

### Product Lifecycle Management Course Work

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Source: Rex LaRowe





## **Education Foundation Project**

SME

**Curriculum Modules in** 

**Product Lifecycle Management (PLM)** 

for Engineering and Engineering Technology

**Students and Industrial Practitioners** 





## SME Project

- 2 years: January 2006 December 2007.
  - Develop 235 PLM related curriculum modules
  - (40 % developed).
  - Integrate into existing courses.
  - Will be available on-line, hosted by Purdue PLM CoE and NCME.









## AdditionalActivities/Deliverables

- **Student Internships**
- **Student Projects**
- Faculty Externships
- Engagement with K-12 groups





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## Student Internships

Jui Shyang Liu – MSC , Summer 2006





## **T**torials

- Developed 15 complete tutorials with step-by-step instructions and extensive screenshots
  - http://support.mscsoftware.com/kb/results\_kb.cfm?S\_ID=1-34424274

#### The different tutorials covered the following topics:

- Linear Static (SOL 101)
- Thermal Steady State (SOL 153)
- Modal Frequency Response (SOL 111)
- Implicit Non-Linear with Contacts (SOL 600)

Tutorials were developed so that a user with no previous FEA or Patran/Nastran experience can learn how to use the program and conduct full analysis.



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## Ttorial Example

#### Common Lug & Clevis example from Aerospace Industry



## **T**torial Example







UNIVERSITY



## Student Projects

#### Patricio Torres

- E-Factory
- Factory CAD
- Factory Plan
- Factory Flow
- Factory OPT





## E-Factory

#### Goals of Manufacturing Facilities and

#### Material Handling

Flow & Aisle Analysis

Activity Relationship Analysis





## Product Lifecycle Management Center of Excellence Activity RelationshipAnalysis





## Product Lifecycle Management Center of Excellence Creating "Lean" Designs



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## Midwest Coalition for Comprehensive Engineering Design Education



## PURDUE NSF project

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#### Three years: September 2006 – August 2009.

- \$1.5 M
- 16 Faculty Members

#### **5 Academic Partners**

- Purdue University
- Sinclair Community College (Dayton, Ohio)
- Fox Valley Community College (Appleton, Wisconsin)
- Butler Community College (Andover, Pennsylvania)
- Mott Community College (Flint, Michigan)











## Project goal

- Development and dissemination of comprehensive design & manufacturing curricula for
  - associate degree technician and
  - baccalaureate degree technology students
- Develop and offer programs to improve the skills of the existing workforce





## **Pr**oject goal

The skills in the areas of :

- **CAD**,
- Design for manufacturability and assembly, collaborative engineering,
- Teamwork,
- Managing change, etc.

The skills necessary for increased competitiveness, as identified by the Society of Manufacturing Engineers and National Association of Manufacturers.



## Project goal

The partner institutions on the project will work collaboratively:

- to identify
- develop and
- deliver curriculum that will integrate

comprehensive design education across

- associate degree technician and
- baccalaureate degree technology colleges,

in order to increase the skill level in the manufacturing sector.





- **1.** Validate competencies for comprehensive engineering design
- 2. Transferability between AS and BS Programs
- **3. Comprehensive design curriculum for academic institutions**
- 4. Comprehensive engineering design and workforce development
- **5. Interaction with K-12 students**

DISCOVER PURDUE

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# NSFAE project will specifically target the following competency gaps/skills

- Product/process design
- Manufacturing systems
- **Problem solving**
- Teamwork/working effectively with others
- Business knowledge/skills
- **Project** management
- **Oral communications**
- **International perspective**





## **Dissemination**

- Dissemination will be accomplished through the integration and use of hybrid delivery models for continued professional development.
  - Specific components of the competency gaps/skill set require the use of software tools and thus regular software updates.
  - Collaborative professional development among the partner institutions will reinforce partner institution relationships.

The partner institutions will then work to replicate and disseminate within their respective states.



## **Future Directions**

 2008 – NSF Regional Center for Comprehensive Engineering Design Education.

 2011 – NSF National Center for Comprehensive Engineering Design Education.

**DOL Grants** 

DIS









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