A message from the chairman

Dear students, alumni, and other friends of the department,

Welcome to another issue of ME Update. The department is moving ahead with considerable enthusiasm, and your continuing interest in mechanical engineering at ISU has an enormous influence on what we can accomplish on campus. Thanks for helping us do what we enjoy doing most, providing a first-rate education to engineering students.

This newsletter highlights several important facets of the department. For example, the student technical society and honorary organizations are thriving under superb student leadership and faculty advising. Their activities are a vital supplement to what goes on in the classrooms and laboratories.

Engineering work experience is also an essential part of an undergraduate education in mechanical engineering, and we are trying hard to increase the availability of this kind of opportunity for students.

The phenomenal growth of our graduate program is very exciting because it allows faculty and students to work on state-of-the-art and -market engineering projects.

In terms of staff, we are proud to introduce our five newest faculty members whose talents are adding much to what we have to offer. Also joining us are three new office staff members who provide us with the all important services. Three professors have elected to retire. We celebrate their contributions and regret their leaving our active ranks.

For your information, recent faculty, alumni, and student honors and awards are included. Please let us know if we have missed any.

Finally, I invite you to read about how much we gain from gifts from individuals, families, corporations, and other organizations. The generosity shown by friends of the department is awe inspiring and it propels us forward.

Clearly, the department is on the move. However, to improve, we continue to need your help. Let us know your thoughts on how we can do it better. We want to!

Cordial regards,

[Signature]

Department of Mechanical Engineering, Iowa State University, Ames, Iowa
Undergraduate student organizations provide exciting opportunities

Society of Automotive Engineers (SAE) (Over 70 members). Special events and activities for the year include hosting the 1993 Ford Probe Collegiate Driving Challenge on campus in October and participating in SAE competitions involving mini-baja and formula racing vehicles and a radio-controlled cargo plane model. Officers for the year are Angela Gregg—President, Tony Grau—Vice-President, Matt Scott—Secretary, and Brett Bailey—Treasurer. Faculty advisor is Jim Oliver.

American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) (About 40 members). Field trips included a visit to the new ice thermal storage facility at the Des Moines Area Community College in Ankeny and the new KVI office building in West Des Moines. The student section is well supported by the Iowa Chapter through two scholarships, handbook rebates, speakers, and tour guides. Officers include: John Trickel—President, Annette Tetmeyer—Vice-President, Tony Bier—Secretary, Joe Fong—Treasurer, and Mark Crocker—Engineering Council Representative. Faculty advisor is Greg Maxwell.

American Society of Mechanical Engineers (ASME) (About 175 members). Activities for the year include touring Fisher Controls in Marshalltown and 3M in Ames, sponsoring a variety of invited speakers, and selling sweatshirts and engineering problems paper. Officers include: David Gift—President, Kay Frank—Vice-President, Lynn Zwiers—Secretary, and Darby Larson—Treasurer. Faculty advisor is Bill Bathie.

Pi Tau Sigma (About 45 members). Activity highlights include a monthly Dinner with a Prof, the ME fall picnic together with other departmental student organizations, and the annual department spring banquet. Pi Tau Sigma is relied on each semester for help with the course and instructor evaluations and with the graduating senior/department chair get-together each semester. Officers include: Dave Waller—President, Mike Jensen—Vice-President, Todd Oltman—Treasurer, Chris Froath—Secretary, Paul Witty—Parliamentarian, Randy Blake, Jim Gruman, and B. J. Newton—Engineering Council Representatives, and Darrin Almond, Jeff Fosler, and Ted Veliz—department curriculum committee representatives. Faculty advisor is Bill Cook.

Bill Bathie presents International Gas Turbine Institute scholarship check to Darby Larson. This annual award is for an outstanding ASME student section member. Also in the picture is David Gift, ASME student section president.
The co-op way

Cooperative education, an optional program in the department since 1954, alternates classroom study with supervised engineering work experiences. The first group of fourteen co-op students, placed at various John Deere facilities, completed the program and were graduated in 1957. Since then, over 360 mechanical engineering students have completed the program.

Mechanical engineering students enter the program at the end of their sophomore year with the last two years of the curriculum spread over three years. They complete the same requirements for the bachelor’s degree as regular students while acquiring from 12 to 15 months of industrial experience.

