

TEACHING AND MENTORING AWARDS

Alice M. Agogino

- **ASME Ruth and Joel Spira Outstanding Design Educator Award**, 2015. Citation: *for tireless efforts in furthering engineering design education including curriculum changes that blend cutting-edge design topics with state-of-the-art educational practices; promoting wide-ranging interaction between industry and students; performing game-changing design research; and mentoring the next generation of designers, educators, researchers and engineers*. The award will be presented at the 2015 International Design and Engineering Technical Conference (IDETC).
- **Lifetime Mentor Award**, AAAS, 2012. Citation: *for efforts to significantly increase the number of women and African- and Hispanic-American doctorates in mechanical engineering*.
- **Professor of the Year**, UC Berkeley Pi Tau Sigma, 2011. Citation: *demonstrated time and again her commitment to high academic standards and improving the undergraduate experience for Mechanical Engineering students*.
- **Faculty Award for Excellence in Graduate Student Mentoring**, Mechanical Engineering Graduate Student Council, 2007.
- **Chancellor's Award for Advancing Institutional Excellence**, 2006. The new award recognizes faculty providing leadership in research, education and public service in building an equitable and diverse learning environment. Citation: *an extraordinary blend of research in mechanical engineering, inquiry into issues of gender and minority access and equity and the building of programs, resources and curricula to advance both causes*.
- **NSF Director's Award for Distinguished Teaching Scholars**, 2004. This award was considered "the foundation's highest honor for integrated teaching and research excellence".
- **IEEE Helen Plants Award for "Best Non-Traditional Session at Frontiers in Education"**, 1998, American Association for Engineering Education.
- **Best Overall Paper Award**, 1998 (with Ann McKenna). Annual Conference of the American Association for Engineering Education.
- **Best Paper Award** (with Ann McKenna), 1997. ASEE/IEEE Frontiers in Engineering Education Conference.
- **John Wiley & Sons Premier Courseware Award** (with D. Yu) for "Virtual Disk Drive Design Studio" CD ROM, 1997.
- **Ralph R. Teetor Educator Award**, Society of Automotive Engineers, 1987.
- **Award for Excellence in Teaching**, 1986, Pi Tau Sigma, UC Berkeley.

TEACHING EVALUATIONS

Alice M. Agogino

Freshman/Sophomore Seminar Evaluations

| Semester | Course Number | Overall Quality and Teacher Effectiveness (maximum 5.0) Agogino | Overall Quality of Course (maximum 5.0) ME Dept. Average |
|----------|---------------|--|---|
| Spr '97 | E24 | 4.6 | 4.32 |
| Spr '97 | ME39C | 4.9 | 4.23 |
| Spr '99 | ME39C | 4.6 | 4.32 |

Teacher Evaluations for ME110 Introduction to New Product Development

| Semester | Instructor Effectiveness (max of 7.0; Agogino) | Course Worth (max of 7.0; Agogino) | Average of Classroom Presentation /Interaction with Students (maximum 5.0; Agogino) | Instructor Effectiveness (Department Average) | Course Worth (Department Average) | Average of Classroom Presentation /Interaction with Students (Department Average) |
|-------------|--|------------------------------------|---|---|-----------------------------------|---|
| Spring 2003 | 6.0 | 5.3 | 4.5 | 5.61 | 5.75 | 4.34 |
| Spring 2004 | 5.8 | 5.8 | 4.5 | 5.94 | 5.92 | 4.54 |
| Spring 2010 | 5.7 | 5.3 | N/A | 5.43/6.02 ¹ | 5.35/5.86 ¹ | N/A |
| Spring 2011 | 5.6 | 5.7 | N/A | 5.2/6.0 ¹ | 5.0/6.0 ¹ | N/A |
| Spring 2013 | 5.8 | 5.6 | N/A | 5.6/5.9 ¹ | 5.5/5.9 ¹ | N/A |

Teacher Evaluations for E10 Introduction to Engineering Design and Analysis

| Semester | Instructor Effectiveness (max of 7.0; Agogino) | Course Worth (max of 7.0; Agogino) | Instructor Effectiveness (Department Average) | Course Worth (Department Average) |
|-------------|--|------------------------------------|---|-----------------------------------|
| Spring 2008 | 6.0 | 5.3 | 5.61 | 5.75 |
| Spring 2009 | 5.4 | 4.5 | 5.42 | 5.32 |

¹ The first number is for the ME departmental average for required undergraduate courses; the second number is for elective undergraduate courses. ME110 has elements of both, as it is one of a few technical electives that satisfies the ABET design requirement.

