June 27-29, 2002 (Thurs. – Sat.)

Introductory College Physics – 21st Century (ICP 21) at Joliet Junior College in Joliet, Illinois (near Chicago)

Alex Dickison
Seminole Community College, Sanford, FL

Sherry Savrda
Lake Sumter Community College, Leesburg, FL

Curtis Hieggelke
Joliet Junior College, Joliet, IL

Tom O'Kuma
Lee College, Baytown, TX

This workshop will introduce and give participants experience with a modular approach to teaching algebra/trigonometry-based courses known as Introductory College Physics/Twenty First Century (ICP/21). The modules were written with the technical (engineering and medical) student in mind. Each participant will work through selected modules in this new curricula that was developed by a group of two-year college physics professors led by Alexander Dickison of Seminole Community College in Sanford, Florida, Marvin Nelson of Green River Community College in Auburn, Washington, Pearly Cunningham of Community College of Alleghany County in West Mifflin, Pennsylvania, and Sherry Savrda of Lake Sumter Community College in Leesburg, Florida.

Each module uses a series of learning cycles and incorporates many of the teaching techniques, developed by others, that are based on physics education research. ICP/21 also uses applications found in industry and medicine throughout the problem sets and examples. This modular CD curriculum will allow HS and TYC instructors an opportunity to choose several modules from the curricula that is particularly germane for their students. Each module is activity-based and utilizes a variety of tools to better motivate the student in the learning of the key physics concepts.

The ICP/21 curriculum has two tracks. One incorporates the advantages of using technologically advanced equipment in the laboratory and the classroom (MBL, CBL, multimedia, computer analysis of data), while a second track will allow instructors to teach the same concepts using traditional equipment.

The modules have been written so they can be edited to meet the needs of the school using them. This curricula can be modified to fit a transferable college physics course, a general high school physics course, or a less mathematical technical physics course. Each instructor will also have an opportunity to develop methods of using the modules at their institutions. The ICP21 curriculum will be provided to the participants for them to continue their adaptation of the modules to their home environments. Modules that have been developed so far are motion, forces, torque, work and energy, waves, electricity, and magnetism.

The goal of this workshop is for the participants to become familiar with this modular CD curriculum, develop ways of using the ICP21 modules and to continue working on this approach after the workshop. Each participant will receive extensive ready-to-use curricula materials and rights to use them at their institution. In this workshop, participants will work in teams composed of two to four individuals using the workshop leaders' guidance.

There will also be an opportunity to share and discuss issues relating to teaching physics more effectively, particularly for students enrolled in technician/technology education programs. There will be extensive discussions on how to use various strategies, tools, and tactics to overcome problems and barriers to learning at TYCs and HSs. Important issues such as standards, assessment, diversity, and technology utilization will be addressed at various points during the workshop. Discussion and information on the needs of the technological workforce and its connection with the activities of this workshop will also be presented.

The workshop leaders have many years of experience in developing and refining curriculum for introductory physics students. In addition and more importantly, the workshop leaders have had extensive experience with the implementation and adaptation of curriculum in a variety of institutions and for many types of introductory physics students along with the training of faculty in using and developing their own curricula for their technology-oriented students.