Today – two objectives

- Workshop – find out what’s going on with your projects, apply some lecture info to them

- Lecture – convey some project-oriented info to you
What needs to happen in short range

- Establish your work schedule with company/agency/hospital
- Work on “planning sheet”
  - With company supervisor
  - With academic advisor
- I will get academic advisors for your projects once I have project descriptions
Your Projects

- Let’s list the projects that you are doing/did
# Projects for IE496, Spring 2008

<table>
<thead>
<tr>
<th>Student</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chang</td>
<td>BOC Edward</td>
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<tr>
<td>Bednowitz, Jackson</td>
<td>Buffalo – Niagara Airport</td>
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<tr>
<td>Hyde</td>
<td>PCB Piezotronics</td>
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<tr>
<td>Awad, Dooling, Mohd Yusof, Prok</td>
<td>Curbell</td>
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<td>Markin</td>
<td>Del Monte</td>
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<td>Lyke</td>
<td>Fisher Price</td>
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## Projects for IE496, Spring 2008

### continued

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<thead>
<tr>
<th><strong>Student</strong></th>
<th><strong>Company</strong></th>
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</thead>
<tbody>
<tr>
<td>Snyder</td>
<td>General Mills</td>
</tr>
<tr>
<td>Anipindi, Cheng, Devendorf, Luo</td>
<td>Greatbatch</td>
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<tr>
<td>Piecuch, Szalkowski, Worthy</td>
<td>GM Powertrain</td>
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<tr>
<td>Brown</td>
<td>ITT Heat Transfer</td>
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<tr>
<td>Stange</td>
<td>Nanodynamics</td>
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<td>Pedicone</td>
<td>Reichert</td>
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<tr>
<td>Student</td>
<td>Company</td>
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<tr>
<td>Myers</td>
<td>Rome Air Force Base</td>
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<tr>
<td>Frank, Indraputa, Strovers</td>
<td>SAMCO</td>
</tr>
<tr>
<td>Henchey</td>
<td>USPS</td>
</tr>
<tr>
<td>Chung, Davis</td>
<td>Sisters Hospital</td>
</tr>
<tr>
<td>Chandra, Willis</td>
<td>We Care</td>
</tr>
</tbody>
</table>
Broad Categories of IE Work

- Human Factors
- Operations Research
- Production Engineering
- Other technical work – e.g., Web Design
Projects by Broad Categories

- Human Factors
  - Decision Analysis
  - Work Station/Task Improvement

- Operations Research
  - Networks
  - Queuing
  - Simulation
Projects by Broad Categories, continued

- Production Engineering
  - Failure Mode Effect Analysis
  - Inventory, Supply Chain Management
  - ISO, etc.
  - Lean Manufacturing
  - Line Design
  - Material Flow
  - Quality, Six Sigma, Statistical Quality Control
Common Project Objectives

- Reduce Cost ↓
- Increase Quality ↑
- Deliver on Time =
Criteria

- What are criteria?
- What evidence will you accept as to whether or not your project has accomplished its purpose?
Criteria Development by Broad Categories

- Human Factors
  - Time
  - % defective (decision-making)
  - Range of motion
  - Size: height, width, depth
  - Weight of items handled
Criteria Development by Broad Categories

- Operations Research
  - Location
  - Time

- Production Engineering
  - % defective
  - Distance of travel
  - Relative place of sequential operations in space
  - Scrap
  - Time
What are your projects’ objectives?

What criteria are you using?
Some Measurement Tools

- Brain Storming
- Cause – Effect Diagrams (Fish Bone)
- Data Collection
- Flow Diagrams
- Graphs and Charts
- Histograms
- Pareto Analysis
- Scatter Diagrams
- Surveys
Six Sigma - DMAIC

- Define
- Measure
- Analyze
- Improve
- Control
<table>
<thead>
<tr>
<th>Project Phase</th>
<th>Definition / Activities</th>
<th>Example of Tools for Use</th>
</tr>
</thead>
</table>
| Practical Problem | Prioritize opportunities for improvement  
Select appropriate project(s) based on company goals, objectives, & strategy  
Select proper team  
Develop statement of problem to be solved | Project Charter  
Financials  
Business Strategic Plan  
Ghant Chart |
| Practical Problem | Describe the total process in an effort to identify response(s) & how to measure those identified  
Determine acceptable performance criteria  
Gather data on current process | Process Map  
C&E Matrix  
C&E Diagram  
MSA  
Value Stream Map, Current State |
| Statistical Problem | Assess current data & establish a baseline performance  
Confirm relationship between inputs & outputs  
Begin identification of root causes for issue | Failure Modes & Effects Analysis  
Multi-Vari Studies  
Screening DOE’s  
Control Charts  
Setup Reduction |
| Statistical Solution | Implement process controls  
Optimize the process  
Multiple iterations may be needed | DOE, Characterization Studies  
Value Stream Map, Future State  
Cell Design  
Regression |
| Practical Solution | Monitor process & implemented improvements  
Determine capability  
Document effort & results | Optimization Studies  
Control Plan  
5S  
Kanban  
SPC / Capability Studies |
Your Report

Expected report information
- Title Page
- Table of Contents
- Executive Summary
- Introduction
- Problem/Objective
- Methodology
- Results
- Recommendations
- Conclusions
- Appendix
Next Week

- Mr. William Grunert – information on:
  - Written report
  - Oral report