Teacher Evaluations for ME290P/BA290N
Managing the New Product Development Process: Design Theory & Methods

| Semester | Instructor Effectiveness (max of 7.0) | Course Worth (max of 7.0) | Instructor Effectiveness (Department Average) | Course Worth (Department Average) |
|-----------------|--|--------------------------------------|--|--|
| Fall 1995 | 5.9 | 5.5 | 5.6 | 5.6 |
| Fall 1996 | 5.0 | 5.6 | 5.8 | 5.9 |
| Fall 1997 | 6.2 | 5.9 | 5.8 | 5.7 |
| Fall 1998 | 6.0 | 6.2 | 5.6 | 5.6 |
| Fall 2002 | 5.9 | 6.2 | 5.86 | 5.75 |
| Fall 2004 | 5.2 | 5.74 | 5.2 | 5.75 |
| Fall 2006 | 5.8 | 5.4 | 5.8 | 5.7 |
| Fall 2007 | 5.7 | 5.7 | 5.48 | 5.57 |
| Fall 2008 | 6.0 | 5.8 | 5.7 | 5.6 |
| Fall 2009 | 5.9 | 6.3 | 5.92 | 5.86 |
| Fall 2010 | 6.0 | 6.0 | 5.89 | 5.88 |
| Fall 2011 | 5.2 | 5.7 | 5.8 | 6.0 |
| Fall 2013 | 6.4 | 5.9 | 6.0 | 5.0 |

Teacher Evaluations for Haas School of Business ME290P/BA290N/SIMS290P
(7.0 maximum)²
Managing the New Product Development Process: Design Theory & Methods

| Semester | Instructor Effectiveness (Agogino & Beckman) | Course Worth (Agogino & Beckman) | Willingness to Recommend (Agogino & Beckman) | Instructor Effectiveness (Department Average) | Course Worth (Department Average) | Willingness to Recommend (Department Average) |
|-----------------|---|---|---|--|--|--|
| Fall 1996 | 6.0 median | 6.0 median | 6.0 median | 6.0 median of medians | 6.0 median of medians | 6.0 median of medians |
| Fall 1997 | 6.0 median | 7.0 median | 7.0 median | 6.0 median of medians | 5.5 median of medians | 6.0 median of medians |
| Fall 1998 | 6.0 median | 7.0 median | 7.0 median | 6.0 median of medians | 5.8 median of medians | 6.0 median of medians |
| Fall 2002 | 6.0 median | 6.0 median | 7.0 median | 6.0 median of medians | 6.0 median of medians | 6.0 median of medians |
| Fall 2003 | 6.0 median | 6.0 median | 6.0 median | 6.0 median of medians | 6.0 median of medians | 6.0 median of medians |
| Fall 2009 | 6.25 | 6.12 | | 5.73 | 5.77 | |
| Fall 2010 | 6.10 | 6.10 | | 6.00 | 6.00 | |

² Team taught with Dr. Sara Beckman, Haas School of Business, 1996-2010; with Dr. Mark Martin, Haas School of Business, 2011. I ask students to fill out both the Mechanical Engineering and the Haas evaluations for this co-located, team-taught course.

| | | | | | | |
|-----------|------|------|--|------|------|--|
| Fall 2011 | 5.72 | 5.68 | | 5.56 | 5.52 | |
|-----------|------|------|--|------|------|--|

