over 60 technical papers, has 10 U.S. patents issued to him, and was made a Fellow of the IEEE in 1988.

All Welcome
Members and guests interested in the subject are invited.

Time: 7:00 PM, Wednesday, March 9, 1994.
Place: NJIT, 202 ECEC, Newark, N.J.
Information/Reservations: Dick Snyder (201) 492-1207; Willy Schmidt (201) 492-0371; Edip Niver (201) 596-3542.

North Jersey PES/IAS:
Application Of Adjustable Speed Drives

On March 17, 1994, the North Jersey Power Engineering/Industry Application Society Chapters will present a talk on "Application Of Adjustable Speed Drives—Technical Issues." The speaker will be Ibrahim Hassan of Raytheon Engineers and Constructors Inc., Ebasco Division, in New York City.

About The Talk
The presentation will discuss the energy saving advantages and potential applications of ASD systems. The principles of AC motor speed/torque control and the power electronic devices used in large ASD systems will be presented. This will be followed by an overview of large synchronous and induction motor ASD systems configurations and principles of operation. The presentation will also discuss converter generated harmonics and the interactions between the converter, motor, and driven load, as well as the interactions between the converter and the power source. The presentation will be concluded by discussing ASD application considerations and analysis required at the planning stage.

About The Speaker
Ibrahim Hassan has 28 years of experience in the engineering and analysis of electrical systems and equipment. Currently, he serves as a Senior Consulting Electrical Engineer for the Nuclear and Advanced Technology Division of Raytheon Engineers and Constructors Inc., Ebasco Division.

Free Pre-Meeting Buffet
Members and guests interested in the meeting topic are invited. Reservations are required for the complimantary pre-meeting buffet which starts at 6:00 PM followed by the meeting at 7:00 PM.

Time: 7:00 PM, Thursday, March 17, 1994.
Place: JCP&L Co., Punch Bowl Room, 300 Madison Avenue, Morristown, N.J.
Reservations/Information:
Ken Oexle (JCP&L) (201) 455-8481.

1994 International Conference on Networks for Personal Communications
NPC94
March 16-18, 1994   Ocean Place Hilton Long Branch, New Jersey

The 1994 Conference on Networks for Personal Communications is sponsored by the New Jersey Coast Section of the IEEE. The focus of the conference will be telecommunications network support of Personal Communication Services.

Invited Speakers
Bob Lucky (V. P. - Bellcore)
Don Cox (Professor - Stanford Univ.)
Mark Emery (V. P. - A PC)
George Brody (V. P. - B NR)
Howard Sherry (Director - Bellcore)

Program
March 16 - Tutorial 1 to 4 P. M.
What is PCS? - Phil Peterson (Motorola)
Networks Today and Tomorrow - Brenda Edwards (Bell Atlantic)
How Might PCS Work for Voice and Data Services? - Dwight Hakim (Bellcore)

March 17 - Sessions 8:30 A.M. to 5 P.M.
AM - Session 1 - Services & Architectures
PM - Session 2 - Network Management
March 17 - Reception 6 to 8 P. M.
March 18 - Sessions 8:30 A. M. to 5 P. M.
AM - Session 3 - Network Platforms & Elements
PM - Session 4 - Implementation Challenges

**Hotel Information: Ocean Place Hilton
One Ocean Boulevard
Long Branch, NJ, 07740
Phone: 908-571-4000   Fax: 908-571-3314**

Name		Before Feb. 25, 1994	After Feb. 25, 1994
Address		Registration (Sessions, Reception, Proceedings, Lunches)	
		IEEE Member $250.00	$300.00
Phone _____ Company _____		IEEE Membership Number	
Credit Card (circle one): AMEX VISA Master Card		Non-Member $300.00	$350.00
Number		Tutorial $45.00	$75.00
Expiration Date		Extra Proceedings $25.00	$40.00
Signature		Total Remittance (Must be in U. S. Dollars) $	
Date		Make checks Payable to: NPC94	No refunds on cancellations made after March 1, 1994

Send to:Jose Peruyero, AT&T-BL Room 2E532, 101 Crawfords Corner Road, Holmdel, NJ 07733-3030; FAX: 908-949-6832;

North Jersey Section Activities — MARCH 1994

March 2, 1994—"North Jersey Section Executive Committee Meeting"—7:00 PM, Plant 11, GEC-Marconi, 164 Totowa Rd,. Totowa, N.J. Mel Lewis (914) 968-2500, Ext. 2304.

