



The IEEE

# Newsletter

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

## Members and Associate Members – Advance to a Higher Grade

Members can become Senior Members. Associate Members may qualify for Member or Senior Member grade. To advance from Associate Member to Member grade, all you have to do is fill out an application and attach a copy of your resume.

To get information and the application, send me your mailing address and the grade you want to advance to: Don Weinstein, Kulite Semiconductor, One Willow Tree Rd, Leonia, NJ 07605-2239, (201) 461-0900 Ext 234, mornings, FAX (201) 461-0900, email: don@kulite.com.

## Newly Elected IEEE Fellows

The North Jersey Section IEEE congratulates the following members who were elected to the Fellow grade:

**Peter Feldman**, Lucent Technologies

*"For contributions to the analysis and simulation of electronic circuits."*

**S. Jamaloddin Golestani**, Lucent Technologies

*"For contributions to the theory of congestion control and provision of fairness and guaranteed services in packet networks."*

**Anthony M. Johnson**, New Jersey Institute of Technology

*"For contributions to ultrafast optoelectronics and nonlinear optics."*

**Conor S. Rafferty**, Lucent Technologies

*"For the development of pioneering simulation tools and models for technology computer aided design."*

**Nambirajan Seshadri**, AT&T Labs

*"For contributions to theory and practice of reliable communications over wireless channels."*

**Abraham Silberschatz**, Lucent Technologies

*"For contributions to the development of computer systems dealing with the efficient manipulation and processing of information."*

## Here's Your GOLDen Opportunity!

Have you graduated (from your first bachelors' degree) in the last ten years? Looking to make professional and personal connections in the North Jersey area? Want to learn more about how to make your IEEE membership work for you? Then let's get a GOLD (Graduates of the Last Decade) group rolling again. The North Jersey Section is searching for folks interested in GOLD activities. We are seeking a North Jersey GOLD Chair (don't worry-there's not that much to do, and seasoned help is available) along with some new committee members to assist. Anyone who has recently graduated is heartily encouraged to jump in! Chances are, that any leadership and project planning responsibility you have at work will pale in comparison to the opportunities that await around IEEE.

Other GOLD Chapters around the world have been holding such \*fun\* (yes, that's a key word) events as: family barbecues, happy hours, and of course the more traditional IEEE format - meetings on topics ranging from "Managing Your Boss" and "Planning for Your Next Job" to "First Time Home Buying." Discussions often cover challenges faced by those fresh (or not so fresh) out of school, whether working in corporate America or self-employed. If anyone is interested, or even has any questions at all, contact Amy Galarowicz at email: a.galarowicz@ieee.org or work phone number (973) 765-0830.

## In Memory of Edward J. Doyle

On January 24, 2000, Edward J. Doyle died at his home. Mr. Doyle was an electrical engineer who developed the first Presidential traveling switchboard in 1967. As an active member of the IEEE he served as a member of the board of directory from 1980-1983 and again from 1986-1987. He also was the Division III director of IEEE from 1980-1981 and vice president of professional activities from 1982-1983 and treasurer from 1986-1987.

He received the IEEE Communications Society Donald W. McLellan Meritorious Service Award in 1981, the IEEE Centennial Medal in 1984 and the Haraden Pratt Award in 1989.

Surviving are a son, Alex, and three grandchildren.

## Need an expert?

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# March 2000

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### NEWSLETTER STAFF

Editor .....Keith Saracinello  
Business Manager .....Theresa Saracinello

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### IEEE NJ SECTION HOME PAGE

<http://www-ec.njit.edu/~ieeenj/>

### IEEE NJ SECTION NEWSLETTER HOME PAGE

<http://www-ec.njit.edu/~ieeenj/NEWSLETTER.html>

### REPORT ADDRESS CHANGES TO:

IEEE Service Center, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331, (732) 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.

