

# Alumni Newsletter Summer 2001

## Department of Industrial and Operations Engineering

### Six More Years!

By Jeffrey Liker, Newsletter Editor and Professor, IOE

A lot has happened since the Winter, 1999 Newsletter. A highlight for IOE was that we were accredited for the maximum six years by ABET (accredits engineering schools). ABET used to have a long list of things to teach for engineering schools, with some specific requirements for each field like IOE. For this recent accreditation we decided to apply under a new system they recently rolled out. In this case a system similar to a Total Quality Management program was used. As a department we needed to define our learning objectives for our students and how we will measure these. Then we had to develop the measures and demonstrate we were beginning to use them for continuous improvement.

We now have sympathy for all of you

in industry who work for service organizations and ask how to measure your effectiveness. Some of us may have given you glib responses in the past but we learned first hand what a challenge it is.

An important part of the evaluation was whether we used constituent input to develop our mission statement and learning objectives. We involved alumni through our external advisory board and our Alumni Academy as well as held focus groups for students. ABET required a number of learning objectives in basic math and science knowledge and some innovative objectives like learning to work as a team, learning professional ethics, and learning about environmental impacts. One thing you learn about standards like ISO 9000 is do not promise more than you need to because you will be held to it. Well we did not follow this advice. We came up with additional



A peaceful afternoon at the reflecting pool fountain, outside IOE building. This addition to North Campus was a gift from the Engineering Class of 1947. At the distant background is the Lurie Tower.

### Table of Contents

<a href="#">Editor's Note .....</a>	<a href="#">1</a>
<a href="#">From the Chair .....</a>	<a href="#">2</a>
<a href="#">Alumni Society Merit Award .....</a>	<a href="#">3</a>
<a href="#">Alumni Survey '99 Result .....</a>	<a href="#">4</a>
<a href="#">Program Updates .....</a>	<a href="#">9</a>
<a href="#">Department Updates .....</a>	<a href="#">14</a>
<a href="#">Student Organizations .....</a>	<a href="#">16</a>
<a href="#">Faculty Focus.....</a>	<a href="#">18</a>
<a href="#">Adjunct/Visiting Faculty Focus</a>	<a href="#">24</a>
<a href="#">Special Honors.....</a>	<a href="#">28</a>
<a href="#">Charitable Contributions.....</a>	<a href="#">29</a>
<a href="#">Alumni Updates .....</a>	<a href="#">30</a>

Editor: Jeffrey Liker, Professor, IOE  
 Assistant Editor: Kuo-Ting (Ken) Hung,  
 BSE EECS '96, MSE IOE '98  
 Comments?: [ioe.alumni.newsletter@umich.edu](mailto:ioe.alumni.newsletter@umich.edu)

skill objectives for IOE:

1. **Human Resource Management (Social) Skills** (e.g., manage people, understand diversity, change management, etc.)
2. **Business Management Skills** (e.g., global management, business law, engineering economy, etc.)
3. **Personal Management Skills** (e.g., goal setting, time management, lifelong learning skills)
4. **Macro Analysis** (e.g., problem definition, designing products and processes)
5. **Critical Thinking** (e.g.,

*(Continued on page 2)*

# From The Chair

## From the Chair

By Lawrence M. Seiford,  
Department Chair and  
Professor, IOE

Greetings to all IOE alumni and friends! We are reaching the end of the academic year, and I have found my new position as chair to be both challenging and rewarding. The caliber and professionalism of our students, faculty, and staff make me proud to represent IOE locally and at professional meetings across the country.

Our graduate and undergraduate programs are ranked #2 in the nation and we continue to be a popular department of choice with approximately 550 IOE undergraduates - truly the best and the brightest of Michigan Engineers! For example, the president, vice president, and secretary of the (graduating) Class of 2001E are all from IOE. In addition, you can imagine how pleased I was at the College of Engineering's Graduation Exercises to discover that all three student speakers were from IOE.

As described in Faculty Focus, the faculty continue to excel in all aspects of their work. Among the special honors this year were the awarding of the "Herrick Professor of Manufacturing" endowed professorship to Steve Pollock and the IOE Award for Outstanding Accomplishment to Chip White.

