**University of Management and Technology**

**School of Science**

***Department of Mathematics***

**Course Code:** MTH601

**Course Title: Fuzzy Logics and its Applications**

**Program: MS MA**

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| **Schedule**  |  | **Pre-requisite** |  |
| **Course Coordinator** |  Dr. Tabasam Rashid | **Contact** | Ext 3499Cell: 03214609358 |
| **Course****Description** | Fuzzy logic allows translating statements from natural language into a mathematical form. Once we have this mathematical form of knowledge, we are able to draw upon hundreds of years of recent history in technology to manipulate this knowledge.**TOPICS:**Fuzzy SetsExamples of FuzzinessModeling of FuzzinessOperations on Fuzzy SetsLevel Sets, Alpha CutsImages of alpha level setsNegationst-normt-conormGenerators of t-norms and t-conormsFuzzy RelationFuzzy NumbersFuzzy IntervalsInterval ArithmeticTriangular Fuzzy NumbersTrapezoidal Fuzzy NumbersFuzzy ConvexityFuzzy Implication, Yager's ImplicatorLattices, Zadeh’s Extension Principle. Applications of fuzzy logicDifferent extensions of fuzzy setsFuzzy Similarity measureFuzzy GraphsIntuitionistic Fuzzy SetsHesitant Fuzzy SetsHesitant Fuzzy Linguistic Term Sets |
| **Expected****Outcomes** | * Students can transform the classical concepts of Mathematics into Fuzzy Mathematics and they can study the applications of these transformations.
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| **Text** **Book(s)** | 1. Fuzzy logic with Engineering applications, Timothy J. Ross, *University of New Mexico, USA, Third Edition*
2. Fuzzy Logic by H.T. Nguyen and E. A. Walker, 3rd Edition.
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| **Reference books** | 1. Fuzzy Theory and Applications by Kwang H. Lee.
2. Fuzzy Set Theory and its Applications by H. J. Zimmermann.
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| **Assignments** | 2 | **Project** | 1 project from advanced topics and/or research papers |
| **Quiz** | 2 |  |  |
| **Mid Term****Examination** | 1 Midterm Exam  | **Final** **Examination** | 1 Final Examination |
| **Attendance** **Policy** | According to University Policy |
|  | **Grading Policy** |
| **Assignments**  |  10% | **Project + Presentation** | 10% |
| **Quiz** | 10% |  |  |
| **Mid Term****Examination** | 30% | **Final** **Examination** | 40% |