It takes more than hammers, nails and lumber to build a modern home. Qualified, knowledgeable builders are critical factors, in addition to careful planning and technological advancements. Michigan State University has recently taken steps to help the housing industry assure quality in each of these areas.

Since 1996, when the MSU Housing Education and Research Center was approved for membership in the National Consortium of Housing Research Centers, students and faculty have worked hard to make HERC a useful resource to the Michigan housing industry.

They have done this in two ways: by promoting and conducting housing research and technology transfer activities, and by serving as the adjunct education and research arm of the Michigan Association of Home Builders.

"HERC is a partnership between the Michigan Association of Home Builders and building construction management at MSU," Matt Syal, HERC director says.

This alliance is beneficial to both institutions. MSU receives valuable industry input from MAHB, and MAHB receives research support from MSU.

Throughout the year, HERC has involved itself in a diverse array of activities such as sponsoring training seminars and workshops relating to current housing issues, developing a capstone course in housing, providing assistance with educational and licensing programs, and conducting research projects.

The focus of the research is to present the MAHB with a comprehensive feasibility analysis and business marketing plan.

The 1996-97 research project was called "Professional Designation Feasibility Study for the Michigan Housing Industry."

"Basically, we were researching ways to raise the level of professionalism in home-building because that is an important issue," Andrew Seidel, graduate assistant says.

According to Seidel's research, this may be accomplished by developing a certification process for builders, to assure that they have been through some basic training. The certification could be attained by attending a class taught jointly by an MSU professor and a professional builder.

"We study all aspects of the idea including cost, feasibility, public response and marketing," Seidel says.

The studies are funded by the advisory council of the HERC. Funds are generated through direct contributions from industry participants, and local and state home builders associations. The council consists of representatives from every aspect of the residential industry such as: builders, associations, designers, material suppliers, government officials and other related professions. Bi-annual meetings of the council provide overall guidance and advice to HERC management concerning its activities, fund raising, and policies and procedures.

Besides the research project this year, HERC was also responsible for developing technology transfer programs on construction safety and computer-based scheduling. Four seminars were presented to home builders on these topics during the year.

For the coming year, the HERC advisory council has decided to fund two research projects. One deals with the positive impacts of housing developments on communities, and the other studies alternative sewage systems for residential and light commercial developments.

For more information, the HERC Web page can be accessed at: http://www.egr.msu.edu/AgE/BCM/herc.html.
College News

Fellows learn from Leadership Initiative experience

Adding more to an already busy schedule is not something that Matt Syal, associate professor of agricultural engineering, and Aurles Wiggins, director of the diversity programs office, seem to shy away from. This becomes very clear as they take on another responsibility and join 20 other faculty members from across campus as Fellows in the Michigan State Leadership Initiative.

The Leadership Initiative, which teams up a Fellow with the mentors of their choice, is based on the principle that the learning process never ends.

For her project Wiggins will be following people who she feels have expertise in multicultural issues. The Fellowship gives her the opportunity to learn from her mentors and see what their average day involves.

Specifically, she wants to see how well workshops that promote diversity are working.

Syal says that he is in the process of choosing a project to work on and is still working out the details.

“The Fellowship gives me the chance to expand my network, broaden my skills, and learn things about diversity that I would not have gotten the chance to learn otherwise,” she says. “I think most Fellows are interested in finding out what goes on ‘behind the scenes.’ We all want to make a difference in terms of our projects.”

Having a mentor doesn’t require being a Fellow, but according to Wiggins there are many advantages.

“If you are a Fellow, it is recognized by the university and you are allowed some time off to pursue your learning. It is expected that you can bring that knowledge back to the department,” Wiggins says.

Chemical engineering professor receives grant

Representatives of the Dow Chemical Company have named Mark Worden, Ph.D., associate professor of chemical engineering, the 1997 recipient of the Dow Environmental Enhancement Grant. The $12,000 grant is offered annually to an MSU researcher who proposes the most innovative technique or process for reducing, converting, managing, or destroying hazardous waste. The award was presented July 3 at the University Club.

“We are pleased to recognize and support Dr. Worden’s work through this Environmental Enhancement Grant,” says Gary Klecka, environmental scientist in Dow’s Health and Environmental Research Laboratories. “His research complements Dow’s emphasis on cleaner manufacturing, ‘or green chemistry,’ which focuses on reducing waste generation in our plants while also improving productivity and quality.” The Dow Environmental Enhancement Grant was initiated on Earth Day, 1990, to facilitate the development of viable solutions to the most pressing environmental problems.

