BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
HYDERABAD CAMPUS
INSTRUCTION DIVISION
FIRST SEMESTER 2016-2017
Course Handout Part II

Date: 01-08-2016

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

Course No. **: EA C482/BITS F343**
Course Title **: FUZZY LOGIC & APPLICATIONS**
Instructor-in-charge **: K.SRINIVASA RAJU**

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. Further, the project work provides an opportunity to the students to study research papers appearing in various journals and learn about the latest developments in the field.

2. **Text Book [TB]:** M. Ganesh : Introduction to Fuzzy sets and Fuzzy Logic, Prentice Hall of India private limited, 2006.

Reference Books :

[RB1]: Timothy J. Ross:- Fuzzy Logic with Engineering Applications, John Wiley and Sons, 2010
[RB2]: Kwang H.Lee, First course on Fuzzy Theory and Applications, Advances in Soft computing, Springer, 2005
[RB3]: K.Srinivasa Raju, D.Nagesh Kumar, Multicriterion Analysis in Engineering and Management, PHI Learning Private Limited, 2010.

3. **Course Plan:**

Lecture No	Learning Objectives	Topics to be covered	Chapter in the text book/reference book
1	Brief information about crisp set theory	Crisp Set Theory	Chap-1 (TB), Chap-1(RB1)
2 to 4	Basics of fuzzy sets	Fuzzy Set Theory	Chap-6 (TB), Chap-1,2 (RB1)
5 to 8	Basics of fuzzy relations	Fuzzy Relations	Chap-7 (TB), Chap-3 (RB1)
9 to 13	Various shapes of membership functions, fuzzification and defuzzification aspects, Neural networks, MATLAB perspective	Properties of memberships functions, development, defuzzification	Chap-4,6 (RB1)

14 to 19	Basics of various types of reasoning, Fuzzy inference systems, MATLAB perspective	Fuzzy logic and reasoning	Chap-8 (TB), Chap-5 (RB1)
20 to 26	Decision making in fuzzy environment along with various algorithms, Bayesian Decision Making, MATLAB perspective	Applications in decision making	Chap-10 (TB), Chap-9 (RB1) and supporting material
27 to 30	Brief description of data mining, Fuzzy classification, MATLAB perspective	Fuzzy Classification	Chap-10 (RB-1)
31 to 36	Fuzzy Optimization, Fuzzy Regression, Control Theory, Expert Systems, Artificial Intelligence, MATLAB perspective	Advances in fuzzy logic	Chap-14(RB1)
37 to 42	Various case studies in different disciplines	Case studies	Supplementary material, research papers

- **Supplementary notes will also be provided wherever necessary**

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:**

EC No.	Evaluation Component	Duration	Weightage (%)	Date, Time & Venue	Nature of Component
1	Test I	60 mts	20	9/9, 1.00--2.00 PM	CB
2	Test II	60 mts	15	24/10, 1.00--2.00 PM	CB
3	Project		25		OB
4	Comprehensive Exam	3 hrs	40	05/12 AN	CB

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

7. **Notices:** Notices concerning the course will be displayed only on the Civil Engineering notice board.

Instructor-In-Charge
EA C482/ BITS F343