Last, but not least, I would like to recognize our dedicated and loyal staff for their commitment to meeting the

needs of students and faculty and making the department run so smoothly. We are extremely proud that our undergraduate student advisor, Pam Linderman, was honored with the College of Engineering's Excellence in Staff Service Award.

These are exciting and challenging times for educators. The rapid advancements in technology have had, and will continue to have, a dramatic impact on the way we do business. Many of you may be aware that MIT recently announced their intention to make nearly all of their course materials available free on the World Wide Web. Their goal is to support education worldwide, including innovations in the process of teaching and learning itself. The University of Michigan has joined fathom.com, a consortium of prestigious institutions. Fathom's primary goal is to open the enormous intellectual resources of these institutions to Internet users. The College of Engineering is working with Shanghai Jiao Tong University to develop undergraduate and graduate courses in industrial (and mechanical) engineering based on the Michigan Engineering model. This will change how China educates its future engineers. These three examples clearly illustrate the forces of technology and globalization currently reshaping education.

We all know that change is here to stay. I'm convinced, however, that one thing will never change: the significance of the Michigan experience! In my travels across the country and around the world, I have met a number of you - loyal and enthusiastic alumni who couldn't wait to congratulate me and

to tell me about their wonderful experience at Michigan - praise for the faculty and staff, the value of IOE course work, and/or warm memories of extracurricular activities. After my first year, I understand this pride and am pleased to be part of this tradition. You, our loyal alumni, are part of an incredible legacy. Please visit our alumni web page, <http://ioe.engin.umich.edu/alumni.html> to update your information. I'd also be delighted to hear from you regarding any suggestions you have for our future. (E-mail: [seiford@umich.edu](mailto:seiford@umich.edu))

---

*(Continued from page 1, Six More Years!)*

synthesize information, product logical inferences, define ambiguous problems, etc.)

6. **Operations Management** (e.g., understand quality concepts, cost accounting principles, capacity plans, basic ergonomics)

7. **Information Systems** (e.g., understand a programming language, understand software development as an example of the engineering process, learn basics of database structures, skills in identifying information systems requirements)

8. **Operations Research** (broad understanding of O.R. as tools for planning, formulate problems as optimization models, learn basic tools of optimization to improve system performance)

We developed a whole set of measures - senior exit surveys, employer surveys, revised course evaluations, faculty self-assessment AND the alumni survey. As it was, IOE was one of the few departments that already had an

*(Continued on page 8)*

# Alumni Society Merit Award

The University of Michigan College of Engineering Alumni Society awarded John A. Muckstadt the Industrial and Operations Engineering Alumni Society Merit Award at the College's annual Alumni Society Awards Dinner held on October 13, 2000.

The Alumni Society Merit Awards were established to honor distinguished alumni who personify the College's tradition of excellence and who have had continuing impact on their fields. The Award is given to one alumnus from each of the eleven academic departments within the College. Recipients are selected by the departmental committees whose members are chosen and headed by the department chair.



John A. Muckstadt studied at the University of Rochester for the A.B. degree in Mathematics and at the University of Michigan for the M.S. in Industrial Administration, the M.A. in Mathematics, and the Ph.D., granted in 1966, in Industrial Engineering. He joined the Cornell faculty in 1974 after twelve years of active military service as a faculty member of the Air Force Institute of Technology and an operations research analyst at the Air Force Logistics Command Headquarters.

Dr. Muckstadt has been a visiting

professor at the Université Catholique de Louvain, Belgium (1980), the Katholieke Universiteit, Leuven, Belgium (1981-82), and the University of Michigan (1987). At Cornell he has served as the chairman of the Graduate Professional Programs Committee and was the founding director of the Cornell Manufacturing Engineering and Productivity Program (COMEPP), which is now the Center for Manufacturing Enterprise. Dr. Muckstadt was also the director of the School of Operations Research and Industrial Engineering at Cornell University from 1987 to 1996. Currently, he is conducting research in manufacturing logistics and inventory control. He has written more than fifty papers on these subjects.

