



# Updates on Industrial Engineering Program

Amy Zeng, Ph.D.  
Program Director, [azeng@wpi.edu](mailto:azeng@wpi.edu)

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# Agenda

- Overview of the IE Program
  - Enrollment
  - Job Placement
  - Highlights of Recent Graduates
- WPI IE Career Paths
- IE Curriculum
- Q-and-A Session



# 1. IE Enrollment

Enrollments in the School of Business in Fall 2010:

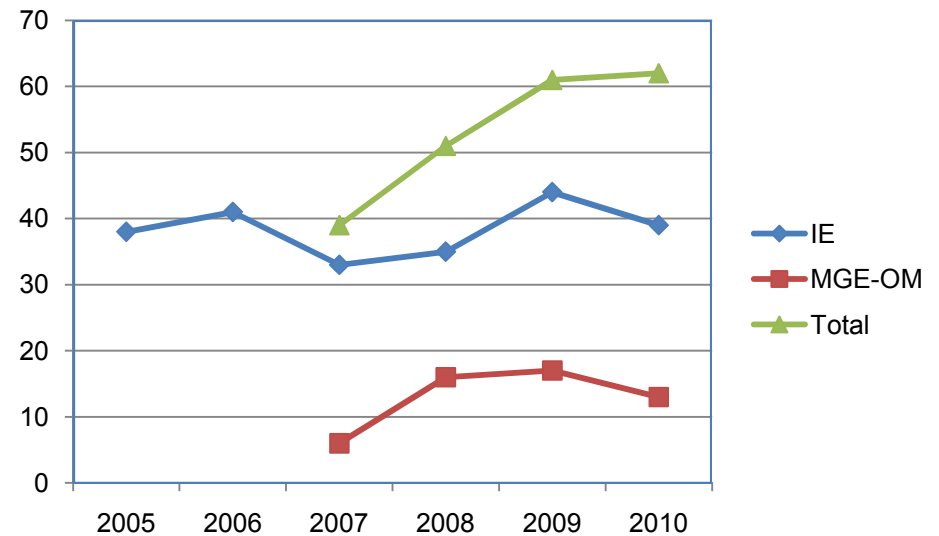
	Freshman	Sophomore	Junior	Senior	<b>Total</b>
<b>IE</b>	<b>6</b>	<b>6</b>	<b>8</b>	<b>19</b>	<b>39</b>
MG	7	7	9	5	<b>28</b>
MGE	7	14	27	27	<b>75</b>
MIS		10	5	10	<b>25</b>

Source: WPI Institutional Research: [www.wpi.edu/+IR](http://www.wpi.edu/+IR)



# IE Enrollment Data

	2005	2006	2007	2008	2009	2010
IE	38	41	33	35	44	39
MGE-OM			6	16	17	13
<b>Total</b>			39	51	61	62
MG		20	26	40	42	28
MGE		34	43	53	66	75
MIS		42	30	33	29	25



Source: WPI Institutional Research: [www.wpi.edu/+IR](http://www.wpi.edu/+IR)



# Demographics of IE Population

In Fall 2010

	Female	Male
White	15	6
Black		
Hispanic	2	5
Asian	1	
Native American		
Non Resident Alien	5	5
Others		
<b>Total</b>	<b>23</b>	<b>16</b>

Source: WPI Institutional Research: [www.wpi.edu/+IR](http://www.wpi.edu/+IR)



# IE Placement

## Industrial Engineering

Post-graduation Plans for Class of 2009

	All Students	Registered with the CDC	Total Industrial Engineering Job Listings for 2009
Employed	5	5	<b>Full-Time: 87</b>  <b>On-Campus Recruiting: 25</b>  <b>Summer Professional: 25</b>  <b>Cooperative Education: 11</b>
Graduate School	3	3	
Military	0	0	
Still Seeking	0	0	
Unknown	0	0	
<b>Total Students</b>	<b>8</b>	<b>8</b>	

100% registered with the CDC

WPI Average Salaries with a Bachelor's	2009 \$49,000	2008 \$62,200
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- **Average salary:**

- \$ 49,000 (2009)
- \$ 62,200 (2008)
- \$ 52,000 (2006)
- \$ 52,250 (2005)
- \$ 48,333 (2003)

- **Employers:**

- Avery Dennison
- APC Corporation
- BAE Systems
- Wright Line
- UTC-Pratt & Whitney
- Goldman Sachs
- Hanover Insurance

Source: [http://www.wpi.edu/Images/CMS/CDC/CDC\\_Stat\\_Report-2009.pdf](http://www.wpi.edu/Images/CMS/CDC/CDC_Stat_Report-2009.pdf)



