Wayne State University
“World Class Education in the Real World”

Industrial & Systems Engineering Department

IEAB Report – April 2012

http://ise.wayne.edu
Faculty

Dr. Kenneth Chelst
Professor, ISE Department
Areas: Structured decision making in engineering management, impact of globalization on engineering and manufacturing management functions

Dr. Ratna Babu Chinnam
Associate Professor, ISE Department
Areas: Advanced product development, supply chain management, sustainability, smart engineering systems

Dr. R. Darin Ellis
Associate Professor, ISE Department
Areas: Human systems integration, user interface design, Development of simulated task test-beds.

Dr. Julia Gluesing
Research Professor, ISE Department
Areas: Culture, technology change, innovation in global networked organizations, collaboration in complex multi-stakeholder business environments.

Dr. Kyoung-Yun Kim
Assistant Professor, ISE Department
Areas: Computational intelligence, design informatics, design innovation, collaborative product development, PLM

Dr. Leslie Monplaisir, Chair
Associate Professor, ISE Department
Areas: All facets of product development

Dr. Alper Murat
Assistant Professor, ISE Department
Areas: Supply chain management, logistics, operations research & applications.

Dr. Nanua Singh
Professor, ISE Department
Areas: Concurrent engineering, global product development

Dr. Kai Yang
Professor, ISE Department
Areas: Statistical methods in quality and reliability engineering, engineering design methodologies and lean healthcare.

Dr. Qingyu Yang
Assistant Professor, ISE Department
Areas: Healthcare systems engineering

Dr. Evrim Dalkiran
Assistant Professor, ISE Department
Areas: Advanced optimization modeling
Dr. Nanua Singh
- Research Interests
  - Concurrent engineering,
  - Global product development
  - CAD/CAM
  - Engineering Design
Kyoung-Yun Kim is an associate professor in the Department of Industrial and Systems Engineering at Wayne State University, where he directs the Computational Intelligence and Design Informatics (CInDI) Laboratory and the Product Development and System Engineering Consortium (PDSEC).
US New and World Report rankings

WSU College of Engineering Rankings

- #66 - Biomedical / Bioengineering
- #91 - Chemical
- #106 - Civil
- #91 - Computer Engineering
- #112 - Electrical / Electronic / Communications
- #42 - Industrial / Manufacturing
- #81 - Mechanical
Research Areas

- **Product Design, Innovation, Knowledge Management**
  - GDLS, TARDEC, Ford, Visteon, Ricardo ...

- **Global Supply Chain Management and Logistics**
  - UPS, Ford, GM, C.H. Robinson, MDoT, Dana, Continental ...

- **Computer-aided Manufacturing and Lifecycle Management**
  - Ford, Delphi, Visteon, Chrysler ...

- **Human Factors Engineering**
  - TARDEC, NASA ...

- **Diffusion of Innovation**
  - NSF, IBM, Ford, GM, Chrysler, Visteon, EDS/HP ...

- **Global Teams – Impact of Culture**
  - P&G, Motorola, Ford, Milliken, AutoLiv ...

- **Sourcing to Emerging Markets & Risk Mgt**
  - Ford, Visteon, ...

- **Systems Engineering**
  - SERC, DoD

- **Six Sigma and Quality Management**
  - Siemens, Chrysler ...

- **Healthcare Engineering**
  - VA, Henry Ford, Beaumont, Crittenton ...
Education Programs

- **Undergraduate Program**
  - **B.S. Industrial Engineering**
    - Specializations:
      - OMLP- Operations Management Leadership Program
      - Business Minor, Computer Science minor

- **Master’s Programs**
  - **M.S. Industrial Engineering**
    - **New specialization in Healthcare Systems Engineering**
  - **M.S. Manufacturing Engineering**
  - **M.S. Engineering Management**
  - **Ford EMMP** – Engineering Management Masters Program
    - Open to all Automotive Suppliers

- **Doctoral Programs**
  - **Regular Track - Ph.D.**
  - **Global Executive Track – Ph.D.**
Certificate Programs and Short Courses