An associate editor of four scholarly journals and a consultant to many corporations, Muckstadt is a member of the Institute for Operations Research and the Management Sciences, and the Institute of Industrial

Engineers. He has served as a consultant to numerous industrial organizations, including the Chicago Pneumatic Tool Company, IBM, Bell Atlantic, GM, RAND corporation, TRINOVA Corporation, SAS Airlines, GE, and Xerox, as well as to several government agencies.

Dr. Muckstadt received an IIE Transactions Award in the area of Best Paper in Scheduling and Logistics Focus Issue for his coauthored paper with Dr. Charles R. Sox, "Optimization-based planning for the stochastic lot-scheduling problem." In 2000, he was awarded the College of Engineering Excellence in Teaching Awards from Cornell University. In the same year, Dr. Muckstadt was named the Acheson/Laibe Professor of Business Management and Leadership Studies by the Cornell University Board of Trustees.

Dr. John Muckstadt (*right*) received the 2000 IOE Alumni Society Merit Award from Stephen W. Director (*left*), Robert J. Vlasic Dean of Engineering, along with Lawrence M. Seiford (*far right*), IOE Department Chair, and Leslie L. Loomans (*far left*), Chair of Engineering Alumni Society Board of Governors.



# IOE Alumni Survey

## Result of 1999 College of Engineering Alumni Survey

### PART I. Background

1. What major(s) did you receive your undergraduate degree in?

<u>%</u>		<u>%</u>	
0.6	Aerospace Engineering	0.2	Engineering Physics
0.0	Atmospheric, Oceanic & Space Sciences	81.8	Industrial and Operations Engineering
0.5	Chemical Engineering	0.5	Materials Science and Engineering
0.5	Civil and Environmental Engineering	6.9	Mechanical Engineering and Applied Mechanics
0.4	Computer Engineering	0.2	Naval Architecture and Marine Engineering
1.4	Electrical Engineering	0.0	Nuclear Engineering and Radiological Sciences
11.0	No Response		

3. Did you enter the U-M College of Engineering as a:

<u>%</u>		<u>%</u>	
70.1	First year student	11.3	Transfer student from a four-year college
4.5	Transfer student from a two-year college	7.3	Transfer student from other U-M school or college
6.8	No Response		

4. A. What degrees did you get from IOE at University of Michigan (check all that apply):

<u>%</u>	
79.2	Bachelors
21.4	M.S.
5.2	M.Eng.
5.0	Ph.D.

B. What advanced degrees do you hold?

<u>%</u>		<u>%</u>		<u>%</u>	
1.3	2 <sup>nd</sup> B.S.	20.5	M.S.	0.8	Ph.D. (non-Engineering)
3.6	J.D. (Law)	8.6	M.Eng.	2.5	Other
31.0	M.B.A.	4.1	Masters (non-Engineering)		
0.7	M.D.	5.8	Ph.D. (Engineering)		

5. What is your gender? 20.5% Female 78.9% Male 0.6% No Response

6. If you are an U.S. citizen or Permanent Resident, please mark the one race or ethnicity which you think applies to you best (*optional*):

<u>%</u>	
2.3	African American/Black (not of Hispanic origin)
4.6	Asian or Pacific Islander (includes the Indian sub-continent)
0.0	American Indian or Alaskan Native
1.7	Hispanic/Latino(a) (Spanish culture or origin, regardless of race)
85.7	White (persons not of Hispanic origin, having origins in any of the original peoples of Europe, North Africa, or the Middle East)
1.2	Race not included above
4.5	No Response

