EE 867 Fuzzy Control Systems (3-0)

Textbook: A Course in Fuzzy Systems and Control by Li Xin Wang, Prentice Hall, 1996.

ISBN-10: 0135408822, ISBN-13: 978-0135408827.

Reference Book: Fuzzy Control Systems by Abraham Kandel and Gideon Langholz), Prentice Hall, 1996. ISBN-10: 0849344964, ISBN-13: 978-0849344961.

Objective:

The aim of this course is to equip the students with the knowledge of Fuzzy Control Systems. Fuzzy is a relatively new area in the field of control systems that helps model and control various complex systems. The main utility is to be able to interpret human knowledge and reasoning about a system into mathematics using Fuzzy theory and then using it to design control systems.

Pre-Requisite:

EE 826 Linear Control Systems (or equivalent)

Course Outcome:

The students graduating from this course are expected to have developed a sound knowledge base of techniques for modeling and control of engineering systems using fuzzy theory.

Course Outline:

Introduction to Fuzzy Set theory, approximate reasoning, inference engine development, modeling of complex systems and design of controllers using the Fuzzy methodology.

Topics	Allocated Periods
Introduction to fuzzy sets Mathematics of fuzzy sets and control Operations on fuzzy sets Fuzzy relations Fuzzy IF-THEN rules Fuzzy logic and approximate reasoning	45

Fuzzy rule base and inference engineering Fuzzy systems as non linear mapping Design of fuzzy systems from i/o data Design of fuzzy systems using RLS Design of fuzzy systems using clustering Design of stable fuzzy controllers New emerging applications of fuzzy sets	