



University of Tehran
School of Industrial Engineering
(Course Plan)

Course Name: Fuzzy Sets Theory & its Application in Decision Making	Course No.: 810912001
Course type: Required <input type="checkbox"/> Elective <input checked="" type="checkbox"/>	Credits: 3
Course Level: Undergraduate <input type="checkbox"/> Graduate <input checked="" type="checkbox"/>	
Instructor: Seyed Ali Torabi	Academic position: Associate Professor Date: 30/08/1392
Prerequisite(s): Operations research 1,	
Course objectives: Describing the basics of fuzzy sets theory and fuzzy mathematics and their applications in Decision Making (including the fuzzy mathematical programming and fuzzy expert systems)	
Required software: GAMS, MATLAB	
Grading: Assignments: 15% Final exam: 60% Term project: 25%	
Course references: <ol style="list-style-type: none">1. Ross, T.J., 2010. Fuzzy Logic with Engineering Applications, 3rd Edition, John Wiley & Sons.2. Zimmermann, H.J., 1996. Fuzzy Set Theory and its Application, 3rd Edition, Kluwer Academic Publishers.3. Klir, G.J., Yuan, B., 1995. Fuzzy Sets and Fuzzy Logic: Theory and Applications, Prentice Hall, Upper Saddle River, New Jersey.4. Lai Y. J. and Hwang, C. L., (1992), Fuzzy Mathematical Programming, Methods and Applications, <i>Springer-Verlag</i>.5. Selected papers from recent literature in relevant areas.	

Course Schedule

Week	Subject
1	Different sources of uncertainty & Systems modeling under uncertainty
2	Basics of fuzzy sets
3	Fuzzy operators
4	Fuzzy extension principle and its applications
5	Possibility theory
6	Fuzzy measures & Fuzzy ranking
7	Fuzzy decision making: concepts & basic model
8	Classification of Fuzzy Mathematical Programming (FMP) methods & Fuzzy (Flexible) Programming methods
9	Possibilistic Programming methods
10	Possibilistic Programming methods (con.)
11	Multi-objective Fuzzy Mathematical Programming (MOFMP): concepts & methods
12	Fuzzy relations, Linguistic variables and fuzzy propositions
13	Fuzzy Logic & Fuzzy rule-based systems
14	Different types of Fuzzy rule-based systems
15	Inference mechanisms in Fuzzy rule-based systems