Originally, the grant was designed to be a five-year project between Dow and MSU but it has been extended for three successive years and may continue after that.

“Both MSU and Dow are very pleased with the quality of proposals that we received this year,” says William Taylor, Ph.D., professor of civil and environmental engineering and originator of the agreement. Taylor elaborates that of the 12 proposals that had been submitted this year, Dow had a difficult time choosing from among three of them. “They wanted to fund all three,” says Taylor.

Steps toward the future

Fariba Barez, computer science graduate teaching assistant, helps a Detroit Area Pre-College Engineering Program student with computer image building in a lab session. In the program, students learned personal and professional development as well as engineering skills. DAPCEP was very successful this year according to Authella Collins-Hawks, program director. “I was really pleased with the effort the students invested into this four-week experience,” she says.

Graduation was held on July 18 in Wilson Hall.
**Departmental Round-Up**

**Agricultural Engineering**

**Matt Syal,** associate professor, recently became a member of the editorial board of the American Society of Civil Engineer’s, *Journal of Construction Engineering and Management.* He officially started for the June 1997 issue.

**Civil & Environmental Engineering**

After placing first in the regional competition held at MSU in mid-April, the **concrete canoe team** placed highly once again. This time, at the Nationals held in Cleveland, Ohio, the Spartans placed fourth overall.

In order to be invited to a national competition, a school must win one of the 20 regional competitions held in the spring. MSU has won their regional competition, and has not placed lower than tenth in the national competition for the past nine years.

**Computer Science**

**Anil Jain,** professor, has been selected to receive an IBM Partnership Award for $40,000. This is the third year that the computer science department has received this honor. The award is highly competitive and recognizes the quality of Jain’s program and its importance to the computer industry.

According to Jain, the money has been very useful to the computer science department. “A lot of the money has been used to help develop a fingerprint recognition system,” he says.

The $40,000 is an open-ended “gift” according to Jain and can be used however the department sees fit.

“Student travel and other research projects have also been possible because of this award,” Jain says.

Although this is the last year that MSU is able to receive the award, research contracts are still ongoing between MSU and IBM.

**Cooperative Engineering Education**

**Les Leone,** director of cooperative engineering education, won the 1997 CED Best Session Award for his session titled, *Re-engineering Cooperative Education Learning,* which was given at The 1997 American Society for Engineering Education Conference for Industry and Education Collaboration in Tampa, Florida last January.

Leone will be recognized for his accomplishment during the awards breakfast on Friday, February 6, 1998 at the CIEC Conference in Savannah, Georgia.

**Mechanical Engineering**

The **Department of Mechanical Engineering** has been featured in the June 1997 issue of *Enterprise,* the Michigan Manufacturers Association magazine. Titled *Industrial Project Partnership yields Profitable Results,* the four-page cover article tells how member industries of MMA have teamed up with mechanical engineering at MSU in the senior capstone course to sponsor one or more student projects.

The article also features **Brian Thompson,** professor and capstone course creator. His course helps students gain practical experience as professional engineers. Students provide the ideas; industry provides the experience.

To obtain a copy of this article please contact the Michigan Manufacturers Association communications department at (517) 487-8542.

Prentice-Hall is publishing a new text on differential equations this August entitled *Differential Equations: A Systems Approach.* The book is authored by **Merle Potter,** professor emeritus of mechanical engineering, and **Jack Goldberg** of the math department at the University of Michigan. Goldberg provides the mathematical rigor with the usual theorems and proofs, and Potter provides the physical applications.

The book integrates a systems approach with all the usual topics found in the conventional differential equations courses. This matrix approach forms the basis of methods used in computer applications and several engineering subjects.

Typically, the first parts of the chapters introduce the conventional approach, with the systems material following. This allows an instructor to present the material in the usual fashion or to use the more generalized systems approach. It is the first differential equations book to use the systems approach.

Potter is the coauthor of five text books and nine trade books, primarily exam-review material.

**Correction**

In the July 1997 issue of *Events,* George Mase was titled incorrectly. He is professor emeritus of materials science and mechanics. We apologize for the error.

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**Events Readers:**

Please send news and information for the newsletter to **Beth Hale** at Events@egr.msu.edu or via snail mail to room 2467 Engineering Building, East Lansing, MI 48824-1223.

Thank you!
Worden’s project, titled Characterization of the Reversible Gas and Liquid Aphrons, uses a simple, yet effective technique for transferring chemical components from one fluid, such as oil, into a second incompatible fluid, such as water. Bubbles.