**Teacher Evaluations for ME290KA
Innovation Through Design Thinking**

| Semester | Instructor Effectiveness (max of 7.0) | Course Worth (max of 7.0) | Instructor Effectiveness (Department Average) | Course Worth (Department Average) |
|-----------|--|------------------------------|--|--------------------------------------|
| Fall 2013 | 6.6 | 6.4 | 6.0 | 5.9 |

**Teacher Evaluations for ME290H
Green Product Development: Design for Sustainability**

| Semester | Instructor Effectiveness (max of 7.0) | Course Worth (max of 7.0) | Instructor Effectiveness (Department Average) | Course Worth (Department Average) |
|-------------|--|------------------------------|--|--------------------------------------|
| Fall 2007 | 5.0 | 5.5 | 5.48 | 5.57 |
| Spring 2011 | 6.3 | 6.3 | 6.0 | 6.0 |
| Spring 2013 | 6.2 | 5.8 | 5.9 | 5.9 |

**Teacher Evaluations for ME290M
Expert Systems in Mechanical Engineering**

| Date | Instructor Effectiveness (maximum 7.0; Agogino) | Course Worth (maximum 7.0; Agogino) | Average of Classroom Presentation /Interaction with Students (maximum 5.0; Agogino) | Instructor Effectiveness (Department Average) | Course Worth (Department Average) | Average of Classroom Presentation /Interaction with Students (Department Average) |
|-------------|--|--|--|--|--------------------------------------|--|
| Spring 1995 | 5.8 | 5.5 | 4.3 | 5.8 | 5.8 | 4.3 |
| Spring 199 | 6.2 | 5.5 | 4.63 | 6.01 | 5.67 | 4.45 |
| Fall 2003 | 5.9 | 5.5 | 4.64 | 5.85 | 5.84 | 4.45 |

**Teacher Evaluations for Education 290C
Cognition and Development: Educational Issues in Engineering Design and Problem Solving**

| Semester | Instructor Effectiveness (max of 7.0) | Course Worth (max of 7.0) | Instructor Effectiveness (Department Average) | Course Worth (Department Average) |
|-----------|--|------------------------------|--|--------------------------------------|
| Fall 2009 | 6.16 | 6.33 | 6.02/5.43 ³ | 5.86/5.35 ³ |

³ The first departmental average is for graduate courses in ME, the second for courses in the Graduate School of Education.

This course is listed in the Graduate School of Education and fulfills the disciplinary requirement for the SESAME (Studies in Engineering, Science and Mathematics Education) Graduate Group in Science and Mathematics Education. The Fall 2009 course explored research in engineering education and cognitive issues in engineering curricular development, teaching, and assessment. It included both qualitative and quantitative research methods in engineering education, coverage of key research findings, and a course project. One recurring theme throughout the course was the duality between learning and design: design-based research, design as a pedagogy for integrative learning and the role of cognition and the learning sciences in the practice of engineering design.

SELECTED STUDENT QUOTES

ME110: Introduction to Product Design

This course provides an introduction to the engineering design process and conceptual design of products. It provides an experience in preliminary project planning of complex and realistic mechanical engineering systems. Design concepts and techniques are introduced; the student's design ability is developed in a design project or feasibility study chosen to emphasize innovation and ingenuity, and provide wide coverage of engineering topics. Design optimization and social, environmental, economic, and political implications are included as well. There is an emphasis on hands-on creative components, teamwork, and effective communication. In recent years I have developed new content and exercises on the development of sustainable products, from product definition to sustainable manufacturing and financial models. As a project-based learning class, student teams of 4-5 students work on design challenges of their own initiative or those sponsored by outside companies and nonprofits. In Spring 2013 I accepted an overload of students, but was able to find design coaches from industry for each of the design teams and sponsors for many of the teams (e.g., NASA Ames, Mercedes-Benz, Samsung Electronics, Meyer Sound, Lawrence Hall of Science, Pinoleville Pomo Nation, Human-Powered Gym).