### SECTION OFFICERS

Chairman .....Alan Stolpen  
a.stolpen@ieee.org, (973) 822-1300, ext. 2416  
Vice-Chairman-1 .....Dr. Nirwan Ansari  
(973) 596-3670  
Vice-Chairman-2 .....Rodney Cole  
rgcole@ieee.org (973) 299-9022 Ext. 2257  
Treasurer .....Milton Korn  
miltonkorn@aol.com (973) 365-2757  
Secretary .....Wayne Owens  
wowens@crestron.com (201) 767-3400, ext. 226

### Members-at-Large:

Bhanu Chivakula ([b.chivakula@computer.org](mailto:b.chivakula@computer.org))  
Durga Misra ([dmisra@megahertz.njit.edu](mailto:dmisra@megahertz.njit.edu))  
Richard Tax ([rtax@bellatlantic.net](mailto:rtax@bellatlantic.net))

*The North Jersey Section Executive Committee usually meets the first Wednesday (except holidays and December) of each month at 7:00 PM. Meetings are open to all members. For information on meeting agenda contact Secretary Wayne Owens at (201) 767-3400, ext. 226, [wowens@crestron.com](mailto:wowens@crestron.com).*

# North Jersey Section Activities

## March 2000

**Mar. 1**—"NJ Section Executive Committee Meeting" – 7:00 PM, ITT, 100 Kingsland Road, Clifton, NJ. Wayne Owens at (201) 767-3400 ext. 226 or [wowens@crestron.com](mailto:wowens@crestron.com).

**Mar. 9**—"Y2K Student Presentation Contest" – NJ Section, 6:00 PM, NJIT, Room 202, ECE Building, Newark, NJ. Amit Patel (973) 284-2708, [a.j.patel@ieee.org](mailto:a.j.patel@ieee.org).

**Mar. 13 - May 15**—"Object Oriented C++ Programming" – North Jersey Section, Monday Evenings, 10 sessions, 6:30-9:00 PM, GEC-Marconi, 164 Totowa Road, Wayne, NJ. Gabe Silberman at 732-463-6824 ([silberman@ieee.org](mailto:silberman@ieee.org)) or Bhanu Chivakula 973-751-4879 ([b.chivakula@computer.org](mailto:b.chivakula@computer.org)).

**Mar. 15 - Apr. 19**—"Object Oriented Design" – North Jersey Section, Wednesday Evenings, 5 sessions, 6:30-9:00 PM, GEC-Marconi, 164 Totowa Road, Wayne, NJ. Gabe Silberman at 732-463-6824 ([silberman@ieee.org](mailto:silberman@ieee.org)) or Bhanu Chivakula 973-751-4879 ([b.chivakula@computer.org](mailto:b.chivakula@computer.org)).

**Mar. 17**—"Induction Motor Drives & Applications Seminar" – NJ IAS/PES Chapters, 9:00 AM to 4:00 PM, Smiths Industries, 7-9 Vreeland Road, Florham Park, NJ. R. Vittal Rebbapragada (609) 720-3209 or via e-mail at [r.rebbapragada@ieee.org](mailto:r.rebbapragada@ieee.org).

**Mar. 21**—"Implementing Frequency Division (FD) with Time Division (TD): The Broadcast Disks Problem" – NJ Communications Chapter and NJ Center for Wireless Telecommunications, 3:00 PM, NJIT, Room 202, ECE Building, Newark, NJ. Dr. Yuguang "Michael" Fang (973) 596-6594 ([fang@njit.edu](mailto:fang@njit.edu)).

### Upcoming Meetings

**Apr. 5**—"NJ Section Executive Committee Meeting" – 7:00 PM, ITT, 100 Kingsland Road, Clifton, NJ. Wayne Owens at (201) 767-3400 ext. 226 or [wowens@crestron.com](mailto:wowens@crestron.com).

**May 7**—"NJ Section Awards Reception" – 3:00 to 6:00 PM at the Birchwood Manor, 111 North Jefferson Road, Whippany, NJ. Anne Giedlinski (973) 377-3175.

**May 26**—"Symposium on Next Generation Wireless Networks - Defining Applications and Services for the Next Generation" – New Jersey Center for Wireless Telecommunications, Time TBA, Room TBA, NJIT, Newark, NJ. Cynthia McCray at (973) 596-5548 ([mccray@adm.njit.edu](mailto:mccray@adm.njit.edu)).

## Members and Non-Members Welcome

# PLEASE POST

## Final Reminder for Y2K Student Presentation Contest

This message is to remind you that the student presentation contest for the North Jersey Area is coming up. The contest has been scheduled to be held on Thursday, March 9, 2000. It will be in Room ECE 202 of the Electrical and Computer Engineering Building. The contest starts with a light dinner at 6:00 PM with the formalities to begin afterwards. Parking has been made available for all participants on the parking deck across the street. Directions and campus map are available at <http://www.njit.edu/University/Directions.html>.

