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THE COLLEGE OF ENGINEERING AND APPLIED SCIENCES & THE BTR—A PARTNERSHIP WITH PURPOSE

By Dr. Michael B. Atkins

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and

Mr. Kurt Hayden, Industrial Engineering Doctoral Associate

All that we do at Western Michigan University should be in clear alignment with the university mission that states in part that, "*Western Michigan University is a student-centered research university building intellectual inquiry, investigation and discovery into all undergraduate, graduate and professional programs...*" The College of Engineering and Applied Sciences (CEAS) is certainly in line with the stated mission of the university as illustrated in the vision and mission of the college. Our documented vision is that we are, "*A scholarly community dedicated to excellence through student-centered education and research emphasizing professional practices in engineering and applied science.*" This vision is accomplished through the elements of the mission by educating our students to be professionals, increasing knowledge through research and other scholarly activities, serving as a resource to our constituents and by creating highly qualified job-ready graduates. We, as faculty and administrators in the College of Engineering and Applied Sciences, have found that working with our corporate partners collaboratively results in the best approach to converting our students to highly qualified professional technologists or engineers.

An overview of the characteristics of the college illustrates that we represent approximately 10% of the university in number of faculty members (102) and student population (2, 723). We conduct 18 undergraduate and 16 graduate programs within our nine academic departments. At the undergraduate level, 10 of the programs are oriented toward engineering education while the other eight programs are concerned with engineering technology or the applied sciences. There are 11 Master of Science degree and five Ph.D. programs. The graduate students represent about one-third of our total student population. Our reputation has been built upon the production of pragmatic or hands-on personnel for industry. About 62% of our students participate in at least one period of co-op or internship experience in industry during their academic career. This is significant when considering that this is not required in the vast majority of our programs. Our graduates are sought after by industries that recognize their job ready capabilities.

The College of Engineering and Applied Sciences research record shows one of the measures of our success in scholarly contributions. Our research grant amounts received this past year were about one-third above our previous year. We have continued to show an increase in productivity in this area over the past few years. As evidenced by the monetary amounts of our grants, more than half of our research success is in the private non-federal arena (58%) that is primarily concerned with applied problem-solving for industry. The remainder (42%) of the research is through federal or state grants that are of both applied and pure research types. Our research productivity continues to increase and true to our vision and mission, the students (both the undergraduate and graduate level) are heavily involved. All undergraduates are required to conduct a senior design capstone project. Many of these projects are conducted with or for industrial partners in proposing solutions of problems for their companies. A significant number of graduate students are funded in their academic programs through research endeavors for corporate partners.

To better facilitate our ability to work closely with industrial partners, we built a new Parkview campus that includes the Business Technology and Research Park (BTR). This campus is located

about 3.5 miles away from the central campus. Parkview consists of a 265-acre campus consisting of about one-third of the area being devoted to the College of Engineering and Applied Sciences building along with the Energy Research Center and the Paper Coating Pilot Plant all with appropriate parking. The remainder of the campus is allotted to the BTR corporate partners' facilities. In the short five-year history of the BTR, approximately 75% of the site has been developed, is under construction or is under option. The companies that are in the BTR must be involved predominately in advanced engineering, information technology or life sciences. Of the current businesses in the park, two have constructed their own research and development facilities, seven are housed in two multi-tenant structures and 15 have laboratories and offices in the Southwest Michigan Innovation Center. Each company is interviewed to determine that there is really a true partnership potential with the university. The companies are basically asked the three following questions:

- What opportunities will the students in the college have for participating in projects or internships/co-op positions within your organization?
- What synergism do you see for faculty members to be involved through research or consulting within your operations?
- What advantage do you envision to your company by being generally aligned in collaboration with Western Michigan University and the College of Engineering and Applied Sciences in particular?

This interview process and continuing periodic meetings have resulted in a very close working relationship with our immediate neighbors in the BTR. Most organizations have students currently working as interns or research associates within their facilities. The faculty and students have executed and are currently involved with multiple research projects with our partners. This truly is a model that is working as designed.

Another measure of our success as a college is the employment of our students by corporations throughout the country. In the Fall semester each year we host employers at a personnel recruiting event entitled the Engineering Opportunity Day. We generally have about 50 organizations in attendance. This year, more than 120 students were interviewed following the Engineering Opportunity Day. The companies were interviewed for either full-time, co-op or internship opportunities. When our students are employed they receive very good starting salaries averaging about \$48,000.

The success of our students is a prime measure of the success of our college. A good example of the impact of our orientation to collaborative opportunities with our industrial partners is embodied in the experiences of Mr. Kurt Hayden. Mr. Hayden emphasizes that the collaboration between undergraduate and graduate students with industrial partners results in a unique opportunity to apply the theoretical tools of engineering to real-life problem solutions. Mr. Hayden worked with industries through internships, research projects and consortium activities as both an undergraduate and graduate student. His experiences provided a wide variety of opportunities that were not available to him otherwise. The very fact that the college was involved with industrial partnership has contributed to him economically as well as professionally. His activities in the college has resulted in direct contacts with 24 companies along with involvement in two consortiums through five public and four proprietary research projects. His research has spawned 17 public presentations, 13 journal articles and nine illustration credits. That type of experience motivated him in his desire to continue in the educational field as opposed to pursuing a career in industry as an engineer. Because of his research opportunities, he has had the opportunity to work with 42 students in capstone senior projects and 72 other students that were involved with various aspects of the investigation process. As he states, "Industrial collaboration provided me with a sound foundation of

educational and research experiences. I loved performing industrial research with fellow students. My exposure to collaborative research has inspired me to help students build these same foundations. The immense satisfaction I experienced when helping others succeed in these projects motivated me to begin work on my Ph.D. and pursue academics and research as a career path.”

The practice of involving our industrial partners in the education and training of our students has served us well in accomplishing our mission as a college. There is no better way to produce the future engineers and technologists with job-ready skills than through providing the opportunities to work on real life problems that result in practical solutions.