She really cares about students, more than any other professor I've had. She stands above the rest. Spring 2010

Puts a lot of time and effort and it shows! Enthusiasm is infectious. Spring 2011

Great Speaker – had an aura of fun and enthusiasm. Engaging. Spring 2013

Great class! Spring 2013

Amazing accessibility. Spring 2013

Really good collection of slides, activities, guest lecturers to keep each week interesting. Spring 2013

Alice makes interesting points in her lectures that show her knowledge in industry. Spring 2013

Her enthusiasm, encouragement and overall support is much appreciated. Alice helped me on

a personal level as a person. She helped me feel comfortable in an environment that I felt unfamiliar with. Thank you Alice! You were very helpful & hospitable. I would take your class again. Spring 2013

Extremely enthusiastic about what she teaches. Best Prof so far. Spring 2013

Best professor ever. Helpful, smart, experienced. Spring 2013

The only lectures I looked forward to this semester. You were awesome. Spring 2013

Tries to know everyone's name, encourages name cards, participation. Spring 2013

Good presentations. Interesting lectures. Very interactive class. Spring 2013

Awesome class! Spring 2013

Fun, exciting, knowledgeable. Spring 2013

She cares a lot about the success of her students and their projects. Great caring professor. Spring 2013

Professor Agogino is great! Overall a very good interesting class. She's great! Spring 2013

Most interesting lectures I have had at Berkeley. One of the friendliest professors. Spring 2013

Good presentation style! Is helpful, friendly and has a very interesting style of presentation. Spring 2013

Excellent and dedicated teacher Alice made me want to go into design. Spring 2013

Really enjoyed the class. Very engaging lectures, very enthusiastic. Good at relating to students and listening to feedback. Glad you address assignment issues. Spring 2013

ME290H Green Product Development: Design for Sustainability

The focus of the course is management of innovation processes for sustainable products, from product definition to sustainable manufacturing and financial models. Using a project in which students are asked to design and develop a product or service focused on sustainability, I teach processes for collecting customer and user needs data, prioritizing that data, developing a product specification, sketching and building product prototypes, and interacting with the customer/community during product development. The course is intended as a very hands-on experience in the "green" product development process. It provides credit towards the Engineering and Business Sustainability Certificate for graduate students. Students can expect to depart the semester understanding "green" product development processes as well as useful tools, techniques and organizational structures that support sustainable design and environmental management practice.

Extremely organized yet flexible lectures that allow questions. Very approachable and easy to

talk to. Best class I've ever taken. Spring 2011

She is very enthusiastic and encouraging, can effectively share her knowledge. She encourages students and identifies them as individuals. Spring 2011

Very nice PowerPoint slides and examples. I liked the in-class videos. Excellent interaction with students. Provides constant feedback. Spring 2011

It is a great course with an amazing instructor but the time is too short for a design project. Spring 2011

I really like the class. It was my favorite you learn a lot in a very entertainment way. She is a great teacher very enthusiastic. Spring 2011

A+ Very dedicated. Spring 2011

I appreciated that we took a teacher evaluating during the course and actions were taken afterwards to meet the students requests. Spring 2011

My favorite course as a graduate student! I learned a lot and also had fun. Alice has excellent pedagogy as well as expert knowledge. Games and team activities in class were great. Thank you! Spring 2011

The course opened my eyes to the world of design. It has given me all the tools to partake my own design. Spring 2011

Amazing presentations! Amazing instructor! Spring 2011

Best class this semester. Spring 2011

Responded to email promptly. Spring 2011

I really like the slides! Spring 2013

Strengths! Interesting lectures, approachable, very good knowledge about subject. Spring 2013

This was an excellent course. There are so many things I liked about it. Group projects were great and I liked the check-ins. It helped us to keep on track. Guest lectures were great. Prof. Agogino did a great job of incorporating the expertise in the room and encouraging guest lectures. Spring 2013

Workshops were good. I would require them to encourage more students to attend. Spring 2013

Fun and exciting, loved how much activity there was and the guest lectures that were provided. Very social and willing to meet and discuss ideas. Learned a lot about different topics. Over the course of the semester which I really enjoyed how broad the material was. Altogether it was inspirational! Spring 2013

Really enjoyed this class slightly fast paced a first but a lot must be done on the first half of that can't be helped. Spring 2013

