

# IEEE CIS / IAS / PES / IEEE SEMINAR

## “Solution of Engineering Problems by Biologically Inspired Techniques”

**Professor Mohammed El-Sharkawi, *Fellow, IEEE***

**Wednesday, February 9, 2005, 3 p.m. (Refreshments will be provided)**

**G-31, Emerson Electric Co. Hall, University of Missouri-Rolla**

Philosophers argue that despite all human achievements in science and engineering, nature still provides the best system that can ever be fashioned. This is true even if we compare the most complex machine built by man to the simplest form of a biological cell. This notion has encouraged scientists and engineers, during the end of the 20th Century, to study biological structures and animal behaviors in the hope of acquiring new knowledge to develop better machines. This is the field of Intelligent Systems (IS), which is also known as Biologically Inspired Systems (BIS). In recent years, BIS have found use in numerous fields, including control, pattern recognition, optimization, remote sensing, diagnosis, imaging and many more. BIS is a collection of tools inspired by some of the following biological features: the way the nerve systems learn and function; the unformulated decisions made by human; the evolution of genetic systems through generations; the motion patterns of birds and insects while searching for food; the spreading and survival of viruses. The talk will focus on the basic concepts behind the BIS. In addition, several engineering applications will be presented.

***Mohamed A. El-Sharkawi is a Fellow of the IEEE. He received his Ph.D. in Electrical Engineering from the University of British Columbia in 1980. In 1980 he joined the University of Washington (UW) as a faculty member where he is presently a Professor of Electrical Engineering. He also served as the Associate Chair and the Chairman of Graduate Studies and Research at UW. Professor El-Sharkawi is the author of two textbooks, editor/co-editor of several IEEE tutorial books on intelligent systems and applications, and member of the editorial board and associate editors of several journals. He has published over 180 papers and book chapters, and holds 5 patents.***