



SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

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Department of Biotechnology		LP: BY22204
B.E/B.Tech/M.E/M.Tech : <u>Biotechnology</u>		Rev. No: 0.00
PG Specialisation : Biotechnology		Date: 23.01.2024
Sub. Code / Sub. Name : BY22204 - MACHINE LEARNING FOR BIOTECHNOLOGISTS		
Unit : 01		

Unit Syllabus: MACHINE LEARNING

Objective:

1. To introduce students to the basic concepts and techniques of Machine Learning.
2. To have a thorough understanding of the Supervised and Unsupervised learning techniques.
3. To study the various probability-based learning techniques.
4. To understand graphical models of machine learning algorithms.
5. To importing knowledge on foundation of machine learning to solve bioinformatics problems.

Session No *	Topics to be covered	Ref	Teaching Aids
1	Fundamentals of Machine Learning in Biotechnology	TB1. Pp. 01	BP, LCD
2	Feature Engineering and advancements in bio research	IR 1	BP, LCD
3	Data Imputation and Dimensionality Reduction	TB1. Pp. 96	BP, LCD
4	Unsupervised Learning	TB1. Pp. 21	BP, LCD
5	Linear and Logistic Regression	TB1. Pp. 34	BP, LCD
6	Decision Trees	TB1. Pp. 213	BP, LCD
7	Random Forests and extreme Gradient Boosting	TB1. Pp. 499	BP, LCD
8	Extreme Learning Machines	IR 2, Video 1	Flipped model
9	Hidden Markov Models & Kernel Methods	TB1. Pp. 349 & 417	BP, LCD
10	Support Vector Machines	TB1. Pp. 349	BP, LCD
11	Deep Learning: Fundamentals, Embeddings	TB1. Pp. 306	BP, LCD
12	Rule-based Learning Graphs, Ensemble	TB1. Pp. 505	BP, LCD
13	Semi-supervised Learning	TB2. Pp 32	BP, LCD
14	Data Integration	RB 1	BP, LCD
15	Automated Scientific Discovery	RB 1	BP, LCD

Content beyond syllabus covered (if any):

* Session duration: 50 minutes





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REFERENCES:**TEXTBOOKS:**

1. Ethem Alpaydın, Introduction to Machine Learning (2014). The MIT Press
Cambridge, Massachusetts London, England
2. Olivier Chapelle, Bernhard Schölkopf, and Alexander Zien, Semi-Supervised
Learning (2010) MIT Press

REFERENCE BOOKS:

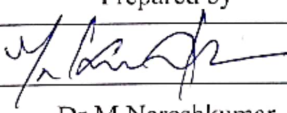
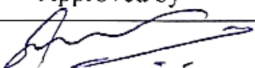
1. Alkhalifa, S. (2022). Machine Learning in Biotechnology and Life Sciences: Build
Machine Learning Models Using Python and Deploy Them on the Cloud. United
Kingdom: Packt Publishing.

INTERNET REFERENCES:

1. https://soeagra.com/abr/abr_may2021/33.pdf
2. <https://towardsdatascience.com/introduction-to-extreme-learning-machines-c020020ff82b>

ANIMATED VIDEO:

1. <https://www.youtube.com/watch?v=J33wLfQtfuo>

	Prepared by	Approved by
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Name	Dr M Nareshkumar	Dr E Nakkeeran
Designation	Assistant Professor	Professor & Head, Department of Biotechnology
Date	23/01/2024	
Remarks *:		