A new era in engineering education began in the College on September 1, 2000, with the opening of the Engineering Learning Center in the Cushing Hall of Engineering and the introduction of a new course sequence for first-year engineering intents. This new focus on a learning paradigm rather than a teaching paradigm can perhaps be best described as one that will promote innovation, encourage collaboration, foster interaction, and develop even stronger connections among the engineering disciplines within the College. In fact these words — innovation, collaboration, interaction, and connection — embody the spirit of engineers and engineering at Notre Dame.

The engineering curriculum at the University began in 1873. In 1932 a beautiful new building, the Cushing Hall of Engineering, was dedicated. It was a gift of civil engineering graduate John Cushing, and the auditorium of that building was named in his honor.

Over the years the Cushing Auditorium served many functions. Most important, students throughout the University gathered there for classes, laying the foundation for their future careers within its walls. Many students have fond memories of the personal bonds formed after classes, when the auditorium was used for a variety of student activities, including movie night. One local church even used the auditorium as a temporary home while its building was being renovated. The Cushing Auditorium has served the University well, and it will continue to do so, but in a new form and with renewed purpose.
Twenty-two months ago, an ad-hoc Curriculum Enrichment Committee of the College published a report providing guidelines for Achieving Preeminence in Undergraduate Engineering Education. Two key recommendations emerged from the report, one having to do with the first-year experience and the other with what the committee termed a learning paradigm. Specifically, it was recommended that the College substantially increase the engineering content of the first year of studies and that, throughout the curriculum, greater emphasis be placed on collaborative, interactive and experiential learning experiences. I’m pleased to report that considerable progress has been made on both fronts.

This year two new first-year courses, EG 111 and 112, are being offered to all engineering intents. These courses are intended to provide students with an appreciation for the nature of engineering through exposure to applications that cut across traditional engineering disciplines. Featuring special projects involving design and hands-on activities, use of the computer as a tool in solving engineering problems, and guest speakers from industry, the courses involve student-faculty interactions in small group settings, as well as numerous opportunities for students to work and learn collaboratively. The courses will enable students to make more informed decisions concerning engineering as a career option and to establish a foundation for functioning as an engineer.

In the last issue of INSIGHTS, we reported that Cushing 117, the engineering auditorium, was being renovated to establish a Learning Center for supporting the collaborative and experiential activities in EG 111 and 112, as well as in each department of the College. The Center was formally dedicated in early September and has already become a hub of student and faculty activity.

Most of the growth is attributable to new activities that cross disciplinary boundaries and involve teams of faculty and students. Areas that have experienced a significant increase in activities are micro and nanoelectronics, materials synthesis, and biomedical engineering. The Center for Nano Science and Technology, established approximately one year ago, is now pursuing a full range of options for encoding binary information, ranging from quantum dots to organic and biological molecules. The new Center for Moleculary Engineered Materials is using molecular-level engineering of materials to advance technologies in fields ranging from catalysts and sensors to fuel cells, biomaterials, and nanomagnetics. The work in biomedical engineering involves the development of minimally invasive techniques for orthopedic surgery, as well as the use of fluid-based microelectromechanical systems (MEMS) for medical diagnostics.

We look forward to the new year and the many opportunities it will afford for continued improvement of our teaching and research programs.
ENGINEERING LEARNING CENTER

Occupying more than 4,000 sq. ft. of space, the Engineering Learning Center is an exciting addition to the College’s facilities. A cross between a computer cluster, a model shop, and a laboratory, the Learning Center was developed as the result of the Undergraduate Curriculum Enhancement Study, performed during the 1998-99 academic year. It is dedicated to collaborative, interactive learning and provides an important resource for the College’s increasing emphasis on experiential learning. The purpose of the Learning Center is to:

• Foster hands-on, multidisciplinary activities within the College.
• Encourage an understanding of how engineering principles can be used to benefit mankind.
• Promote the opportunities available in engineering.
• Develop innovative teaching and learning methods.

Although created with first-year engineering intentions in mind, the Center can be used by students at all levels to explore, experiment, and experience the many facets of engineering. The departments using the Center will be actively involved in creating courses and projects that promote interactive learning, where students can analyze, design, build, test, and communicate their findings, preparing them to function as engineers within the multidisciplinary settings they will encounter as professionals.

In the Learning Center students work individually and in teams on a variety of discipline-specific and multidisciplinary projects, creating and testing mathematical models via advanced computer simulations, and designing and fabricating prototype systems and processes. They also team with faculty and peer mentors from throughout the College. Most important, they discover opportunities within the field of engineering that are limited only by their imaginations.

“It is very important for engineers in particular to learn how to combine their skills with those of others,” said Frank P. Incropera, McCloskey Dean of Engineering and Broyce Professor of Mechanical Engineering. “Engineering problems and technologies have become extremely complex and multifaceted. Today’s engineers must be able to work across traditional engineering disciplines, as well as with professionals from fields such as business, law, and medicine.”

During this first year of operation, the Learning Center is being used primarily for the new first-year course sequence, EG111/112, required of all engineering intents at Notre Dame. While a handful of the nation’s prominent engineering schools have opened centers like the College’s Learning Center, Notre Dame’s is the first to be used by all first-year students.

Stephen M. Batill, associate dean for educational programs and professor of aerospace engineering, sees the Learning Center as a resource for students and society. Through hands-on challenges, students will have the opportunity to test the demands of engineering as a career choice and find which area of engineering best fits their interests and talents. But Batill’s hope lies beyond that. “If you look at the great advances of recent times — interconnecting computers, artificial intelligence, smart sensors, the genome project,” he said, “they are the kinds of activities that come from people who understand engineering systems as a whole — one of the purposes of the Center. Our hope is that this perspective will help students become the kind of people who are leaders in society’s advancements.”

The prototype of a much larger facility, planned for a new engineering building, the Engineering Learning Center allows the College’s facilities to be used for the development of a broad spectrum of activities. And, in the near future all undergraduates will have courses assigned in the Center.

Open throughout the day and into the evening, the Center is staffed by a full-time manager, a profession- al engineer who works with faculty on curriculum development and supervises the Learning Center’s peer mentor program. Natalie Gentil, the Learning Center manager, is assisted by a team of students who help other students with their course and project activities, as well as assisting with the development of experiments and project-related equipment. For more information on the Learning Center, visit http://www.nd.edu/~englearn.

Engineering problems and technologies have become extremely complex and multifaceted. Today’s engineers must be able to work across traditional engineering disciplines, as well as with professionals from fields such as business, law, and medicine.
EG111/112

EG111/112 is a new course sequence within the College of Engineering. Geared specifically for first-year engineering intents, the sequence replaces EG120, a one-semester course that served as an introduction to computer programming. The principal purpose of EG111/112 is to introduce students to engineering through special projects, the use of the computer in solving engineering problems, and guest lecturers who are practicing engineers. (See article on page 8 about the Distinguished Engineering Lecture Series.)

