



NEWSLETTER

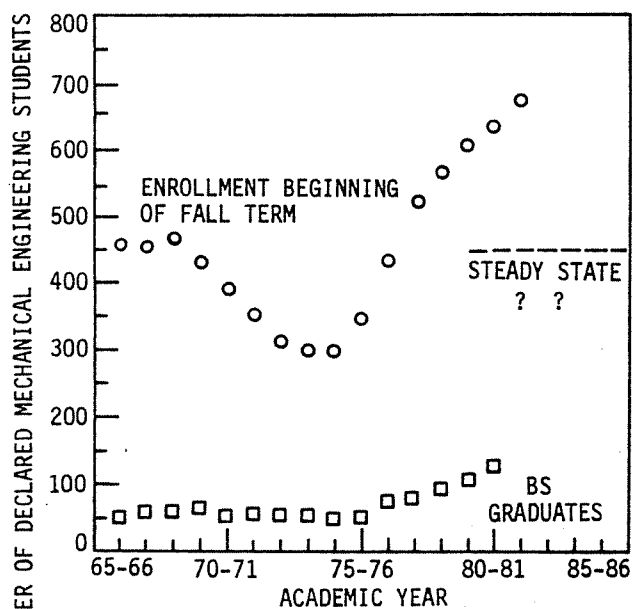
Department of Mechanical Engineering

SEPTEMBER 1981

THIS ISSUE OF THE ME NEWSLETTER DESCRIBES ENROLLMENT PROBLEMS, PROGRAM CHANGES, NEW FACES AMONG THE FACULTY AND STAFF, AND OTHER ITEMS OF INTEREST TO THE ME COMMUNITY. THE SURVEY CREW MARKINGS AROUND OUR IVY-COVERED BUILDING SUGGEST THAT SOME INTERESTING THINGS ARE HAPPENING THIS YEAR. READ ON AND SEE WHAT THEY ARE.

IN SEARCH OF STEADY STATE

The number of ME undergraduates has fluctuated widely during the past 15 years. As shown below, the declared ME's at the beginning of the Fall term varied from 450 in 1966 to a record high 676 in 1981, with a low of 299 in 1974. During this period, the number of faculty has remained at about 25.



UNDERGRADUATE ENROLLMENT TRENDS IN MECHANICAL ENGINEERING, 1966 - 1981.



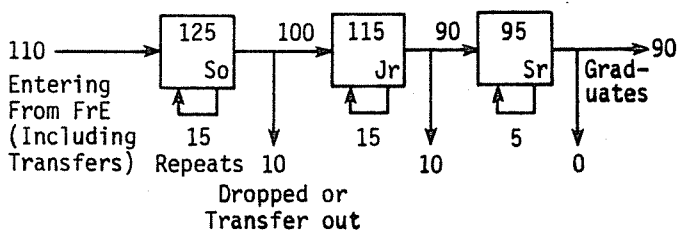
The unrelenting pressure for ME courses made it necessary to implement a departmental Enrollment Management Plan in Fall 1980. Under that plan oversubscribed courses were designated Controlled Enrollment Courses. Class size limits were set at 20 percent less than full class size and the remaining places allocated according to a priority list. Graduating seniors preclassified for the course were given highest priority and students who dropped the course in any quarter were given the lowest priority. In general, this arrangement worked quite well during the 1980-81 academic year.

Recognizing that the oversubscription to classes had spread to a large portion of the Engineering College, the Engineering Faculty voted in January 1981 to implement Enrollment Management for the entire college, effective Fall 1981. There are four features of the plan developed by engineering administrators:

1. Mathematics requirements must be satisfied before Freshman Engineering classes can be requested.
2. Basic Program requirements must be completed before entrance to a Professional Curriculum is considered.
3. Entrance into the ME Professional Curriculum is defined by classification for ME 253. ME 253 enrollment will be controlled so that students can have high expectancy of "flowing" through Sophomore, Junior, and Senior years without major scheduling problems once they are enrolled in this entrance course.
4. Selection of students for ME 253 will be as follows: Up to 50% of the available spaces will be filled from students who have previously been denied enrollment in the course. Remaining places will be filled by students who have not been previously denied enrollment in ME 253. In each group, students will be rank-ordered by a QPA computed for Basic Program courses. Students expected to complete the Basic Program requirements by the end of the semester will be considered in this group for the following semester. Formal entry into the Professional Curriculum is acknowledged by an immediate switch from a FrE advisor to an ME advisor.