- This contest is open to grads and undergrads.

- There will be 1/2/3rd places in both categories.
- Prizes will be \$100/\$75/\$50 for winners.
- Undergrad winners will qualify to advance to the Regional contest in April.
- Abstract forms are required for all entrants.
- Contest rules, forms, and additional information available at:  
<http://menger.eecs.stevens-tech.edu/~apatel3/ieee.html>

Do not miss this opportunity to showcase your work and possibly win some cash for your excellence. If you would like more information or have any questions, please feel free to contact by: [a.j.patel@ieee.org](mailto:a.j.patel@ieee.org) or (973) 284-2708.

# CALL FOR PAPERS AND PARTICIPATION

## SYMPOSIUM ON NEXT GENERATION WIRELESS NETWORKS Defining Applications and Services for the Next Generation

*Sponsored by the New Jersey Center for Wireless Telecommunications  
May 26, 2000  
New Jersey Institute of Technology  
Newark, New Jersey, USA*

This one-day symposium is dedicated to defining applications and services for the next generation wireless network. An estimated twelve presentations will be scheduled. **SELECTED CONTRIBUTIONS WILL BE INCLUDED AS FULL LENGTH CHAPTERS IN AN EDITED VOLUME TO BE PUBLISHED BY KLUWER ACADEMIC PUBLISHERS.**

Topics include:

- Broadband Global Wireless
- Genuine Personal Communication
- Standards Activities
- Wireless Location Systems
- Geocasting
- The Role of Satellites; LEOS, GPS
- Wireless Location Based Services
- Wireless Location Sensitive Internet
- Travel, Navigation Services
- Law Enforcement, Security, Personal Safety
- Health Care Services
- Real-Time Control (Traffic, Power Grids, ...)
- Journalism, Transportation
- Education, Personal Relationships
- Social and Economic Implications

In the course of the accelerated contention of wireless technologies with wired technologies, broadband wireless service has become a reality, and wireless Internet is attainable. However, Quality of Service and cost remain as deficiencies of wireless systems. Despite the freedom of mobility, in the data arena, wireless technologies have enjoyed limited popularity to speak of. The true advantage of mobility in the context of broadband services is exemplified by the capability to deliver location specific services to the mobile user. Expanding the user's range of sight through the fog, and around the corner, as well as increasing the user's visibility to those around him, are among the objectives.

### IMPORTANT DATES:

Full Manuscripts Due.....February 29, 2000

Notification of Acceptance:.....March 15, 2000

Camera Ready Manuscripts Due: .....March 30, 2000

Please send papers to: Professor Sirin Tekinay, Technical Program Chair Electrical and Computer Engineering New Jersey Institute of Technology University Heights, Newark, NJ 07102 Stekinay@megahertz.njit.edu (973) 596-8464, (973) 596-5680 (fax)	For further information, please contact: Ms. Cynthia McCray, Admin Assistant Electrical and Computer Engineering New Jersey Institute of Technology University Heights, Newark, NJ 07102 mccray@adm.njit.edu (973) 596-5548 (973) 596-5680 (fax)
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IEEE North Jersey Section Communication Society Chapter and  
New Jersey Center for Wireless Telecommunications

Presents

Implementing Frequency Division (FD) with Time Division (TD):  
The Broadcast Disks Problem

*Amotz Barnoy, PhD  
AT&T Research Labs*

*3:00pm, March 21, 2000  
ECEC 202, New Jersey Institute of Technology*

**Abstract**

Consider the problem of scheduling activities of several types under the constraint that at most a fixed number of activities can be scheduled in any single period. Any given activity type is associated with a service cost, and an operating cost that increases linearly with the number of periods since the last service of this type. The problem is to find an optimal schedule that minimizes the long-run average cost per period.

Applications of such a model are the scheduling of maintenance service to machines, multi-item replenishment of stock, and minimizing the mean response time in {\em broadcast disks}. Broadcast disks gained a lot of attention recently, since they are used to model backbone communications in wireless systems, Teletext systems, and web caching in satellite systems.

The talk will concentrate on the broadcast disks application. We will present the problem, some solutions and open problems.

