

# Spring 2008 Workshops



## Engineering Reasoning – Workshop for Engineering Faculty & Practitioners

With Dr. Rob Niewoehner

Engineering increasingly attends to systems of systems, where the product of the engineer's intellect exhibits complex interactions with other systems, markets, technologies, the environment, and society. Additionally, the workplace demands that the individual engineer continually develop, mastering new learning and deal with increasing complexities. The thinking skills of our students and young engineers provide the foundation for that growth, while in school and in the workplace. When we explicitly target their thinking skills, we provide them leverage for learning both in class and on the job.



“Critical Thinking” can be an educational buzz-phrase which we presume implicit in rigorous programs. Or, substantively expressed, critical thinking becomes a “system opening system,” a lever for both cracking open both new domains and intensifying insight into the web of connections that characterize engineering work. Generalizable critical thinking skills and dispositions should guide professional reasoning through complex engineering questions and issues, whether technological, commercial, environmental, ethical, or social.

Yet our students do not naturally think using the tools of critical thinking; they do not intuit the important questions they should be asking of themselves, teachers, colleagues, customers, or vendors, to either guide their understanding or refine their thinking. We can leave them to learn these skills fitfully over their career (if they do at all), or direct and coach them.

This workshop will focus on contextualizing the concepts of critical thinking as they apply to any engineering discipline, for both the engineering educator and industry leader. These questions will lie at the heart of the workshop:

- How can we help young engineers recognize and articulate the important questions at the heart of all high quality engineering reasoning? Here the workshop develops the elements of reasoning, the intellectual standards and the intellectual traits as templates for analyzing engineering thinking.
- How can we diffuse critical thinking skills through our instruction and business practices? Here the workshop directly addresses the challenges posed by the thorniest of the ABET 2000 ‘a-k’ criteria: life long learning, teamwork, ethical and professional responsibility, and effective communications.



**Space is  
limited.  
Register  
online  
today!**

### Registration rates:

Engineering Reasoning Workshop	Cost Per Person		
EARLY REGISTRATION FEES <i>(by February 1, 2008)</i>	1 person	2-3 people	4 or More
A Workshop for Engineering Faculty & Practitioners	\$360.00	\$330.00	\$300.00

**A Two-Day Workshop**  
**February 29 - March 1, 2008**  
DoubleTree Hotel and Marina  
Near UC Berkeley, CA

**To Register – Go online to**  
[www.criticalthinking.org/conference/  
Engineering\\_ReasoningSP08.cfm](http://www.criticalthinking.org/conference/Engineering_ReasoningSP08.cfm)



**The Foundation for Critical Thinking**  
800-833-3645 [www.criticalthinking.org](http://www.criticalthinking.org)  
P.O. Box 220, Dillon Beach, CA 94929

## Conference Hotel Information

### DoubleTree Hotel and Executive Meeting Center Berkeley Marina

The DoubleTree Hotel in Berkeley, California  
is located on the water,  
overlooking the San Francisco Bay.

The National Academy Rate is \$124.00 per night.  
This rate includes a full breakfast buffet every day  
of the academy (including beverage and gratuity).

This rate is available until February 1, 2008.

For Hotel Reservations, call the  
Berkeley DoubleTree directly at  
**510.548.7920**

Or visit the hotel online at  
[doubletree.hilton.com](http://doubletree.hilton.com)

For more about the  
workshops and hotel,  
please visit:

[www.criticalthinking.org](http://www.criticalthinking.org)  
and select *Conferences  
and Events then 2008  
Spring Workshops*



## About us...

The Center and Foundation for Critical Thinking have together hosted critical thinking workshops and conferences for more than a quarter century. During that time, we have played a key role in defining, structuring, assessing, improving and advancing the principles and best practices of fair-minded critical thought in education and in society.

Throughout our work we emphasize and argue for the importance of teaching for critical thinking in a strong, rather than a weak, sense. We are committed to a clear and "substantive" concept of critical thinking (rather than one that is ill-defined); a concept that interfaces well with the disciplines, that integrates critical with creative thinking, that emphasizes the affective as well as the cognitive dimension of critical thinking, that highlights intellectual standards and traits. We advocate a concept of critical thinking that organizes instruction in every subject area at every educational level, around it, on it, and through it.

The workshop will be led by **Dr. Rob Niewoehner**, Director of Aeronautics at the U. S. Naval Academy. He served as a senior experimental test pilot with government/industry teams prior to joining academia. He received his B.S. in 1981 from the U.S. Naval Academy, his M.S.E.E. in 1981 from The Johns Hopkins University, and his Ph.D. in 1994 from the Naval Postgraduate School. He is among the early contributors to the international CDIO (Conceive, Design, Implement, Operate) consortium, tackling the reform of engineering education and emphasizing the engineer as learner and practitioner. He has worked diligently during the past several years to bring critical thinking into his classes at all levels and into engineering and leadership instruction from both program and institutional perspectives. He is a dynamic presenter.



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