

# CURRICULUM VITAE

Daria A. Kotys-Schwartz  
Instructor of Mechanical Engineering

## General

Department of Mechanical Engineering  
427 UCB  
University of Colorado  
Boulder, CO 80309-0427

Phone: 303.492.3174  
Fax: 303.492.3498  
Email: [daria.kotys@colorado.edu](mailto:daria.kotys@colorado.edu)

## Education, Professional Training

B.S., Mechanical Engineering, The Ohio State University, June 1998  
M.S., Mechanical Engineering, The Ohio State University, December 2001  
Ph.D., Mechanical Engineering, University of Colorado at Boulder, May 2007

## Teaching Experience

### **Instructor** (2004 – Present)

*University of Colorado, Department of Mechanical Engineering* *Boulder, CO*

- Instructing freshman, junior and senior level mechanical engineering courses.
- Implementing multi-level interactive methods, coupled with modern learning theories to drive instruction.
- Designed course curriculum, confidence surveys and content assessments.
- Developed in-class collaborative activities, demos and interactive response system inquiries.

### **NSF Graduate Teaching Fellow** (2002 – 2005)

*University of Colorado, Integrated Teaching and Learning Laboratory* *Boulder, CO*

- Designed and implemented engineering based lessons and activities in 5 middle school classrooms.
- Engineering specialist for Centaurus High School Project Lead The Way Program.
- Co-designer and co-instructor for Denver School of Science and Technology Creative Engineering course.
- Developed and edited curricular units for the NSF Digital Library – TeachEngineering.com.
- Designed and conducted attitude and content assessments.

### **Instructor - Women's Manufacturing Workshop** (2002 – 2004)

*University of Colorado, Women in Engineering Program* *Boulder, CO*

- Developed and employed project-based curriculum for 3-week manufacturing center workshop, held three times per semester.
- Trained and supervised manufacturing teaching assistants.

### **Instructor – Introduction to Engineering** (2002 – 2004)

*University of Colorado, PCDP and CUUB Program* *Boulder, CO*

- Instructed summer introductory engineering course for 35 students.
- Designed and integrated project-based, cooperative learning engineering curriculum.
- Created and conducted attitude and content assessments.

**Substitute Teacher – K-12 Math and Science (2002)**

*Denver Public Schools*

*Denver, CO*

- Permanent substitute for 6<sup>th</sup> grade math
- Developed active learning curriculum for 5 middle school math classes.

**Instructor – Introduction to Parametric Design (2000 – 2001)**

*The Ohio State University Department of Mechanical Engineering and  
Department of Industrial Engineering*

*Columbus, OH*

- Instructed senior level mechanical engineering/industrial engineering technical elective for 50 students.
- Course emphasized communication of design through perspective sketching, engineering drawings, Geometric Dimensioning and Tolerancing and 3-D parametric model generation utilizing Unigraphics.

**Graduate Teaching Assistant – Introduction to Engineering (2000 – 2001)**

*The Ohio State University Department of Industrial Engineering*

*Columbus, OH*

- Designed and conducted Industrial Engineering Assembly Line seminars and Injection Molding seminars for 300 freshman students.

**Professional and Research Experience****Research Assistant (2005 – Present)**

*University of Colorado, Department of Mechanical Engineering*

*Boulder, CO*

- Designed and conducting mixed-method, design-based educational research in paired section Manufacturing Processes and Systems course.
- Evaluating the impact of interactive pedagogy on student performance and attitudes.
- Co-coordinator for the mechanical engineering core-curriculum assessment revision project.
- Guest lecturer in the mechanical engineering Component Design course.

**Research Assistant - Gear Dynamics and Gear Noise Research Laboratory and Integral Attachment Program (1999 – 2001)**

*The Ohio State University Department of Mechanical Engineering*

*Columbus, OH*

- Investigated improving polymer gear profiles through the use of gas-assisted injection molding.
- Collaborated with ABA-PGT to develop a modified mold design for gas nozzle integration.
- Conducted finite element analysis of experimental gear, and performed mold flow simulations.
- Manufactured 1500 experimental Nylon 6/6 gears, utilizing a 200 ton Sumitomo injection molding press.
- Performed topography testing and analysis of experimental gears.