7. What type of organization do you work for? (*check the one that is most appropriate*)
- |                         |  |                                 |
|-------------------------|--|---------------------------------|
| 1.5 aerospace           | 2.0 electronics                        | 0.7 public utility              |
| 16.2 automotive         | 3.9 engineering consulting firm        | 0.4 elementary/secondary school |
| 1.3 chemical/petroleum  | 3.9 financial firm                     | 1.1 transportation firm         |
| 1.3 communications firm | 0.7 food production/processing         | 4.4 university or college       |
| 2.6 computer hardware   | 2.1 government agency or lab           | 18.2 other                      |
| 4.4 computer software   | 5.5 health-related firm/public utility | 8.9 currently not employed      |
| 2.5 consumer products   | 9.2 management consulting firm         | 9.2 no response                 |
8. A. How satisfied were you with the career services offered by the College in terms of how helpful they were to you as an **undergraduate**? **AVERAGE = 3.6**  
 5 Very satisfied      4 Satisfied      3 Neutral      2 Somewhat dissatisfied      1 Dissatisfied
- B. How satisfied were you with the career services offered by the College in terms of how helpful they were to you as a **graduate student**? **AVERAGE = 3.3**  
 5 Very satisfied      4 Satisfied      3 Neutral      2 Somewhat dissatisfied      1 Dissatisfied
9. What is your job title/level? (*check the one that is most appropriate*)
- | %                                | %                                  | %                             |
|----------------------------------|------------------------------------|-------------------------------|
| 1.8 software developer           | 21.0 mid-level manager             | 7.2 systems analyst/engineer  |
| 0.7 designer                     | 21.5 corporate executive           | 3.7 supervisor of small group |
| 0.9 graduate student             | 6.6 marketing/sales manager        | 10.7 consulting engineer      |
| 3.6 faculty member               | 1.3 researcher                     | 0.8 doctor                    |
| 0.3 elementary/secondary teacher | 7.6 manufacturing/process engineer | 2.2 lawyer                    |
| 10.1 no response                 |                                    |                               |
10. In what income range does your annual salary (gross) fall? **AVERAGE = \$92,000**  
 67% of the responses falls within the range of \$41,000 to \$160,000
11. Overall, how satisfied are you with your choice of career? **AVERAGE = 4.3**  
 5 Very satisfied      4 Satisfied      3 Neutral      2 Somewhat dissatisfied      1 Dissatisfied
12. How many different companies/employers have you worked for since the receipt of your B.S. degree from the U-M College of Engineering? **AVERAGE = 2.75**  
 67% of the responses falls within the range of 1.1 to 4.4 jobs

## **PART II. Undergraduate Education (Please answer only if you received a U.M. IOE UNDERGRADUATE degree)**

13. Please rate how important the following competencies and attitudes have been to you in your professional experience and how well you feel the undergraduate program at the University of Michigan prepared you in these areas?

*Circle the appropriate number for A & B using the following scales:*

- |                              |                                   |
|------------------------------|-----------------------------------|
| <b>A: 5=always necessary</b> | <b>B: 5=excellent preparation</b> |
| 4=often useful               | 4=good preparation                |
| 3=useful                     | 3=some preparation                |
| 2=rarely useful              | 2=slight preparation              |
| 1=never used, needed         | 1=no preparation                  |

# IOE Alumni Survey

	A: <u>Importance (Avg.)</u>	B: <u>U-M Preparation (Avg.)</u>
Math, science and engineering skills	3.7	4.1
Ability to design and conduct experiments	2.7	3.2
Ability to design a system, component or process	3.5	3.3
Ability to function on a team	4.4	3.0
Engineering problem-solving skills	4.1	4.0
Appreciation for the ethical values of being a professional	4.0	3.0
Communication skills	4.7	2.9
Understanding of the social, economic and environmental impact of my work	3.3	2.6
Interest and ability to keep up-to-date through continuing education (formal or informal)	3.7	3.0
Knowledge of contemporary issues that affect my work	3.8	2.8
Ability to use modern engineering techniques, skills & tools	3.2	3.5

17. Overall, how satisfied are you with your UNDERGRADUATE educational experience at the University of Michigan? **AVERAGE = 4.3** (67% of the responses falls within the range of 3.5 to 5.0)  
 5 Very satisfied    4 Satisfied    3 Neutral    2 Somewhat dissatisfied    1 Dissatisfied

## PART III. GRADUATE EDUCATION (Please answer only if you received a U.M. IOE GRADUATE degree)

18. Please rate how important the following competencies and attitudes have been to you in your professional experience and how well you feel the GRADUATE program at the University of Michigan prepared you in these areas?

