



“DESIGN EDUCATION: INNOVATION AND ENTREPRENEURSHIP”

MUDD DESIGN WORKSHOP VIII

26–28 MAY 2011

FINAL (REV. 1) PROGRAM

Supported by Harvey Mudd College and the National Science Foundation, this **workshop** brings together engineering educators, designers and researchers to articulate the relevant issues of innovation and entrepreneurship in engineering design education. The **participants** intend to identify and delineate the key intellectual and institutional issues that engineering design educators must address.

ORGANIZING COMMITTEE: Clive L. Dym, *Harvey Mudd College* (Chair); Alice Merner Agogino, *University of California at Berkeley*; Aaron Altman, *University of Dayton*; Cindy J. Atman, *University of Washington*; J. Edward Colgate, *Northwestern University*; Daniel D. Frey, *Massachusetts Institute of Technology*; Peter Gregson, *Dalhousie University*; Ahmad Ibrahim, *Yorkville University*; Larry J. Leifer, *Stanford University*; Christopher L. Magee, *Massachusetts Institute of Technology*; Gregory B. Olson, *Northwestern University*; John W. Prados, *University of Tennessee, Knoxville*; Sheri D. Sheppard, *Stanford University*; Janis P. Terpenny, *Virginia Polytechnic Institute and State University*; and John W. Wesner, *Carnegie Mellon University*.

12:00PM, THURSDAY: OPENING LUNCHEON

PLATT CAMPUS CENTER

Welcome: Robert Cave, Vice President for Academic Affairs, *Harvey Mudd College*

Remarks: Clive L. Dym, *Harvey Mudd College*

Keynote: “Finding One’s Way,” Alice Merner Agogino, *University of California at Berkeley*
Larry J. Leifer, *Stanford University*

2:00PM, THURSDAY (S1): CHARACTERIZING INNOVATION

PARSONS DESIGN STUDIO

Moderator: Cindy J. Atman, *University of Washington*

D. M. Ferguson and M. W. Ohland, *Purdue University*, “What is innovativeness in engineers?”

A. F. McKenna and A. Carberry, *Arizona State University*, “Characterizing the role of modeling in innovation.”

R. Currano and M. Steinert, *Stanford University*, “A framework for reflection in innovation design.”

R. Burton, L. Schlemer and L. Vanasupa, *California Polytechnic State University, San Luis Obispo*, “On the use of pattern interruption and self observation in human systems for transformative innovation.”

4:00PM, THURSDAY (S2): STUDENTS SEEING INNOVATION**PARSONS DESIGN STUDIO**

Moderator: Ahmad Ibrahim, *Yorkville University*

K. E. Bigelow, *University of Dayton*, "Student perspectives in an all-female first-year engineering innovation course."

K. Lau, S. Beckman and A. M. Agogino, *University of California at Berkeley*, "Diversity in design teams: An investigation of learning styles and its impact on team performance and innovation."

J. Rhee, D. Parent, L. Speer, A. Basu and L. Gerston, *San Jose State University*, "Formative assessment of the influence of personality in a multidisciplinary senior project combining innovation and entrepreneurship."

M. V. Manuel, *University of Florida*, A. F. McKenna, *Arizona State University*, and G. B. Olson, *Northwestern University*, "The driving force behind student innovation in capstone design projects: Insights into the human connection."

6:30PM, THURSDAY: INFORMAL DINNER & PRESENTATION**PLATT CAMPUS CENTER**

Speakers: "A conversation about change in teaching engineering: Insights from the Academic Pathways Study,"

Sheri D. Sheppard, *Stanford University*

Cindy J. Atman, *University of Washington*

Ken Yasuhara, *University of Washington*

8:00AM, FRIDAY (S3): IMPROVING INNOVATION LEARNING (I)**PARSONS DESIGN STUDIO**

Moderator: J. Edward Colgate, *Northwestern University*

E. Gerber, J. Olson and R. Komarek, *Northwestern University*, "Innovation-based learning: A pilot study, evaluation, and emerging design principles."

M. K. Thompson, *Korea Advanced Institute of Science and Technology*, "Fostering innovation in cornerstone design courses."

