

SCANFAX

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A publication of the
Institute of Electrical & Electronics Engineers
— Chicago Section —

Electromagnetics

**Touching Every Aspect of
Modern Life: Standards are Vital**

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Chairman
Pat Murphy, E.E., P.E.
Phone 312-733-7000 ext. 6805
Fax 312-432-7118
E-mail: patmurphy@IEEE.org

Editor
Gerry Ryan
Phone 708-445-7537
Fax 708-445-7538
E-mail: mondoryan@aol.com

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CHICAGO SECTION EXECUTIVE COMMITTEE MEETING

Tuesday, April 9, 6:30 pm
DeVry DuPage, Room TBA, 1221 N. Swift Rd., Addison, IL
No Registration Needed

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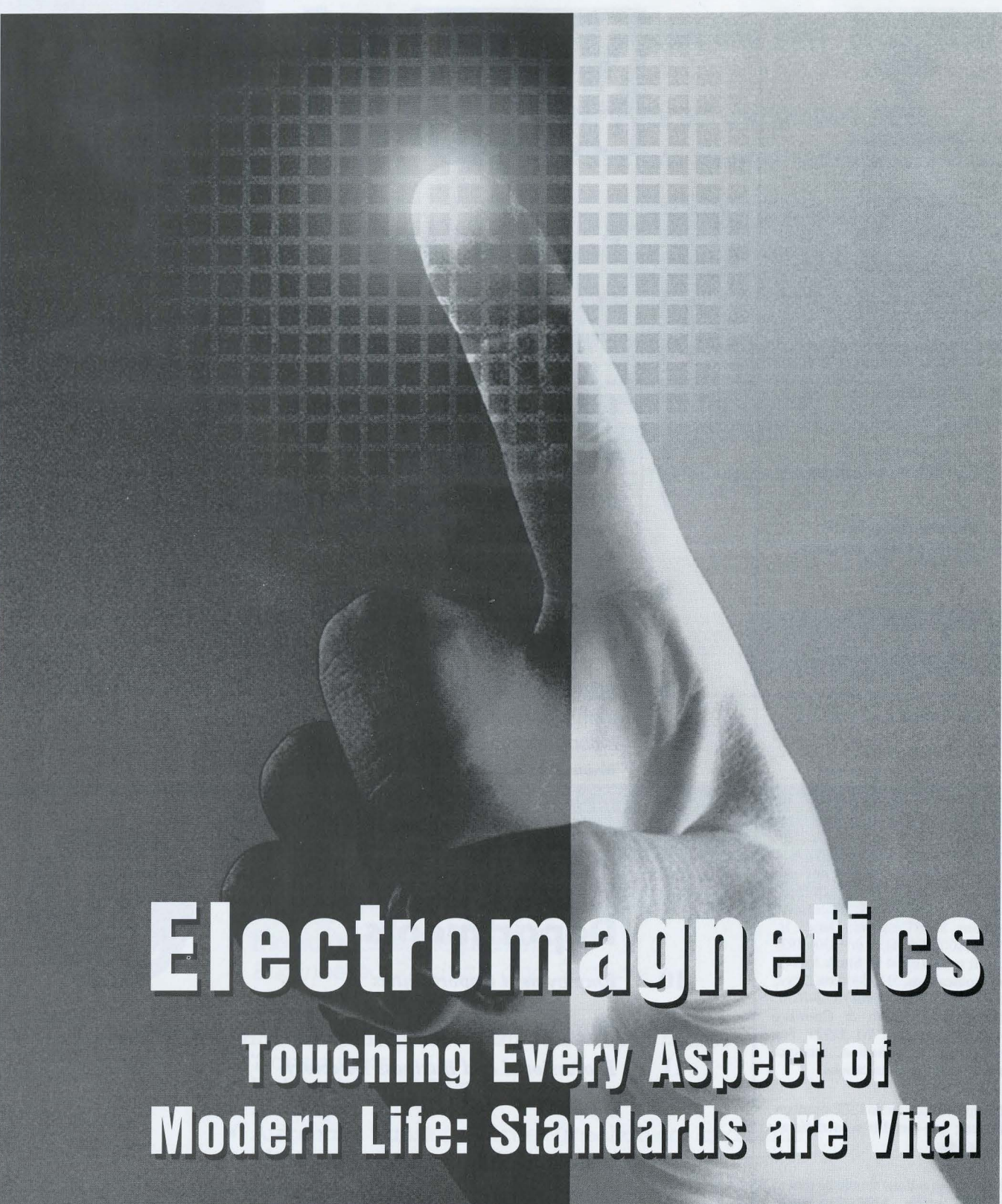
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Electromagnetics

Touching Every Aspect of Modern Life: Standards are Vital

By
**Paul
Zukowski**

Every wire with a current flowing through it and nearly every electronic device produces some sort of electromagnetic field. The earth itself has a magnetic field, as the Northern Lights (aurora borealis) demonstrate, and even the human body produces low levels of electromagnetic radiation.