Approximately 15% of our mechanical engineering undergraduates participate in the co-op program. The graph shows the number of students participating in the program and the number who completed the program during each of the past ten years. Note the variation in the number of students who participated in the program from 1982 to 1992.

Students who want a co-op experience interview on campus with company representatives. After accepting an offer, students stay with the same company until graduating, alternating between the company and campus until they have completed their degree requirements. Most students spend their last two semesters on campus since technical and most design electives are offered only once a year.

Some advantages of a co-op education are that it
• acquaints students with the functions of an engineer and identifies their strengths and weaknesses
• adds reality to learning
• develops a greater sense of responsibility, self-confidence, and maturity in students
• provides valuable work experience that improves job prospects after graduation
• helps students decide on technical electives
• lets students earn a substantial portion of the cost of their education.

Many companies use their co-op program to recruit trained personnel. Companies like to interview students who have participated in a co-op program because they have industrial experience and usually know what they want to do after graduation.

Other ways that undergraduate students can obtain practical experience include:
• summer jobs
• internships (This is usually a two-term work experience.)
• part-time work (for credit or pay) on departmental research projects.

Department goals for the future are to increase the number of companies offering co-op, internship, or summer work experiences and the number of students working on departmental research projects either for credit or for pay. We want to enhance classroom and laboratory teaching by making the valuable lessons of actual engineering work experiences available to more students. Please contact Bill Bathie, assistant chair of the department, to give your suggestions on how we can expand the engineering work experience opportunities available to our students.
Graduate program continues to grow

In 1982 the graduate program in mechanical engineering at ISU included 39 full-time graduate students. Through the efforts of our faculty, the graduate program grew to 78 full-time students by 1990. Despite concerns at the time that additional growth would be difficult to achieve, the department set an ambitious goal of 135 graduate students by 1995. The momentum of scholarly activity in our department has us approaching this goal much sooner than expected: the number of full-time graduate students reached 123 during the 1992 fall semester.

Associate Professor Robert Brown, director of graduate studies in mechanical engineering, attributes much of this growth to faculty members who have joined the department in the last few years. "Although faculty with established research programs support the largest number of students, the recent surge in enrollment has been enhanced by the efforts of new members of the department," Brown says. He points to newcomers like assistant professors Eric Bartlett and Jim Oliver each of whom work with five or more graduate students.

Our current graduate students come from a wide variety of experiences and backgrounds. For example, Steven Winter, a top undergraduate student in ISU's aerospace engineering department last spring, decided to join our graduate program for the wider opportunities offered by mechanical engineering. He now works with Professor Cook on experimental fluid dynamics. John Rasberry, a graduate from Annapolis in 1985, found himself on board a ship off the coast of Kuwait a little more than a year ago. Resolving to find a less exciting but still stimulating career, John is now developing methods for enhanced heat transfer while working toward his master's degree at ISU.

Recent research sponsors

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General Electric
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International Fire Particle Research Institute, Inc.
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Iowa Center for Emerging Manufacturing Technology
Iowa Department of Economic Development
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Iowa Laser Technology, Inc.
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U.S. Office of Naval Research
University City Science Center

Some of the faculty, staff, and graduate students of the department of Mechanical Engineering, Fall 1992.
Transitions

New faculty
Eric Bartlett joined us as an assistant professor of nuclear engineering in 1991 and has already established an important research program applying neural networks to solving complex engineering controls problems. The Engineering Student Council recently honored Eric with an Outstanding Professor Award. He received his B.S. degree in electrical engineering and his M. Eng. degree in nuclear engineering from Rensselaer Polytechnic Institute and his Ph.D. degree in nuclear engineering from the University of Tennessee. Prior to moving to ISU, Eric served as a postdoctoral research fellow on a joint appointment at The Emory University Medical School and the Georgia Institute of Technology.

Last summer Dan Bulle came to ISU as an associate professor of nuclear engineering, specializing in radioactive waste management. Just prior to that, Dan worked at the Georgia Institute of Technology where he was a 1991–92 Lilly Teaching Fellow. After receiving his Ph.D. degree in nuclear engineering from the University of Wisconsin in 1984, Dan spent five years as a practicing professional engineer at the Lawrence Livermore Laboratory and smaller corporations that served the lab. He obtained a B.S. degree in engineering science at ISU and M.S. degrees in materials sciences and nuclear engineering at the University of Wisconsin.