Mar. 2-April 20—"Seminar: Electrical Safety In Hazardous Locations"—NJ Section ISA and NJ IAS of IEEE, 8 Sessions, Wednesday Evenings, 7:00-9:00 PM, Automatic Switch Co., Training Room, 50-60 Hanover Rd., Florham Park, N.J. Stan Rogacki (201) 316-3369.

Mar. 9—"Transistor Models For GaAs MMIC"—NJ Section MTT-S, 7:00 PM, NJIT, 202 ECEC, Newark, N.J. Dick Snyder (201) 492-1207.

Mar. 10—"How To Find Money In Your 1040"—North Jersey Section PACE, 7:30 PM, JCP&L Co., 300 Madison Ave. & Punch Bowl Road, Morristown, N.J. Robert Sinusas (201) 228-3941.

Mar. 16-18—"NPC94 International Conference: Networks For Personal Communications"—NJ Coast IEEE, Ocean Place Hilton, Long Branch, N.J. Tony Noerpel (908) 758-2809. noerpel@nyquist,bellcore.com

Mar. 17—"Application Of Adjustable Speed Drives: Technical Issues"—North Jersey PES/IAS, 7:00 PM, Jersey Central Power & Light Co., Punch Bowl Room, Morristown, N.J. Ken Oexle (201) 455-8481.

Mar. 24-June 2—"Seminar: Advanced C Programming For PC's"—IEEE North Jersey Section, Eight Thursday Sessions, 6:30-9:00 PM, JCP&L Co., 300 Madison Ave., Morristown, N.J. J. Baka (201) 455-8534.

Mar. 30—"Optically Controlled Devices And Systems"—IEEE LEO Chapter with Center for Microwave and Optics at NJIT, 4:00-6:00 PM, NJIT Alumni Ctr., Newark, N.J. Dr. H. Grebel (201) 596-3533.

Mar. 31—"Setting Consulting Fees: A Range Of Issues And Available Options"—IEEE Constultants' Network of Northern NJ, 7:30 PM, GEC-Marconi Facility, 150 Parish Dr., Wayne, N.J. Jim Boyd (201) 584-0329.

Upcoming Meetings

Apr. 6—"North Jersey Section Executive Committee Meeting"—7:00 PM, Plant 11, GEC-Marconi, 164 Totowa Road, Totowa, N.J. Mel Lewis (914) 968-2500, Ext. 2304.

Apr. 19—"One-Day Seminar: Radar Signal Processing And Technology"—IEEE Aerospace and Electronic Systems Chapter of the Long Island Section, Radisson Plaza Hotel, Melville, N.Y. Thomas A Campbell, Chairman (516) 757-3008.

Apr. 20—"The Business Of Optical And RF/Microwave Companies; And Optoelectronics Industry Show"—IEEE LEO Chapter with Center for Microwave and Optics at NJIT, 4:00-6:00 PM, NJIT, Newark, N.J. Dr. H. Grebel (201) 596-3533.

Apr. 25-26—"Computer Integrated Manufacturing In The Process Industries (CIMPRO '94)"—National Science Foundation and Defense Logistics Agency, Brunswick Hilton Hotel, East Brunswick, N.J. For information: Ms. Cindy Ielmini (908) 932-3654 FAX (908) 932-5467.

Members and Non-Members Welcome — PLEASE POST

PACE

By Richard F. Tax

The following article is reproduced with permission from the December 1993 issue of "American Engineer" newsletter, publication of the American Engineering Association.

NEW ENGINEERING GRADS AREN'T MAKING IT INTO ENGINEERING EMPLOYMENT

Nov. 1993, (c) Robert A. Rivers
P.O. Box 129, Union, NH 03887

Engineering employment participation by new engineering graduates is showing significant declines according to data obtained from the Engineering Workforce Commission's 1993 salary survey (1). That survey showed approximately one third in engineering employment. The 1983 salary survey (3) showed three quarters of new graduates in engineering employment. By 1990, that salary survey (2) showed slightly less than half of new graduates in engineering employment.