**Advanced Manufacturing Engineer (1998 – 1999)**

*Copeland Corporation*

*Sidney, OH*

- Procured \$500,000 of capital equipment to help complete Copeland's most aggressive plant start-up within the planned schedule.
- Solely managed project that quoted, purchased, conceptually designed and approved the mechanical drawings for 5 hydraulic presses that were required for plant start-up.
- Tested process capabilities and functionality of each hydraulic press to guarantee that the approved Copeland quality standard of 1.33 Cp/Cpk was met.
- Led team that performed an ergonomic study that optimized work cell, trained and interacted with operators while integrating their suggestions to improve completed layout.
- Wrote, edited and published process documentation, operation instructions, preventive maintenance instructions and visual aids.

### **Advanced Manufacturing Engineer and Consultant Intern (1996 – 1997)**

*Copeland Corporation*

*Sidney, OH*

- Compiled and developed Bills of Materials, engineering drawings and specifications for Philippines franchise.
- Managed \$120,000 budget to purchase and install Live Load stations, bar coding system and Compaq Proliant server for new Scroll compressor plant in North Carolina.
- Tested and evaluated new assembly line equipment to ensure that Copeland's 1.33 Cp/Cpk quality standard was achieved prior to purchase.
- Conducted batch internal inspections using Zeiss Coordinate Measuring Machine to verify that machined scrolls were kept within the critical tolerances.

### **Undergraduate Research Assistant – Center for Automotive Research (1994 – 1996)**

*The Ohio State University Department of Mechanical Engineering*

*Columbus, OH*

- Collected air/fuel ratio and emissions data from V-8 engine for graduate research, utilized MATLAB software to determine the validity of the collected data.
- Designed and fabricated breadboard circuits and printed circuit boards to simulate minor engine failures and calibrated laboratory instrumentation.

### **Society and Association Memberships**

Member, American Association of University Women (AAUW)

Member, American Society of Mechanical Engineers (ASME)

Member, American Society of Engineering Education (ASEE)

Member, Society of Women Engineers (SWE)

Member, Society of Manufacturing Engineers (SME)

Member, Pi Tau Sigma

Member, Alpha Lambda Delta

Member, Phi Eta Sigma

### **Honors and Awards**

Undergraduate Research Assistant, Center for Automotive Research, 1993-1996

The Ohio State University Scarlet and Gray Academic Scholarship, 1993-1997

The Ohio State University Industrial Advisory Board Minority Scholarship, 1995

Graduate Research Assistant, 1999-2000

The Ohio State University Women In Engineering Leadership Award, 2001

Fellow, National Science Foundation, 2002 - 2005

University of Colorado Sullivan-Carlson Innovation in Teaching Award, 2004

University of Colorado Residence Hall Teaching Award, 2004

University of Colorado Leads Faculty Appreciation Award, 2004

University of Colorado Graduate Part-Time Instructor Teaching Excellence Award, 2004 - 2005

University of Colorado Multicultural Engineering Program Faculty Appreciation Award, 2005

University of Colorado American Society of Mechanical Engineers Best Lecturer Award, 2005 - 2007

American Association of University Women Brown/ Ricketts/Udick Grant, 2005

American Society of Engineering Education – ERM Faculty Apprentice Grant, 2006

University of Colorado Outstanding Ph.D. Dissertation Award, Department of Mechanical Engineering, 2007

## **Publications & Presentations**

Jenkins, D., Kotys, D. A., Chan, V., Ledyard, J., "Development of a Robotic Manipulator to Assist Disabled Children", NSF Gateway Engineering Coalition Concurrent Design and Manufacturing 1998 Project Technical Report, The Ohio State University, Columbus.

Kotys, D.A. (2001), "Improving Plastic Gear Accuracy Through Gas-Assisted Injection Molding", Proceedings, Gear Dynamics and Gear Noise Research Laboratory Sponsors Meeting, Columbus, Ohio.

Kotys, D. A. (2001), "Improving Plastic Gear Accuracy Through Gas-Assisted Injection Molding", Gear Dynamics and Gear Noise Research Laboratory and Integral Attachment Program, The Ohio State University, Masters Thesis.

Kotys-Schwartz, D.A., Zamora Thompson, X., Friedrichsen, J., Zarske M.S., Carlson, D.W. "Curricular Unit: Put a Spark In It! - Electricity." TeachEngineering. 2004. NSF - NSDL. 23 Mar. 2005 <[www.teachengineering.com](http://www.teachengineering.com)>.