In Worden’s research, small bubbles of gas or liquid, called aphrons, are introduced into an aqueous environment. Worden, however, takes the principle to the extreme by introducing bubbles so small they can’t be seen by the naked eye. He is vastly increasing the rate that a desired chemical reaction is able to take place. As rate increases, the efficiency of the reaction also increases, which means less waste is created. And producing less waste is the best way to protect the environment.

“That’s what the aphron idea is all about,” says Worden, “To make very small droplets or bubbles with high surface area to increase the transfer rate from one phase, such as liquid, to another phase, such as gas.”

Worden states that one benefit of the reversible aphron approach is that it is generic and can be applied to a wide variety of chemicals and many types of processes. Worden will be presenting his findings to the Dow research community later this fall.

Dow Chemical Company’s Gary Klecka presents Mark Worden a check for $12,000. Worden’s project was one of twelve submitted for a chance at receiving the Environmental Enhancement Grant.

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**Grants Received**

- **Lira, C. (CHE)**
  Natural Cherry Flavor Recovery from Dilute Streams
  Natura, Inc.  
  5/1/97-11/30/97..........................$17,228.00

- **McDowell, J. (CHE)/ Sticklen, J. (CPS)/ Hawley, M. (CHE)**
  Developing Decision Support Software for (a) Mold/Die Manufacturing Process Selector (b) Rapid Prototyping Method Selector
  MMPI  
  9/1/96-8/31/97............................$70,261.00

- **Mutka, M./ Rover, D. (CPS)/ Wey, C./ Cheng, B. (EE)**
  Visions for Embedded Systems Laboratories
  NSF  
  6/1/97-5/31/00............................$396,657.00

- **Nayeri, M. (EE)**
  Crack Detention in Fiber-reinforced Laminates
  U.S. Army/TACOM  
  5/30/97-5/29/98...........................$25,000.00

- **Salam, F. (EE)**
  Cellular Neural Array for Image Processing
  Innovative Computing Technologies, Inc.  
  1/15/97-6/15/97............................$22,094.00

- **Salam, F/ Khalil, H. (EE)/ Radcliffe, C./ Shaw, S. (ME)/ Tummala, L. (EE)/ Mukherjee, R. (ME)**
  Real-time Sensing and Control Computing for Automotive Systems
  NSF  
  6/15/97-5/31/00............................$145,045.00

- **Shack, H. (ME)**
  Application of Exciplex Fluorescence to Evaluate Chrysler Fuel Injectors
  Chrysler Corporation  
  4/1/97-3/31/98............................$45,000.00

- **Shaw, S. (ME)**
  Risk Analysis of Commercial Fishing Vessels Operating in Extreme Seas
  Michigan SEA Grant  
  3/1/97-2/28/99............................$71,658.00

- **Sticklen, J. (CPS)/ Ritchie, J. (Crop & Soil Science)**
  Leveraging an Integrated Expert System/Crop Modeling System for Farm Level Wheat Crop Management
  U.S. Department of Agriculture  
  7/1/97-1/15/00............................$83,744.00

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**Proposals Submitted**

(over $50,000)

- **Chen, K./ Nyquist, D./ Rothwell, E. (EE)**
  Multi-Spectral Low Observable Nondestructive Evolution Research
  The Boeing Company..................$99,955.00

- **Esfahanian, A./ Mutka, M./ Ni, L./ Tornog, E. (CPS)**
  Hyper-curriculum Textbook Project
  NSF.................................$421,439.00

- **Hubbard, R. (MSM)**
  General Research
  SAE..................................$100,000.00

- **Hughes, H. (CPS)**
  Undergraduate Faculty Workshop in Computer Networks
  NSF................................$72,347.00

- **Liu, D. (MSM)**
  Wood Material Models with Failure Capacity for Roadside Safety Applications
  Federal Highway Admin..................$98,740.00

- **Masten, S. (CEE)/ Yokoyama, M. (Animal Sci)**
  Ozonation of Chitinous By-products from the Marine Seafood Industry
  National Sea Grant College Program, NOAA, Marine Biotech.........................$159,979.00

- **Mukherjee, R. (ME)/ Pramanik, S. (CPS)**
  Creation of Intelligence in Robots through Active Interaction with Environment Using Open Complex Adaptive System
  NSF.................................$59,425.00

  Design of Composite Material Structures Using Genetic Algorithms
  NSF.................................$1,611,033.00