As a year-long sequence, EG111/112 is organized into four half-semester modules, each of which highlights the application or development of a multidisciplinary system. In taking this approach, the sequence exposes students to basic principles, but in the much broader context of their role in the design and/or performance of engineering systems.

With an enrollment of 380 students, EG111/112 is organized into 14 sections of 25-30 students. Each section is taught by a regular teaching and research faculty member in the College, who is assisted by an undergraduate peer mentor. A single graduate teaching assistant works with both the course faculty and the Learning Center manager to supervise the peer mentors. Two of the course faculty also serve as course co-directors — Jay Brockman, associate professor of computer science and engineering, and Thomas Fujita, associate professor of electrical engineering. The smaller group sessions are supplemented by large lectures attended by the entire class.

While first-year students are not yet equipped to undertake detailed solutions to problems, they can make use of simplifying approximations to predict system behavior and to make engineering decisions. The EG111/112 projects intended to foster these objectives for the current academic year encompass:

- the development of a model-based methodology for launching a projectile and hitting a target;
- creating a compact bar-code scheme along with the development of a machine to scan and decode messages;
- designing and implementing a truss that will support a given load with a specified maximum deflection, measuring and digitally recording its deflection, and comparing the results with model predictions, and
- the creation and construction of a control system for neutralizing an acidic waste stream, including the comparison of actual system performance with computer simulations.

Each of the projects involves decomposition of the system into its principal constituents and the development of models to predict system behavior. The models may also be used to make design decisions, as well as to predict system performance. Project requirements also include construction and testing of the design, documentation of the results, and recommendations for future changes. Hence, the steps taken in each project mirror those followed in actual product or process development activities. For details on projects or instructors, or to get information on lectures, assignments, or activities in EG111/112, visit [http://www.nd.edu/~engintro](http://www.nd.edu/~engintro).

Reinventing Curriculum and Grants that Support the Effort

“Every day we see the tremendous changes and opportunities brought about by technology, globalization, and other forces that require creativity and the ability to think in a boundaryless fashion,” said Keith Sherin, General Electric’s chief financial officer and member of the GE Fund board of directors, of the recent announcement that Notre Dame had received a $300,000 two-year grant from the General Electric Fund in support of an innovative, multidisciplinary approach to engineering instruction. Presented as part of the Fund’s Learning Excellence Initiative, a competitive program that invests in the development of interdisciplinary curricula and teaching methods in engineering and business, this gift — the maximum allowed by the program — will enable engineering faculty to develop additional learning modules for the College’s Engineering Learning Center.

Opened this fall, the Learning Center bridges traditional disciplinary boundaries and provides hands-on opportunities for all students, particularly first-year engineering intents, to explore engineering and the interrelationships among the disciplines within the College — aerospace and mechanical engineering, civil engineering and geological sciences, chemical engineering, computer science and engineering, and electrical engineering.

“Competition for this grant was extremely intense, and we’re delighted to have our vision for new directions in engineering education affirmed by the GE Fund,” said Frank P. Incropera, McCloskey Dean of Engineering and Broyse Professor of Mechanical Engineering.
he need for materials impacts every sector of manufacturing and is certainly essential to economic growth. There is not an industry in the world that can survive without materials ... automotive, electronics, energy, telecommunications, medical ... the list is endless. In many cases, existing materials will not be sufficient to sustain the advancement of technology. And, new technologies, applications, and industries will depend on the availability of new materials. That's where engineers and the newly established Center for Molecularily Engineered Materials come in.

Academic, industrial, and national laboratory researchers have long been exploring the field of molecularily engineered materials ... working on the molecular level to create new advanced materials from two or more previously existing less valuable materials. (See reference to related article in Scientific American on page 13.) The new Center builds on the long history of cross-disciplinary research and leadership that Notre Dame has had in this area.

Emphasizing the development of materials at the molecular level, the Center integrates research from four main groups: catalysis and reaction processes, electrochemical interfaces and processes, nanostructured materials, and advanced processing techniques. Its goal is to develop materials and systems whose structure and components exhibit novel and significantly improved physical, chemical, and biological properties. Another aspect of the Center will be its educational focus — the training of students in emerging materials engineering technologies with special emphasis on potential industrial applications. A goal of the Center is to serve as a national resource where researchers can come to explore long-range concepts, which is not always possible in industry given its day-to-day requirements.

Arthur J. Schmitt Professor of Chemical Engineering Arvind Varma serves as Center director, and Paul McGinn, professor of chemical engineering, is associate director. Although managed by the College of Engineering, the Center is comprised of researchers from several departments in the Colleges of Engineering and Science, as well as the University's Radiation Laboratory. Like the Center for Nano Science and Technology, the Center for Molecularily Engineered Materials is committed to the enhancement of interdisciplinary research at Notre Dame.

The Center for Molecularily Engineered Materials: Working with What Is to Create What Can Be

Students’ Efforts Linked to EPA Award for Nearby Community

Student research opportunities are ideal ways to gain firsthand experience in engineering research and development. They are also a good way to gain valuable work experience in an industrial or commercial setting. However, they may also offer benefits to a community. For example, since 1998 undergraduates participating in Notre Dame's Research Experiences for Undergraduates (REU), a summer research program, and doctoral students have worked with officials from the city of Elkhart, Ind., on a variety of projects. According to Lloyd H. Ketchum Jr., associate professor of civil engineering and geological sciences and departmental adviser for the REU program, one important objective is to use the eight-week program as a means of attracting top-quality graduate students.

The Elkhart projects were additionally attractive because they allow close interaction with practicing professionals and a real-world component of university research. Some of the projects Elkhart REU students have participated in include a sewer overflow control plan, a comparison between rubberized asphalt and conventional asphalt pavements, superfund reclamation, the feasibility of various abatement technologies, treatability of a specific industrial wastestream, and the development of a sequencing batch reactor (SBR) model of the Elkhart Wastewater Treatment Plant during wet weather conditions.

Ketchum cites the development of the 10-liter SBR as one of the most significant contributions made by the students to the community. Essentially, the students modeled the activated sludge process in the Elkhart Wastewater Treatment Plant and worked with plant supervisors to monitor the results. They were able to show the city that a reduced aeration of the sludge in one part of the process could not only achieve superior treatment but could save up to $125,000 a year in energy usage.

Elkhart has been honored by the Environmental Protection Agency with a U.S. EPA Region 5 Award for superior operation and maintenance of their wastewater treatment plant and nominated for the National EPA Award. Although Ketchum is quick to point out that Elkhart's efforts are certainly to be congratulated, he believes REU students and civil engineering and geological sciences graduate students have also contributed to the city's success and this most recent acknowledgement of their efforts.

Art Umble, a graduate student of Ketchum's who worked with city officials as part of his doctoral program, is now the manager of wastewater treatment operations for the city of Elkhart, Ind.
any colleges and universities offer job fairs and placement programs for undergraduates. The College of Engineering at the University of Notre Dame encourages and assists its students in the development, planning, and implementation of their own career fair. This approach has been very successful for two decades, and this year students in the College celebrated Industry Day 2000 in a new location. The 20th annual engineering career fair was held Sept. 19-21 in the north dome of the Joyce Center.