Greg Luecke started at ISU as an assistant professor of mechanical engineering last summer. He is leading our controls-related effort in the mechanical engineering program. Greg received his Ph.D. degree in mechanical engineering last spring from Penn State where his research was centered on the application of neural nets to robotic control. After receiving his B.S.M.E. from the University of Missouri, he worked as a design engineer with emphasis on aircraft controls systems for eight years. He holds one patent. Greg received an M.S. degree from Yale University.

In 1991, Jim Oliver moved to Ames from the State University of New York-Buffalo to become an ISU assistant professor of mechanical engineering. He has set an intense pace for himself and his students. Recently, he received a National Science Foundation Young Investigator Award, one of only 200 selected from over 1600 nominees. Jim currently focuses on geometric modeling and computational methods applied to solving design and manufacturing problems. He received his B.S. degree from Union College and his M.S. and Ph.D. degrees from Michigan State, all in mechanical engineering.

Judy Vance transferred from the ISU Engineering Fundamentals and Multidisciplinary Design Division to our department in 1992 to become an assistant professor of mechanical engineering. She has five years of engineering practice in industry and five years of university teaching experience. As a fellow of the Iowa Center for Emerging Manufacturing Technology, she works on advancing engineering design and manufacturing. She received her undergraduate and graduate degrees in mechanical engineering from ISU.

New office staff
Rod Simpson joined the department last fall as an administrative assistant. He is the department office manager. Rose Pence and Becky Staedtler are new department secretaries. Rose is in the nuclear engineering program office, and Becky is in the department office.

Retiring faculty
Joe Baumgarten, emeritus professor of mechanical engineering—Joe retired after 14 years in the department. He was honored for excellence in teaching by senior ME students and the Iowa Legislature. Several of his senior design students won national awards for their design projects. While associated with the department, Joe was a visiting professor at three European universities and conducted research activities at several government laboratories.

Chuck Mischke, emeritus professor of mechanical engineering—Chuck joined the ISU mechanical engineering department in 1964. A prolific author, he is credited with numerous important books and technical articles. Among his national honors are the Ralph Coates Roe Award of the American Society of Engineering Education and the Machine Design Award of the American Society of Mechanical Engineers. Chuck has been honored for teaching excellence by the Iowa Legislature among others.

Don Roberts, emeritus professor of nuclear engineering—Don joined the ISU nuclear engineering department in 1964. His expertise in the classroom over the years was recognized with a well-deserved Engineering College Superior Teaching Award in 1983. Don is noted for his selfless service to students and colleagues. He still continues as a nuclear engineering seminar leader and has served on the Engineering Faculty Council and as a faculty senator.
Honors and awards

Eric Bartlett—Selected Outstanding Nuclear Engineering Professor by the Engineering Student Council; Rockwell Excellence award

Joe Baumgarten—1990–91 Teaching Excellence Award for Engineering Design Category from the Iowa Legislature

Bill Bathie—Selected Region VII Outstanding Faculty Advisor by the American Society of Mechanical Engineers


Robert Brown—1991 Young Engineering Faculty Research Award from the College of Engineering

Jerry Colver—Mechanical Engineering Department Graduate Teaching Award

Don Flugrad—1991–92 Teaching Excellence Award for Introductory and Entry Level Course Category from the Iowa Legislature; Mechanical Engineering Department Professor of the Year (1992); Promoted to Associate Professor of Mechanical Engineering (1991)

Dick Hendrickson—1991–92 Teaching Excellence Award for Laboratory Category from the Iowa Legislature

Greg Luecke—1992 Faculty Fellow of the Iowa Center for Emerging Manufacturing Technology

Greg Maxwell—Promoted to Associate Professor of Mechanical Engineering with tenure; Mechanical Engineering Department Professor of the Year (1991)

Chuck Mischke—1990–91 Teaching Excellence Award for Textbook Category from the Iowa Legislature; 1991 Ralph Coates Roe Lecturer at the annual meeting of the American Association for Engineering Education

Ron Nelson—Elected faculty senate representative from Mechanical Engineering Department

Ted Okishi—Elected fellow member of the American Society of Mechanical Engineers; elected to Cardinal Key (all university service honorary)

Jim Oliver—1991 Faculty Fellow of the Iowa Center for Emerging Manufacturing Technology; 1992 National Science Foundation Young Investigator award; Rockwell Excellence Award