*Circle the appropriate number for A & B using the following scales:*

- A: 5=always necessary    B: 5=excellent preparation**  
 4=often useful            4=good preparation  
 3=useful                    3=some preparation  
 2=rarely useful            2=slight preparation  
 1=never used, needed    1=no preparation

	A: <u>Importance (Avg.)</u>	B: <u>U-M Preparation (Avg.)</u>
Math, science and engineering skills	3.9	4.1
Ability to design and conduct experiments	3.1	3.4
Ability to design a system, component or process	3.7	3.4
Ability to function on a team	4.5	3.1
Engineering problem-solving skills	4.2	3.9
Appreciation for the ethical values of being a professional	3.9	3.9
Communication skills	4.6	3.0
Understanding of the social, economic and environmental impact of my work	3.5	2.7
Interest and ability to keep up-to-date through continuing education (formal or informal)	3.9	3.3
Knowledge of contemporary issues that affect my work	3.8	3.2
Ability to use modern engineering techniques, skills & tools	3.7	3.8

22. Overall, how satisfied are you with your GRADUATE educational experience at the University of Michigan? **AVERAGE = 4.4** (67% of the responses falls within the range of 3.7 and 5.0)  
 5 Very satisfied    4 Satisfied    3 Neutral    2 Somewhat dissatisfied    1 Dissatisfied

## PART IV. General IOE Assessments

This part focuses on the usefulness the general IOE program overall— undergraduate and graduate level.

23. Please rate how important courses you took in the Industrial & Operations Engineering Department prepared you in the areas below (skip if you did not take courses in the area).

*Circle the appropriate number for A & B using the following scales:*

**A: 5=always necessary    B: 5=excellent preparation**

**4=often useful                      4=good preparation**

**3=useful                                3=some preparation**

**2=rarely useful                        2=slight preparation**

**1=never used, needed                1=no preparation**

<u>IOE Course areas</u>	<u>A: Importance (Avg.)</u>	<u>B: IOE Preparation (Avg.)</u>
Operations research	2.9	3.5
Ergonomics	2.7	3.4
Production and inventory control	3.3	3.4
Information systems	4.0	3.1
Engineering economy and capital budgeting	3.8	3.5
Work measurement	2.7	3.4
Simulation	2.8	3.2
Safety engineering and management	2.6	2.8
Organizational management	4.0	3.2
Hospital engineering	1.7	2.7
Facility layout	2.8	3.1
Senior projects	3.0	3.1
Manufacturing	3.5	3.3
Other	4.2	3.3

24. Overall, how would you rate the quality of education you received from the IOE program (compared to what you've heard about other IOE programs in other universities)? **AVERAGE = 3.8** (67% between 3.0 and 4.6)

5 The Best                      4 Exceptional                      3 Good                      2 Fair                      1 Poor

25. How would you rate the balance of theory and application in the IOE program for you professionally?

**AVERAGE = 3.5** (67% of the responses falls within the range of 2.9 and 4.2)

5 Much too theoretical    4 Too theoretical                      3 Right balance    2 Too applied    1 Much too applied

26. How satisfied are you with the following?

5 Very satisfied 4 Satisfied 3 Neutral 2 Somewhat dissatisfied 1 Dissatisfied

	<u>Average</u>	<u>Standard Deviation</u>
A. The IOE program overall	4.2	0.7
IOE Faculty/Staff	4.1	0.9
Other IOE Students	4.0	0.8
Other UM programs/opportunities	4.2	0.8
UM placement services	3.4	1.1
B. Job hunting overall	3.5	1.0
C. Salary offer	3.8	0.9
D. Job location	4.0	0.9
E. Job function	4.1	0.9

# IOE Alumni Survey

## Survey Data Analysis

### 1. Income based on the highest IOE degree attained:

	<u>Average</u>	<u>% of responses = (\$41-160K)</u>
<b>B.S.</b>	\$94,000	75%
<b>M.S./M.Eng.</b>	\$88,000	86%
<b>Ph.D.</b>	\$92,000	86%

### 2. Satisfaction with program based on the highest IOE degree attained:

5 Very satisfied    4 Satisfied    3 Neutral    2 Somewhat dissatisfied    1 Dissatisfied

	<u>Average</u>		
	<u>B.S.</u>	<u>M.S./M.Eng.</u>	<u>Ph.D.</u>
A. The IOE program overall	4.2	4.2	4.0
IOE Faculty/Staff	4.0	4.1	3.8
Other IOE Students	4.0	3.9	4.0
Other UM programs/opportunities	4.2	4.1	3.9
UM placement services	3.4	3.3	3.4
B. Job hunting overall	3.6	3.4	3.5
C. Salary offer	3.9	3.7	3.9
D. Job location	4.0	4.0	4.0
E. Job function	4.0	4.1	4.1

*(Continued from page 2, Six More Years!)*

alumni survey. The college has taken over this activity and is surveying selected classes rotating every year. We decided to add our own IOE-specific page and survey the rest of our alumni. Okay, we admit it, we are gluttons for punishment.

