Felder and Silverman divide learning styles into six categories – active and reflective learners; sensing and intuitive learners; and visual and verbal learners. Go to Felder’s website for more information http://www4.ncsu.edu/unity/lockers/users/f/felder/public. The following is a list of techniques that addresses all learning styles:

✓ Motivate learning. As much as possible, relate the material being presented to what has come before and what is still to come in the same course, to material in other courses, and particularly to the students’ personal experience.

✓ Provide a balance of concrete information (facts, data, real or hypothetical experiments and their results) and abstract concepts (principles, theories, mathematical models).

✓ Balance material that emphasizes practical problem-solving methods with material that emphasizes fundamental understanding.

✓ Provide explicit illustrations of intuitive patterns (logical inference, pattern recognition, generalization) and sensing patterns (observation of surroundings, empirical experimentation, attention to detail), and encourage all students to exercise both patterns. Do not expect either group to be able to exercise the other group’s processes immediately.

✓ Follow the scientific method in presenting theoretical material. Provide concrete examples of the phenomena the theory describes or predicts; then develop the theory or formulate the model; show how the theory or model can be validated and deduce its consequences; and present applications.

✓ Use pictures, schematics, graphs, and simple sketches liberally before, during, and after the presentation of verbal material. Show films. Provide demonstrations, hands-on, if possible.

✓ Use computer-assisted instruction—sensors respond very well to it.

✓ Do not fill every minute of class time lecturing and writing on the board. Provide intervals—however brief—for students to think about what they have been told.

✓ Provide opportunities for students to do something active besides transcribing notes. Small-group brainstorming activities that take no more than five minutes are extremely effective for this purpose.
✓ Assign some drill exercises to provide practice in the basic methods being taught but do not
overdo them. Also provide some open-ended problems and exercises that call for analysis and
synthesis.

✓ Give students the option of cooperating on homework assignments to the greatest possible
extent. Active learners generally learn best when they interact with others; if they are denied
the opportunity to do so they are being deprived of their most effective learning tool.

✓ Applaud creative solutions, even incorrect ones.

✓ Talk to students about learning styles, both in advising and in classes. Students are reassured to
find their academic difficulties may not all be due to personal inadequacies. Explaining to
struggling sensors or active or global learners how they learn most efficiently may be an
important step in helping them reshape their learning experiences so that they can be
successful.

Excerpts from Felder, R. M., & Silverman, L. K. (April 01, 1988). Learning and Teaching Styles in Engineering
Education. *Engineering Education, 78*, 7, 674-81. See revised version with author's preface (June 2002) at

For Richard Felder’s index of learning styles, go to his website:
http://www4.ncsu.edu/unity/lockers/users/f/felder/public