Kotys-Schwartz, D.A., Hill, J., Yakacki, C., Zarske M.S., Yowell, J.L. "Curricular Unit: Mission to Mars." TeachEngineering. 2004. NSF - NSDL. 23 Mar. 2005 <[www.teachengineering.com](http://www.teachengineering.com)>.

Kolenbrander, A., Kotys-Schwartz, D.A., Yowell, J.L., Mach, N., Zarske M.S., Carlson, D.W. "Curricular Unit: Air Pollution Activities." TeachEngineering. 2004. NSF - NSDL. 23 Mar. 2005 <[www.teachengineering.com](http://www.teachengineering.com)>.

Kotys-Schwartz, D.A. and Zarske, M.S. "Graduate Student Personal Experiences: Improving Collegiate Teaching through K-12 Outreach." *Proceedings*, 2005 American Society for Engineering Education Annual Conference & Exposition, Portland, OR. Session 3455.

Zarske, M.S., Kotys-Schwartz, D.A., Sullivan, J.F. and Yowell, J.L. "*Creative Engineering*: Helping Ninth-Grade Students Discover Engineering." *Proceedings*, 2005 American Society for Engineering Education Annual Conference & Exposition, Portland, OR. Session 2610.

Kay, B., Kotys-Schwartz, D.A., Yowell, J.L., Zarske M.S. Unit: Mixtures and Solutions." TeachEngineering. 2006. NSF - NSDL. 1 Mar. 2006 <[www.teachengineering.com](http://www.teachengineering.com)>.

Kotys-Schwartz, D.A. and Carlson, L.E. "Manufacturing Processes and Systems: Quantitative Evaluation of the Impact of Interactivity on Student Performance." *Proceedings*, 2006 American Society for Engineering Education Annual Conference & Exposition, Chicago, IL. Session 3166.

Kotys-Schwartz, D.A., Carlson, L.E. and Reamon, D. "Systematic Integration of Concept Inventories in Mechanical Engineering." *Proceedings*, 2006 American Society for Engineering Education Annual Conference & Exposition, Chicago, IL. Session 3430.

Kotys-Schwartz, D.A. and Carlson, L.E. "Evaluation of the Impact of Interactivity on Student Performance and Attitudes in Engineering." *Proceedings*, First International Conference on Research in Engineering Education, Honolulu, HI. (Manuscript Submitted).

Kotys-Schwartz, D.A. and Carlson, L.E. "Evaluation of the Impact of Interactivity on Student Performance and Attitudes in Engineering – Part I." *Journal of Engineering Education*. (Submission November 2007).

Kotys-Schwartz, D.A. and Carlson, L.E. "Evaluation of the Impact of Interactivity on Gender Performance and Attitudes in Engineering – Part II." *Journal of Engineering Education*. (Submission November 2007).

## **Professional Activities**

### **Service to Conferences**

- Co-Chair, Forum – Energy Issues and Technology Developments for ASME Nuclear Codes and Standards, 2007
- Reviewer, ASEE Faculty Apprentice Grant, 2007
- Moderator, ASEE Annual Conference & Exposition, 2007
- Reviewer, International Conference on Research in Engineering Education, 2007
- Reviewer, FIE Conference Proceedings, 2007
- Reviewer, ASEE Annual Conference & Exposition, 2006
- Session Feedback Assistant, FIE Conference, 2004

### **Service to NSF**

- Reviewer, Course Curriculum and Laboratory Improvement Proposals, 2007

## **College of Engineering and Mechanical Engineering Department Service**

### **College Service & Outreach**

- Panel Member, Discover Engineering Days, 2007
- Member, College of Engineering and Applied Sciences Co-op Committee, 2006 - Present
- Presenter, Colorado MESA Mark, 2006 and 2007
- Panel Member, Explore CU Engineering Day, 2005 and 2007
- Presenter, Colorado MESA Fall Fling, 2005 and 2007
- Presenter, University of Colorado MEP, 2005
- Presenter, Expanding Your Horizons, 2004

### **Department Service**

- Advisor, Shell EcoMarathon Vehicle, 2007- Present
- Co-Advisor, Formula SAE Vehicle, 2007- Present
- Advisor, ASME Student Chapter, 2006 - Present
- Mechanical Engineering Co-op Coordinator, 2006 - Present
- Co-Coordinator, Undergraduate Core Curriculum Assessment, 2005 - Present
- Co-Coordinator, High-School Honors Institute, Summer 2005
- Advisor, Mechanical Engineering Independent Study, 2004 - Present