Typically located in the Fitzpatrick Hall of Engineering, the student-run event outgrew its traditional home. Sixty-nine companies participated in Industry Day 1999. A total of 84 companies attended this year’s event. “Our goal this year was expansion,” said Traci Korytkowski, a senior in chemical engineering and one of the student organizers. “We’re very excited about the increase in the number of companies. It makes Industry Day a better event for students.”

Another first for Industry Day 2000 implemented by the student planning committee is that engineering undergraduates and MBA students with engineering backgrounds could place their resumes in a specific company’s resume book on-line using Go Irish (Internet Recruiting and Scheduling Hotlink).

Students in the Joint Engineering Council and the Society of Women Engineers planned and organized the entire event, from the reception and industry banquet on Sept. 19 to the Career Fair on Wednesday, Sept. 20, to a day of formal interviews on Sept. 21. The organizing committee believes the focus of Industry Day is not just to provide job opportunities. “Even those students not looking for an internship or permanent employment,” said Max Wingert, organizing committee member and senior chemical engineering major, “were able to meet with companies and recent ND grads at the banquet. It’s a less formal time but gives students a chance to see the options available in engineering and the different types of positions companies are seeking to fill.”

This was also the first year the organizing committee has worked with the Career and Placement Office on campus, which Korytkowski believes helped make the event more professional. Companies could register on-line, and students visiting the Industry Day Website could link to companies they were interested in and find out what engineering disciplines those corporations were hiring or if they were seeking interns.

What did the companies think of the new format? Sonia Kaur Doogal, college relations specialist for ArvinMeritor, says, “One benefit of this particular style is that meeting a candidate one day and then interviewing him or her the next is a good way to start building a relationship.” ArvinMeritor targets eight universities each year, including Notre Dame.

“What I’ve noticed about these students is that they are very confident, and that’s what distinguishes them,” said Doogal.

Although he doesn’t stay for Interview Day, Jim VanSlambrook, recruiting and development manager for the Communications Test Solutions Services Division of Agilent Technologies, also likes the informal setting of the banquet and the career fair. “I don’t actually hire these students, but I do have a specific need to fill for one portion of our company. My job is to meet with the electrical engineering, computer science, and computer engineering majors...
A total of 84 companies participated in Industry Day 2000. Here’s an overview of the three corporations highlighted in this article.

**Agilent Technologies**
Description: Formerly a subsidiary of Hewlett-Packard, Agilent Technologies is a technology company focused on developing products that sense, analyze, display, and communicate data for the communications, electronics, life sciences, and healthcare industries.
World headquarters: Palo Alto, Calif.
Number of employees: 46,000
Offices: Agilent Technologies has manufacturing facilities as well as product development sites, and sales, service, and support offices in more than 40 countries.

Sonia Kaur Doogal, ArvinMeritor

“One benefit of this particular style is that meeting a candidate one day and then interviewing him or her the next is a good way to start building a relationship.”

VanSlambrook, who attends two career fairs like Industry Day a year, typically finds three to five recruits annually for Agilent field service positions in the United States. In fact, two recent Notre Dame graduates were with him in this year’s booth.

VanSlambrook believes the reason he’s been so successful in recruiting Notre Dame students is his ability to interact with them and discuss their needs and Agilent’s needs face to face. “I’m looking for very sharp students technically, but they also have to be able to relate to people and work in a team with a customer in the field to find a solution to that customer’s needs.” He also emphasized the similarity between Agilent’s values of trust and respect for the individual and 100 percent integrity and Notre Dame values.

Scient’s Ivan Shin, who attends seven to 10 career fairs annually, also stressed values. “Obviously the people we’re looking for must be technically adept. But we’re also focusing on interpersonal skills and values ... making sure we can create a strong team whose members reflect the sense of community, urgency, excellence, innovation, growth, and spirit that are Scient.”

Shin was pleased with the turnout for Industry Day, even though some representatives indicated that traffic seemed less than in years past. “If they’re interested, the students will be here,” he said. “Those are the recruits we want to talk to.”

Will Scient, Agilent, and ArvinMeritor be back on campus for the next Industry Day? The organizing committee is counting on it. They have already begun initial planning for Industry Day 2001. For information as it becomes available, visit the Websites for the Joint Engineering Council at http://www.nd.edu/~jec/industryday/ or the Society of Women Engineers at http://www.nd.edu/~swe/.

**ArvinMeritor**
Description: Supplier of integrated automotive systems and modules
Number of employees: 36,500
Manufacturing plants: North America, 58; Europe, 44; Asia/Pacific, 14; and South America, 5.

**Scient**
Description: E-business systems innovator
World headquarters: San Francisco, Calif.
Number of employees: 1,180
Offices: Eight across the U.S. and one each in England, Germany, and Singapore
New Distinguished Engineering Lecture Series
Gives Students a Glimpse of the Real World of Engineering

This year the College of Engineering launched a new lecture series — the Distinguished Engineering Lecture Series. Developed to expose students to engineers who have achieved at the highest levels of their professions and to give students an overview of the opportunities available for engineers today, the series will feature four speakers each academic year from a variety of engineering disciplines. According to McCloskey Dean of Engineering Frank P. Incropera, “Each lecture will provide students with a better understanding of the role of engineering in society and the impact that they, as aspiring engineers, can have in the world.”

Open to the entire University, the lectures are presented during the EGI11/112 class sessions, an introductory course sequence designed to give first-year engineering intents a taste of what engineering is and what engineers do. Each lecture is also featured as a live cybercast for those unable to attend.

Larry Augustin, president, chief executive officer, and director of VA Linux Systems and a leading entrepreneur in the information technology industry, delivered the inaugural lecture on October 6. Titled “The Future of Software Development and the Internet,” Augustin’s talk addressed many issues facing companies using the Internet for commerce, particularly as it relates to the Linux operating system. Linux, an open source version of the UNIX operating system, was developed in 1991 by University of Helsinki graduate student Linus Torvalds. An advocate of the Open Source philosophy of computer operating systems, Augustin founded VA Linux in 1993. Today the Sunnyvale, Calif.-based company is a leading provider of Linux-based computer operating systems and servers. It has grown from 15 employees to more than 400.

Augustin is a 1984 graduate of Notre Dame’s electrical engineering department. He worked for three years at AT&T Bell Laboratories on high-speed digital switching before going on to earn master’s and doctoral degrees in electrical engineering at Stanford University. Going on to work for AT&T from 1987 to 1992, he was appointed chief executive officer of Kiewit Construction Group in 1992. He was named to his current position in 1998.

Another University graduate, Kenneth Stinson delivered the second installment of the series. Chairman and chief executive officer of Peter Kiewit Sons’ Inc., Stinson graduated in 1964 with a bachelor’s degree in civil engineering. From 1966 through 1969 he served as an officer in the U.S. Navy Civil Engineering Corp, which included three tours in Vietnam. After completing his service in the Navy, he attended Stanford University, receiving his master’s degree in civil engineering.