The selection process for any oversubscribed upper-level ME courses will be as in 4. above, except that the rank-ordering will be according to the usual overall QPA.

A critical factor in this plan is the number of students that will be admitted to the ME Professional Curriculum each year. Trying carefully to preserve a balance between teaching of required ME courses, ME electives, courses for non ME majors, and ME graduate courses, the following "flow model" was developed:



According to this model, the effective number of ME majors that can be handled with present faculty and facilities is 445. When this number is contrasted with the data given in the above figure, it is apparent that many students will not promptly gain entrance to the Professional Curriculum. Some students with low BP QPA's may never be high enough in the "denied" list to gain admission.

Although it is extremely difficult to predict the demand for ME (and 253), it is of interest to examine the number for this academic year.

Requests for 253	Fall 1981	Spring 1982 (est.)
Denied	38	56
First Time	68	150
Enrolled	50	75
Denied	56	131

(Approximately 80 students will be granted admission to the ME Professional Curriculum in 1981-82.)

If students entering Iowa State continue to declare ME at the present rate, the number of denied students will grow rapidly and the cut-off QPA will rise steadily. The immediate effect, however will be to turn around the rapid rise in enrollment so that a steady state can be reached.

At the present time, the upper class courses in ME are oversubscribed by about 30 percent. Every means possible is being utilized to obtain additional faculty so that additional courses or sections can be taught, therefore making it possible for students currently in the Curriculum to graduate with minimum delay. Toward this end, the largest Summer Session program in our history was taught. We hope that this can be continued next year.

WHAT ARE THE OPTIONS?

We will make every effort to provide up-to-date information on the prospects for admission to ME 253. For some the prospects will be sufficiently gloomy that another course of action is advisable. Some other options are a) selection of another Engineering Professional Curriculum, b) transfer to another College at ISU, or c) transfer to an ME program in another university. Regarding the latter, it should be noted that the University of Iowa and engineering colleges in surrounding states are also heavily oversubscribed. Similar enrollment management plans are in effect in several of these colleges. For example, Iowa has a maximum enrollment in engineering and at Nebraska last spring, the cut-off for admission to ME was 2.9 QPA.

Freshman Engineering advisors and the ME office will be glad to discuss alternative courses of action for those who have declared a preference for ME but who cannot gain entrance to the curriculum.

HOW COULD THIS HAPPEN?

It can reasonably be asked how we have gotten to the situation where over one hundred students declaring ME cannot enter the Professional Program during this academic year. Since 1976 the department has expressed concern about the rapid rise in ME (and Engineering) enrollment at ISU. The general response has been that all indicators suggest that university enrollments will decline; hence, no drastic measures are necessary. Certain curricula (and colleges) do exhibit a decline; however, engineering exhibits a steady growth, with ME in the forefront. By State law, all qualified students (upper half of the high school class) must be admitted to one of the state universities. At ISU there has been no barrier to choice of curriculum. With this general philosophy, it has not been possible to limit enrollment in Engineering. It has been only possible to manage it, which is presently the intent of the 1980 departmental policy and the new college policy. In other words, there is no way to avoid a stacking up of students in Freshman Engineering.

More money would help. The university budget was cut 4.6 percent this year, due to economic conditions in the State, and another 2.2 percent budget reversion is being considered. Some funds are available for hiring temporary faculty, but no new faculty positions have been made available. In any event, current demand for new and experienced ME's is so high that there are few takers for faculty positions - particularly at the prevailing salary levels. Starting B.S. graduates earn essentially the same as Assistant Professors. A further consideration is that space and equipment are inadequate to handle larger numbers of students in the laboratory courses.

The only solution to the enrollment problem appears to be temporary control of admissions to the College of Engineering until the backlogs of students in the Professional Curriculum and in Freshman Engineering are brought under control. If the present trend continues, it is possible that such a restriction will be requested. This has been done at Iowa City.

