

(Approved by AICTE, New Delhi & Affiliated to AKTU, Lucknow)

Knowledge Park-II, Greater Noida (U.P.)

## **Lesson Plan**

Program:MBASemester:OddCourse Code:KMBN IT02. Course Name:Ai and Machine Learning for Business

## **Course Objectives**

(CO1):To understand the need of Machine Learning & Statistics for solving various problems

(CO2):To understand the basic concepts of supervised and unsupervised learning.

(CO3):To apply regression analysis on the data Available

(CO4):To design appropriate machine learning and apply on real world problems

(CO5):To optimize different Machine Learning & Deep learning Techniques.

**Session Duration:**60 minutes

#### **Participants:**

## Entry level knowledge and skills of students

- i. Statistical analysis and computing.
- ii. Data Visualization and strong Communication Skills

## Equipment required in Classroom/ Laboratory/ Workshop

- i. Projector
- ii. White board

#### **Assessment Schemes**

| S. No.    | Criteria                                   | Marks (150) |
|-----------|--|-------------|
| 1         | AKTU End Term Examination                  | 100         |
| 2         | Internal Evaluation Scheme                 | 50          |
| 2(a)      | Class Tests                                | 30          |
| 2(a)(i)   | Class Test-I                               | 15          |
| 2(a)(ii)  | Class Test-II                              | 15          |
| 2(b)      | Teacher Assessment (Continuous Evaluation) | 20          |
| 2(b)(i)   | Attendance                                 | 5           |
| 2(b)(ii)  | Case Study/Topic Based Presentation        | 5           |
| 2(b)(iii) | *GD  | 10          |
|           | *MCQ Based Assignment                      | 2           |

**Course Outcomes** (starting with action-oriented observable and measurable verb)

(CO1):To understand the need of Machine Learning & Statistics for solving various problems.

(CO2):To understand the basic concepts of Supervised and unsupervised learning.

(CO3):To apply regression analysis on the data available.



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(CO4):To design appropriate machine learning and apply on real world problems. (CO5):To optimize different Machine Learning & Deep Learning Techniques.

| L.<br>No | Topics   | Sub Topics  | Date of implementatio | Pedagogy             | CO-<br>Covere<br>d | Facult<br>y Sign | HoD's<br>Remar<br>k with<br>Date |
|----------|--|---|-----------------------|----------------------|--------------------|------------------|----------------------------------|
|          |  |   | Unit - 1              |                      |                    |                  |                                  |
| 1.       | Artificial<br>Intelligence<br>for Business<br>Planning | Introduction<br>and Data<br>sources for AI,<br>Knowledge<br>acquisition |                       | Improved<br>Lectures | CO1                |                  |                                  |
| 2.       | Artificial<br>Intelligence<br>for Business<br>Planning | Knowledge<br>representation,<br>History of ML                           |                       | Improved<br>Lectures | CO1                |                  |                                  |
| 3.       | Artificial<br>Intelligence<br>for Business<br>Planning | Framework for<br>building ML<br>System KDD<br>process mode              |                       | Improved<br>Lectures | CO1                |                  |                                  |
| 4.       | Artificial<br>Intelligence<br>for Business<br>Planning | Data Science Vs<br>Machine<br>Learning                                  |                       | Improved<br>Lectures | CO1                |                  |                                  |
|          |  |   | Unit - 2              |                      | •                  | •                |                                  |
| 5.       | Supervised<br>Learning<br>and<br>Application           | Introduction to classification Linear Regression                        |                       | Improved<br>Lectures | CO2                |                  |                                  |
| 6.       | Supervised<br>Learning<br>and<br>Application           | Metrics for evaluating linear model, Multivariate regression            |                       | Improved<br>Lectures | CO2                |                  |                                  |
| 7.       | Supervised<br>Learning<br>and<br>Application           | Logistic<br>Regression,<br>Support Vector<br>Machine                    |                       | Improved<br>Lectures | CO2                |                  |                                  |