Alice is very enthusiastic and gives very useful helpful feedback. She also has many connections Wonderful. She is awesome. Spring 2013

ME290P Managing the New Product Development Process: Design Theory and Methods

This cross-disciplinary class has half MBA students (team taught by lecturers in the Haas school of Business). This class is challenging as it must meet the needs of the MBA students with 4-5 years of increasing leadership experience and graduate students in engineering and related disciplines, some of whom may have had little or none industrial experience. I started this course with Dr. Sara Beckman in the Haas School of Business and taught with her for over a decade. As Sara Beckman had increased teaching responsibilities in 2011 the course transitioned to other lecturers in Fall 2011. The Haas Business instructors are responsible for the thirty-plus MBA students in the class and I am responsible for the thirty-plus engineering, iSchool and other general campus students in the class. To accomplish a truly multidisciplinary dimension, we also collaborated with students at the California College of the Arts (CCA) in San Francisco. We have also added an international component where some of the teams included graduate engineering students from the Autonomous University of Mexico (UNAM) in Mexico City. Students from all of these programs and colleges join forces on product development teams to step through the new product development process in detail, learning about the available tools and techniques to execute each process step along the way. The course aims to develop the skills necessary for successful product development in today's competitive global marketplace – multidisciplinary teamwork, rapid prototyping, creativity, business, entrepreneurship and human-centered design.

[Interaction with students] great! Thanks! Fall 2009

Gives good insights. Fall 2009

She has always been very helpful outside class. And whenever our group needed she was available. Fall 2009

Great exercises and lectures Multidisciplinary teams. Good mix of theory and Practice, Fall 2010

Made the course interactive ; asked questions; lots of “hands”, Fall 2010

Love the class exercises, Fall 2010

Interesting material, group projects allow for a lot of learning on team dynamics, Fall 2010

Enthusiastic, knowledgeable, attentive, Fall 2010

Amazing lectures and instruction, loved the group work. So well organized, Fall 2010

Prototyping, Fall 2010

Great instructors and great course structure. Covering everything about product development and design, Fall 2010

Great experience and stories from the real world, Fall 2010

Excellent! Fall 2010

Great presentations. Fall 2010

Dynamic nice. Incredible accessible. Very nice, caring. Questions are precisely answered, backed by research data. Fall 2010

Very good lecturer with engaging demos and exercises. Very helpful and approachable. Fall 2010

I love the passion the instructors have for the course material. Fall 2010

Well organized, clear presentation. Good use of examples. Fall 2011

Very practical. I love all the exercises. I learned a lot about time dynamics. Well done! Fall 2011

Very helpful; provides constructive feedback; advises on other courses as well. Always asks question and asks us to share relevant experiences which benefits all. Fall 2011

Helped find funding for in person meeting with international team member This was indispensable. Great use of bspace and thorough syllabus. Both were very useful and efficient. Fall 2011

Very understanding, I really enjoyed having Alice as an instructor. Fall 2011

Prof. is energetic and have a broad knowledge. Fall 2011

Overall, you've done a great job! You showed that you really care about your students, particularly by forwarding all info relating to our project. I really like this class. It opens my mind about design thinking. Thanks! Fall 2011

Strengths: passionate! Energetic. Well organized. Work load is heavy but helpful. Thanks Alice! It's a great class. I learned a lot. Fall 2011

Good and great feedback. Fall 2011

Great course! Really loved the class. Learned a lot of useful information. Couldn't have asked for a better experience. Thanks! Fall 2011

RECENT EDUCATIONAL INITIATIVES

Human-Centered Design Course Threads and {design} Decal

I am the faculty sponsor and mentor for the DeCal class {design.}, a student-initiated course on the basic human-centered design process and philosophy. This course has been offered every semester with approximately 50 students each semester. The students range from freshman to senior and span all departments on the campus.