HOW CAN WE HELP EACH OTHER?

Students can help by being certain that they have the prerequisites for the courses preclassified for and by carrying an academic load that can be completed without drops. If a student is enrolled in a course and finds out that he or she does not have the prerequisites for that course, the course should be dropped immediately. Note that prerequisites are being rigidly enforced this semester. A registration form must be completed in each course.

The department will do everything possible to minimize any delay in completing the curriculum after ME 253 is completed.

ME 253-321-331

Many students who are unable to get into 253 are still enrolling in ME 321 and/or 331. This concerns the faculty because it takes a minimum of 5 semesters to complete the curriculum once a student is enrolled in 253, this occurring because of prerequisites. The sequence is

253→310→311→360→460.

Maximum efficiency for all concerned results from taking these courses in sequence.

The department will offer during the summer as many of the courses required in the curriculum as funds and faculty availability will permit. However, ME 253 will not be offered during the summer.

+ GRADING

Beginning this term, instructors have the option to use plus and minus grades in undergraduate courses. The policy for the semester has been announced in all courses. The permissible grades and their quality-point equivalents are A: 4.00, A-: 3.67, B+: 3.33, B: 3.00, D-: 0.67, F: 0.00.

NEED HELP WITH VAX?

Richard S. Ketcham, a graduate student in EE/CPR E is a computer consultant for ME. After graduating from EE in 1978, Dick worked for Rockwell International in Cedar Rapids. He has the background and experience to assist with procedural questions as well as hardware and software problems. His office hours are posted on 203 ME.

ME 460

ME 460 Experimental Engineering is required for those students on the 1981-83 catalog. A technical elective for the 1981-83 academic year, the course will be scheduled each semester starting Fall 1982. Experiments -- taken primarily from thermodynamics, fluid mechanics, and heat transfer -- are being developed for the Spring 1982 offering. Election of ME 460 this spring is highly recommended as the course will provide a valuable experience in solving problems by experimental means as well as a glimpse into the thermal-fluid research activities in the department.

MIDNIGHT REQUISITIONS

Each year the department suffers the theft of vital items of equipment. Computers, calculators, cameras, and video cassette units have disappeared. It is important to note that the university has no insurance to cover such losses. The missing items must be replaced at the expense of current equipment allocations. Please help by securing equipment, locking lab doors, closing windows, and being alert for possible incidents.

NEW FACULTY

Dr. Ralph F. Scrutton joins us as Associate Professor in the Materials and Manufacturing Processes Division. A native of Australia, he received his B.S. and M.Sc. from Melbourne University and, just recently, his Ph.D. from University of New Brunswick, Fredericton, New Brunswick, Canada. He held a number of government laboratory, industry, and university positions in Australia. He was Associate Professor of Mechanical Engineering at University of Waterloo, Waterloo, Ontario, Canada, from 1967-75, including a sabbatical year at Carnegie-Mellon University. Dr. Scrutton is a specialist in metal processing and has published widely his research in that area.

VISITING FACULTY

Dr. Andrzej A. Oledzki is Visiting Professor in the Machines and Systems Division for this academic year. He is Professor of Mechanical Engineering and Vice-Dean of the Department of Aeronautical Engineering and Energetics, Warsaw Technical University, Warsaw, Poland. He holds the Ph.D. and Sc.D. from that institution. A specialist in dynamics of machines, vibrations, and modelling and simulation of mechanical systems, he has held visiting research positions at Case Western Reserve University and University of Massachusetts.

Stanley W. Crull has assumed a temporary position as Assistant Professor in Machines and Systems. Mr. Crull earned the B.S. and M.S. in mechanical engineering from University of Illinois and the M.B.A. from Drake. He has been employed by Woodward Governor Co., Twin Disc, Inc., and Sundstrand Hydro-Transmission. A specialist in controls, he holds three patents on hydraulic controls.

Dr. R. Bruce Hopkins continues as Visiting Associate Professor in the Machines and Systems Division. Jeffrey L. Balvanz and Gary L. Reynolds will continue as Temporary Instructors in Thermodynamics and Energy Utilization. Reynolds has just been named Head of Energy Management for the University.