**About the Speaker**

Dr. Amotz Bar-Noy received a BSc degree in 1981 in Mathematics and Computer Science and PhD degree in 1987 in Computer Science, both from the Hebrew University, Israel. From 1987 to 1989 he was a post-doc fellow in Stanford University, California. From 1989 to 1996 he was a Research Staff Member with the IBM T.J. Watson Research Center, New York. Since 1995 he has been an associate Professor with the Electrical Engineering - Systems department of Tel Aviv University, Israel. He has been with AT&T research labs in New Jersey since 1999.

His main areas of interest are: Communication Networks, Combinatorial Optimization and Algorithms, Parallel and Distributed Computing.

For more information, contact Dr. Yuguang "Michael" Fang, (973) 596-6594, [fang@njit.edu](mailto:fang@njit.edu). For directions, visit <http://www.njit.edu/University/Directions.html>.

# INDUCTION MOTOR DRIVES & APPLICATION SEMINAR

The IEEE North Jersey Section Chapters of IAS/PES will host a one day Seminar on "Induction Motor Drives & Applications" on **March 17, 2000** at Smiths Industries in Florham Park, NJ. The seminar duration will be 9 AM to 4PM, with breaks for lunch & coffee. The seminar will cover the following topics:

- Fundamentals of Energy Conversion- Induction Motors
- Mathematical Modeling of Motors to Simulate Dynamics of its Performance
- Standards Governing the Selection & Application of Motors
- Application of Motors for Centrifugal Pumps, Fans, and Chillers
- Variable Speed Drive Applications
- Technical Issues Associated with Variable Speed Drive Applications
- Protection of Motors- IEEE Std. C37.96 perspective
- Digital Relays for Motor Protection.

The speakers for this Seminar, drawn from different organizations, have over 20 years of experience in the design, selection & application of motors (see <http://www-ec.njit.edu/~ieeenj/> for speaker bios). The panelists include Marc B. Buchwald of Siemens Energy and Automation, Vittal Rebbapragada, PE, of Raytheon E&C, and Stanley Zocholl of Schweitzer Engineering Laboratories.

The registration fee for this seminar prior to February 15th will be \$200 (non-IEEE members), \$150 (IEEE Members), and \$100 (Students with valid ID). Registrations after February 15th must include an additional late fee of \$25. The Seminar fee includes lunch, refreshments and handouts. Non-members joining IEEE within 30 days of the seminar will be rebated \$50 of the \$200 registration charge.

Date: March 17, 2000 (9am – 4pm)  
Location: Smiths Industries, 7-9 Vreeland Road, Florham Park, NJ 07932  
Information: contact R. Vittal Rebbapragada, PE at (609) 720-3209 or via e-mail at [r.rebbapragada@ieee.org](mailto:r.rebbapragada@ieee.org)  
Registration: US mail to: K. Oexle  
11 Deerfield Rd  
Whippany, NJ 07981

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Registration: Induction Motor Drives & Application Seminar, 3/17/2000

Name \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Phone \_\_\_\_\_ Email \_\_\_\_\_

IEEE # \_\_\_\_\_ Student @ \_\_\_\_\_ Non IEEE \_\_\_\_\_

Payment Enclosed \$ \_\_\_\_\_ (make check payable to **North Jersey Section IEEE**)  
Add \$25 late registration after February 15<sup>th</sup>

# IEEE AWARDS RECEPTION

*North Jersey Section  
May 7, 2000  
Birchwood Manor, Whippany NJ*

*A time to relax, unwind and enjoy --  
A time to pay tribute to our new Fellows --  
A time to honor our Award Winners --  
YES it's time for the Annual Section Reception*

The Annual Section IEEE Awards Reception will be held at the Birchwood Manor, 111 North Jefferson Road, Whippany again this year. The affair is scheduled for **Sunday, May 7, 2000** from 3 to 6 PM. Tickets are \$35.00 each and include a complete prepaid, two-hour open bar, hors d'oeuvres, buffet, and dessert. Spouses and guests are welcome. We are limited to 90 attendees, so please make your reservations early.

**Reservations are required by May 1, 2000.** Complete the reservation form and return it with your payment. If you would like tickets mailed back to you, please enclose a self-addressed **stamped** envelope. Otherwise, your tickets will be held at the door for you. If any additional information is required concerning the reception, contact Anne Giedlinski at (973) 377-3175.

