

Robert Hesketh is Professor and Chairperson of Chemical Engineering at Rowan University. He received his B.S. in 1982 from the University of Illinois and his Ph.D. from the University of Delaware in 1987. After his Ph.D. he conducted research at the University of Cambridge, England. Robert's research is in green engineering, multiphase flows, novel separations including, crystallization, ultrafiltration, and supercritical fluids, and particulate removal related to combustion processes.



Robert has developed over 20 unique experiments ranging from pilot plant to laboratory scale. These experiments have been integrated throughout the chemical engineering curriculum in the courses of freshman engineering, fluid mechanics, thermodynamics, reaction engineering, separations, unit operations and the Rowan Engineering Clinics. As a result of this integration students become familiar with equipment, have a better understanding of their mathematical models and have a firm grasp on the physical and chemical phenomena that is used to design engineering processes and products.¹ In addition to these laboratory experiments he has led in the development of green engineering education modules that have been linked to all undergraduate chemical engineering courses.²

Robert has presented his educational innovations in international and national meetings and workshops. Robert's dedication to teaching has been rewarded by receiving several educational awards including the 2006 Chester F. Carlson, 2002 Robert G. Quinn Award, 1999 Ray W. Fahien Award, 1998 Dow Outstanding New Faculty Award, the 2001, 1999 and 1998 Joseph J. Martin Awards, and four teaching awards.

Robert has a high level of interest in integrating advanced computational tools in the undergraduate curriculum. Below are several examples of his work in this area:

- Integration of chemical process simulation throughout the curriculum starting with a novel cogeneration facility exercise³ through simulations in chemical reaction engineering⁴
- Finite element learning exercises for Process Fluid Mechanics, Chemical Reaction Engineering and Transport Phenomena.⁵
- Data acquisition tools through reverse engineering products⁶

¹ [Featured Educator in Chemical Engineering Education, 37\(1\) 8-13, Winter 2003](#)

² C.S.Slater, R.P.Hesketh, D.Fichana, J.Henry, A.M.Flynn and M.Abraham, "Expanding Frontiers for Chemical Engineers in Green Engineering Education," *Intl. J. Engineering Education*, **23**(2) pp 309-324 (2007). Website: www.rowan.edu/greenengineering

³ Hesketh, R. P. and C. S. Slater, "Using a Cogeneration Facility to Illustrate Engineering Practice to Lower Level Students," *Chemical Engineering Education*, **33** (4) 316 Fall 1999.

⁴ R. P. Hesketh, "Incorporating Reactor Design Projects into the Course," Paper 149e, 1999 AIChE Annual Meeting, Dallas, TX, 31 October - 5 November 1999. and <http://users.rowan.edu/~hesketh/0906-316/index.html>

⁵ Finite Element Exercises: Process Fluid Mechanics: <http://users.rowan.edu/~hesketh/0906-309/index.html>, Transport Phenomena: <http://users.rowan.edu/~hesketh/0906-402/index.html>

⁶ Marchese, A. J., R. P. Ramachandran, R. P. Hesketh, and J. L. Schmalzel, "The Competitive Assessment Laboratory: Introducing Engineering Design via Consumer Product Benchmarking," *IEEE Transactions on Education*, **46**(1) 197-205 (2003).