Because sources of electromagnetic interference is so ubiquitous, the need for standards is absolutely crucial. Picture a world where the electronic devices in your automobile caused your cell phone to malfunction — or your heart pacemaker.

New Wireless Standard

Speaking of cell phones, the industry is poised to roll out a new level of wireless service often called "third generation" or 3G that promised to deliver video to handheld devices as well as voice and data. To help enable that, hundreds of engineers from the world's leading wireless operators and vendors met for the last two years in an open-air consensus process to come up with an air interface standard.

IEEE Standard 802.16™ WirelessMAN™ ("Air Interface for Fixed Broadband Wireless Access Systems") was approved in December by the Standard Board of the Institute of Electrical and Electronic Engineers Standards Association (IEEE-SA). Having this standard in place will enable the use of 10 to 66 GHz wireless networks as economical high-speed "last-mile" connections to public networks in metropolitan areas. The standard enables interoperability among devices from multiple manufacturers.

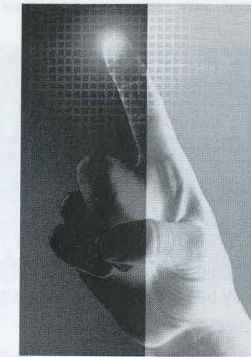
In a published statement, Roger Marks, Chair of the 802.16™ Working Group on Broadband Wireless Access said, "The new WirelessMAN™ standard is a groundbreaking development that changes the landscape for providers and customers of high-speed networks." It is the first broadband wireless access standard from an accredited standards body and can be viewed at <http://WirelessMAN.org/published.html>.

The IEEE 802.16™ Working Group on Broadband Wireless Access has 178 members and 52 official observers and meets bimonthly. It is a unit of the IEEE 802 LAN/MAN Standards Committee, the premier transnational forum for wireless networking standardization. The new IEEE 802.16™ standard joins the widely used family of Ethernet and wireless networking standards developed by the committee.

Computational Electromagnetics

A standards project that is just getting underway involves computational electromagnetic computer modeling. As reported in the fall issue of the IEEE Electromagnetic Compatibility (EMC) Society newsletter, the IEEE Standards Association Board recently approved the new project to develop a formal standard and recommended practice applied to computational electromagnetics (CEM) computer modeling and simulation (M&S).

Andy Drozd of the IEEE EMC Society's Standards Development Committee wrote that there is a great deal of interest behind the idea of a CEM standard. He pointed out that the need arose over 30 years ago when computer tools for electromagnetics applications were first being used, partly in response to the growing complexity and sophistication of military and commercial systems designs.



The central issue is that there is a lack of well-defined methodologies to achieve code-to-code or even simulation-to-measurement validations within a consistent level of accuracy.

Today he sees the fast-track CEM M&S trend continuing to grow thanks to the availability of high-performance computing. Applications include analyzing printed circuit board radiated and conducted emissions/immunity, assessing system-level EMC, predicting the radar cross section (RCS) of complex structures, and automated target recognition (ATR) and imaging simulations.

According to Drozd, the central issue is that there is a lack of well-defined methodologies to achieve code-to-code or even simulation-to-measurement validations within a consistent level of accuracy. These concerns are what the standard and recommended practice are expected to address as well as providing a method for validating CEM codes and models.

There are two separate four-year projects established. Project 1597.1 is to develop a standard for the validation of CEM computer modeling and simulation codes in differing applications. The standard will provide a basis for analytical and empirical validation of CEM codes and configurations. Project 1597.2 is to develop a recommended practice for use in CEM computer M&S applications to guide the EMC design of printed circuit

boards for large, complex systems.