VISITING SCIENTISTS

Phillipe M. Constant of the Architectural Engineering Department at University of Liège, Liège, Belgium has been at the Building Energy Utilization Laboratory since last October. This October he will be succeeded by Jean-Claude Golinval who will also represent University of Liège in cooperative studies on building energy management. A recent arrival is Dr. Sun Sok Kwon, Associate Professor of Mechanical Engineering, Dong-A University, Busan, South Korea, who will work with Dr. Kuehn on heat transfer research. Mr. Chung-Fang Ma, Research Associate, Institute of Engineering Thermophysics, Chinese Academy of Science, Beijing, People's Republic of

China, will work with Dr. Bergles in the Heat Transfer Laboratory. Similarly involved will be Mr. Yin-Koo Tan, Associate Professor, Chemical Engineering Research Institute, South China Institute of Technology, Guangzhou, People's Republic of China. Dr. Yutaka Yamaguchi, Associate Professor of Aeronautical Engineering, The National Defense Academy, Yukosuka, Japan, will work with Dr. Cook on the study of turbulent boundary layers in oscillating flows. With Dr. Serovy in the Turbomachinery Components Research Laboratory will be Mr. Zhiquan Ye, Lecturer, Department of Mechanical Engineering, Gansu University of Technology, Lanzhou, People's Republic of China. Mr. Stefan Olovsson of the Department of Turbomachinery, Chalmers University of Technology, Göteborg, Sweden, is expected to join Dr. Kavanagh in TCRL for several months in the spring of 1982.

FACULTY RECOGNITIONS

Dr. Thomas H. Kuehn was promoted to Associate Professor. A graduate of the University of Minnesota, Dr. Kuehn joined the ME Faculty in 1976. He has taught thermodynamics, thermal environmental engineering, and heat transfer. Under NSF sponsorship, he is currently developing a heat transfer optics facility. Dr. Kuehn is departmental Scholarship Chairman.

Dr. Howard N. Shapiro was also promoted to Associate Professor. Dr. Shapiro graduated from Ohio State University and joined the ME Faculty in 1975. He has taught thermodynamics, fluid mechanics, and heat transfer and has under development a facility for study of heat and mass transfer in soils. Active in ASME, currently as Faculty Advisor of the ISU Student Section, he was given the Outstanding ME Professor recognition by that group last spring. Dr. Shapiro chairs the departmental Graduate Committee.

Prof. William Bathie received the Superior Engineering Advisor Award at the Engineering Convocation on August 24th. He was cited for outstanding service as ME Classification Officer and for his contributions to student affairs at the College level. Prof. Bathie received an ASME Centennial Medallion and was the recipient of a 1981 Ralph R. Teetor Award of the Society of Automotive Engineers.

Dr. William J. Cook was recognized as a Superior Engineering Teacher at the Engineering Convocation. Dr. Cook has been a highly effective and popular instructor in the Thermodynamics and Energy Utilization Division. Currently Faculty Advisor of Pi Tau Sigma, he was voted ME Professor of the Year in 1978. Prof. Cook is well known in the energy area; he represents the department on the College Power Affiliate Research Program Steering Committee, chairs the university Energy Systems Engineering Supervisory Committee, and is a member of the national ASME Energy Committee.

ALUMNI SCORE, TOO

Prof. Kermit B. Myers retired as Associate Professor of Mechanical Engineering last May after 23 years of outstanding service to the department. He taught most disciplines within the curriculum, the last 8 years primarily in the HVAC area. Prof. Myers was saluted by colleagues and presented with an ISU captain's chair at the ME Banquet. Prof. Myers graciously reciprocated by announcing the establishment of the Kermit B. Myers Scholarship in Mechanical Engineering.

Dr. Joseph R. Baumgarten was awarded a Faculty Improvement Leave to join the Faculty of Machine Design at Delft University, The Netherlands, for the academic year 1981-82. He is an active researcher in the area of inflated structures, particularly aircraft tires. Dr. Baumgarten was voted ME Professor of the Year for 1981, a recognition he also received in 1979.

