SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Department of Biotechnology	LP: BY22204 Rev. No: 0.00 Date: 23.01.2024
~~B.E/B.Tech/M.E~~/M.Tech : Biotechnology Regulation: R2022 PG Specialisation : Biotechnology Sub. Code / Sub. Name : BY22204 - MACHINE LEARNING FORBIOTECHNOLOGISTS 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 bioresearch	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

Sub Code / Sub Name: **BY22204 - MACHINE LEARNING FOR BIOTECHNOLOGISTS**

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
Signature		
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Designation	Assistant Professor	Professor & Head, Department of Biotechnology
Date	23/01/2024	
Remarks *:		