It is hoped that the new standard and practice will help modelers and analysts select and apply the appropriate modeling and simulation methodologies, physics, and solution techniques to achieve accurate results, and to complement measurements and EMC design tasks for a wide range of problems. Another important use of CEM computer modeling and simulation could be the study of radiation hazards and related safety issues.

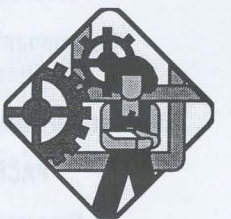
The first ad hoc Working Group meeting was held in conjunction with the 2001 IEEE International Symposium on EMC in Montreal. The Working Group plans to meet two to three times per year in conjunction with current EMC symposia, conferences, or review meetings. The Working Group officers are Andy Drozd of ANDRO Computational Solutions, Rome, N.Y. (Chair), Dr. Bruce Archambeault of IBM, Research Triangle Park, N.C. (Vice Chair), and Dr. Maqsood Mohd of Sverdrup Technology, Eglin AFB, Fla. (Secretary). For more information or to provide comments, please contact Andy Drozd at andro1@aol.com.

Paul Zukowski is a freelance writer from Madison, WI, who writes about technology. ■

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2002/2003 Official Ballot
Show your interest in section activities by voting.

Ballots must be
postmarked by
April 26th

ELIGIBILITY REQUIREMENTS:

- All members of the IEEE Chicago Section who are FULL members for 2002-2003 are eligible to vote.
- Student members and Associate members are not eligible to vote.

VOTING INSTRUCTIONS:

- Vote for a candidate by checking the box immediately to the left of the candidate's name.
- Write-in candidates are accepted for any office. Write-in candidates must be full members as defined above.
- To enter a write-in candidate, place the office title, candidate name, and member number

in the area provided. Additional write-in candidates may be submitted on a separate piece of paper (please sign).

- You may vote for only one candidate for each office.

We have several open positions and are looking for volunteers. Please help keep this organization strong by becoming involved as an IEEE Chicago Section officer or committee chair. We need you! For more information contact Ed Bogus at e.g.bogus@ieee.org or 847-259-9600, ext. 4738.

BALLOT INSTRUCTIONS:

- Enter your name, membership number, and mailing address in the space provided.
- After voting, sign the ballot on the line at the bottom.
- Ballots **must be mailed to:**
IEEE Business Office
c/o Western Society of Engineers
53 W. Jackson Blvd., Suite 1730
Chicago, IL 60604
Please mark "Ballot" on the envelope.

Chicago Section Nominations 2002-2003

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Member Services ☐ Jack Sherman
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Signature (required) _____

EVENING MEETING

IEEE-Fox Valley Subsection AP/MTT Chapter and Reliability Chapter
Nanotechnology: The Quest for Magnetic Electronics
Wednesday, April 10, 2002

Sam Bader, Argonne National Laboratory

About the Topic:

Argonne National Laboratory has proposed the creation of a major nanoscience/nanotechnology center. The Center would welcome outside users and would enable a new generation of cross-disciplinary advances, including the quest for magnetic electronics (the first commercial products are expected to be MRAMs from Motorola and IBM). The talk will outline the plans for the Center and highlight the background and recent research advances associated with magnetic electronics.

About the Speaker:

Samuel D. Bader is Senior Physicist and Group Leader of the Magnetic Films Group in the Materials Science Division of

Argonne National Laboratory. He was recently appointed Director of the proposed Center for Nanoscale Materials at Argonne. He received his Ph.D. from the University of California at Berkeley, and is a Fellow of the American Physical Society and the American Vacuum Society.

Sponsors:

IEEE Fox Valley Subsection, AP/MTT Chapter, Reliability Chapter, Illinois Institute of Technology's Center for Professional Development-Rice Campus, and Rice Student Association.

Location:

IIT's Rice Campus, 201 East Loop Road, Wheaton, Illinois. Take Rt.56/Butterfield

Rd. to first stoplight east of intersection at Butterfield & Naperville roads. Turn north onto East Loop Road (Grady's Restaurant and Phillip's 66 Gas Station on the corners); the campus will be on your right about a block north of Butterfield Road. More detailed directions and a map are available at www.rice.iit.edu/directions.html

