SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Department of Biotechnology	LP: BY22204 Rev. No: 0.00 Date: 03.02.2025
~~B.E/B.Tech/M.E/~~M.Tech : Biotechnology Regulation: R2022 PG Specialisation : Biotechnology 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	T1 (01)	BB, PPT
2	Feature Engineering and advancements in bioresearch	R1(26)	BB, PPT
3	Data Imputation and Dimensionality Reduction	T1 (96)	BB, PPT
4	Unsupervised Learning	T1 (21)	BB, PPT
5	Linear and Logistic Regression	T1 (34)	BB, PPT
6	Decision Trees	T1 (213)	BB, PPT
7	Random Forests and extreme Gradient Boosting	T1 (499)	BB, PPT
8	Extreme Learning Machines	IR (1 &2); AV1	Blended Learning Video
9	Hidden Markov Models & Kernel Methods	T1 (349 & 417)	BB, PPT
10	Support Vector Machines	T1 (349)	BB, PPT
11	Deep Learning: Fundamentals, Embeddings	T1 (306)	BB, PPT
12	Rule-based Learning Graphs, Ensemble	T1 (505)	BB, PPT
13	Semi-supervised Learning	T2 (32)	BB, PPT
14	Data Integration	R1	BB, PPT
15	Automated Scientific Discovery	R1	BB, PPT
Content beyond syllabus covered (if any): NIL			

* Session duration: 50 minutes; BB – Black Board; PPT – Power Point.

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

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
Date	03/02/2025	03/02/2025
Remarks *: Nil		