

**NSF-ATE Grant
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Capturing the Next Step in 3D: From 3D Modeling to 3D Parametrics



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Principle Investigator

Capturing the Next Step in 3D: From 3D Modeling to 3D Parametrics

#0202256

Project Summary

Moraine Valley Community College has updated its existing exemplary Mechanical and Design Drafting/CAD A.A.S. degree and three corresponding certificates by incorporating 3D Parametric Modeling skills into the curriculum.

Parametric modeling combines the power of three-dimensional modeling as an intuitive engineering design tool with the ability to manipulate and control the corresponding engineering drawings in an adaptive environment. This simplifies the design process, reduces the engineer's design cycle time, achieves better design visualization, more closely associates 2D and 3D drawings, and makes the design process easier to manage. Rapid prototyping is being incorporated into curriculum in order to provide faculty and students the opportunity produce a prototype, or model, of their designs.

The goals for the program are as follows:

Goal 1: Revise/update current Mechanical Design and Drafting A.A.S. degree and three Certificates to include 3D Parametric Modeling.

Goal 2: Build on existing partnerships with high schools and other community colleges to develop, pilot test and evaluate 3D Parametric Modeling courses.

Goal 3: Utilize E-Learning tools to incorporate Web-assisted instructional course resources.

Goal 4: Disseminate the Mechanical Design and Drafting A.A.S. degree and three Certificates to other educational institutions.

Goal 5: Develop and implement recruitment strategies to promote the revised programs to high school students – focusing on students currently underrepresented in Mechanical Design and Drafting/CAD courses.

Participants

The lead personnel for this project are: P.I. - J.C. Malitzke, Moraine Valley Community College, Co-P.I.'s - Chuck Bales, Rick Lapidus and Maria Vlamakis, Moraine Valley Community College and Mark O'Halleran, Park Industries.

The current **Advisory Committee** members include:

Mechanical Design and Drafting/CAD Advisory Committee Members		
William Ostrowski Electromotive Div. of General Motors	Herb Zimmerman Conveyors Plus, Inc.	Ron Badon Reliant Bolt
Michael Enright Wm. Wrigley, Jr. Company		Brian Rusthoven Argonne National Laboratory
Jeff Sliepka Matocha Associates	Mark O'Halloran Park Industries	Lori Cesario-Farraj Argonne National Laboratory
Dave Sechrest Mid America Taping & Reeling	William Landgraf AK Specialty Vehicles	Dan Prokop Argonne National Laboratory
Ineke Sieverding Inekad Drafting and Design, Inc.	Kelly Ruffolo Hansen Technologies	Cathi Eby Thornel Associates, Inc.

A **Content Development Team** has been established with three other community colleges and four high schools as well as industry professionals to fully develop, pilot test, evaluate and revise curriculum for three existing and two new courses in the Mechanical Design and Drafting/CAD A.A.S. degree. Each member of this partnership, the CDT, has participated in regularly-scheduled meetings and a summer 2002 curriculum development workshop for developing curriculum, pilot testing, evaluation, and revision activities. The PI and three Co-PIs from Moraine Valley will serve on the Content Development Team and ensure that the project goals and corresponding objectives are implemented.

The CDT will be responsible for

- Developing course content materials for each individual course topic.
- Creating, evaluating, and testing tutorials for individual course topics. The tutorials will be scripted for traditional lecture-type and web-based, online delivery.
- Creating, evaluating, and testing tests and quizzes. This includes generating a sufficient number of questions/problems for creating a test bank. The tests and quizzes will be used for both the web-based and traditional classroom.
- Evaluating the overall course for completeness and clarity.
- Learning, understanding, and applying Blackboard online course development.
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Web Site Established

The CAD Program web page was created with the NSF logo displayed. The site is, <http://www.morainevalley.edu>.

Summer Teacher Training Workshops

Working with Autodesk, Inc. it was decided to hold an additional technical workshop for teachers under the auspices of Autodesk for the purpose of Teacher Training. (Workshops are scheduled for the

summer of 2003 and 2004 using developed curriculum that was developed by the Content Development Team.) (For the summer of 2005, workshops on the curriculum will also be conducted for the final assessment of the program)

Career Outreach-Mechanical Drafting Design and CAD

The Principal Investigator and Co-Principle Investigators promoted the grant and the enhanced degree and certificates college wide at Moraine Valley. The following are the dissemination, recruitment and awareness sessions conducted this past year.

Mentoring Activities Targeting the Under-represented Student Population

Established the Big Sister Peer-Mentoring Program

MORAIN VALLEY COMMUNITY COLLEGE
NATIONAL SCIENCE FOUNDATION GRANT

Women in Mechanical Design Technology Join the Big Sister Peer- Mentoring Program

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Summary of the first year

The NSF grant project team has spent many hours and faced many challenges during the first year. The main focus for the first year was to initiate the project, have the new and revised courses approved, have the revised degree and certificates approved, select a content development team, initiate curriculum development, initiate dissemination/recruitment/awareness activities, initiate evaluation activities, meet project timelines, complete deliverables and provide feedback. In many areas of the grant we exceeded the first year's expectations.