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| 8.  |                          | Model<br>Evolution        |          | Improved             |       |  |
|-----|--------------------------|---------------------------|----------|----------------------|-------|--|
|     | Supervised               | Application of supervised |          | Lectures             | CO2   |  |
|     | Learning                 | learning in               |          |                      | 602   |  |
|     | and<br>Application       | multiple<br>domains       |          |                      |       |  |
| 9.  | Application              | domains                   |          | Improved             |       |  |
|     |                          | Application of            |          | Lectures             |       |  |
|     | Supervised<br>Learning   | Supervised<br>learning in |          |                      | CO2   |  |
|     | and                      | multiple                  |          |                      |       |  |
| 10. | Application              | domains Application of    |          |                      |       |  |
| 10. |                          | supervised                |          | Improved             |       |  |
|     | Cunomisod                | learning in               |          | Lectures             | 602   |  |
|     | Supervised<br>Learning   | solving<br>business       |          |                      | CO2   |  |
|     | and                      | problems and              |          |                      |       |  |
| 11. | Application              | aspiring                  |          | Improved             |       |  |
|     |                          |                           |          | Lectures             |       |  |
|     | Supervised<br>Learning   | Customer                  |          |                      | CO2   |  |
|     | and                      | relationship              |          |                      |       |  |
| 12. | Application              | management                |          | Improved             |       |  |
| 12. |                          |                           |          | Lectures             |       |  |
|     | Supervised               |                           |          |                      | CO2   |  |
|     | Learning<br>and          | Sales and                 |          |                      |       |  |
|     | Application              | marketing                 |          |                      |       |  |
| 13. | Uncuporaico              | I                         | Unit - 3 | 1                    | 1     |  |
| 15. | Unsupervise d Learning   |                           |          | Improved<br>Lectures | CO3   |  |
|     | Algorithms               | Clustering                |          |                      |       |  |
| 14. | Hanna e e e              |                           |          | Improved             |       |  |
|     | Unsupervise d Learning   | Hierarchical              |          | Lectures             | CO3   |  |
|     | Algorithms               | Clustering                |          |                      |       |  |
| 15. |                          |                           |          | Improved<br>Lectures |       |  |
|     |                          | Partitioning              |          | LCCIUI E3            | CO3   |  |
|     | Unsupervise              | clustering -K             |          |                      | 1 203 |  |
|     | d Learning<br>Algorithms | means<br>clustering       |          |                      |       |  |
| 16. | Unsupervise              | Density Based             |          | Improved             | CO3   |  |



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|     | d Learning<br>Algorithms                              | Method DBSAN   | Lectures             |     |  |
|-----|---|--|----------------------|-----|--|
| 17. | Unsupervise<br>d Learning<br>Algorithms               | OPTICS Applications of unsupervised learning in multiple domains | Improved<br>Lectures | CO3 |  |
| 18. | Unsupervise<br>d Learning<br>Algorithms               | Association<br>rules   | Improved<br>Lectures | CO3 |  |
| 19. | Unsupervise<br>d Learning<br>Algorithms               | Introduction<br>Large Item sets                                  | Improved<br>Lectures | CO3 |  |
| 20. |   | Apriori<br>Algorithms  | Improved<br>Lectures | CO3 |  |
|     |   |  | Unit - 4             |     |  |
| 21. | Artificial<br>Neural<br>Network &<br>Deep<br>Learning | Perception<br>model  | Improved<br>Lectures | CO4 |  |
| 22. |   | Multilayer perception  | Improved<br>Lectures | CO4 |  |
| 23. | Artificial<br>Neural<br>Network &<br>Deep<br>Learning | Gradient<br>descent  | Improved<br>Lectures | CO4 |  |
| 24. | Artificial<br>Neural<br>Network &<br>Deep<br>Learning | The Delta rule   | Improved<br>Lectures | CO4 |  |
| 25. | Artificial<br>Neural<br>Network &<br>Deep             | Multilayer<br>network  | Improved<br>Lectures | CO4 |  |