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Use this form for Reception reservations. **ENCLOSE A SELF-ADDRESSED STAMPED ENVELOPE to receive tickets in advance.** **Reservations are required by May 1, 2000.** Mail reservation request to:

Anne Giedlinski  
299 Brooklake Road  
Florham Park, NJ 07932

Enclosed is \_\_\_\_\_ for \_\_\_\_\_ ticket(s) at \$35.00 each (make check payable to **North Jersey Section IEEE**) for:

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

\_\_\_\_\_

# IEEE North Jersey Section Course Object Oriented C++ Programming

*Monday Evenings, March 13 through May 15, 2000 - ten weekly classes  
(March 13, 20, 27, April 3, 10, 17, 24, May 1, 8, and 15)  
GEC-Marconi, 164 Totowa Road, Wayne, NJ  
(Checks should not be mailed to this address)*

The North Jersey Section IEEE is offering an evening course entitled "Object-Oriented C++ Programming." The Object-Oriented concept is very widely used today in new design and programming work. Instead of focusing on functionality (what the programs do) it focuses on the natural objects comprising the problem and how they, and their capabilities, are modeled in the program.

C++ is the most widely used language today for object-oriented design and programming. But O-O programming is still programming, so the course will begin with the elements of procedural programs and using C++ as a better C language. It will then move on to Object-oriented programming. The course will cover concepts, implementation and practical aspects of using C++ code.

A knowledge of C programming is not necessary to take the course, but, because neither C nor C++ are elementary programming languages, a familiarity with foundation programming concepts will be very helpful.

## TOPICS

1. Review common elements of C and C++: punctuation and key words, variable naming, typing and scope, libraries, text strings, arrays, structures and pointers.
2. C++ procedural programs: conditionals and logical variables, looping and testing, subfunctions and arguments. Debugging.
3. Concept of Object-Orientation: objects and classes of objects, methods and messages, encapsulation and abstraction, overloading of functions and operators, inheritance and polymorphism.
4. C++ improvements to C: new commands and operators, comments, stream I/O. function prototypes, more explicit typing and linking.
5. C++ implementation of objects: what is a C++ object, data and method functions within an object, public, private and friend, static and dynamic objects, constructors and destructors.
6. Encapsulation and abstraction within C++ objects: references and aliases, scope control operator, 'this' object, overloading, functions, operators.
7. Inheritance and polymorphism among C++ objects: parent class or object, extending classes, redefining object data and methods, multiple inheritance.
8. C++ I/O streams: standard I/O, formatted I/O with manipulators, disk and device I/O.
9. C++ library classes and their use: characteristics of a good library class, conversion base classes, video base classes, window base classes, database base classes.
10. Overall program structure with C++ objects: how to lay out a C++ program, how to reuse classes in a program, how to test and evolve a C++ program, how to find errors and debug C++ object programs.
11. Other topics: object-oriented design methodologies, templates and the standard template library, namespaces and interactive program design. Object programs in the Windows environment. Evolution of C++. Commonality and differences with Java.

Class size will be limited to a maximum of 25 with a minimum of 15. Early registration is recommended. Phone reservations will NOT be accepted. Reservations accepted after March 1<sup>st</sup> will require a late fee of \$25. No reservations will be accepted after March 6<sup>th</sup>.

**WHERE:** GEC-Marconi, 164 Totowa Road, Wayne, NJ. (Checks **should not** be mailed to this address)

**WHEN:** 10 Sessions, Mondays, March 13 through May 15, 2000, 6:30-9:00 PM.

**COST:** With text book only: IEEE members \$295; Non-IEEE members \$395.

**CONTACT:** Gabe Silberman at 732-463-6824 (silberman@ieee.org) or Bhanu Chivakula 973-751-4879 (b.chivakula@computer.org)

## REGISTRATION: OBJECT-ORIENTED C++ PROGRAMMING

To: Mr. Naz Simonelli, 68 Woodmont Drive, Randolph, NJ 07869-3740 (Checks should be mailed to this address)

Name: / Mr. / Mrs. / Miss / Ms. / \_\_\_\_\_

☐ Non-member

 email address 

☐ IEEE Member Member #: \_\_\_\_\_ Member of \_\_\_\_\_ technical society

Employer: \_\_\_\_\_

Employer Address: \_\_\_\_\_

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

Business (day) telephone #: \_\_\_\_\_ Home telephone #: \_\_\_\_\_

Please enclose required fee payable to: **North Jersey Section IEEE**

Registration status will be mailed after March 6, 2000. Phone inquiries concerning registration will NOT be honored. In general, the effective date of the application corresponds to the date when BOTH a fully completed application & payment are received.