Human-Centered Design Course Threads

I started the Human-Centered Design Course Thread with Assistant Professor Björn Hartmann, Computer Science, a certificate program in which students take multiple courses across departments that are thematically linked to human-centered design. An evaluation of these two multidisciplinary initiatives was published in our paper “Teaching Human-Centered Design Across Engineering, Humanities and Social Sciences”, published in the *International Journal of Engineering Education*, Vol. 28, No. 2, pp. 484-491. See:

<http://coursethreads.berkeley.edu/course-threads/human-centered-design>

ME39 Freshman/ Sophomore Seminar (Fall 2010)

I offered a Freshman/ Sophomore seminar in Fall 2010 associated with my “CARES (Community Assessment of Renewable Energy and Sustainability)” research. The CARES project has shown that living sustainably, having access to accurate environmental data, and having implementable solutions are of major concerns to consumers. Research also indicates that people are more eager to adopt a sustainable lifestyle if they are able to collaborate, share and work together with others who share similar sustainability goals. CARES works on projects to help reduce climate change by being the first to close the loop of assessment, advisement and implementation of more sustainable lifestyles. This seminar covered approaches to community assessment of renewable energy, with a focus on conservation, geothermal, micro-hydro-electric, solar photovoltaic, solar hot water heating, and wind energy for a project with the Pinoleville Pomo Nation near Ukiah, California. At the end of the semester the students had the opportunity to develop curricular materials for a workshop that was held at the Pinoleville Pomo Nation for three age categories: elementary/middle school students, high school students and adult education. The figure (above, right) shows some of the students in their solar panel workshop for elementary school students at the Head Start center at the Pinoleville Pomo Nation.



ME39 STUDENT ENERGY WORKSHOP
AT PINOLEVILLE POMO NATION

National Collegiate Inventors and Innovators Alliance

I was the lead PI (with Dr. Sara Beckman as co-PI) in a successful grant from NCIIA (National Collegiate Inventors and Innovators Alliance) that helped fund prototyping of projects for all of my design courses.

Engineering and Business for Sustainability

I was co-founder (with PI Arpad Horvath and other faculty) of the Engineering and Business for Sustainability (EBS) Certificate Program to train UC Berkeley graduate students to understand the complexity and urgency of their role in engineering, business, and environmental management, and to work across boundaries to achieve sustainable solutions to pressing societal problems. EBS courses will allow graduate students to tap into the university's vast multidisciplinary educational resources in the College of Engineering, Haas School of Business, Energy and Resources Group, Goldman School of Public Policy, College of Natural Resources, School of Public Health, and potentially other schools. The goal of the EBS Certificate Program is to produce a cadre of influential problem solvers who can have a lasting beneficial impact on the global environment. The EBS Certificate Program is the first certificate program approved at the highest campus level under formal campus guidelines established in 2006. I co-teach the required seminar for this certificate: CEE292A: Technologies for Sustainable Communities. For more on the certificate program see: <http://sustainable-engineering.berkeley.edu>. The Luce Foundation video shows examples of some of the class projects: <http://player.vimeo.com/video/35283830?title=0&byline=0&portrait=0&color=ab0000>

Minner Faculty Fellow

The Engineering College Committee on Ethics and Social Responsibility awarded me a Minner Faculty Fellow in Summer 2012 with the opportunity to work with other Minner Fellows to add ethics and social justice to all of my design courses. I found this an extremely valuable experience and was able to develop new approaches, modules, readings and exercises for all of my subsequent design courses.

Product Design Concentration in Fung Institute for Engineering Leadership

I took the lead in developing a new area of concentration for the Masters of Engineering Program in Product Design and currently serve as its Head Graduate Advisor. The program only started in Fall 2013 and enjoyed the largest number of students for a concentration in Mechanical Engineering. Our message to prospective students was: “Product Design enables you to create, design, develop and market new products to meet the needs of consumers from all backgrounds and requirements, including sustainability. You gain skills in communicating with and assessing the needs of the user/customer, prototyping and evaluating potential designs with respect to the performance specifications and requirements and insuring safe operation, economical production, and reduced energy and resource consumption as well as environmental impact.”