# Highlights of Recent Graduates

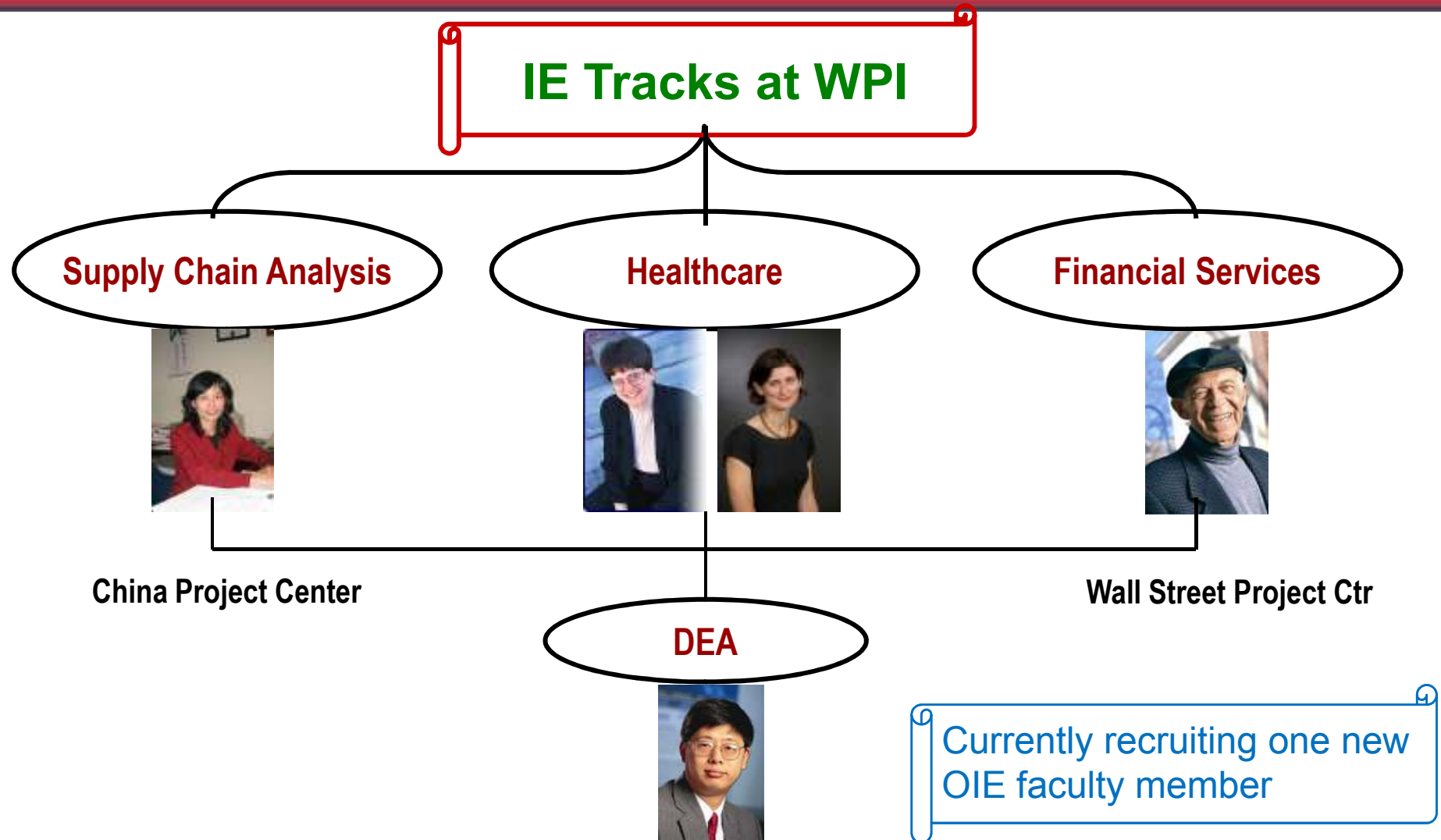
- Case 1
  - Graduated #1 in class, received an offer from Goldman Sachs
  - But decided to pursue a Master's degree in Stanford
  - *"The program equipped me with excellent understanding of industrial engineering concepts through team-based hands on projects. ... The flexible curriculum of WPI's IE program gave me the opportunity to shape my own education through a combination of engineering and business courses."*
- Case 2
  - Had an internship at Biogen Idec
  - Currently a clinical trial analyst making ~\$90K a year



# Highlights of Recent Graduates

- Case 3
  - Business Risk Analyst at Hanover Insurance
  - *“The IE Program at WPI prepared me for my current role as a Business Analyst. The coursework provided me with the opportunity to strengthen my teamwork and communication skills through projects with students studying other majors. The professors’ ability to provide ‘real-world’ examples in class emphasized the connections between the course material and its applications to numerous different settings. The IE Program at WPI challenged me to view what others may consider an issue as an opportunity.”*

## 2. Career Tracks for WPI IE Majors





# 3. IE Curriculum

## ● New Business Foundation

### - Business Context and Mindsets Cluster

- BUS 1010: Foundations of Leadership Thinking
- BUS 1020: Global Environment of Business Decisions
- BUS 2020: The Legal Environment of Business Decisions