At that time he joined Kiewit and has served the company in various engineering and management capacities on large projects across the country, including the 63rd Street Tube and Tunnel in New York City and the Ft. McHenry Tunnel in Baltimore, Md. A director of the parent company since 1987, Stinson was appointed chief executive officer of Kiewit Construction Group in 1992. He was named to his current position in 1998.

In 2002 he returned to the University of Pittsburgh from his position as chairman and chief executive officer of Peter Kiewit Sons’. Today, he leads the nation’s eighth-largest construction firm. From 1966 through 1969 he served as an officer in the U.S. Navy Civil Engineering Corp, which included three tours in Vietnam. After completing his service in the Navy, he attended Stanford University, receiving his master’s degree in civil engineering.

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Augustin is a 1984 graduate of Notre Dame’s electrical engineering department. He worked for three years at AT&T Bell Laboratories on high-speed digital switching before going on to earn master’s and doctoral degrees in electrical engineering at Stanford University. In addition to the lecture, Augustin met with faculty in the electrical engineering and computer science and engineering departments and the Notre Dame Linux Users’ Group (NDLUG), a student organization that offers help and information to the University community for installing and using Linux.

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Stinson’s discussion, “Building our Infrastructure: The Role and the Romance,” covered many aspects of engineering projects from development to completion. He shared the excitement of being an engineer with students and faculty. And, like Augustin’s lecture, Stinson’s talk was cyberscast via the Notre Dame Website.

NDLUG — Alive, Well, and on Campus

NDLUG stands for Notre Dame Linux Users’ Group. Linux is an operating system that was introduced by Linus Torvalds. Very popular across the Internet, Linux has all the features of a modern UNIX system but also runs on other architectures, such as PowerPC, Sparc, Alpha, Strongarm, and MIPS. It is promoted by many companies, including Larry Augustin’s VA Linux Systems — see above article covering the Distinguished Engineering Lecture Series.

What is the purpose of this fully recognized student organization? Founded in 1998, NDLUG offers a way for campus Linux users to meet one another. Most important, it serves as a way to raise awareness about the usefulness of Linux to the Notre Dame community. Although the Group’s activities are not directly related to course work, members feel Linux makes life easier for many students, especially engineers. For example, most of the work engineers do — particularly computer science majors — involves UNIX operating systems. Since Linux provides a UNIX-like interface, students can accomplish much of their programming work from the dorm room without going to a lab. NDLUG also helps with the set up of machines to the campus network.

Most of the Group’s members, undergraduate and graduate students alike, come from the Colleges of Engineering and Science. However, a few members are from the Mendoza College of Business. Dr. Vincent W. Freeh, assistant professor of computer science and engineering, is the Group’s adviser. As NDLUG continues to grow, it will continue to improve its service to the Notre Dame community. For more information about the Group, visit http://www.ndlug.nd.edu/.
The Irish Racing Team has been invited to participate in the conservation program of the 2001 National Scout Jamboree at Fort A.P. Hill in Virginia, scheduled for July 23-August 1, 2001. Partnering with Brigham Young University, the Team will assist 2,000 to 3,000 scouts earn their electricity merit badges. Jamboree programs typically nurture the skills of scouting, as well as its national heritage, physical fitness, environmental conservation, and the spirit of scouting, which promotes strong values and leaders. Daily programs for the Scouts may include activities such as archery, a confidence course, conservation programs, scuba diving, kayaking, and raft encounters.

William B. Berry, professor of electrical engineering and Irish Racing Team adviser, believes the Scouts’ conservation program and the organization’s canons mesh with the efforts of the Team and the University. Comprised of nine students, the goal of the Team is to provide its members with hands-on research experience while advancing the technology of zero-emission transportation. Students develop the motor, drive systems, and batteries for the vehicle. Why? Because nothing ignites the imagination or invites innovation like firsthand experience. The Irish Racing Team represents one of many groups at universities across the country who fuse higher education and racing to fuse higher education and racing with the spirit of competition.

A major goal of the Team is to provide its members with practical experience. This unique educational experience fosters student participation and teamwork. The Irish Racing Team is strictly on a volunteer basis, as is much of the funding for the program. For example, even though it is a University program, funding must come from outside contributions in the form of sponsorships, individual donations, and equipment. In turn, sponsors receive exposure at official Team events, as well as at public appearances throughout the year, including conventions, seminars, and hospitality areas during Notre Dame home football games. For more information about the Team, race statistics, current projects, and sponsorship opportunities, visit: http://www.nd.edu/~ndracing/.

An official program of the University, the Team focuses on the development of fast and efficient electric vehicles and vehicle propulsion systems. Faculty and students work hand-in-hand to build the Team’s car, not just to win races, but to gain practical experience. This unique educational experience fosters student participation and teamwork. The Irish Racing Team is strictly on a volunteer basis, as is much of the funding for the program. For example, even though it is a University program, funding must come from outside contributions in the form of sponsorships, individual donations, and equipment. In turn, sponsors receive exposure at official Team events, as well as at public appearances throughout the year, including conventions, seminars, and hospitality areas during Notre Dame home football games. For more information about the Team, race statistics, current projects, and sponsorship opportunities, visit: http://www.nd.edu/~ndracing/.

**ELECTRIC RACE CAR SPECIFICATIONS**

**Chassis**
- Length: 36"
- Height: 39"
- Width: 81"
- Wheel base: 28.5"
- Material: TIG-welded 4130 chrome-moly tubing

**Batteries**
- Type & No.: 28 12-Volt Optima Yellow Top (Deep-cycle) batteries or 30 12-Volt Delco-Remy Lead-Acid Total nominal voltage: 400 Volts
- Batteries or 30 12-Volt Delco-Remy Lead-Acid Total nominal voltage: 400 Volts

**Motor**
- Type: Delco-Remy AC three-phase induction
- Peak Power: 100 kW
- Top Speed: 140 mph

**Weight**
- Mass (without driver): Under 1338 kg (2950 lbs)
- Mass (w/driver): Under 1250 kg (2756 lbs)

**With professional driver Warren White at the wheel, the Irish Racing Team led by Lap 3 of the first race of the 1999-2000 season at Winchester Speedways. With their fastest lap recorded at 85.71 mph, the Team maintained second for a good portion of the race. However, after experiencing problems, they placed fifth.**
New Advisory Council Members Announced

John A. Martell, vice president, Trans Tech Electric, Inc., South Bend, Ind.; Myron C. Noble, chief executive officer and chairman of the board, Pil-Rod, Inc., Plymouth, Ind., and Thomas M. Rohrs, group vice president for global operations, Applied Materials, Inc., Santa Clara, Calif., have been named to the College of Engineering Advisory Council. Their appointment was announced in November by Rev. Edward A. Malloy, C.S.C., the University’s president. Martell is a 1977 electrical engineering graduate; Rohrs graduated from Notre Dame in 1973 with a bachelor’s degree in mechanical engineering.

