The internationally recognized Integrated Teaching and Learning (ITL) Program and Laboratory showcase the college’s commitment to hands-on learning by providing undergraduate engineering students the opportunity to learn in a state-of-the-art facility and an interdisciplinary environment. From their first through senior years, students engage in projects that cultivate teamwork, open-ended problem-solving, and presentation skills.

The First-Year Engineering Projects course, completed by more than half of each first-year class, has proven to increase retention into engineering, especially for populations traditionally underrepresented in the field. Students are introduced to the design-build process while they solve real-world engineering problems in mixed-discipline teams.

In the Invention and Innovation technical elective, upper-level students explore the world of entrepreneurship through the invention of new, marketable products. Sophomore and junior-level interdisciplinary courses and multi-departmental senior design projects complete the ITL’s university curriculum.

Named a Program of Excellence by the Colorado Commission on Higher Education, the ITL
program also conducts hands-on, engineering-based summer classes, workshops, and camps for K-12 teachers and youngsters, both on campus and in the community. In local K-12 classrooms, CU engineering students develop and teach hands-on lessons and activities that use engineering as the vehicle for teaching and learning science and math fundamentals.

In 2005, an NSF-sponsored, searchable digital library was launched to make available these K-12 engineering curricula at teachengineering.org.

With the ITL's First-Year Engineering Projects course, first-year students don't have to wait to dig into hands-on work. Students from all majors learn teamwork and real-world engineering applications, as they plan, design, and create their projects ranging from assistive technology to Rube-Goldberg designs. Above, youngsters play a game of Twister that uses sound and texture to make it possible for blind students to play. CU engineering students in the Freshman Projects class were given the task of creating games and toys for blind students.

Students demonstrate their projects to the community at the fall and spring Design Expos. Ball Aerospace & Technologies Corp. sponsored senior design students Nolan Amy, Bradley Brisnehan, Bradford Peagler, Myles Raymond, Cristal Salcido, and David Tovani for the creation of this project, which has potential for both military and space use.