### - Managerial Business Tools Cluster

- BUS 2060: Financial Statements for Decision Making
- BUS 2070: Financial and Operational Risk Management
- BUS 2080: Data Analysis for Decision Making

### - Business Execution Cluster

- BUS 3010: Creating Value through Innovation
- BUS 3020: Achieving Effective Operations
- BUS 4030: Executing for Strategic Effectiveness

## ● Impacts on IE Curriculum

→ OBC 2300 (Organizational Science)  
(Students may receive credits for both BUS 1010 & OBC 2300)

→ OIE 2500 (Deterministic Models)  
(Students may **not** receive credits for both BUS 2080 & OIE 351X)

→ OIE 3400 (Production Systems)  
(Students may **not** receive credits for both BUS 3020 & OIE 3400)



# Program Distribution Chart

	First Year	Second Year	Third Year	Fourth Year
<b>Degree Requirements</b>	<b>Humanities and Arts (2 Units)</b> 6 courses including Inquiry Seminar/Practicum			
	<b>Social Science (2/3 Units)</b>			
			<b>IQP (1 Unit)</b>	
	<b>Math/Science (4 Units)</b> Calculus/Diff. Equations Statistics Physics/Chemistry			
		<b>IE Core (3 Units)</b> BUS 1010 (Leadership) BUS 2080 (Data Analysis) BUS 3020 (Operational Excellence) CS 2118 (Database Design) OIE 2850 (Engineering Economics) OIE 3410 (Materials Management) OIE 3420 (Quality Control) OIE 3460 (Simulation) OIE 3510 (Stochastic Models)		
			<b>IE Electives (1 Unit) Choice of:</b> OIE 3405 (Work Systems) OIE 4410 (Case Studies) OIE 4460 (Global Logistics) MIS 3720 MIS 4720 3000/4000 level OR courses in MA	
			<b>Technical Electives (1 Unit)</b> Any engineering/science design course	
				<b>MQP (1 Unit)</b>
	<b>Free Electives (1 Unit)</b>			
	<b>Physical Education (1/3 Unit)</b>			



# Revised IE Core from AY2011

- **IE Core (9 courses; 3 units)**
  - BUS 1010: Foundations of Leadership Thinking
  - BUS 2080: Data Analysis for Decision Making
  - BUS 3020: Achieving Effective Operations
  - CS 2118: Database Design
  - **OIE 3410: Materials Management in Supply Chains**
    - (replacing OIE 3401)
  - OIE 2850: Engineering Economics
  - OIE 3420: Quality Design and Control
  - **OIE 3510: Stochastic Models**
    - (replacing OIE 3501)
  - OIE 3460: Simulation Modeling and Analysis



# IE Electives (1 unit)

- **IE Electives**

- BUS 2080: Data Analysis for Decision Making
- OIE 3405: Work Systems and Facility Planning
- OIE 4410: Case Studies in IE
- OIE 4460: Global Planning and Logistics
- MIS 3720: Business Data Management
- MIS 4720: System Analysis and Design
- 3000/4000 level courses in MA

- **Notes:**

- OIE 3450 (Human Factors) is no longer in the curriculum
- New course in “Advanced Optimization Techniques” in the near future



# Technical Elective (1 unit)

- Suggested courses include: ES 1310, ME 1800, ES 2001, ME 2820, ECE 2011, ECE 3601, CS 2011, CS 4032/3257.
- Most popular choices to date include
  - ES 1310: Intro to CAD
  - ME 1800: Manufacturing Science, Prototype, and Computer-controlled Machining
  - ES 2001: Intro to Material Science
- Courses in other Engineering disciplines will require advisor's approval – ensuring enough Design Component



# MQP Requirement for IE Majors

- Sufficient design component – assured by project advisor
- Reflection essay in the “Recommendation” Chapter (occasionally in the “Methodology” Chapter) to address
  - Using a definition of engineering design, identify what is designed (e.g., a process, a quality control tool, etc.) and describe how they applied the design process.
  - A discussion of alternatives considered, and most importantly, the constraints that were considered, including economic, environmental, social, political, ethical, health and safety, manufacturability, sustainability.
  - In terms of testing and implementation, if recommendations were not able to be implemented or tested, outline a plan for implementation that would include specific steps, priorities, and how constraints or barriers might be minimized.



# IE as a Minor

- **IE Tools:** Choose 2 from the following list
  - OIE 2500: Deterministic Models
  - OIE 2850: Engineering Economics
  - OIE 3510: Stochastic Models
  - OIE 3460: Simulation Modeling
- **IE Knowledge:** Choose 4 from the following list.
  - BUS 3020: Achieving Operational Excellence
  - OIE 3410: Materials Management in Supply Chains
  - OIE 3405: Work Systems and Facility Layout
  - OIE 3420: Quality Design, Planning, and Control
  - OIE 4410: Case Studies in IE
  - OIE 4460: Global Planning and Logistics
  - At least one of these four must be a capstone course chosen from OIE 3405, OIE 4410, or OIE 4460.