☐ Tuition receipt will be mailed only if this box is checked

Signature: \_\_\_\_\_

# IEEE North Jersey Section Course Object Oriented Design

*Wednesday Evenings, March 15 through April 19, 2000 - five weekly classes  
(March 15, 22, 29, April 12, and 19 - NO class on April 5th)  
GEC-Marconi, 164 Totowa Road, Wayne, NJ  
(Checks should not be mailed to this address)*

The IEEE is offering an evening course entitled Object-Oriented Design. As Object-Oriented programming has become more important, Object-Oriented design has also emerged as a new way to conceptualize computer programs. The creation and dissemination of the Unified Modeling Language, as a skeleton for all phases of Object-Oriented design, has aided this. This is a course in Object-Oriented design using UML. It covers software requirements, design and application, but it is not a programming course. It may be of interest to Software Project Managers, customers and programmers who want to learn the latest techniques of Object-Oriented design using Unified Modeling Language. There will be five weekly lectures.

Upon completion of this course, the student will be able to:

- ◆ Use "Use Cases" and "Contracts" to capture the customer expectations for a system
- ◆ Use "Structure Diagrams" and "Class Diagrams" to define the classes and objects that make up the essence of the system
- ◆ Use "Sequence Diagrams" and "Collaboration Diagrams" to capture the flow of operations within the system
- ◆ Define and create various levels of simulations in order to test the validity of the system design and operation

## COURSE TOPICS

1. Introduction and background: The Software Development Cycle: requirements, design, and implementation. Comparison of techniques.
2. Object-Oriented Analysis: Comparison to natural language (English). Objects and their classes, Attributes of objects, Methods used by objects. General concept of "Encapsulation". Representations of objects etc. Exercise on defining objects.
3. Relationships within Objects: Other characteristics within objects: birth, death, multiplicity. Scope: public and private, Names of objects (subjects/references). General concept of "Abstraction". Representations of relationships within classes. Exercise on relationships.
4. Relationships among Objects: Real world relationships. Inheritance: base and derived classes General concept of "Inheritance". Friends. Containers and iterators. Messages vs. methods. Automatic routing of messages. General concept of "Polymorphism". Representations of relationships among classes. E-R diagrams. Neatening up relationships: promotion, segregation. Exercise on relationships among objects
5. Other Topics: Relationships in other dimensions. Memory: state transition diagrams. Timing: triggers & clocks. Step-by-step design techniques. Software tools to aid in design.

Class size will be limited to a maximum of 25 with a minimum of 15. Early registration is recommended. Phone reservations will NOT be accepted. Reservations accepted after March 1<sup>st</sup> will require a late fee of \$25. No reservations will be accepted after March 6<sup>th</sup>.

**WHERE:** GEC-Marconi, 164 Totowa Road, Wayne, NJ. (Checks **should not** be mailed to this address)

**WHEN:** 5 Sessions, Wednesday - March 15 through April 19, 2000, 6:30-9:00 PM.

**COST:** With text book only: IEEE members \$200; Non-IEEE members \$225.

**CONTACT:** Gabe Silberman at 732-463-6824 (silberman@ieee.org) or Bhanu Chivakula 973-751-4879 (b.chivakula@computer.org)

## REGISTRATION: OBJECT-ORIENTED DESIGN

To: Mr. Naz Simonelli, 68 Woodmont Drive, Randolph, NJ 07869-3740 (Checks **should be mailed to this address**)

Name: / Mr. / Mrs. / Miss / Ms. / \_\_\_\_\_

☐ Non-member

 email address 

☐ IEEE Member Member #: \_\_\_\_\_ Member of \_\_\_\_\_ technical society

Employer: \_\_\_\_\_

Employer Address: \_\_\_\_\_

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

Business (day) telephone #: \_\_\_\_\_ Home telephone #: \_\_\_\_\_

Please enclose required fee payable to: **North Jersey Section IEEE**

Registration status will be mailed after March 6, 2000. Phone inquiries concerning registration will NOT be honored. In general, the effective date of the application corresponds to the date when BOTH a fully completed application & payment are received.

☐ Tuition receipt will be mailed only if this box is checked

Signature: \_\_\_\_\_