Mike Pate—1992 Young Engineering Faculty Research Award from the College of Engineering

Joe Prusa—1991–92 Faculty Improvement Leave (one year at the National Center for Atmospheric Research in Boulder, Colorado)

Dick Pletcher—1991 David R. Boylan Eminent Faculty Award for Research

George Serovy—1992 Dedicated Service Award from the American Society of Mechanical Engineers

Howard Shapiro—1991–92 Teaching Excellence Award for Textbook Category from the Iowa Legislature; Iowa Board of Regents Faculty Excellence Award

Judy Vance—1992 Faculty Fellow of the Iowa Center for Emerging Manufacturing Technology; Best Technical Paper at the 1992 MacNeal-Schwendler Corporation/Nastra World User’s Conference and Best Paper Presentation Award at the same conference

Marty Vanderploeg—Selected Outstanding Faculty Advisor by the Society of Automotive Engineers; selected Outstanding Mechanical Engineering Professor by the Engineering Student Council

Jon Van Gerpen—1991–92 Faculty Improvement Leave (one year at the John Deere Product Engineering Center in Waterloo, Iowa)

Alumni awards

Allen Acheson—1992 Marston Medal; 1992 Past Presidents Award of the American Consulting Engineers Council; elected a governor of the ISU Foundation

Richard Grant—1992 College of Engineering Professional Achievement Citation in Engineering Award

Jordan Larson—elected a governor of the ISU Foundation

John Lawson—1992 College of Engineering Professional Achievement Citation in Engineering Award

Mujeeb Malik—1992 College of Engineering Professional Progress in Engineering Award

Bob Witte—1992 College of Engineering Professional Achievement Citation in Engineering Award

Don Zuck—elected a governor of the ISU Foundation

Student awards

Graduate Level

Thiagaraj Subbian—Graduate College Research Excellence Award (Fall 1990)

Bruce Reichert—Graduate College Research Excellence Award (Spring 1991)

Nolan Van Gaalen—Graduate College Research Excellence Award (Summer Session 1991)

Kenneth Junk—Graduate College Teaching Excellence Award (Fall 1991)

Jay Shannan—Graduate College Research Excellence Award (Fall 1991)

Mike Brewer—Graduate College Research Excellence Award (Summer Session 1992)

Afshin Mikaili—Graduate College Research Excellence Award (Fall 1992)

Undergraduate Level

Jeff Dirks—Cardinal Key

Greg Hester—Basketball Academic All Big 8 Honors

Bob Kacmarynski—Top graduate in Mechanical Engineering (Spring 1992)

Tamara Schroeder—Outstanding Mechanical Engineering Senior (E-Week Fall 1991)

Kory Sylvester—Cardinal Key; Participant in Washington Internships for Students of Engineering program (Summer 1991); top graduate in Nuclear Engineering (Spring 1992); Outstanding Nuclear Engineering Senior (E-Week Fall 1991)

Thedy Veliz—Elected Region VI Student Representative of The Society of Hispanic Professional Engineers

Brian Williams—ISU Hockey Team’s Most Valuable Player
Gifts help move department ahead

Much of the continuing success of the Department of Mechanical Engineering is linked to the generous contributions received from individuals, families, corporations, and other organizations. These funds are used for:

- student merit awards including scholarships and fellowships
- start-up funds to attract new faculty
- seed money for development of new projects
- laboratory equipment

The Black-Hilstrom Mechanical Engineering Development Fund started by Professor H.M. Black (department head from 1946 to 1972) and Pete Hilstrom (class of 1934) is one of two major endowment accounts relied on by the department. Interest earned from this fund allows the department to move forward even when state budget cuts are necessary.

The Raymond A. (class of 1929) and Kathryn A. Engel Endowment Fund is the other major department endowment account. The Engel family gift to the department resulted in the initiation and continuous development of the Engel Laboratory for Integration of Design and Manufacturing. This laboratory is one of the department’s major resources for teaching, research, and outreach.