The M. L. R. Darin Engineering Prize continues to honor sophomores who have shown significant improvement in grades between their first year of studies and their first semester of the sophomore year. This year’s winners were computer engineering major Nicole Lopresto, chemical engineering major Whitney Snocks and electrical engineering major Ryan Sweeney.

Darin, the son of Italian immigrants, faced many hardships in his life, beginning at age 10 when his father died. At 13 he was admitted to the Henry Ford Trade School and was invited to attend the Ford Engineering Apprenticeship Program. Upon completion of the program, he didn’t have money to continue on to college and needed to support his mother and brothers. So, he started working for the company at 18. He retired in 1980 a divisional manager of plant engineering, having supervised the building of 11 assembly plants.

In spite of the numerous achievements throughout his career, Darin felt not having a college education held him back. He and his family developed the Darin Engineering Prize in 1999 to encourage those students who struggle for excellence and succeed.

The Glucometer DEX Diabetes Care System, manufactured by Bayer Corporation of Elk hart, Ind., is one of the most advanced handheld blood glucose monitoring systems in the country. It has recently undergone a mechanical redesign to improve its performance. Students in the CAD/CAM course are being directed by John E. Renaud, associate professor of aerospace and mechanical engineering, and Bayer engineers on a reverse engineering project of the DEX system. In short, they are conducting a product evaluation study, comparing the operation of the previous DEX System with the re-designed model.

According to Renaud, “At first glance the DEX looks like a fairly simple device, but in reverse engineering the students are required to re-create part geometries for which there are no blueprints to work from.” In CAD/CAM most projects involve creating geometry which is fully prescribed as part of the assignment; in reverse engineering that is not the case. Students were required to explore and learn new features of the Pro/Engineer software that they had not previously been exposed to. They learned that even “simple” parts can contain numerous geometric features which can be difficult to re-create. And, since most of the parts were made by plastic injection molding, they also gained an appreciation for the versatility of injection molding.

Working in teams of five, the students measured and inspected each of the mechanical components of this product. They then created detailed drawings of each part and re-created each part’s geometry, although some parts needed more than one detail drawing to document its different geometric features. Each team member also supervised the building of 11 assembly plants.

To provide closure to their reverse engineering project, Renaud and his students visited the Bayer manufacturing facility, a new fully automated plant that manufactures more than 2,500 glucometers per eight-hour shift.
Seen Some New Faces in Engineering?

The College is buzzing with activity ... new courses, new students ... and new faculty. Here are the newest members of the engineering faculty:

Martin Haenggi joined the College in November 2000 as an assistant professor of electrical engineering. A native of Zurich, Switzerland, he received a M.Sc. degree in electrical engineering from the Swiss Federal Institute of Technology (ETH) in 1995. At that time he joined the Signal and Information Processing Laboratory at ETH as a teaching and research assistant. Haenggi continued his studies and in 1999 completed his Ph.D. in analysis, design, and optimization of cellular neural networks. He comes to the University after a postdoctoral year at the Electronics Research Laboratory of the University of California-Berkeley. Haenggi is a member of the Institute of Electrical and Electronics Engineers, a reviewer for several international journals and conferences, and co-author of the book "Cognitive Neural Networks: Analysis, Design, and Optimization." His research interests include communications, networking, analog and digital signal processing, and nanoelectronics. He will be teaching Digital Signal Processing during the spring semester.

In August the Department of Computer Science and Engineering added Gregory R. Madey to its staff as a professional specialist and concurrent associate professor. Madey’s interdisciplinary studies target Web-based agents with application to e-commerce, emergence and self-organization on the Internet, knowledge management, chaos and complexity, as well as management technology. He received a Ph.D. in operations research from Case Western Reserve University in 1984. He also received two M.S. degrees — one in operations research from Case Western Reserve in 1979 and another in mathematics from Cleveland State University in 1975. He will be teaching Operating Systems during the spring semester.

Entering the Department of Civil Engineering and Geological Sciences as an associate professor is Patricia A. Maurice. Her research interests focus on developing a quantitative understanding of trace-metal, organic and microbial interactions with mineral surfaces, from the atomic to the watershed scale. She received her Ph.D. in aqueous and surface geochemistry from Stanford University in 1994. Prior to coming to Notre Dame she was associate professor in the Department of Geology at Kent State University. She will be teaching Water-Rock Interactions in the spring semester.

Professor Timothy C. Ovaert became a member of the Department of Aerospace and Mechanical Engineering in August 2000. His research interests include tribology of multi-layered materials, advanced lubricants, and thin-film materials for wear applications; biomedical systems; machine design; transportation engineering, and the mechanical behavior of materials. Ovaert received his Ph.D. in mechanical engineering from Northwestern University in 1989 and his M.S. in engineering management, also from Northwestern, in 1985. A member of the Society of Tribologists and Lubrication Engineers, the Materials Research Society, and the American Society of Mechanical Engineers, he has worked in industry plant/design engineering at Wells-Durabar in Woodstock, Ill., and the National Institute of Standards and Technology in Gaithersburg, Md. Ovaert comes from Penn State University where he was a professor in the Department of Mechanical and Nuclear Engineering. He will teach Continuum Mechanics and co-teach the Senior Design Project in the spring semester.

In memory of Brionne

Notre Dame junior and mechanical engineering major Brionne Clary passed away Wednesday, September 20, 2000, from complications of leukemia. A native of Tyler, Texas, she was re-diagnosed with the disease the Monday before this academic year began, after successfully battling the disease in high school. She is survived by her parents and two sisters.

Clary was a resident of Welsh Family Hall, active in interhall basketball, and committed to her pursuit of an engineering degree. She had been in regular contact with friends at Welsh Hall and was hoping for a bone marrow transplant which would allow her to return to her studies. She contracted pneumonia a week before her death.

A memorial Mass was held for her family and friends on November 21 in the Basilica of the Sacred Heart. University President Rev. Edward A. Malloy, C.S.C., presided over the 50-minute Mass and delivered Clary’s homily. In addition to speaking of her “energy, enthusiasm, and sense of humor,” Malloy lauded Clary as a symbol of courage and personal strength ... one who enriched the Notre Dame community. He said, “She fought gracefully and with a sense of purpose; and in doing that, she serves as a model for all of us.”

More than 300 engineers, researchers, and students participated in PMC 2000, the premier gathering of national and international experts involved in stochastic mechanics, random vibration, stochastic processes, structural reliability, stochastic control, and related topics.
Faculty Update

Ipatieff Prize Goes to Brennecke

The American Chemical Society has awarded the Ipatieff Prize to Joan F. Brennecke, professor of chemical engineering. Issued every three years, the Ipatieff Prize honors outstanding experimental work in the field of catalysis or high-pressure chemistry by researchers under the age of 40. Formal presentation of the Prize will take place in April 2001 at the 21st ACS national meeting in San Diego, Calif., where Brennecke is also scheduled to deliver a lecture at a symposium organized in her honor.

