New Directions

INFLUENCE

ACHIEVE

INNOVATE

School of Chemical Engineering

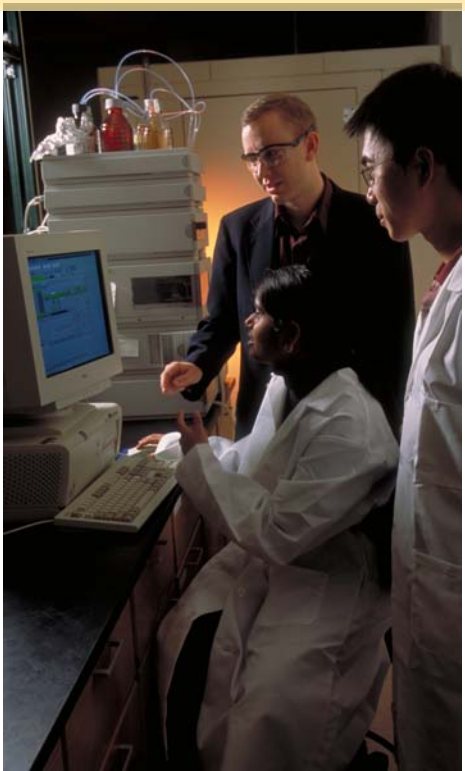
Working together to create an educational environment to prepares today's chemical engineering students for the 21st century

PURDUE
UNIVERSITY

Influence

Since 1988, New Directions has been a valued partnership through which leading corporations, who rely on chemical engineering talent as a key resource, work directly with Purdue University's School of Chemical Engineering to advance and improve the education and professional preparation of chemical engineers who will meet the needs of industry in the 21st century.

PREMIER SOURCE OF CHEMICAL ENGINEERS



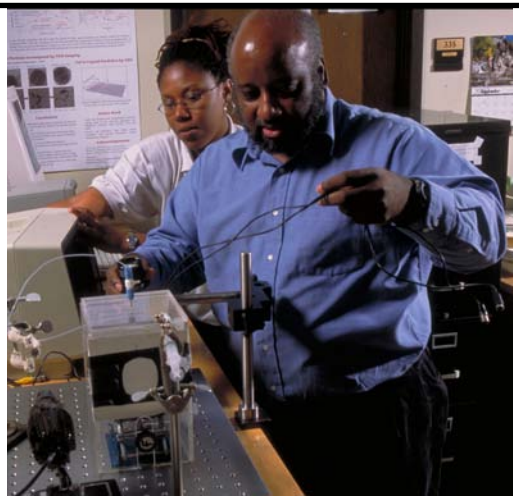
Educated in the environment created by the New Directions partnership, Purdue chemical engineers learn a variety of skills. They master ChE fundamentals; complement their knowledge of fundamentals through hands-on laboratory and industrial experiences; apply these fundamentals to new products and processes; and prepare for professional practice in a global economy. They master new knowledge and acquire multicultural and team skills.

In addition to deepening their core ChE competencies, advanced degree graduates gain technical breadth.

Faculty, staff and students rely on the partnership, advice and input of the New Directions members to ensure that the Purdue School of Chemical Engineering is the premier source of well-educated and well-prepared chemical engineers in the world.

PROGRAM OBJECTIVES:

- To continue – and increase – the momentum of New Directions' past accomplishments
- To build on the strength of our industrial partnerships
- To prepare the chemical engineers of the 21st century



Over the past decade, Purdue's School of Chemical Engineering has been one of the largest producer of ChE baccularaute graduates in the United States. The school also is among the top three in the U.S. for chemical engineering doctorate graduates. More than 90 percent are employed by industry, making Purdue's School of Chemical Engineering a major source of chemical engineering talent.

New Directions partners, as major employers of these chemical engineers, enjoy three important benefits:

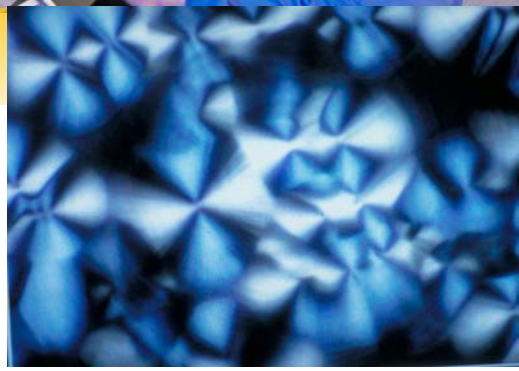
1. Influence the direction of education and training of student
   Partners participate in the initiation of courses important to new graduates. They assist in launching innovative educational experiences and course materials, and in shaping the professional practice component of graduate and undergraduate programs.