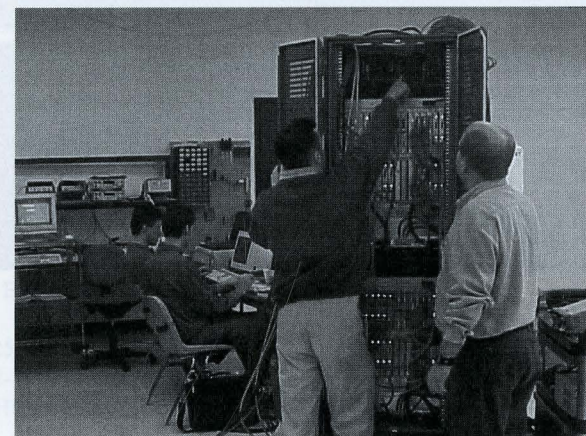
Time:

6:00 PM Social Hour
7:00 PM Presentation

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EVENING MEETING

IEEE-IAS/PES Dinner Presentation Short Circuit Ratings as Applied on 208 Through 15,000 Volt Equipment Wednesday, April 17, 2002

Steve Wilmes, PE and Joe Joyce, Square D Company

About the Topic:

Short circuit ratings as applied on equipment from 208 through 15,000 volts. Definitions of several key terms, series ratings, low and medium voltage ANSI ratings, and low voltage motor control centers.

About the Speakers:

Steve Wilmes

Education: BS, University of Illinois

Present Position: Square D Company, Application Engineer

Steve Wilmes is an Application Engineer in the Chicago District Sales Office for Square D Company where he has worked for almost 22 years. He is a registered PE in Illinois with extensive experience in the application of Circuit Breakers.

Joe Joyce

Education: BS, Purdue University

Present Position: Square D Company, Senior Sales Engineer

Joe Joyce is an Senior Sales Engineer in the Chicago Sales Office for Square D Company where he has worked for almost 30 years. Joe's current assignment is to work with Consulting Engineers, helping them apply Square D power distribution and control products.

NEW Location:

Costa's, 340 S. Halsted St., Chicago- Located in Greektown on the corner of Van Buren and Halsted.

Time:

5:30 PM Social

6:00 PM Dinner

7:00 PM Presentation

Cost:

Your cost includes the presentation and a four-course dinner with a choice of the main entry - Roast lamb, Chicken, or Fish (Vegetarian or special dietary meals available upon request). Cost is \$25 for IEEE members and \$30 for non-member. Valet parking is included with your meal.

Directions:

See www.iaschicago.com for directions.

Reservations:

Call the IEEE Business Office at (800) 898-IEEE or (630) 493-4333 or www.iaschicago.com with your reservation. Please note any special meal requests at the time of the reservation.

Note: For P.E. licenses that require continuing education for renewal, attendance at IEEE Technical Meetings is acceptable as one Professional Development Hour (PDH) per meeting.

EVENING MEETING

IEEE EMC Society Chicago Chapter X2Y, Broadband Capacitor Performance through Inductance Cancellation Technology Wednesday, April 17, 2002

Jim Muccioli, Jastech EMC Consulting

About the Topic:

The presentation includes an overview of X2Y capacitor technology which utilizes unique internal layered circuit architecture. The device is applied for RF filtering, decoupling, noise suppression, transient voltage suppression, and is designed to reduce the number of standard capacitors, inductors, ferrites and other passive elements used in a circuit.

Its low and high frequency component characteristics will be outlined and performance measurement techniques overviewed. In addition, product benefits with current and future applications will be described.

About the Speaker:

Jim Muccioli is a NARTE certified EMC and ESD engineer. He is an active member of SAE J-1113 and J-551 EMC committees, and is the current chairman of the SAE Integrated Circuit EMC Task Force. He was selected as an IEEE Fellow in 1998 for contributions to integrated circuit design practices to minimize electromagnetic interference. Mr. Muccioli is a holder and applicant of over 23 issued and pending US and International Patents and applications and teaches seminars on EMC through his consulting firm, Jastech EMC Consulting, LLC as well as undergraduate courses on EMC at the University of Michigan-Dearborn.

Location:

Elite Electronic Engineering
1516 Centre Circle
Downers Grove, IL 60515

Time:

6:30 PM Social Hour

7:00 PM Presentation

Reservations:

Steve Laya (Elite Electronic Engineering)
Phone: 630-495-9770
www.ewh.ieee.org/soc/emcs/chicago/

IEEE EMC Society Chicago Chapter 4th Annual Chicago EMC MiniSymposium Tuesday, May 21, 2002

Lee Hill, Editorial Review Board of Printed Circuit Design Magazine

About the Topic:

The Chicago Chapter of the IEEE EMC Society presents its fourth annual MiniSymposium. The purpose of this event is to offer EMC technical and regulatory information to individuals interested in the field of EMC who would not typically attend one of the national or international EMC symposiums.

