

# *Preparing The Future Engineer Through Service to Others*

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**Abstract.** Our future world will largely be defined by humanity's attempts to resolve its most challenging problems such as global warming, overpopulation, and systemic poverty. Resolution will require acute attention to the interplay between society and technology, which will inevitably involve engineers. Traditionally, engineering education has turned to courses in ethics and sustainability to introduce students to these topics, but here the focus is typically on avoidance of anti-social behaviors along with knowledge acquisition. And yet, our future challenges will require a socially active, civic professional with a highly developed sense of moral identity, sensitivity, and empathy. Based on preliminary findings from a multi-university, national research study on engineering ethics education, my colleagues and I have found that service learning may provide one avenue to preparation of civically minded professional engineers. I will describe briefly how we approach service learning at Cal Poly, and the impact that it has had on our students.



**Biography.** Dr. Trevor S. Harding is Chair and Professor of Materials Engineering at California Polytechnic State University–San Luis Obispo where he teaches courses in service learning, introductory materials engineering, biomedical materials design, and tribology. Dr. Harding has published numerous manuscripts in the area of ethical development of engineering undergraduates through application of psycho-social models of moral expertise. He also conducts research in student motivation, service learning, and project-based learning. His technical research is focused on degradation of biomedical materials *in vitro*. He currently serves as Associate Editor of the online journal *Advances in Engineering Education*, is Chair of the ASEE Materials Division, and ERM Program Chair for the 2010 ASEE Annual Conference. Dr. Harding was invited to deliver a workshop on Ethics in the Engineering Curricula at the 2009 NSF Engineering Awardees Conference, and to participate in the NSF Project Based Service Learning summit. He recently received the 2008 President's Service Learning Award for innovations in the use of service learning at Cal Poly. In 2004 he was named a Templeton Research Fellow by the Center for Academic Integrity, Duke University. Dr. Harding received both the 1999 Apprentice Faculty Grant and 2000 New Faculty Fellow Award for his contributions to engineering education.