



## How Engineers Can Gain the Management Skills They Need to Move Up the Corporate Ladder

~ Mark J. Crawford

**M**any professional engineers find that opportunities to advance into management positions within their firms are limited because they don't have the necessary business skills. People with deep technical knowledge can get trapped by their own niche and "don't understand how their job impacts the rest of the company," states Dr. Jeff Lefebvre of the Robert R. McCormick School of Engineering and Applied Science at Northwestern University. "Successful companies go to great efforts to integrate their operations and foster cross-communication."

Part of the problem is that engineering undergraduate programs across the country are de-emphasizing the business/management aspects of engineering, reports Hasan Sevim, Professor of Mining Engineering and Associate Dean at Southern Illinois University-Carbondale. "Most students need to graduate with 125-130 hours of coursework," says Sevim. "If we

made it 136 hours to include courses like statistics and engineering economics, our program would not be as competitive with other schools and our enrollment would drop. Students want the technical skills."

Because of the technical nature of their training, many engineers have difficulty being effective communicators outside their engineering realm. "Basic engineering degrees don't include writing skills," says Dr. Maurice L. Hirsch, Jr., Associate Dean for Academic Affairs at the School of Business, Southern Illinois University - Edwardsville. "Engineers, being very analytical, tend toward terse non-sentences or bullet formats. And it is critical for managers to have effective oral and written communication skills - and not just at their own level." Progressive companies want to maximize cross-communication and productivity, which also means keeping their top employees. Engineers can become frustrated at the lack of advancement opportunities. Because the engineer is doing a

great job with his or her technical specialty, less progressive companies are reluctant to move them up the ladder and start the search for an equally skilled replacement.

"Working engineers who are seeking greater managerial and technical responsibilities need comprehensive information about the basics of management, quantitative analysis, and behavioral science, as well as updated information about new developments in engineering," states Gina Weber Myerson, Associate Director of the Master of Engineering Management program at Northwestern University.

So how do engineers get the skills they need to make the transition to management? Or to be more competitive in the job market? Depending on their individual needs, and the role of the employer, a variety of Master of Business Administration (MBA), Master of Engineering (ME), or professional enhancement programs can help engineers

## MBA PROGRAMS

### ILLINOIS INSTITUTE OF TECHNOLOGY

Naomi Miyamoto, manager of recruitment for the Stuart Graduate Business School at Illinois Institute of Technology in Chicago, indicates that over half the students enrolled in its MBA program are engineers, most of whom are in their thirties with 6-10 years of professional experience. "They have gone up the ladder as far as they can go and have realized the next step is an MBA, which will help them compete for management positions," says Miyamoto.

Most MBA courses are offered at night. Students typically enroll in 1-2 courses per semester, which means it takes about three years to get their MBA's. Nearly 75 percent of the students have their tuition and expenses reimbursed by their employers. Miyamoto stresses that "companies realize that if they want to keep their engineers who are motivated to advance, who want more responsibilities and higher salaries, they must help them get the skills they need or lose them to the competition."

### NORTHERN ILLINOIS UNIVERSITY

Northern Illinois University's MBA program is also designed for the full-time working professional who wants to earn a quality MBA degree by going to school part-time in the evenings. "Our scheduling is flexible and students can set their own pace," says NIU's Mona Samon. "Engineering courses can also be taken as electives."

Engineer Steve Bicking decided to

get an MBA after six years of professional employment. "I was already in management and wanted to improve my skills," he says. Now a project manager with Smith Engineering consultants in McHenry, Bicking knows his MBA will help in his dealings with private development firms, municipalities, and other clients "because the details of the business side are now easier to understand." With about a year to go, his MBA from NUI is nearly three-quarters complete. The time commitment is about 10-15 hours a week. "I think an MBA is a great enhancement to any engineering background," concludes Bicking.

Steve Moss, senior engineer with Hamilton Sundstrand in Rockford, Illinois, is also working toward his MBA. His goal is to go beyond technical management into wider-ranged corporate management. "I think the MBA is critical for a technical person with limited business experience to move up the corporate ladder," Moss maintains. He is also pleased with his company's support, which includes reimbursement of tuition and other expenses, a gift of corporate stock when he finishes his degree, and being involved in the MBA rotation program, which gives members management experience in different parts of the company. Moss spends about 10-20 hours a week studying.

Working as a supportability consultant for Caterpillar in DeKalb, engineer Tonya Schnelle describes her job as "interfacing between the technical group and the rest of the corporation." She started her MBA program at NIU "to better understand the big picture and make better business decisions." For Schnelle the hardest part is arranging her 8-10 hours of weekly study time around her busy travel schedule. "What has surprised me the most," she

shares, "is how much of what I am learning can be related to my life as a consumer."