The Minisymposium will include several speakers presenting tutorials on EMC design issues, domestic and international compliance regulations, and EMC testing.

In addition to the various technical presentations, there will be over twenty vendor exhibits highlighting EMC related products, test equipment, and services. Exhibitors include technical representatives, test laboratories, test equipment

manufacturers, component suppliers, EMC modeling vendors, and consultants.

About the Speaker:

The featured presenter this year will be Mr. Lee Hill, an IEEE EMC Society Distinguished Lecturer and member of the Editorial Review Board of Printed Circuit Design Magazine. Mr. Hill will present on the effects of inductance degrading signal integrity and producing excessive radiated EMI from PCBs, cables and connectors. The presentation reintroduces the audience to inductance through physical demonstrations and clear, easily comprehensible electrical definitions.

Location:

Holiday Inn, 860 West Irving Park Rd, Itasca, IL 630-773-2340

Time:

8:30 AM -5:30 PM

Cost:

Admission for IEEE members is \$35 (\$45 non-members, \$15 students) and includes breakfast rolls, coffee, lunch, and entry into a door prize raffle.

Registration:

Information on the full technical program, directions, and registration is available at the chapter website www.ewh.ieee.org/soc/emcs/chicago/, or contact Steve Laya, at Elite Electronic Engineering 630-495-9770.

Two Classes being offered through D.L.S. Electronic Systems, Inc.

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About the instructor

Donald Sweeney, Senior EMC Engineer is president of D.L.S. Electronic Systems, Inc. He is a graduate of the department of electrical engineering, University of Illinois at Urbana and has 30 years experience in the electrical engineering field. Most of his time has been devoted to solving problems in electromagnetic engineering and closely related disciplines. He has worked for Exel Corporation, Teletype Corporation, Gates Radio, and Collins Radio prior to forming D.L.S. Elec-



tronic Systems, Inc., a Wheeling, Illinois based company. He specializes in EMC, RFI, & EMI consulting and testing. Don has taught at Oakton College & the University of Wisconsin (at both the Madison and Milwaukee Campuses), and consults nation-wide on electromagnetic compatibility. He has served as a special consultant to Lawrence Livermore National Laboratory and the Nuclear Regulatory Commission. He was the Chicago area Chairman of the IEEE EMC Society, founding chairman of U.S. Council of EMC Laboratories, and a NARTE certified EMC Engineer and has served on the board of directors of IEEE EMC Society for six years.

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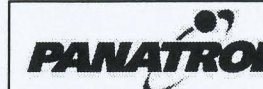
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Master of Science in Computer Network Systems

Our master's program in computer network systems provides professionals with state-of-the-art technical knowledge and a lot more. You will learn the ins and outs of WANs, LANs, Visual BASIC, distributed databases, VB script, Active Server Pages, and client server systems. You also will sharpen your communication skills, develop your management competencies, and explore the ethical issues of a fast-moving profession.

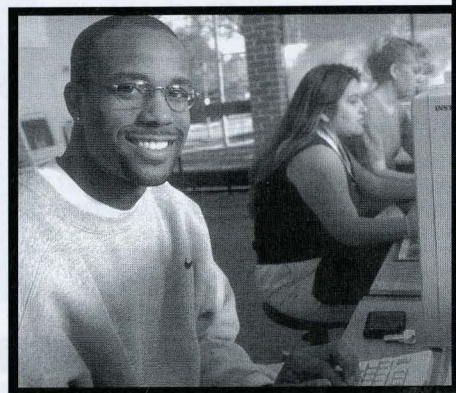
Elmhurst takes a distinctive approach to graduate study. We keep classes small, so each student works closely with our talented faculty. What's more, because you go through the entire program in cohorts, you will gain team-building experience and build a key professional support network.

All classes are scheduled part-time, in the evening. Challenging, innovative, intensely practical: at Elmhurst, you will get more than a master's.



Elmhurst College

More than a master's...



For information or to arrange a campus interview, call us at (630) 617-3030, or e-mail us at gradadm@elmhurst.edu. The College is located at 190 Prospect Avenue, Elmhurst, Illinois 60126.