- **Certificate Programs (12-18 credits)**
  - Systems Engineering
  - $6\sigma$ Black Belt & Master Black Belt
  - Engineering Management

- **Short Courses (2-3 days)**
  - Project Management
  - Systems Engineering and Design
  - Six Sigma
  - Lean
  - Product Development
  - Decision and Risk Analysis
  - Global Teams and Cross-Cultural Issues
  - Management of Technology Change
ABET Update

- ABET Visit Fall 2012
  - Self Study report under preparation
  - Students
  - Program educational objectives and Alumni Survey
  - Student outcomes
  - Continuous improvement
  - Curriculum
  - Faculty
  - Facilities
  - Institutional Support

- Undergraduate Chair will provide more detail
<table>
<thead>
<tr>
<th>Programs</th>
<th>Fall 07</th>
<th>Fall 08</th>
<th>Fall 09</th>
<th>Fall 2010</th>
<th>Fall 2011</th>
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Declining enrollment especially in Manufacturing Engineering Programs at both Graduate and Undergraduate levels.
Efforts to reverse enrollment decline

- Engaging with program coordinators and academic advisors from community colleges and high schools.
- Visits to the ISE department from high school juniors and seniors. Such efforts have resulted in greater awareness of Industrial Engineering as a career choice.
- Established an undergraduate scholarship fund in 2010 that has provided two new scholarships annually for IE juniors and seniors.
- Engaged the IIE student chapter in the recruitment effort by providing funds for them to host events and participate in high school visits.
- Added a minor in Computer Science to widen the options for students entering the BSIE program.
Efforts to reverse enrollment decline

- Work with faculty to include an undergraduate research component in their grant proposals. To date, 8 undergraduate students have benefited from this experience.
- Completely revamped the ISE website and recruiting material such as banners, broachers, flyers etc.
- Worked with faculty to devise a graduate recruitment strategy that includes setting up 3+2 programs with 3 international universities.
- Appointed a GPO specifically for the MS degree programs with the tasks of revising the MS options and coordinating the graduate application processing.
- Spearheaded the introduction of distance learning sections in several ISE courses. So far, seven courses have online sections. Enrollment in these courses has doubled.
Efforts to reverse enrollment decline

- Rolled out new certificate program in Engineering Management (EM) with courses offered by distance or at Macomb campus. The EM program has seen the strongest growth in new students over the last three years.
- Introduce the new option in the MSIE program in Healthcare Systems Engineering with the first course offering in Fall 2012.
- Put in place a process to engage new MS applicants to increase the number of admits enrolling in the MSIE program.
- Add 10 new MS scholarships for MS program recruitment.
- Actively engaging our Industrial Advisory Board to determine the skill set necessary to meet the current industry requirements especially in the area of manufacturing.
## Summary of Goals

<table>
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<th>Statistic per year</th>
<th>AY 2011-2012</th>
<th>AY 2013-2016</th>
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<tr>
<td>Undergrads graduated</td>
<td>15</td>
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<tr>
<td>Masters graduated</td>
<td>50</td>
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<td>EMMP graduated</td>
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<td>Ph.D. graduated</td>
<td>6</td>
<td>8</td>
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<td>New faculty</td>
<td>1</td>
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<td>National Ranking (US News)</td>
<td>&gt;50</td>
<td>&gt;35</td>
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<td>External funding</td>
<td>$2.1M=$600K(F) + $150K(L) + $1.25M(I) + $100K(A)</td>
<td>$3.2M=$750K(F) + $250K(L) + $2M(I) + $200K(A)</td>
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<td>Publications</td>
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(F) = federally competitive, (L) = local and state government, (I) = Industry, (A) = Alumni
ISE Priorities

- Implement recruitment plan
- Roll out entire certificate programs by distance learning by Fall 2012 and MSIE by Fall 2013
- New undergraduate concentrations:
  - Systems Engineering
  - Computer Science
  - Product Engineering
- New graduate options in
  - HCSE
  - Systems Engineering
- ABET
- National rankings and visibility
- Engage alumni and industrial partners
- Devise a strategy to revitalize interest in manufacturing education for potential applicants.
Visit ISE New Website – ISE.Wayne.edu