ESTEEM
ENGINEERING, SCIENCE, AND TECHNOLOGY
ENTREPRENEURSHIP EXCELLENCE
MASTER’S PROGRAM

Preparing Tomorrow’s Innovators
at the University of Notre Dame
The academy and industry agree: America needs innovators, entrepreneurs who command technology and business practices. One of the key challenges, however, to improving our country’s technological preeminence is that most science, engineering, and mathematics students are not exposed to the innovation process or to the utilization of intellectual property for the creation of vibrant new companies and enterprises. There is little opportunity for them to explore the fundamentals of business.

In order to address this challenge, the College of Science, College of Engineering, and the Mendoza College of Business, are pleased to introduce the ESTEEM (Engineering, Science, and Technology Entrepreneurship Excellence Master’s) degree program. ESTEEM is the first interdisciplinary, inter-college graduate degree program in the history of the University of Notre Dame. Its primary goal is to prepare students for lifelong engagement with innovation that is wholly congruent with Notre Dame’s distinctive Catholic character and fosters a culture of excellence, inclusion, collaboration, and respect for diverse ideas and care for the common good.

We are excited to report that 29 students are currently enrolled in the ESTEEM program. They are pursuing a wide range of projects in a variety of fields, from energy to transportation and environmental studies to cancer research. Over the course of the next 12 months, they will learn technology entrepreneurship and professional practices so that when they graduate they will be fully capable of starting their own small companies or creating new opportunities in corporations like yours. We invite you to learn more about the program by reviewing this brochure or visiting the Web site at esteem.nd.edu.
A key characteristic sought by many of today’s employers is the ability of the engineers and scientists they hire to take innovative ideas from concept to product to market. And, it’s not an easy task. Each step requires great intellectual capacity, not only to lead the technological aspects of the process but also to successfully integrate marketing and management skills as a product or process is rolled out to end-users.

Because it is an interdisciplinary program, ESTEEM prepares students who have a technological background to anticipate emerging opportunities, exploit value from fundamental research or seed ideas, and assume leadership roles in businesses ... from small start-up companies to Fortune 500 corporations.

Inexpensive energy fuels the quality of life ... for individuals and for nations. As traditional nonrenewable sources become scarce, it is imperative to develop new energy resources. ESTEEM students have a wide range of opportunities through which to pursue next-generation energy technologies.

One of the projects in which students will be paired with a faculty mentor investigates the use of semiconductor quantum dots and carbon nanotubes in a solar cell array. Researchers at Notre Dame have already shown that by using the size-dependent property of quantum dots, they can tune a solar cell’s ability to more efficiently use the sun’s wavelengths. Called a “rainbow solar cell,” ongoing work in this innovative technology is laying the foundation for a more efficient solar cell, one that collects and converts (to electricity) far more of the solar spectrum than previously thought possible.
ESTEEM participants are able to pursue many project options in a variety of fields, including but not limited to:

**HEALTH**
- Tissue vaccines
- The role of lipids in biological membranes
- Water-soluble cytotoxic cancer treatment

**SOCIAL PROGRAMS**
- Genetics and genomics to fight dengue fever

**ENERGY**
- Harnessing wasted energy
- Nanotechnology-based solar cells

**ENVIRONMENT**
- Portable diagnostics for invasive species detection
- Remote sensor for water pollutants

**CHEMICALS AND PHARMACEUTICALS**
- Nanotechnology-based active sunscreen

**MANUFACTURING**
- Passive smart windows

**NATIONAL SECURITY**
- Nuclear detection and forensics

**GENERAL TECHNOLOGIES**
- Adjustable acoustics
- Optimum design of structures for crashworthiness

On track for completion in fall 2009, Innovation Park at Notre Dame is a business incubator designed to facilitate the migration of research and new venture ideas into the marketplace. The 12-acre park will feature up to five buildings and service four types of clients – greenhouse (early-stage), emerging businesses (growth-stage), intrapreneurial ventures (skunk works and joint ventures), and virtual clients, who span the other categories.

Innovation Park will be the home for the ESTEEM students. This collaborative, interactive facility provides a superb environment for the combined science, engineering, and innovation implementation that is the core of the ESTEEM Program. Typical young Notre Dame-based ventures being considered for Innovation Park include – EmNet, a company that provides wireless solutions for distributed control and sensing; MedXCycle, a medical supply company; and RFWare, a student-faculty project resulting in software for first responders in emergency situations.

In addition to the economic opportunities these businesses will provide, they offer ESTEEM students the opportunity for interaction and learning. ESTEEM students will interact with company executives as they observe, and even participate in, the process of technology transfer from concept to end-user — including technology development and validation, business plan fundamentals, financial processes, manufacturing, and marketing.

For more information about Innovation Park, visit www.innovationparknd.com.