A faculty member since 1988, Brennecke is a pioneer in high-pressure studies of the local molecular structure of supercritical fluid solutions and the effect of the local structure on the reaction rates in a single phase. She specializes in environmentally conscious chemical process design, thermodynamics, solvent effects on reactions, and supercritical fluids. Her work was recently featured in the prestigious journal Nature.

Gad-el-Hak Serves as University Liaison to ICTAM 2000

Mohamed Gad-el-Hak, professor of aerospace and mechanical engineering, served as Notre Dame's liaison to the ICTAM 2000 Theoretical and Applied Mechanics. Held every four years, 1,500 researchers and scientists from around the world gathered in Chicago in August to examine topics such as turbulent mixing of fluids, electromagnetic processes of materials, flow of granular materials, vehicle dynamics, the mechanics of foams and cellular materials, and the damage and failure of composite materials. Gad-el-Hak organized and chaired the general session on flow control. Faculty and staff who presented papers included: Igor Veretennikov, research associate in physics; Alexandra Indeikina and Pavlo Takhistov, research associates in chemical engineering; Bayer Corporation Professor of Chemical Engineering Hou-Chia Chang; Stanislav Goryeys, research associate in aerospace and mechanical engineering; Viola D. Hank Professor of Aerospace and Mechanical Engineering Hafiz Atassi; Flint Thomas and Samuel Paolucci, professors of aerospace and mechanical engineering, and James Mason, associate professor of aerospace and mechanical engineering.

Notre Dame co-hosted the ICTAM 2000 along with the Universities of Illinois at both Urbana-Champaign and Chicago; Illinois Institute of Technology; the Universities of Chicago, Wisconsin, Michigan, and Minnesota, as well as Michigan State, Ohio State, Iowa State, Cornell, and Brown Universities.

Kareem Awarded Munro Prize

Ahsan Kareem, Robert M. Moran Professor and Chair of the Department of Civil Engineering and Geological Sciences, received the 1999 Munro Prize for his paper “Applications of Wavelet Transforms in Earthquake, Wind, and Ocean Engineering,” co-authored with Kurtis Gurley, formerly a Notre Dame doctoral student and currently an assistant professor at the University of Florida. The Prize is named in honor of the co-founding editor of Engineering Structures. The Journal of Earthquake, Wind, and Ocean Engineering, John Munro, professor of civil engineering and head of the civil engineering department at Imperial College.

Kareem and Gurley's paper discussed the use of wavelet transforms for time-frequency analysis. Although this is not a new technique, its use in mechanical and civil engineering applications—particularly in studying the random processes involving wind, ocean, and earthquake engineering—is novel and often more informative than the traditional Fourier Transform, which cannot precisely capture the time evolution of the signal's frequency content. This ability to combine time and frequency domains affords engineers and researchers new analysis perspectives.

Endowed Professorships Awarded to Engineering Faculty

University Provost Nathan O. Hatch recently announced that three faculty members of the College of Engineering have been awarded endowed professorships. David J. Costello Jr., was appointed the Leonard Betex Professor of Electrical Engineering. Costello specializes in digital communications with emphasis on coding theory, information theory, multimedia communication, spread spectrum communication, communication networks, error control coding, and coded modulation. A faculty member since 1985, he helped design the communication system for NASA's Tracking and Data Relay Satellite System and has contributed to the design of the codes used by NASA for its Pioneer space series.

A leading researcher in probabilistic structural dynamics, fluid-structure interactions, structural safety, and the mitigation of natural hazards, Ahsan Kareem was appointed the Robert M. Moran Professor of Civil Engineering. Kareem is currently chair of the Department of Civil Engineering and Geological Sciences. He has been a faculty member since 1990, and his research focuses on the environmental loads of wind, waves, and earthquakes on structures, the associated dynamic behavior of structures, and risk assessment.

Billie F. Spencer Jr., was appointed the Leo E. and Patti Ruth Urbeck Professor of Civil Engineering. A member of the Notre Dame faculty since 1985, Spencer specializes in earthquake engineering, structural dynamics, and fatigue/fracture reliability. He and Michael K. Sain, Freimann Professor of Electrical Engineering, have developed a system that counters the damaging structural responses due to earthquakes, strong winds, and other natural disasters.

Other faculty honored with endowed chairs include Peter C. Burns, Henry J. Massman Associate Professor of Civil Engineering and Geological Sciences, and Damy Z. Chen, Rooney Associate Professor of Computer Science and Engineering. Burns, also his department's director of graduate studies, specializes in environmental mineralogy, mineralogy and crystallography, mineral crystal structures and crystal chemistry, mineral structural energetics, mineral polymorphism, and nuclear waste disposal. Chen's main research interests are in the design of algorithm design, analysis, and implementation; computational geometry; parallel and distributed computing; computational medicine; data mining; robotics; VLSI design and computer graphics.
Schmid Selected for Symposium

The National Academy of Engineering has invited Steven R. Schmid, associate professor of aerospace and mechanical engineering, to participate in the Frontiers of Engineering Symposium. Each year the NAE invites select engineers from industry, academia, and government to discuss pioneering technical work and leading-edge research in various engineering fields and industry sectors. Invites are chosen for their potential as leaders in the U.S. engineering endeavor.

Frontiers of Engineering was initiated by the National Academy of Engineering, the National Academy of Sciences, the Institute of Medicine, and the National Research Council. Typically invites are between 30 and 45 years of age. In addition to this age requirement, selected participants must have demonstrated accomplishment in engineering research and technical work with recognizable contributions to advancing the field of engineering.

A faculty member since 1993, Schmid specializes in tribology; manufacturing process simulation and optimization; surface generation, measurement, and modeling, and the tribo-characteristics and wear of tool materials and machinery elements. He is the co-author of three books as well as various journal and conference papers.

Varma Publishes in Scientific American

from his research on combustion synthesis of advanced materials in the August 2000 issue of Scientific American. The article titled "Form from Fire" examined the emerging field of combustion synthesis as a materials production technology and the great strides taken in recent years, toward monitoring and understanding ultrapure chemical reactions. (See related Center for Molecularly Engineered Materials article on page 5.)

Combustion synthesis—creating a new material through burning a mixture of two or more starting powders—is not a new technology. In the last 30 years researchers have created more than 500 compounds using this process. Materials created through combustion synthesis include various ceramics, intermetallics, and their composites with a range of uses from cutting tools and aerospace turbine materials to ceramic engine parts and high-temperature superconductors.

However, the development of this technology has largely been the result of trial and error. With the efforts of Varma and his group, only recently have engineers begun to understand how a combustion wave propagates through a heterogeneous mixture of reactants. It's like watching a trail of burning gunpowder except that instead of ash, a useful material is created.

Knowing what happens from the time the original reactant powders are ignited through the creation of the new product is the best way to refine combustion synthesis. And, Varma and his group have developed a number of experimental techniques that assist in the observation and recording of phenomena along the combustion wave front, which holds only a few reacting particles and is not generally visible to the human eye. One such device is a high-speed digital video camera coupled with a microscope. Using this set-up, Varma's team can capture up to 12,000 frames of video per second and record objects as small as 0.0015 millimeter in diameter; 1/50 the thickness of a human hair. Thus, they can watch the combustion wave front pass through the mixture with great precision. The information they have gained has led Notre Dame researchers to classify reaction waves, whose characteristics can be altered by design, into two types, which will help them to tailor the properties of new compounds in the future.