D. S. Strong, *Queen's University*, "An approach for improving design and innovation skills in engineering education: The multidisciplinary design stream."

J. R. Goldberg, *Marquette University*, "Learning to identify unmet needs and new product opportunities."

10:00AM, FRIDAY (S4): IMPROVING INNOVATION LEARNING (II)**PARSONS DESIGN STUDIO**

Moderator: Alice Merner Agogino, *University of California at Berkeley*

S. Brunhaver, M. Lande, S. D. Sheppard and E. Carryer, *Stanford University*, "Fostering an enterprising learning ecology for engineers."

S. L. Beckman, *University of California, Berkeley*, and M. Barry, *Stanford University*, "Design as a learning process: Implications for teaching."

A. Johri and H. J. Teo, *Virginia Polytechnic Institute and State University*, "Levering advances in open innovation to re-design design learning."

D. Schaefer and J. L. Thames, *Georgia Institute of Technology*, J. H. Panchal, *Washington State University*, S. Haroon, *The RBR Group*, F. Mistree, *University of Oklahoma*, "Innovative design education in a global distance learning setting: Challenges–Opportunities–Experiences."

12:00PM, FRIDAY (GREEN ROOM, PLATT CENTER)**SECOND DAY LUNCHEON**

Host: Ziyad H. Duron, Chair, Department of Engineering, *Harvey Mudd College*

2:00PM, FRIDAY (S5): VIEWS FROM ON TOP**PARSONS DESIGN STUDIO**

Moderator: Daniel D. Frey, *Massachusetts Institute of Technology*
J. Chen, *Zhejiang University*, C. L. Magee, *Massachusetts Institute of Technology*, and K. L. Pey, *Singapore University of Technology and Design*, "What design adds to a modern research university."
U. Jorgensen and A. Valderrama, *Technical University of Denmark*, "Response strategies to new challenges to engineering and design education."
J. McCormack and S. Beyerlein, *University of Idaho*, D. Davis, H. Davis, M. Trevisan and J. Lebeau, *Washington State University*, S. Howe, *Smith College*, J. Khan, *Tuskegee University*, P. Brackin, *Rose-Hulman Institute of Technology*, P. Thompson, *Seattle University*, P. Leiffer, *LeTourneau University*, and R. Gerlick, *Pittsburg State University*, "Contextualizing engineering ethics in capstone projects using the IDEALS professional responsibility assessment."

4:00PM, FRIDAY (S6): ENTERPRENEURSHIP**PARSONS DESIGN STUDIO**

Moderator: Peter Gregson, *Dalhousie University*
N. Duval-Couetil, T. Reed-Rhoades and S. Haghigi, *Purdue University*, "Engineering students and entrepreneurship education: Involvement, attitudes and outcomes."
K. Yasuhara, *University of Washington*, H. L. Chen, M. Lande and S. D. Sheppard, *Stanford University*, "Educating engineering entrepreneurs: A multi-institution analysis."
J. Garcia, J. Sinfield, A. Yadav and R. Adams, *Purdue University*, "Learning through entrepreneurially-oriented case-based instruction."
Z. M. Oden, M. K. O'Malley, G. Woods, T. Kraft and B. Burke, *Rice University*, "Outcomes of recent efforts at Rice University to incorporate entrepreneurship concepts into interdisciplinary capstone design."

6:30PM, FRIDAY: MDW VIII BANQUET**PLATT CAMPUS CENTER**

Host: Christopher L. Magee, *Massachusetts Institute of Technology*
Speaker: "Creating a world class technology and design based university"
Thomas L. Magnanti, *Singapore University of Technology and Design*
Massachusetts Institute of Technology

8:00AM, SATURDAY (S7): CURRICULUM MATTERS**PARSONS DESIGN STUDIO**

Moderator: Janis P. Terpenny, *Virginia Polytechnic Institute and State University*
S. R. Daly, J. Christian, S. Yilmaz, C. Seifert and R. Gonzalez, *University of Michigan*, "Assessing design heuristics in idea generation within an introductory engineering design course."
A. Silva and L. Faria, *Technical University of Lisbon*, "Two approaches to design teaching in a mechanical engineering curriculum."
L. Oehlberg, I. Leighton, B. Hartmann and A. M. Agogino, *University of California at Berkeley*, "Multidisciplinary human-centered design: Fostering innovation across engineering, humanities and social sciences."
W. M. Butler, J. P. Terpenny, R. M. Goff, and H. M. Steinhauer, *Virginia Polytechnic Institute and State University*, R. S. Pant, *IIT Bombay*, "Improving the aerospace capstone design experience through simulation based learning."