Other department resources established and sustained by individual and family gifts include:

- James H. Anderson Award for Design Excellence
- Stan Anderson Scholarship
- William P. and Virginia Binger Graduate Fellowship
- Alice Redington Black Mechanical Engineering Scholarship
- Alice Redington Black Performing Arts Fund
- Henry M. Black Scholarship Fund
- Louis Bubeck Award of Excellence
- Faculty Enrichment Fund
- Robert C. Fellinger Prize in Thermal Science
- George S. and Marcella S. Graves Scholarship Endowment
- William & Emily Haines Memorial Scholarship
- Warren W. Joy Memorial Scholarship
- Kimball Scholarship
- Ronald E. McClellan Scholarship

Jerry Hall and Don Flugrad receive a $25,000 check from Marv Bigbee, Engineering Manager, John Deere Des Moines Works for the purchase of an injection molding machine for the department’s Engel Laboratory for the Integration of Design and Manufacturing.

Corporate and other organizational and individual sponsors of student scholarships and fellowships received by the department’s students include:

- Alcoa
- American Society of Mechanical Engineers (Central Iowa Section)
- Amoco Foundation
- Association for Manufacturing Technology
- Oscar L. Bock
- Boeing
- Bourns
- Burns & McDonnell
- Cargill
- Caterpillar
- George W. Catt
- General Motors
- Hoechst Celanese
- Ingersoll-Rand
- International Gas Turbine Institute
- Charles F. King
- 3M
- Marston Club
- Maytag
- Clayton McClenn
- Paul E. Morgan
- Natural Gas Pipeline Company of America
- Omaha Public Power District
- Phillips Petroleum

Jerry Hall demonstrates the new injection molding machine to two high school visitors. This machine was purchased with a gift from the John Deere Des Moines & Ottumwa Works and with grants from Pete Hilstrom, the College of Engineering, the Iowa Center for Emerging Manufacturing Technology, and the Black-Hilstrom ME Development Fund.

James River Corporation
Rolscreen
Lane Wells

Corporate sponsors of the department include:

- Amoco
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- John Deere Des Moines & Ottumwa Works
- Exxon
- Hoechst Celanese
- 3M
- Procter and Gamble
- Rockwell International
- Shell Oil
- Union Carbide

All contributors to the department are held in very high regard. The Black-Hilstrom Club exists to recognize individual and family donors at the benefactor level ($25,000 or more), fellow level ($10.00 to $24,999), and member level ($1,000 to $9,999).
To date, benefactors include:
Allen M. Acheson '59
William P. Binger '49
Henry M. Black '29 (deceased)
Raymond A. Engel '29 (deceased)
Hollis R. "Pete" Hilstrom '34
Robert F. Jensen '47
Frederick H. Rix '44
Edwin C. Sandham '38

To date, fellows include:
David H. Arnold '69
Eugene '52 and Muriel Boedecker
Owen Garretson '37
Roger Haines '53
Robert C. Hall '55
Jordan L. Larson, Jr., '47, '48
Ralph E. Mann '29
Harold M. Matheson '56
James A. Peterson '58
Larry '73 and Pam Pithan
Don '64, '67 and Bev Wandling

Currently, there are more than 170 Black-Hilstrom Club members.
Recent new members are
Jim '64, '68, '70 and Julie Bull
Dan '78 and Mary Botton
David Englebert '71
Barbara and Edward Gurganas (in memory of
Professor H.M. Black)
Gary D. Hoover '61
John Kelle '39
Charles and Margaret Mischke
Kermit and Dorothy Myers
Jerry '58 and Marilyn Porter
Robert Proctor '45, '48
Larry '59 and Mary Root

The department is forging ahead to increased national prominence and
distinction. Excellence in mechanical engineering education is a
foremost goal. You can participate in Partnership for Prominence—
ISU's current capital campaign—by contributing to the Department of
Mechanical Engineering. For your convenience, a form is included.
Call us at 515/294-1431 if you want to learn more about departmental
gift options. We appreciate your interest in keeping ISU ME on top!

THE BLACK-HILSTROM FUND
An Endowment for Mechanical Engineering

☐ To provide support for the Department of Mechanical Engineering I enclose $ by check made payable to the ISU Achievement Foundation and designated to the Black-Hilstrom Fund.

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☐ I am interested in other ways to help Mechanical Engineering.

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Ames, Iowa 50010-7164

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Iowa State University
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Ames, Iowa 50011-2160

ME Update is prepared by the Office of Editorial Services for the Department of Mechanical Engineering at ISU. Please address comments, inquiries, and address changes to Ted Okilishi, Department Chairman, at the return address above.

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