BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
INSTRUCTION DIVISION
FIRST SEMESTER 2016-2017

Course Handout (Part - II)

Date: 02/08/2016

In addition to part-I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course No. **: BITS F343**
Course Title **: FUZZY LOGIC & APPLICATIONS**
Instructor-in-charge **: SHIVI AGARWAL**

1. **Scope and objective of the course:**

The aim of this course is two fold: 1. to provide a thorough understanding of the basics of this topic which has important applications in almost all fields of study; 2. to bring the students face-to-face with an application in some important area. To this end, every student is required to work on a project, as part of the course, involving an application of Fuzzy Logic (preferably in the students own discipline). The nature of the project could be study oriented, or computer-oriented, or simulation of a system or design of a working model etc. (The scope of the project is limited only by the student's imagination, creativity and vision). Further, the project work provides an opportunity to the students to study Research Articles / Papers appearing in various journals and learn about the latest developments in the applications of Fuzzy Logic.

2. **Text Book:** M. Ganesh : Introduction to Fuzzy sets and Fuzzy Logic, PHI, (2006)

Reference Books :

R 1 Klir & bo Yuan: Fuzzy sets and Fuzzy Logic, PHI , 1997.
R 2 Timothy J. Ross:- Fuzzy Logic with Engineering Applications, John Wiley & Sons, 2004.
R 3 R. Kruse et al : Foundations of Fuzzy Systems, John Wiley & Sons, 1994.
R 4 Yen & Langari : Fuzzy Logic : Intelligence, Info. & Control, Pearson (2001)
R 5 Kwang H. Lee : First Course on Fuzzy Theory and Applications: Springer International Edition (2005).
R 6 D. K. Pratihar : Soft Computing : Narosa (2008).
R 7 S.N. Sivanandam and S.N.Deepa: Principles of Soft Computing: Wiley India, second Edition (2011).

3. **Course Plan:**

S.No.	Topic	Lectures	Ref. to text book
1.	Crisp set Theory	1	Chap. 1
2.	Fuzzy Set Theory	2 to 9	Chap. 6
3.	Fuzzy Numbers	10 to 13	R 1
4.	Fuzzy Relations	14 to 16	Chap. 7

5. Propositional Logic & Predicate Logic	17 to 20	Chap. 2 & Chap. 3
6. Fuzzy Logic, Fuzzy reasoning	21 to 25	Chap. 8
7. Switching Functions & Boolean Algebra	26 to 30	Chap. 4 & Chap. 5
8. Applications of Fuzzy Logic	31 to 34	Chap. 9 & 10 +PROJECT
9. Fuzzy Probability	35 to 37	R 5
10. Fundamentals of Neural Networks	38 to 40	R 6

4. **Home & Reading Assignments:**

   Problems assigned in the class must be worked out. Students are expected to read relevant portions from the reference books and other books available in the library. Further, they must read all relevant articles and papers appeared / appearing in various Journals.

5. **Evaluation scheme:**

Component	Duration	Weightage (%)	Date & Time	Remarks
Mid Semester	90 minutes	30	<TEST_1>	CB
Assignment/Project	----------	30		Partly OB
Comprehensive	180 minutes	40	<TEST_C>	Partly OB

6. **Chamber Consultation Hour:** To be announced in the class.

7. **Notices:** Notices concerning the course will be displayed on Mathematics Department notice board and NALANDA.

Instructor-In-Charge
BITS F343