INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
भारतीय प्रौद्योगिकी संस्थान तिरुपति

Yerpedu-Venkatagiri Road, Yerpedu Post, Tirupati District, Andhra Pradesh - 517 619

1.	Title of the course	Introduction to Computational Learning Theory
2.	Course number	CS546L
3.	Structure of credits (L-T-P-C)	2-0-0-2
4.	New course/modification to	New
5.	To be offered by	Computer Science and Engineering
6.	Proposed by	S Raja
7.	Prerequisite	CoT
8.	**Course Objective(s):** To discuss mathematical models of learning. To describe and apply techniques to analyze these learning models.	
9.	**Course Content:** Introduction; Probably approximately correct (PAC) learning model: definition, examples, Occam's razor; Vapnik-Chervonenkis (VC) dimension and sample complexity; Learning decision trees and disjunctive normal forms (DNF); Weak and strong learning: boosting; Learning in the presence of noise; Reducibility in PAC learning; Learning finite automata; Learning with membership and equivalence queries.	
10.	**Textbook(s):** 1. Kearns M J and Vazirani U V, An Introduction to Computational Learning Theory, MIT Press (1994). 2. Shalev-Shwartz S and Ben-David S, Understanding Machine Learning: From Theory to Algorithms, Cambridge University Press (2014).	
11.	**Reference(s):** 1. Mohri M, Rostamizadeh A and Talwalkar A, Foundations of Machine Learning, 2nd Edition, MIT Press (2018).	