Department of Mathematics
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Course	**Course Name**	**: Fuzzy Logic**
	Course Code	**: KM184829**
	Credit	**: 2**
	Semester	**: 8**

Description of Course	
The fundamental idea of the course is to provide basic and concrete concepts of the fuzzy theory and its applications. There are numerous examples, figures, and exercises to help students to understand. This course consists of two parts: a theory part and an application part.	
Learning Outcome	
PLO 1	[C2] Students are able to identify and explain foundations of mathematics that include pure, applied, and the basic of computing
PLO 2	[C3] Students are able to solve simple and practical problems by applying basic mathematical statements, methods and computations
PLO 3	[C4] Students are able to analyze simple and practical problems in at least one field of analysis, algebra, modeling, system optimizations and computing sciences
PLO 5	[C3] Students are able to make use of the principles of long life learning to improve knowledge and current issues on mathematics
Course Learning Outcome	
1. Students are good at explaining the concept of crisp set in set theory 2. Students are able to explain the concept of fuzzy set, how relationships and fuzzy membership value mechanism. 3. Students are able to explain the algebra of the fuzzy set (T-norm and T-conorms), Hedges, fuzzy arithmetic, fuzzy reasoning and propositions	

4. Students are able to explain the concept of rule based system characteristics, production system, fuzzification and data-system defuzzification. driven, and expert system rule base
5. Students are able to explain the concept of rule based expert system, forward and backward chaining, and overcome the uncertainty in rule based system.
6. Students are able to explain the concept of uncertainty in a rule-based system, a combination of fuzzy numbers and membership, Bayes method and dempster-shafer
7. Students are able to explain data modification and truth value, selection of reasoning type, fuzzification and defuzzification
8. Students are able to explain fuzzy applications for pattern recognition including fuzzy clustering, fuzzy time series, fuzzy pattern recoqnition.
9. Students are able to explain fuzzy decision making, including multi criteria, multi person and multi stage, fuzzy staged decision making, fuzzy ranking method and fuzzy linear programming

Main Subject

Crisp set concepts, fuzzy set concept, fuzzy set relation, fuzzy set operation, rule based inference, fuzzy inference, fuzzy logic, fuzzy decision making

Prerequisites

Mathematical Logic

Reference

1. Kwang H. Lee, " First Course on Fuzzy Theory and Applications", Penerbit Springer Verlag Berlin, 2005

Supporting Reference

1. Zimmerman, "Fuzzy Set and Fuzz Logic", Kluwer Publishing, 1991
2. William Siler and James J. Bookley, "Fuzzy Expert System and Fuzzy Reasoning", Penerbit Wiley and Sons, Inc, 2006
3. George J. Klir dan Bo Yuan, "Fuzzy Set and Fuzzy Logic", Prentice Hall, 1995