In this issue you can see the results of the 1999 IOE Alumni Survey. You can peruse it as you wish. Here are a few highlights:

- Of those in IOE getting advanced degrees 31% got MBAs and 29% got an M.S. or M.Eng. Almost 6% got Ph.D.s in engineering and we even have lawyers and M.D.s out there.
- Average salaries in 1999 were

\$92K and presumably have risen some since.

- Our graduates have worked for almost 3 different companies on average.
- Looking back, the most important skills learned at the undergraduate and graduate level are communication skills and the ability to function on a team. Teamwork seems well taught at the undergraduate level. Communication skills were moderately well taught at both levels—some work there seems to be required.
- Information systems and organizational management are the most important areas for your careers and preparation in these

was “good.”

- Overall you were quite happy with the overall quality of education at IOE (3.8 is almost “exceptional”).
- Interestingly, when we look at income by degree those with a B.S. in IOE score the highest on average.

We had an excellent response rate to our survey which to us reflects your enthusiasm with IOE and UM. It is clear you still feel part of the community and that is what this newsletter is trying to encourage. Thanks!

## Center For Ergonomics

By Thomas Armstrong, Professor, IOE and Director, Center for Ergonomics

The University of Michigan Center for Ergonomics is a multi-disciplinary unit devoted to education and research in ergonomics, the study of work and the efficiency and safety of human-machine systems. While much of the Center's work is in areas of physical ergonomics as it relates industrial and occupational applications, work in the area of cognitive ergonomics is growing and is complemented by activities in the University of Michigan Transportation Research Institute. Descriptions of some Center for Ergonomics activities follow and additional information can be found on our web site: <http://www.engin.umich.edu/dept/ioe/C4E>.

The Center for Ergonomics director is Professor Tom Armstrong. In addition to Professor Armstrong, other faculty participating in the Center include: Professors Don Chaffin, Monroe Keyserling, Yili Liu and Bernard Martin from the Department of Industrial and Operations Engineering; Alfred Franzblau, an occupational health physician from the Department of Environmental Health Sciences; and Robert Werner, a physician from the Department of Physical Medicine and Rehabilitation. Primary Center staff include: Eyvind Claxton, senior engineering technician; James Foulke, Chuck Woolley and Sheryl Ulin, senior research associates; Heidi Koester, senior research fellow; and Randy Rouborn, project manager. Patricia Cottrell, Pat Terrell and Kathleen Hanks provide administrative support to make the Center run smoothly.

Individual interests of Center for Ergonomics faculty are pursued in many different ways. Individual projects as well as collaborative projects between Center faculty members and other organizations are conducted. Dr. Armstrong's work is concerned with computerized tools for quantification of work related risk factors of musculoskeletal disorders and designing jobs and with models and procedures for preventing work disability. Dr. Chaffin is modeling human motion and collaborates with the University of Michigan Transportation Research Institute and the Statistics Department. Dr. Keyserling is investigating various methodologies for analyzing work and

also directs the occupational safety aspects of our academic program. Dr. Martin is studying ways of measuring muscle fatigue and has collaborated with investigators from the Lawrence Livermore National Laboratories. Dr. Liu's research is concerned with human performance and aesthetics, with a goal of developing mathematical models and design guidelines for describing the relationship between users' perceptions of equipment and engineering system parameters.

A major Center for Ergonomics activity includes our Rehabilitation Engineering Research Center (RERC) on Ergonomic Solutions for Employment. The RERC will help all people participate in activities of work and help employers attract and preserve workers. This RERC is in its third year and is funded by the National Institute on Disability and Rehabilitation Research and involves a number of projects exploring:

- procedures for identifying ergonomic interventions
- back pain, bending and work capacity
- back pain, spinal cord injuries and reach performance
- epicondylitis and work capacity
- natural history of musculoskeletal disorders
- use of continuous voice recognition systems and
- a demonstration web site including a database of jobs with ergonomic assessments to facilitate worker placement.

