Course Number	CS 437	Course Title	Machine Learning and Soft Computing
Semester Hours	3	Course Coordinator	Norman Carver
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

SP17

Negnevitsky, M. (2011). *Artificial Intelligence: A Guide to Intelligent Systems*. Pearson, 3rd Edition.

ISBN: 9781408225745.

References

Course Learning Outcomes

- 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 Student Outcomes

SP17

Outcome →	1	2	3	4	5	6	7
Assessed →	X	X	X	X	X	X	

Prerequisites by Topic

CS 330 with a grade of *C* or better or graduate standing.

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}

NOTE: When course is taken as 500-level credit (CS 591 “Special Topics”), there will be additional requirements such as a research project.