## ME PROGRAMS

According to Thomas E. Glenn, Associate Dean of the Undergraduate Program at the University of Illinois-Chicago's College of Engineering, feedback from industrial giants such as Motorola, Lucent Technologies, Andrews, and Ameritech is indicating a need for curriculum that can upgrade both the technical and managerial skills of an engineer - in other words, a Master of Engineering (ME) program. "We also get frequent calls from former students who are seeking the same kind of program because they want to advance within their companies," says Glenn. "We are hoping to offer an ME program in the next year or so that will combine engineering and business courses."

### ILLINOIS INSTITUTE OF TECHNOLOGY

In addition to its MBA program, IIT offers a weekend MS degree in operations and technology management "for technical professionals seeking to advance their careers," says Dr. Lynn Miller, Assistant Dean at the Stuart Graduate School of Business. The program is ideal for professionals who are already experts in their chosen fields but who need advanced business and management training to be promoted. About 35 percent of the students are engineers.

The program consists of 12 four-hour courses that begin in August and convene all day on Saturdays. Because two courses are taken every quarter students graduate in 18 months. Curriculum blends

advanced business and management concepts with functional responsibilities in operations, manufacturing, total quality management, logistics, R&D, project management, economics, human behavior, and information systems. Case studies, team projects, and simulations are used to create the kinds of situations managers face on the job. Professor Joel Goldhar indicates "our goal is not to train students in the commonly accepted ways of solving today's problems, but to educate them to recognize and solve problems that neither we nor they have yet seen."

## NORTHWESTERN UNIVERSITY

Northwestern University has one of the few Master of Engineering Management (MEM) programs in the country. "MEM is an evening graduate program specifically geared toward working engineering professionals who want to advance to positions of greater managerial and technical responsibility," says Myerson. It focuses on the management of product, process, information, and telecommunications technology with cutting-edge engineering electives.

"Unlike a traditional MBA program," says Mark W. McGlothlin, President of Apex Medical Technologies and an MEM graduate, "the MEM program attracts fellow engineers, making the course content more focused, interesting, challenging, and relevant."

Participants must have at least three years work experience. Offered one night a week, the 12-course program takes three years to complete - 3 core business courses, 2 engineering courses, 6 electives, and the crowning

"Capstone Business Laboratory" experience. Unique to this program is that every course has a focus on engineering applications.

"Unlike MBA's, our MEM is divided into management topics and technical topics," says Professor and Director Barry Nelson. "Typical MBA programs take students from all backgrounds and as a result the degree is much more generalized. The MEM finance, accounting, and marketing courses are all taught from an engineering perspective. For example, we would never use 'Ben and Jerry's' as a case study." Popular electives include technical entrepreneurship, supply chain management, and project management.

For many students, the Business Laboratory course is the highlight of the program. "Students apply what they have learned to a dynamic business scenario," says instructor Jeff Lefebvre. "It's fun and challenging. It is not standard talk-and-chalk. Everyone becomes involved."

Jerry Purciarello, an engineer with the consulting firm of Sargent and Lundy in Chicago, is in the middle of the MEM program. "I have always been interested in engineering management, which is what MEM specializes in," says Purciarello. "It is very interactive with computer simulations of corporate situations, working in teams, and making business decisions. The computers allow you to see the immediate impacts of your decisions."

The amount of time Purciarello spends on his courses - about 13 hours a week - is well worth it. "It is making me more aware of all the opportunities out there, and the cutting-edge applications of computers and technology. It is ideal for people who want to be

involved in the entire process of translating a good technical idea into a marketable product."

## OTHER PROGRAMS

The center for Executive and Professional Development at Bradley University in Peoria is designed to help corporations train their key personnel to better respond to the complex and rapidly changing business environment. Sometimes called a "mini-MBA," the program has been utilized by engineers from major companies for over eight years. "The center helps companies keep ahead of the competition and apply the most up-to-date business ideas," says Bradley's Angie Liberty. "We can design one- or two-day programs or workshops to meet specific corporate needs in just about any area of business." Training can be conducted at Bradley or the work site.

## PARTING ADVICE

Engineers who are working toward their MBA or MEM degrees will tell professionals who are considering the same path to really think it through. Daily activities will definitely change. Free time may disappear (coursework requires anywhere from 8 to 20 hours per week). Most engineers deal with technology every day and focus on designing products. Although there may be more money in management, will they be comfortable in this high-stress environment? Are they people-oriented? And getting an MBA will not result in an immediate pay raise - the financial rewards will come later as the engineer accepts increased responsibility and is acknowledged for making better business decisions.

*ILLINOIS ENGINEER*