Prof. Emeritus Henry M. Black received an Alumni Medal at the Alumni Association Awards Convocation last June. Head of the ME Department from 1946-72, he was cited for long, loyal, and outstanding service to ISU. Prof. Black has also served ASME in many capacities, most recently as a member of the Centennial Steering Committee. He received a Centennial Medallion for his contributions to ASME.

Dr. George K. Serovy was also recognized at the Alumni Association Awards Convocation with a Faculty Citation. This award acknowledges Dr. Serovy's long and outstanding service to the department, particularly for development of the research program in turbomachinery, and for contributions to college administration. Dr. Serovy is Division Leader of Fluid Mechanics and Turbomachinery and Assistant to the Dean of Engineering. He is also a member of the ASME Gas Turbine Division Executive Committee.

Dr. James E. Woods, with former Ph.D. student D. Paul Mehta, received an ASHRAE Best Paper Award for 1980 at the ASHRAE Annual Meeting in June. Dr. Woods was also recognized by ASHRAE with a Distinguished Service Award. As Director of the Building Energy Utilization Laboratory, Dr. Woods has been active in international cooperative programs, most recently as holder of the Chaire Franciqui at the University of Liège, Belgium, during May and June.

Dr. Arthur E. Bergles was named Anson Marston Distinguished Professor of Engineering at the university faculty meeting in May. Chairman of the department since 1972, he is active in heat transfer research and has been involved with many cooperative research programs, technical symposia, and short courses here and abroad. Four of his co-authored or co-edited books have appeared this year. Dr. Bergles was also recently selected ASME Vice President for Professional Development.

Professional Achievement Citations in Engineering were awarded to three Alumni at the Alumni Association Awards Convocation in June. Oscar L. Bock '22, retired head of Bock Corporation, manufacturers of boilers and furnaces. Mr. Bock has been awarded 22 patents, primarily in the area of furnace design and energy savings. Robert P. Jensen '47, is President, Chief Executive Officer, and Chairman of the Board of GK Technologies, a corporation of over 25,000 employees serving clients ranging from the federal departments of Defense and Energy to homeowners. Howard M. Wiles '28, retired manager of Research and Development with the Waukesha Motor Company, developed the consolidated fuels research engine. The CFR engine is the universal standard of the world and was designated an Historical Milestone by ASME. (ME's installation, completed this past year, can be seen in 104D).

AWARDS TO STUDENTS

The following mechanical engineering students have recently been honored as indicated.

Judith M. Vance received the Kenneth L. Evans award. This memorial award is presented each year to an upper class student in Mechanical Engineering who has demonstrated good scholarship, character, and leadership. The award was presented at the Annual ME Banquet last May.

C. Greg Kelsay received the Hollis R. Hilstrom Machine Design Award for the best ME design project during the past year. The recognition includes a check for \$300. This award was also presented at the ME Banquet.

Larry D. Diemer has been selected as the Outstanding Senior and will be recognized at the E-Week Banquet on September 29th.

INSTRUCTOR/COURSE EVALUATION FORMS

The Pi Tau Sigma Instructor and Course Evaluation questionnaire has been a valuable aid in evaluating and improving the quality of teaching, as well as course organization, content, texts, etc., in the department.

An ad hoc committee consisting of the student chapter presidents and faculty advisors has been developing a revised questionnaire. Please transmit suggestions to Mitch Cornelison or Prof. Shapiro (ASME), Michael Bucher or Prof. Cook (Pi Tau Sigma), or Bill Angus or Prof. Peters (SAE). Comments will be received until October 15, 1981.