Winkler Honored for Service

Erhard M. Winkler, professor emeritus of civil engineering and geological sciences, received the Meritorious Service Award from the Engineering Geology Division of the Geological Society of America for outstanding service throughout his career. Nominated by his peers, Winkler was honored in November during a special ceremony at Summit 2000, the annual meeting and exposition of the GSA.

Costello Lectures at International Symposium on Turbo Codes

Daniel J. Costello Jr., Leonard Bettes Professor of Electrical Engineering, presented the invited lecture “New Developments in Asymmetric Turbo Codes” at the International Symposium on Turbo Codes in Brest, France. The conference brought together leaders from around the world to discuss the latest developments in error control coding for digital communications.

Vann-Hamilton Appointed Assistant Provost

Joy Vann-Hamilton, most recently director of the Minority Engineering Program, has been appointed assistant provost of the University. The Minority Engineering Program was established in 1987 to challenge and encourage minority engineering students in their pursuit of undergraduate degrees and to provide them with leadership skills necessary for successful careers in the field. Vann-Hamilton served as director for nine years.

Kirkner Receives Grenville Clark Award

David J. Kirkner, associate professor of civil engineering and geological sciences, received the Grenville Clark Award from the University. The Award honors members of the Notre Dame community “whose voluntary activities and public service advance the cause of peace and human rights.” Since 1995, Kirkner has served as the faculty adviser to the Campus Chapter of Habitat for Humanity and member of the Board of Directors of the St. Joseph affiliate of Habitat for Humanity. Under his watch the Notre Dame group has been recognized as one of the best chapters in the country, the only one to have built six homes in as many years.

Carberry Succumbs

James J. Carberry, professor of chemical engineering, died August 27, after a long illness. He was 74. Affectionately regarded by fellow faculty and students, Carberry was an internationally recognized researcher in the fields of reaction chemistry and catalysis. He developed the Carberry-Notre Dame reactor, which facilitated study of the kinetics of catalytic reactions and the design of various industrial and automotive reactors. A member of the National Academy of Engineering, Carberry received numerous honors throughout his career, including the Yale Engineering Association Award for Advancement of Pure and Applied Science, the American Chemical Society’s E.V. Murphree Award in Industrial Engineering Chemistry, and the American Institute of Chemical Engineers’ R.H. Wilhelm, William H. Walker, and Thiele Awards.

Twice he was named a Sir Winston Churchill Fellow at Churchill College, Cambridge University, and he was a Life Fellow of Cambridge’s Clare Hall. The author of “Chemical and Catalytic Reaction Engineering,” Carberry served as a Notre Dame faculty member since 1961. He will be missed.

National Safety Council Honors Taylor

On October 16 at the National Annual Congress and Expo of the National Safety Council, James I. Taylor, professor of civil engineering and geological sciences, received the Distinguished Service to Safety Award. This honor is bestowed on individuals based on their dedication and commitment to public welfare. It is given in recognition of an individual’s outstanding service to the Council’s Highway Traffic Safety Division, the recipient’s employer, other organizations, and the individual’s local community. Presented annually to fewer than 20 individuals from across the nation, Taylor was one of the 19 safety professionals honored for 2000.

A University faculty member since 1976, Taylor continues to pursue his research in transportation, highway safety, and engineering ethics.
Updates

Michael J. Bax ('79, EE) of Naperville, Ill., has joined Network Access Solutions, a leading broadband solutions provider, as vice president of marketing.

William J. Ehmann ('81, CEGEOS), formerly the director of the environmental science and policy program at Drake University, has been named the new director of the Center for Earth & Environmental Science at SUNY-Plattsburgh, an academic unit comprised of 16 geologists and ecologists serving 300 undergraduates. He will continue to teach and conduct research on spider biodiversity and bird conservation.

Michael Grohman ('66, EE) has been named senior vice president of sales and marketing by emWare, a Salt Lake City-based provider of the EMT device networking infrastructure.

Robert J. Manning ('64, EE) was appointed to the board of directors of Electric City Corp., a leading developer, manufacturer, and integrator of energy-saving technologies and custom electric switchgear. Manning resides in Westchester, Ill.

Sylvania, Ohio's Brian J. Murray ('97, CHEG) as been appointed to a fellowship with Judge Dirmuid O'Scannlain, U.S. Court of Appeals for the Ninth Circuit, in Portland, Ore. He also received the highest honor, the Cal. William J. Hoyes Prize, from the Notre Dame Law School. It is awarded for outstanding scholarship, application, deportment, and achievement.

Diane L. Peters ('93, AME) was awarded her M.S. degree in mechanical engineering by the University of Illinois at Chicago in May 2000. She attended part-time for four years while pursuing her career as a mechanical design engineer in industry. She is currently a project engineer in the research and development department of Western Printing Machinery of Schiller Park, Ill.

John Roncz ('71, AME) owner of Gemini Technologies Inc., of Elkhart, Ind., received the Grand Master’s Australian Medal from the Guild of Air Pilots and Air Navigators for his work on designing the Eagle Aircraft in Perth, Australia. He shares this award with co-designer Graham Swannell.

Michael Simon ('87, EE), who founded Uproar Inc., will now lead the company’s overseas initiatives as President of International Operations responsible for Uproar’s strategic relationships outside North America.

Vianet Technologies has elected Tim Sullivan ('64, EE), vice president and general manager of Optical Area Networking for Lucent Technologies, Inc., to the company’s board of directors. He resides in Plano, Texas.

Eastman Kodak Company’s board of directors elected James C. Stoffel ('68, EE) to the position of senior vice president. He was previously director of research and development, chief technical officer, and vice president.

An engineer for IBM in Colorado Springs, Colo., Matt King was born with retinitis pigmentosa, an incurable eye disease that gradually destroys the retina and optic nerve. By the time he entered Notre Dame as a double major in electrical engineering and music, he had completely lost his sight. But for King, who believes that blindness does not justify lower expectations, this was no excuse to quit. He graduated magna cum laude in 1987, and by 1995 he was cycling.

One year later King qualified for the Paralympic Games in Atlanta, Ga. At that time, he and partner Spencer Yates of Colorado Springs broke the world record in the quarterfinals of the 4,000-meter tandem pursuit race but faltered in the semifinals and ended up in fourth place. And, in August 2000, he and Kirk Whiteman of Brooklyn, N.Y., placed second against America’s elite track cyclists at the EDS National Cycling Championships. His partners for the Sydney Paralympics were Whiteman, in the match sprint, and Mark Guerin of Colorado Springs, both in the one-kilometer competition and in the road race.