The survey of engineering employers nationwide for a large number of engineering employing units collects data on base salaries and populations as a function of years from BS degree. As a result, data on population as a function of years from BS degree is available for over 111,000 BS engineers counted. The data is available in one year intervals for years 0 through 8, then in three year intervals up to 32 years from graduation. The balance of the data is basketed in the 33+ category. The three year interval data has been divided by three and the 33+ divided by ten to provide for presentation on a scale consistent with the 0 through 8 year data. The median BS degree age has been found to be age 23 and may be used to roughly translate the data to an age base.

Figure 1 shows the employment curves for the three noted survey years of 1983, 1990, and 1993. The solid line from 1983 data shows that the new graduates were almost all in engineering employment. The minor peak on the right hand side of the curve is explained by the WWII GI Bill graduates still employed.

The dashed line representing 1990 data is beginning to show a lowered absorption of new graduates into engineering employment compared to 1983. Part but not most of the lower employed population can be explained by the fall off of new engineering degrees. By 1993, the dotted line, it appears conclusive that a majority of the new engineering graduates did not make it into engineering employment. In addition, the prior two years of graduates are significantly underrepresented in engineering employment. By 1993, the WWII veterans have disappeared from the scene.

1. Engineering Workforce Commission, "Professional Income of Engineers 1993", Washington, DC
2. Engineering Manpower Commission, "Professional Income of Engineers 1990", Washington, DC
3. Engineering Manpower Commission, "Professional Income of Engineers 1983", Washington, DC
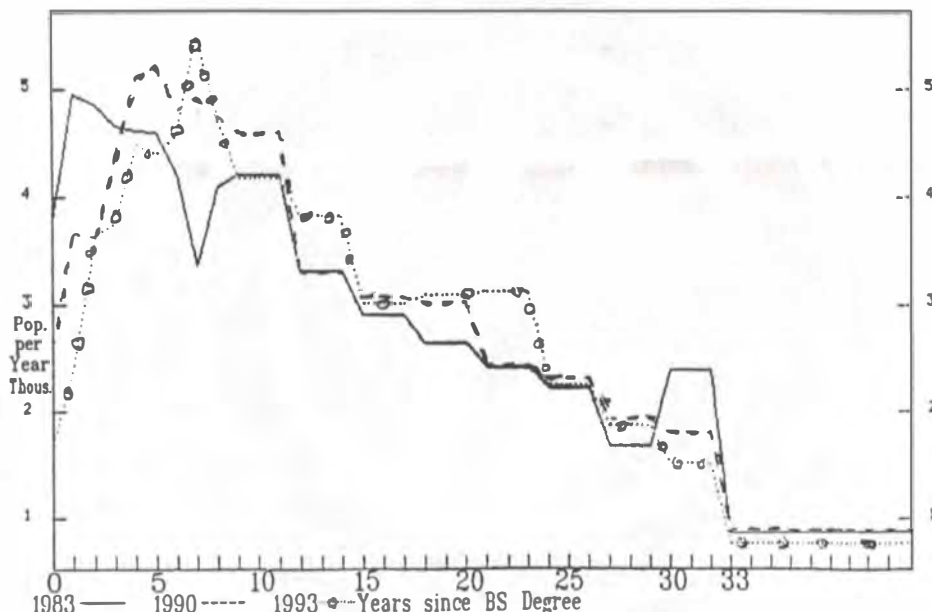

Fig. 1. Survey population vs Years Since BS Degree

SV Systems Inc. presents
Client Server Computing with OracleWare / WINDOWS Programming
8 Week Courses
Thursdays April 7 - May 26 , 1994 6:00pm - 9:00pm(OracleWare)
Tuesdays April 5 - May 24 , 1994 6:00pm - 9:00pm(WINDOWS programming)

These eight week courses will allow you to gain hands on experience with the latest software in today's rapidly evolving software development market.

CLIENT Server computing with OracleWare(Thursdays): The OracleWare is a new product jointly marketed by Oracle Corp. and Novell Corp. (Netware). It includes, the Oracle 7.0 database, Novell Netware, SQL Forms 4.0, and Oracle Glue - which provides client API for exchange of data -e.g. EXCEL, WORD. In this course, you will be introduced to the concepts of relational databases and SQL commands, advanced SQL queries, use of SQL Forms 4.0 for GUI applications, Oracle Glue, database updates, and an overview of performance issues and design aspects. This class requires access to a PC with a modem. However, lab facilities are available at additional cost.