ME290KA: Innovation Through Design Thinking

In order to add the course offerings for the new Product Design MEng degree program, I developed the “Innovation Through Design Thinking” course. Designed for professionally-oriented graduate students, this course introduces students to Design Thinking; a human-centered approach to innovation and problem solving that integrates the needs of people, the possibilities of technology, and the requirements for economic viability. Emphasis is on problem solving as a process within contextual limitations, employing methods from user centered design, qualitative research, rapid prototyping, and the use of collaborative and participatory systems. Students will explore design-based approaches to problem solving that focus on translating observations into insights, and insights into products, services, and experiences to design innovations that improve people’s lives. The first offering of this course was in 2013 and held in the Cal Design Lab (494 Wurster Hall). The final was a tournament sponsored by Larson-Juhl. The course went well and the teacher evaluations were above 6 on a 7 point scale.



Designated Emphasis in Development Engineering

Working with the Development Engineering Executive Committee and U.S. AID funding from the DIL (Development Impact Lab) proposal, I have been working on a proposal for a Ph.D. designated emphasis (minor) in Development Engineering. More at:

<http://cega.berkeley.edu/programs/DIL/>

Jacobs Institute of Design Innovation

I served as a member of the Design Task Force in the College of Engineering to define the educational programming and building features for the new Jacobs' Institute of Design (Spring, Summer 2013). More at: <http://engineeringdesign.berkeley.edu>

Mentoring Undergraduate Research Students

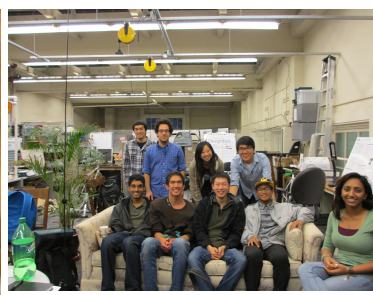
I have hosted over 100 undergraduate researchers in my lab during the last four years. Several of these students were part of programs to increase the diversity of students engineering and encourage them to apply to graduate schools. Four of these students I supervised directly for honors research. The others were co-advised with my senior graduate students. I follow an integrated approach to mentoring, teaching and research – integrating both engineering and learning science research. I mentor graduate students who, in turn, are trained to effectively mentor undergraduate researchers and improve their mentoring and teaching skills. All of these students have graduated to form a cadre of faculty and industry leaders equipped with superior mentoring skills. I meet with all undergraduate and graduate students once a week in a group meeting, then hold weekly meetings with subgroups and individuals. I am proud to have won the 2012 Lifetime Mentor Award from [the American Association for the Advancement of Science](#) (AAAS). Photos of some of the larger teams are shown below.



SMART LIGHTING [MAX TECH & BEYOND](#)



[CARES](#) TEAM BUILDING STRAW
BALE HOME WITH PINOLEVILLE
POMO NATION



[HUMAN-POWERED GYM](#) TEAM

EDUCATIONAL SCHOLARSHIP

I am a firm believer that education needs the same degree of rigorous analysis as disciplinary research in order to evaluate and show impact. A summary of my peer-reviewed publications in the *scholarship of learning* is provided below.