The RERC involves collaborations with employers, medical service providers and workers and most of our Center faculty and staff. It also involves in a number of outreach activities with other universities and professional organizations. Please visit our web site at: <http://umrerc.engin.umich.edu> for more information.

A new Center project includes studies concerned with preventing disability in automobile assembly plants. This UAW-GM supported project is concerned with:

- Using exercises to prevent upper limb disorders and
- Identifying factors that affect the return to work of persons with upper limb disorders, including carpal tunnel syndrome.

# Program Updates

---

Presently there are 12 Ph.D., 8 M.S. and 6 undergraduate students from Industrial Engineering, Biomedical Engineering, Occupational Health, Physical Therapy and Statistics working in the Center for Ergonomics. This broad range of backgrounds provides a rich work and learning environment for students interested in Ergonomics.

The Center for Ergonomics continues to maintain a strong continuing education program. The annual "Occupational Ergonomics" program is now in its twenty-second year. This course provides a state-of-the-art treatment of ergonomics as it relates to the design of manual work activities and is highly attended by engineers and safety and health professionals. This year's offering will be May 14-18 and followed by the "Ergonomics: Job Analysis and Field Studies," May 21-23. The Center conducts other ergonomics-related continuing education programs which draw attendees from across the nation. In the recent past we have collaborated to develop and offer programs with a national and international scope with organizations including: UC Berkeley, UCLA, the Rehabilitation Engineering and Assistive Technology Society of North America, the Society of Automotive Engineers, and the American Industrial Hygiene Association. Center for Ergonomics faculty and staff have also participated in national programs with the Rehabilitation Services Network, the American College of Occupational and Environmental Health State of the Art Conference, the Institute for Industrial Engineers, the ACM Computer Human Interaction meeting and a large number of additional programs and conferences conducted by other organizations..

The Center for Ergonomics has also been active within the state of Michigan, providing ergonomics training and consultation to small businesses across the state. This project is supported by a Safety Education and Training (SET) grant provided by the Michigan Department of Consumer and Industry services. SET grants are awarded annually based upon merit and we are currently in our tenth consecutive year of funding.

## Financial Engineering Program

By Romesh Saigal, Professor, Industrial and Operations Engineering and Interim Director, Financial Engineering Program

The Master of Science program in Financial Engineering has now been in existence since 1997 and has graduated 46 students with the degree. It has survived the departure of its first director Professor John Birge (who left us for Northwestern) and key faculty members Professors Vadim Linetsky (IOE) (to Northwestern) and Ronnie Sircar (Math) (to Princeton). Starting fall of 2000, Professors Jussi Keppo, Jan Vecer (IOE) and Mattias Jonsson (Math) have joined the program. We welcome them to Michigan.

MSFE is a Rackham Interdisciplinary program and the departments of IOE, EECS, Mathematics, Economics, Statistics, Finance of Business School and the Center for the Study of Complex Systems participate in it. This university wide span of the program differentiates it from other competing programs, all of which reside in one department, and enables us to accommodate students from economics, business, math, IOE, EECS and business. UC, Berkeley is the latest university to offer an MSFE degree and their program resides in the business school.

Students with this degree are in great demand. Companies hiring them include energy companies (Enron), investment banks (Morgan Stanley Dean Witter), banks (Credit Swiss), mutual funds (T. Rowe Price), hedge funds (Susquehanna Partners), corporate departments (Ford Credit), government (World Bank) and consulting companies (Author Anderson). The salary offers are mostly in six figures.

We are actively pursuing connections with industry, and have a contract (under the guidance of Professor Jussi Keppo) with Fortum (a Finnish energy company) to study the emerging energy derivative markets in Europe. Professor Keppo is also involved in a feasibility study of the emerging markets in Bandwidth derivatives with European telecommunication companies. We also have interns working at the trading floor of DTE Trading (a subsidiary of the Detroit Edison Company) with offices in Ann Arbor. We expect to increase our interactions with them in the future.