PROSPECTS BRIGHT FOR A NEW BUILDING

After nearly ten years of intense effort, it appears that a new engineering building will be approved for construction to begin in 1982. The present structure is a combination of the 1908 west wing, the 1913 east wing, and a central section constructed in 1937. In spite of numerous modifications the building is grossly inadequate for modern ME education. A similar situation is faced by Engineering Science and Mechanics who are scattered among four antiquated buildings. Recognizing this need, presentations were made to the Capital Improvement Advisory Committee to gain a place on the university capital request list. As early as 1976, President Parks spoke of the great need for a new engineering building. After gaining top university priority, the Mechanical Engineering/Engineering Science and Mechanics Building was included on the Regents asking. Engineering alumni and Dean Boylan's Engineering College Advisory Committee were invaluable in gaining the support of the Regents and the Governor. Late in the past session, a three-year bonding package was approved, with the \$15.42 M ME/ESM Building included in the 1982-83 authorization. Only one formality remains: The Regents at their October meeting, must reaffirm their original priority list and that decision must be confirmed by the cognizant Legislative Committee.

Anticipating eventual favorable approval of a new building, a planning study was begun in 1979. The planning document submitted by Cost, Planning and Management International, Inc. last May incorporates detailed input by ME faculty on the laboratory portion of the building. Over the summer, Charles Herbert and Associates were chosen as the architect and Stanley Consultants were selected as engineers. During the coming year, the faculty will be advising on the multitude of details required to finalize the plans. Groundbreaking is expected to begin during the summer of 1982 in the vicinity of the present building, which will be razed prior to the final stage of construction. Occupancy is scheduled for the 1984-85 academic year. Although some faculty are disappointed that the present building will not remain to be declared a National Mechanical Engineering Historical Landmark, there is general rejoicing over the new building. Student suggestions are most welcome; see Prof. Fellingner.

ALICE R. BLACK FUND FOR THE PERFORMING ARTS

Alice R. Black, in August 1979, established the Alice Redington Black Fund for the Performing Arts "to introduce undergraduate students in Mechanical Engineering to the Performing Arts". Two tickets were awarded to students indicating an interest for 20 events last year. Tickets have already been purchased for 26 events with additional events being considered.

A tentative list of 1981-82 events and details on how to "put your name in the hat" are posted outside Room 205, ME Building.

ASME STUDENT SECTION

Plans are being made for a number of activities and events during Fall Semester, including the Second Annual ASME-SAE Noon Pizza Party, a series of faculty research lectures, a tour of the Energy Research House, and a business meeting. See the ASME Bulletin Board outside Room 213 for details.

The officers for 1981-82 are Mitch Cornelison, President; Steve Thompson, V. President; Don Foley, Secretary; Steve Rasmussen, Treasurer; Jenny Schuller, Publicity; Gisele Gowin, Newsletter; and Damon Rockwell and Cindy Stout, E. Council. See Prof. Shapiro, 101 ME, for membership applications in the 101st year of ASME. Last year's big event was reactivating the ISU Fire Cat. It performed very well in the Veishea parade and at a demonstration at Lake LaVerne following the parade. On land, sea,

SAE STUDENT BRANCH

SAE Student Branch officers for Fall 1981 are Chairman, Bill Angus; Vice Chairman, Mark Peters; Secretary-Treasurer, Dave Harms; and E. Council, Brian Graves and Jay Van Houten. A membership drive is underway. See any of the above, Prof. Peters, or Prof. Crull. Dues this year are \$7.00. Members may obtain an attractive SAE Blast Jacket for \$6.00.

The officers are trying to determine interest in designing and building a mini-Baja vehicle (all terrain vehicle) for the National SAE Student Branch competition. See Dave Harms for details or sign up on sheets on the bulletin board outside Room 310 or over the drinking fountain outside Room 213.

\$SCHOLAR\$HIP\$

At the ME Banquet last May, scholarships totalling over \$28,000 were awarded to 40 ME students. Announcements regarding the scholarship competition for 1982-83 will be posted later this semester.

SEMESTER BREAK CLOSING

As part of the university's major energy conservation program, the ME Building will be essentially closed from December 24 to January 3. Departmental offices will not be open during the four working days of that period, December 28-31. Normal operation is expected during the remainder of the break period.

THERE IS GOLD AT THE END OF THE LINE

Engineering Placement reports that Spring 1981 ME B.S. graduates averaged over 4 job offers and accepted jobs at salaries averaging \$23,800 per year. This is well above the national average for ME's and reflects an increase of 12% above last year's offers. About 200 firms are expected to be on campus looking for ME's this year.