2. Preferential access to potential employees
   Corporate partners have high visibility among students through New Directions' educational projects. They also have direct student contact through a variety of forums, such as seminar presentations and visits.

3. Input and access to research programs
   Input occurs through research forums, graduate student internships, colloquia and joint research projects. Interactions of younger faculty with partner research organizations is fostered as a means of directing faculty attention towards high-impact issues of industrial relevance within their technical expertise.

Through the leadership support of senior executives from Abbott Laboratories, Air Products, Amoco, Dow Chemical and Quantum Chemical, the New Directions program was initiated in 1988.

THE FOUNDATION

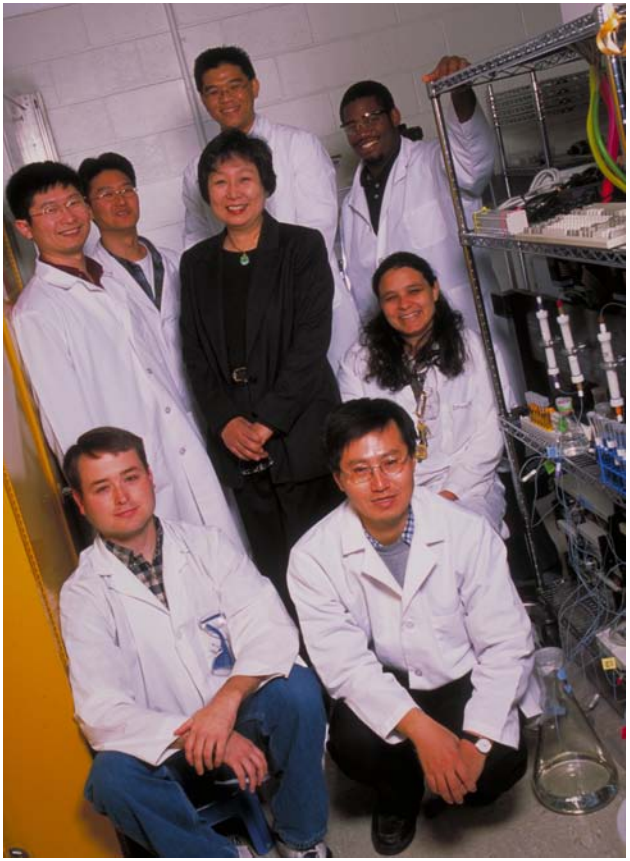


These industry leaders worked with the School of Chemical Engineering to develop a plan to substantially and systematically advance its mission of quality education and research. The plan focused on preparing a new generation of chemical engineers who would meet the growing challenges faced by the chemical industry, and who would be prepared to lead the chemical engineering profession into the 21st century.

During recent years, New Directions has successfully met specific objectives in laboratory and instrumentation renewal and renovation, educational innovations, industrial collaboration and dissemination to the profession. These achievements have been realized through financial support the School of Chemical Engineering has received.

The guiding principle for New Directions' projects is that corporate financial support must be substantially leveraged through alumni, university, foundation and federal sources. To date, a one-to-one match has been sustained.

Achieve



The Head of the School of Chemical Engineering directs the program based on the policies and recommendations of the New Directions Industrial Advisory Council and the Faculty Advisory Committee. Corporate partners are equally represented and encouraged to designate additional representatives to the council's standing committees.

Through the services of the council and committees, many achievements have been accomplished including:

curriculum innovations that have led to new courses in statistical modeling and quality enhancement, principles of molecular engineering, biology of the living cell, computer-aided process operations, and advanced chemical engineering experimentation.

experimental facilities enhancements including the instructional Dow Advanced Instrumentation Laboratory, with its complement of composition measurement instruments, and the research-oriented GE NMR facility with its solid state instrument and supporting laboratory.

instructional computing facilities such as the Process Systems Engineering Laboratory, with 22 advanced workstations used for intensive exercises involving professional engineering software in conjunction with applied statistics, separations, process control, process design and process operations courses.

start-up support for young faculty who have recognized teaching expertise and who, as a group, have received eight prestigious national young investigator awards from the National Science Foundation.

i Innovate

A PLAN FOR THE FUTURE

INSTRUCTIONAL FACILITIES ENHANCEMENT

• Multi-year renewal plan for Senior Chemical Engineering Laboratory
Refurbished and new experiments must continually be implemented. Using modern methods of compositional analysis, experiments must cover new and traditional application areas such as bioseparations, catalytic reaction engineering, dispersed phase and particle technology, polymer processing, and semiconductor processing.