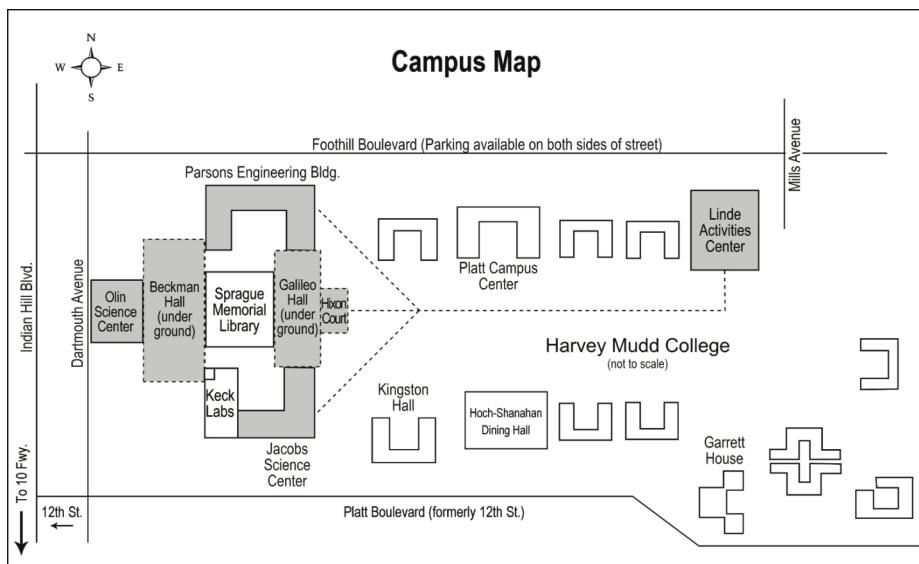
10:00AM, SATURDAY (S8): MDW VIII POSTER SESSION**PLATT CAMPUS CENTER**

Moderator: Aaron Altman, *University of Dayton*

- A. Goncher and A. Johri, *Virginia Polytechnic Institute and State University*, "Do authentic constraints inspire innovative solutions? Findings from a case study of a freshman engineering design project."
- B. Hyman, R. Fales, Y. Lin and R. A. Winholtz, *University of Missouri*, and J. Borgford-Parnell, *University of Washington*, "Capstone design as cornerstone for project-based learning throughout the curriculum."
- B. Morkos, S. Joshi and J. D. Summers, *Clemson University*, and V. Mucino, *West Virginia University*, "International capstone immersion experience: A preliminary evaluation of senior design in Mexico."
- S. Petersen, *Ingomar & Ingomar*, and M. Steinert, *Stanford University*, "What designers can learn from artists and architects about the philosophy within conceptualization."
- C. Roschuni and A. M. Agogino, *University of California at Berkeley*, "Teaching design research for innovation and entrepreneurship."
- M. Schar and M. Lande, *Stanford University*, "'What Counts' for success: Understanding the role of product manager and its implications for teaching design engineering students."
- L. A. Shluzas and L. J. Leifer, *Stanford University*, "Preparing tomorrow's medical device designers as entrepreneurs."
- C. Z. Qian and S. C. Visser, *Purdue University*, "Design for all: A multi-disciplinary design experience."

12:00PM, SATURDAY: CLOSING LUNCHEON**PLATT CAMPUS CENTER**

Host: Clive L. Dym, *Harvey Mudd College*.



MDW VIII will be held in the Engineering Design Studio in the Parsons Building at Harvey Mudd College. It begins with registration at 11:00AM on **Thursday, 26 May**, in the southwest lobby of the Parsons Building. Lunch follows at noon, and the workshop continues through the afternoon of **Saturday, 28 May**.