Second only to the Olympics, the Paralympics is one of the largest sporting events in the world. Sometimes confused with Special Olympics, Paralympics provides opportunities for world-class athletes who must qualify along guidelines similar to their Olympic counterparts. Also like the Olympics, only the top three finishers earn medals. Five categories of athletes with disabilities compete in the Paralympics: blind athletes, wheelchair athletes, athletes with amputations, dwarf athletes, and athletes with cerebral palsy.

The first Paralympic Games were held in Rome in 1960. Four hundred athletes from 23 countries competed in a limited selection of events. Since 1988 the Paralympics have been conducted in the same venues as the Olympics, taking place immediately after the Olympic Games close. Some 4,000 men and women from 125 nations participated in 18 sports this year in Sydney.

Although their goal was gold, King and Whiteman finished ninth in the match sprint at Sydney. Guerin and King finished 14th and 15th respectively in the one-kilometer and road races. In addition to his cycling accomplishments and his career in information technology, King is a popular motivational speaker and influential advocate for the disabled. He hopes his race results will “help the world learn that disabilities do not have to disable; obstacles are opportunities, and limitations are not necessarily limiting.”

Matt King, left, and cycling partner Kirk Whiteman celebrate their victory in the men’s tandem sprints at the 2000 Paralympic Track Cycling Trials in Frisco, Texas, in April.
NASA Selects Two Notre Dame Grads for Its Astronaut Candidate Class of 2000

Alumni Michael T. Good and Kevin A. Ford have been named by the National Aeronautics and Space Administration for the astronaut candidate class of 2000. This year’s class consists of seven pilot and 10 mission specialist trainees.

Astronaut candidate training includes orientation briefings and tours, numerous scientific and technical briefings, intensive instruction in Shuttle and International Space Station systems, physiological training, and ground school to prepare for T-38 flight training, as well as learning water and wilderness survival techniques.

Candidates are selected through a highly competitive process and evaluated for their education, training, experience, and qualifications. Following an initial period of training, which began in August at NASA’s Space Center in Houston, Texas, each candidate will serve in a technical capacity until assigned to a space flight.

Good, a resident of Niceville, Fla., enters the class as a mission specialist. He holds the rank of major in the U.S. Air Force. He received a B.S. in aerospace engineering from Notre Dame in 1984, which he followed in 1986 with a M.S. Prior to his selection as a candidate, Good was Operations/F-15 Weapons Test Officer at Eglin Air Force Base.

A resident of Lancaster, Calif., Ford is a 1982 graduate of the aerospace engineering program. Entering the class as a pilot trainee, Ford is a lieutenant colonel in the Air Force. He had been director of plans and programs at the U.S. Air Force Test Pilot School at Edwards Air Force Base.

Good and Ford are the second and third University alumni to be named astronaut candidates. James Wetherbee, a 1974 aerospace engineering graduate, was selected for the program in 1984. He has served as both a pilot and a mission commander on a total of four space shuttle flights.

Tappeta Receives Shaheen Award

Ravindra V. Tappeta has been named the Eli J. and Helen Shaheen Graduate School Award winner from the College of Engineering. Each year the Shaheen Award recognizes the top graduating Ph.D. recipients in the humanities, social sciences, science, and engineering. Nominated by their departments, the four Shaheen Award winners are chosen for their superior ability as exhibited by grades, research and publication records, fellowships, and other awards received during the course of study at Notre Dame, as well as teaching ability. The winners’ names are added to a permanent Shaheen Award plaque displayed in the Graduate School. They also receive a personal plaque and cash award.

According to his faculty adviser, John E. Renaud, Tappeta completed his Ph.D. studies in January 2000, with the presentation of his thesis, "Interactive Multiojective Optimization of Engineering Systems." Since graduation he has been working in General Electric’s Corporate Research and Development Laboratories in Schenectady, N.Y. Tappeta’s first project at GE received a corporate award for quality improvement and the software developed as a result of that project is being patented by the company.

While at Notre Dame, Tappeta’s research efforts resulted in 10 journal publications and numerous conference publications. He also interned at GE during his fourth year of studies at the University. At that time he transitioned a software algorithm developed at Notre Dame into a commercial software application targeted for jet engine design. His research was published in four GE Technical Reports and also appeared as a journal article in Structural Optimization.

In addition to receiving his doctorate from Notre Dame, Tappeta received his M.S. from Notre Dame in 1997. His undergraduate degree in mechanical engineering is from the Indian Institute of Technology in Madras, India.

Hurd Delivers Hofman Lecture

William C. Hurd, a 1969 cum laude graduate of the Department of Electrical Engineering, delivered the eighth annual Emil T. Hofman Lecture, “A Bird’s Eye View of Ophthalmology: From Memphis to Madagascar,” on September 16. Currently in private practice as an ophthalmologist, Hurd specializes in cataract surgery, radial keratotomy, and corneal transplants. The lecture reviewed advances in eye surgery in the U.S. and discussed Hurd’s annual missionary excursions to Africa, South America, and China, where he offers free medical service to the needy through his airlift eye hospital, which is based in Memphis.

Hurd, an NCAA All-American in track, was a 1968 U.S. Olympics Trials finalist in both the 100 and 200-meter sprints and the 1968 Notre Dame Athlete of the Year. He was also a two-time winner of the Saxophone Award at the Notre Dame Collegiate Jazz Festival.

The Emil T. Hofman Lecture Series is a medical education program sponsored by St. Joseph’s Medical Center in conjunction with the Notre Dame Alumni Association. Hofman is professor emeritus of chemistry and the dean emeritus of the University’s First Year of Studies.
That was the theme of the November 2000 open house for first-year engineering intents. Although this year’s freshmen are the first to experience the full-fledged EG111/112, they are not the first to participate in the fall open house. What goes on during the open house? The departments open their labs for tours, their faculty talk to first-year students about the many opportunities available to them as engineers, and they answer questions about specific programs. First-year students also hear from current engineering undergraduates about what the program is like and what to expect in the years to come.

As first-year students they are halfway through the First Year of Studies Program that all students entering the University are required to take. The program gives students one academic year of basic collegiate studies before entering a department within the College. Before beginning the program, each student is asked to make a tentative declaration of his or her intended major. If it’s engineering, freshmen courses would include physics, chemistry, math, and the EG111/112 course sequence.

At the end of the second semester, students must make a decision as to the department in which he or she wishes to major. The November open house starts that process. It gives engineering intents the opportunity to visit the CAD/CAM, robotics, and design labs of aerospace and mechanical engineering. They can watch civil engineering students test a model of a three-story building to see how it will react during an earthquake, and they can explore the photonics and microwave circuits labs in electrical engineering. In short, they get a taste of what each department has to offer. The principal objective of the open house is to show students the multitude of choices they have as engineers and to encourage their continued participation as part of the College of Engineering.

In addition to meeting faculty, current students, and other College staff, first-year students heard from Dean Frank P. Incropera, Arun Rodrigues, a computer science and engineering senior, and Julie Sherwin, a senior civil engineering major with an environmental specialization, about the exciting things going on in the College and in the field of engineering. The Minority Engineering Program and various engineering student organizations were also present. The consensus? It’s a great time to be an engineer.