WINDOWS Programming(Tuesdays): MS-WINDOWS programming course will introduce you to the GUI techniques in programming. The course will cover WINDOWS concepts using API, messages, mouse and the keyboard, resources, bitmaps and dialogs, font basics, window controls, subclassing window controls, dialog boxes, icons, GDI, and DLLs. Students must have a prior knowledge of C or C++ for taking this course. The course is highly recommended for people who have already taken programming course in C++. The TURBO C++ compiler for WINDOWS is available at additional cost.

Early registration is recommended to reserve a seat in the classes.

Early Registration fee: Client server computing with OracleWare:$435 - (includes text book and dial-up access to the database)

WINDOWS programming: **$385** - (includes text book)
(Add $70 if TURBO C++ compiler is required)

IEEE members are eligible for a 10% discount.
A late fee of $50 will be charged after **March 15th. Cancellations will not be accepted after March 20th.**

All classes will be held at the **Days Inn Hotel, 3159 Rt. 46 East, Parsippany NJ.**

For more information call SV Systems: **(201) 334-1375**

Registration Form for OracleWare and WINDOWS Programming Courses

Name: _____ Day Phone: _____ Evening Phone:_____

Mailing Address: _____

_____

Please detach this form and mail to: IEEE no:_____ Amount enclosed: _____
SV Systems, Inc.
27 Winding Way   **OracleWare**   [ ] **Thursdays April 7 - May 26 , 1994 6:00 - 9:00pm**
Parsippany, NJ 07054   **WINDOWS Prog.** [ ] **Tuesdays April 5 - May 24 , 1994 6:00 - 9:00pm**

SV Systems Inc. presents

Object-Oriented Design / Programming in C++
8 Week Courses

Wednesdays April 6 - May 25, 1994 6:00pm - 9:00pm (OOA and OOD workshop)
Tuesdays April 5 - May 24, 1994 6:00pm - 9:00pm (C++)
Saturdays April 2 - May 21, 1994 9:00am - Noon (C++)

These eight week courses will introduce you to object-oriented programming and design techniques helping you remain competitive in today's rapidly evolving software development market.

Object oriented analysis and design workshop (Wednesdays): Today's GUI applications are far more complex and involve more lines of code than the older applications. Consequently OOA and OOD are becoming more popular as these GUI applications can be developed faster and managed better with the use of object oriented methodologies - characterized by encapsulation, inheritance, polymorphism, anthropomorphic design, modularity, incremental, and iterative development. This course will cover the object oriented concepts, object analysis methods, strategies for producing objects, dynamic and functional models, object oriented design methods, and Case studies. Some of the tools, available in the market for GUI development will also be discussed.

Object Oriented Programming in C++ (Tuesdays and Saturdays): C++ supports the core principles of object oriented methodology: encapsulation, data abstraction, polymorphism and inheritance. The first half of the course will be devoted to the core language and basics (which are very similar to C), while the second half of the course focuses on the object-oriented aspects of C++. This approach is ideal for students who are not familiar with C, or need a brief refresher. The course will cover benefits of object-oriented development, basic C++ elements, flow control and conditionals, structures, arrays, pointers, functions, objects and classes, operator overloading, polymorphism, inheritance, files, and streams.

In addition to these courses, several others are planned for the systems development professional including Power Builder, OS/2 Presentation Manager, and LAN/Communication Systems.

Early Registration fee: OOA and OOD workshop: **$435** (includes text book)
C++ course: **$385** (includes text book and Turbo C++ compiler for WINDOWS)
$315 - (text book only)

IEEE members are eligible for a 10% discount.
A late fee of $50 will be charged after March 15th. Cancellations will not be accepted after March 20th.

All classes will be held at the **Days Inn Hotel, 3159 Rt. 46 East, Parsippany NJ.**

For more information call SV Systems: **(201) 334-1375**

Registration Form for OOA/OOD and C++ courses

Name: _____ Day Phone: _____ Evening Phone: _____

Mailing Address: _____

_____

IEEE no: _____ Amount enclosed: _____

Please detach this form and mail to:
SV Systems, Inc.   OOD [ ] Wednesdays April 6 - May 25 1994 6:00 -9:00pm
27 Winding Way   C++ [ ] Tuesdays   April 5 - May 24 1994 6:00 - 9:00pm
Parsippany, NJ 07054   C++ [ ] Saturdays   April 2 - May 21 1994 9:00am - noon