ICL Workshop

Preparing Engineers for a Globalized Economy: How to Teach Engineering Students Process Skills.

Nikos J. Mourtos

Aims:

This workshop will enable delegates to design effective engineering courses to teach students' process skills, such as problem-solving, design, lifelong learning, critical thinking, self-assessment, change management, communication and collaboration, etc.

Main topics:

1. Process skills in the 21st century engineering workplace, especially in light of the challenges presented by globalization as well as the diverse student body found in engineering classrooms around the world.
2. An explicit definition for each set of process skills, so that the target is clear for faculty and students.
3. Best practices for assessing process skills to provide convincing evidence to all interested parties, including outside evaluators.
4. Best practices for teaching and learning process skills.

Target Group:

The workshop is addressed to faculty members, teaching associates and teaching assistants of engineering subjects as well as mathematics and science, who are interested in improving their effectiveness in teaching and assessing 21st century skills.

Background knowledge expected of the participants:

No previous knowledge is expected.

Workshop Activities:

The workshop format will combine direct instruction, individual practice, working in small groups, group sharing, and discussion. Participants will have an opportunity to design a new engineering course or revise an existing course of their choice, using their familiar technical content as a vehicle to teach students process skills. This will involve defining specific and measurable course learning objectives, identifying appropriate assessment methods for each learning objective, and most importantly, choosing appropriate instructional methods to ensure

their students' development of these skills. Participants will be able to develop their own tools and processes to suit their specific programmatic and curricular needs.

The Presenter:

Dr. Nikos J. Mourtos is professor and Director of the Aerospace Engineering Program at San Jose State University. He received his BSME from the University of Patras in Greece (1980) and his M.S. (1982), Engineer (1983), and Ph.D. (1987) degrees in Aeronautical and Astronautical Engineering from Stanford University. He has developed and taught 20 courses in a variety of mechanical and aerospace engineering subjects. His research interests encompass aerodynamics, aircraft design, and any aspect of teaching, learning, and assessment in engineering education. He has served as the Faculty Instructional Development Coordinator for the College of Engineering (1996-2002), a Faculty-in-Residence for Innovative Pedagogy for the Center for Faculty Development and Support at SJSU (1998-2002), the Assessment Coordinator in the Department of Mechanical and Aerospace Engineering (2002-2006), and the Assistant Director for the Center for Faculty Development and Support at SJSU (2006-2008). He has authored more than 40 scholarly papers on engineering education topics and has offered more than 100 workshops for faculty on pedagogy and course design in the U.S. and around the world.