

Dept Number	CS 437	Course Title	Machine Learning and Soft Computing							
Semester Hours	3	Course Coordinator	Shahram Rahimi							
Catalog Description	An introduction to the field of machine learning and soft computing. It covers rule-based expert systems, fuzzy expert systems, artificial neural networks, evolutionary computation, and hybrid systems. Students will develop rule-based expert systems, design a fuzzy system, explore artificial neural networks, and implement genetic algorithms.									
Textbooks										
Artificial Intelligence: A Guide to Intelligent Systems, 3 rd edition, Michael Negnevitsky, Addison Wesley, 2011.										
References										
Course Learning Outcomes										
<ul style="list-style-type: none"> • To obtain the theoretical and practical knowledge for design and development of basic intelligent systems. • To study soft computing technologies. 										
Assessment of the Contribution to Program Outcomes										
Outcome →	1	2	3	4	5	6	7	8	9	10
Assessed →	X	X	X	X	X	X				
Prerequisites by Topic										
CS 330 with a grade of C or better.										

Major Topics Covered in the Course

1. Introduction to Intelligent Systems {3 classes}
2. Rule-Based Expert Systems {4 classes}
3. Introduction to Expert Systems Programming {4 classes}
4. Uncertainty Management in Rule-Based Expert Systems {5 classes}
5. Fuzzy Expert Systems {6 classes}
6. Frame-Based Expert Systems {2 classes}
7. Artificial Neural Networks {5 classes}
8. Evolutionary Computation {5 classes}
9. Hybrid Intelligent Systems {3 classes}
10. Knowledge Engineering and Data Mining {3 classes}