Peer-Reviewed Journal Publications

1. "The Impact and Instructional Benefit of Using Multimedia Case Studies to Teach Engineering Design," (with Sherry Hsi), *Journal of Educational Hypermedia and Multimedia*, Association for the Advancement of Computing in Education (ISSN 1055-8896), Vol. 3, No. 3/4, 1994, pp. 351-376.
2. "Engineering Courseware Content and Delivery: the NEEDS Infrastructure for Distance-Independent Education," (with W.H. Wood), *Journal of the American Society for Information Science*. Vol. 47, No. 11, 1996, pp. 863-869.
3. "The National Engineering Delivery System (NEEDS): A Multimedia Digital Library of Courseware," (with B. Muramatsu), *International Journal on Engineering Education*, Vol. 13 No. 5, 199, 1997, pp. 333-340.
4. "Examples of Freshman Design Education," (with Sheppard, S., R. Jenison, M. Bereton, L. Bucciarelli, J. Dally, J. Demel, C. Dym, D. Evans, R. Faste, M. Henderson, P. Minderman, J. Mitchell, A. Oladipupo, M. Picket-May, R. Quinn, T. Reagan, and J. Wujek), *International Journal on Engineering Education*, vol. 13, no. 4. pp. 248-261, 1997.
5. "Bridging Diverse Institutions, Multiple Engineering Departments, and Industry: A Case Study in Developing an Assessment Plan for the Synthesis Coalition," (with Flora McMartin and Eric Van Duzer), *Journal of Engineering Education*, Vol. 87, No. 2, April 1998, pp. 157-163.
6. "A Web-based Module for Teaching Middle School Students Engineering Design with Simple Machines," (with A. McKenna), *Journal of Engineering Education*, Oct. 1998, pp. 437-444. (Won 'best paper' award at FIE '97.)
7. "A Document Analysis as a Means for Predicting Design Team Performance," (with A. Dong, and A.W. Hill), *ASME Journal of Mechanical Design*, Vol. 126, May 2004, pp. 378-385.
8. "Perceptions of the Design Process: An Examination of Gendered Aspects of New Product Development", (with Newman, C., M. Bauer, and J. Mankoff), *International Journal of Engineering Education*, Vol. 20, No.2, pp. 452-460, 2004.

9. "Supporting Mechanical Reasoning with a Representationally-Rich Learning Environment", (with A. McKenna), *Journal of Engineering Education*, ASEE, Vol. 93, No. 2, pp. 97-104, April 2004.
10. "Engineering Design Thinking, Teaching, and Learning," (with C. Dym, O. Eris, D.D. Frey, and L.J. Leifer), *Journal on Engineering Education*, ASEE, Jan. 2005, v. 94, no. 1, pp. 103-120.
11. "Triangulation of Indicators of Successful Student Design Teams," (with S. Song and J. Hey), *International Journal of Engineering Education*, ISSN 0949-149X, vol. 22 (3), 2006, pp. 617-625.
12. "Designing Mobile Digital Library Services for Pre-Engineering and Technology Literacy", (with J. Hey, C. Newman, J. Sandhu, C. Daniels, and J.-S. Hsu), *International Journal of Engineering Education*, Special Issue on Mobile Technologies for Engineering Education, Vol. 23 (3), pp. 441-453, 2007.
13. "Self-Reflection: Lessons Learned in a New Product Development Class", (with J.H. Hey, A.P Van Pelt and S. Beckman), *Journal of Mechanical Design*, ASME, Vol. 129, No. 7, July 2007, pp. 668-676.
14. "Enabling and Characterizing Twenty-First Century Skills in New Product Development Teams", (with C. Cobb, S. Beckman and L. Speer), *International Journal of Engineering Education*, Vol. 24 (2), February 2008, pp. 420-433.
15. "Sustainable Product Design: Designing for Diversity in Engineering Education" (with L. Oehlberg and R. Shelby), *International Journal of Engineering Education*, No. 2 of Vol. 26, 2010, pp. 489-498.
16. "Diversity in Design Teams: An Investigation of Learning Styles and their Impact on Team Performance and Innovation," (with K. Lau and S. Beckman), *International Journal of Engineering Education*, Vol. 28, No. 2, 2012, pp. 293-301.
17. "Teaching Human-Centered Design Innovation across Engineering, Humanities and Social Sciences," (with L. Oehlberg, I. Leighton, and B. Hartmann), *International Journal of Engineering Education*, Vol. 28, No. 2, 2012, pp. 484-491.
18. "Mobile and Augmented Reality Cyberlearning with the Engineering Pathway Digital Library," (with K. Ryokai and L. Oehlberg), *International Journal of Engineering Education*, Vol. 28, No. 2, 2012, pp. 1119-1126.
19. "Off the Paved Paths: Exploring Nature with a Mobile Augmented Reality Learning Tool", (with K. Ryokai), *Journal of Mobile HCI (IJMHCI)*, Vol 5 (2), April 2013, pp. 21-49. doi:10.4018/jmhci.2013040102.
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