• Development of ChE Fundamentals Laboratory, with small-scale experiments and demonstrations, supporting sophomore and junior level courses in momentum, heat, and mass transfer; reaction engineering; separations and thermodynamics.

• Expansion of Polymers and Advanced Materials Lab to include synthesis processing and characterization equipment. The laboratory is designed to support existing polymer sciences and engineering and molecular engineering lecture courses.

• Design and implementation of a Visualization Lab to provide students with hands-on experience in dealing with process information systems; advanced control tools; process monitoring and diagnosis methods; hazards and operability analysis techniques; and operations planning and scheduling tools.

RESEARCH FACILITIES ENHANCEMENT & GROWTH

• Renewal and growth in the school's research equipment inventory is essential to maintaining a state-of-the-art training environment for graduate and undergraduate researchers. Particular emphasis will be placed on multiuser facilities essential for the competitiveness of the core research targeted for growth.

• Acquisition of equipment for the initiation of research by young faculty who will be recruited over the next five years. The school has a historically unique opportunity to add seven new faculty over the next five years, and build a platform for chemical engineering education for the future.

INSTRUCTIONAL INNOVATION

• Collaborative development of tools and measures for assessing the effectiveness of our educational programs as demonstrated through the performance of our graduates as employees of member companies.

• Development of multimedia instructional materials on most important categories of process industry equipment for guided student learning.

• Formulation and development of industrially motivated case studies for junior and senior level open-ended team projects.

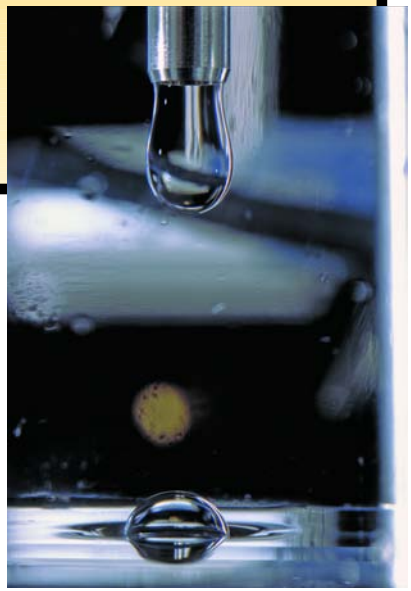
FUNDING

Achieving the goals of the School's strategic plan requires partnerships and funding. New Directions partner funding is cost-shared with alumni contributions, endowments, private foundations and federal grants university support.

Funding Areas:

- Diversity Recruitment
- Fundamentals Laboratory
- Equipment
- Student Retention and Mentoring
- New Faculty Start-up
- Unrestricted

The suggested annual contribution of partner companies is $25,000 per year.



EXPANDED EXPOSURE TO ENGINEERING PRACTICE

• Expanded industrial experiences for undergraduate students through internships and cooperative education programs.

• Expanded industrial internship experiences for graduate students, to support and strengthen their thesis research directions.

• Early research links between younger faculty and interested partner companies.

• Expanded industrial involvement in visiting professorships and guest lectureships.

• Joint formulation of graduate professional development programs using industrial lecturers and covering topics important to industrial careers.

STUDENT RECRUITMENT AND RETENTION

• Meet industry need for diverse and well-educated researchers and technologists by jointly developing programs for increasing minority and women students in the undergraduate and graduate programs.

FOR MORE INFORMATION

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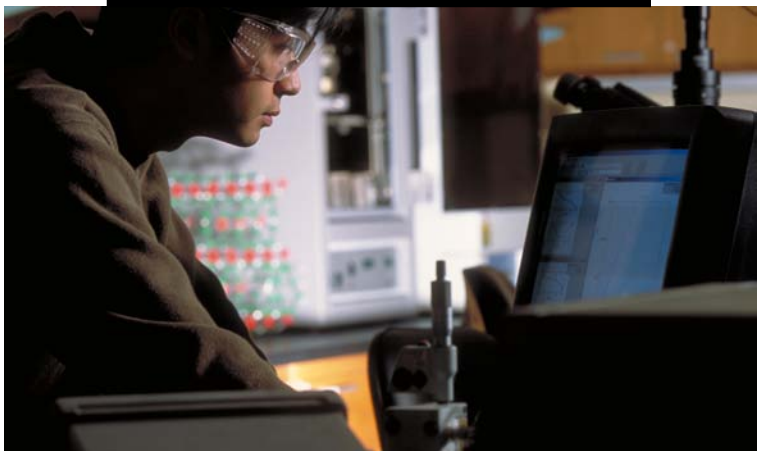

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