



Center for Advanced Training in Engineering and Computer Science (CATECS)

*College of Engineering and Applied Science
University of Colorado at Boulder*

Course: **Neural Network Design, ECEN 5028**

Audience: This course is intended for a broad audience including business, chemistry, forestry, and psychology students; as well as those in engineering, computer science, and mathematics.

Description: Gives an introduction to basic (artificial) neural network architectures and learning rules. Emphasis is placed on mathematical analysis of these networks, on methods of training them, and on their application to practical problems in areas such as pattern recognition, signal processing, and control systems. The course will show how to construct a small set of simple artificial "neurons" and train them to serve a useful function. Such neural networks have been applied in the aerospace, automotive, banking, defense, electronics, entertainment, financial, insurance, manufacturing, oil and gas, robotics, telecommunications and transportation industries.

Prerequisites: One programming language (such as C or Pascal), two semesters of calculus and linear algebra. Okay to take linear algebra concurrently.

Textbook: Hagan, Demuth, and Beale, *Neural Network Design*, ISBN 0-9717321-0-8, available from the CU Book Store. Contact John Stovall at 303-492-3648 or 1-800-255-9168.

Software: MATLAB and the Neural Network Toolbox for MATLAB will be used. Both sets of software are available to distance students by remote access to the campus computing network.

Instructor: Prof. Howard Demuth has 24 years of industrial and 21 years teaching experience. Research: Neural networks, image processing, pattern recognition, control systems, and sorting.

Delivery: Delivered via videotape to all students (including international) and via live TV broadcast locally.

Tuition: This three credit, graduate-level course may be taken toward a graduate degree, for professional development, or for credit/noncredit; \$1,200.

More Info: Registration information is available on the CATECS web site at www.colorado.edu/CATECS. Additional information is on the course web site at ece.colorado.edu/academics/courses/ECEN_4028_5028.html.

Designed specifically for the working professional, CATECS provides the best of both worlds: convenient distance education and University of Colorado academic quality.