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| Learning   |  |   |  |  |  |  |
|------------|--|---|--|--|--|--|
| Artificial |  |   |  |  |  |  |
| Neural     |  |   |  |  |  |  |
| Network &  |  | Improved  | CO4  |  |  |  |
| Deep       | Backpropagatio   | Lectures  |  |  |  |  |
| Learning   | n Algorithm  |   |  |  |  |  |
| Artificial |  |   |  |  |  |  |
| Neural     |  |   |  |  |  |  |
| Network &  |  | Improved  | CO4  |  |  |  |
| Deep       |  | Lectures  |  |  |  |  |
| Learning   | n Algorithm  |   |  |  |  |  |
|            |  | Unit - 5  |  |  |  |  |
|            |  |   |  |  |  |  |
|            | •  | •   |  |  |  |  |
|            |  | Lectures  |  |  |  |  |
| System     | neural Network   | <u> </u>  |  |  |  |  |
| Cambual    |  |   | 605  |  |  |  |
|            | T af la  | Lectures  | COS  |  |  |  |
| System     |  | lua a va va d   |  |  |  |  |
| Control    |  | • · · · · · · · · · · · · · · · · · · ·   | COE  |  |  |  |
|            |  | Lectures  | 05   |  |  |  |
| System     | layers   | Improved  |  |  |  |  |
| Control    | Training of  |   | COS  |  |  |  |
|            | _  | Lectures  |  |  |  |  |
| - Cyste    | TTECHTO! K   | Improved  |  |  |  |  |
| Control    | Training of  |   | CO5  |  |  |  |
|            | Network  |   |  |  |  |  |
| •          |  | Improved  |  |  |  |  |
| Control    | Recent   | Lectures  | CO5  |  |  |  |
| System     | Application  |   |  |  |  |  |
|            |  | Improved  |  |  |  |  |
| Control    | Recent   | Lectures  | CO5  |  |  |  |
| System     | Application  |   |  |  |  |  |
| Revision   |  |   |  |  |  |  |
| Unit-1     |  |   | 1  |  |  |  |
| Unit-2     |  |   | 2  |  |  |  |
| Unit-2     |  |   | 2  |  |  |  |
| Unit-3     |  |   | 3  |  |  |  |
| Unit-3     |  |   | 3  |  |  |  |
|            |  |   | 4  |  |  |  |
|            |  |   | 4  |  |  |  |
| Unit-5     |  |   | 5  |  |  |  |
|            | Artificial Neural Network & Deep Learning Artificial Neural Network & Deep Learning  Control System  Control System  Control System  Control System  Control System  Control System  Unit-1 Unit-2 Unit-2 Unit-3 | Artificial Neural Network & Deep Backpropagatio Learning Artificial Neural Network & Deep Backpropagatio n Algorithm  Introduction concept of convolution system Types of layers Control System Types of layers Concept of Convolution System Training of System Training of Network  Control System Recent Application  Control Recent System Application  Unit-1 Unit-2 Unit-2 Unit-3 Unit-3 Unit-3 Unit-3 Unit-4 | Artificial Neural Network & Deep Backpropagatio Learning Artificial Neural Network & Deep Backpropagatio Learning Network & Improved Lectures  Deep Backpropagatio Learning Network & Improved Lectures  Deep Backpropagatio Learning Network & Improved Lectures  Introduction concept of concept of convolution System Types of layers  Control System Types of layers  Control Convolution System Iayers  Improved Lectures  Improved Lectures  Improved Lectures  Improved Lectures  System Improved Lectures  System Network  Control Training of System Network  Control Recent System Application  Revision  Unit-1 Unit-2 Unit-3 Unit-3 Unit-4 | Artificial Network & Deep Backpropagatio Learning n Algorithm  Artificial Network & Deep Backpropagatio n Algorithm  Artificial Neural Network & Improved Lectures  Deep Backpropagatio n Algorithm  Tunit - 5  Introduction concept of convolution neural Network  Control System  Types of layers  Control Convolution System  Iayers  Control Training of Network  Control Training of Network  Control Recent Application  Control Recent Application  Unit - 1  Unit - 2  Unit - 3  Improved Lectures  CO4  Lectures  CO5  Improved Lectures  CO5  System  Improved Lectures  CO5  Improved Lectures  CO5  System  Application  Revision  Improved Lectures  CO5  System  Application  Revision  Introduction  Lectures  CO5  System  Application  Revision  Introduction  Lectures  CO5  System  Application  Revision  Improved Lectures  CO5  System  Application  Application  Revision  Introduction  Lectures  CO5  System  Application  Application  Revision  Introduction  Lectures  CO5  System  Application  Appl | Artificial Neural Network & Deep Backpropagatio Learning Artificial Neural Neural Neural Neural Neural Network & Deep Backpropagatio Learning Network & Deep Backpropagatio Leatures  Unit - 5  Unit - 5  Unit - 5  Unit - 5  Control System Types of layers Concept of Convolution Lectures Cos System Iayers  Control Training of System Network  Control Training of Network  Control Recent Application Recent System Application  Revision  Unit - 1 Unit - 2 Unit - 3 Unit - 3 Unit - 3 Unit - 3 Unit - 4  Co4 Lectures CO4 Lectures CO5 Lectures CO |  |

**Text Books:** 

# MINITES SERVICES

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#### **Reference Books:**

- 1. Artificial Intelligence for Business Leaders: Ajit Kr Jha
- 2. Machine Learning in Business: John C Hull

## **Suggested Readings**

- 1. An Introduction to statistical Learning with Application in R: James, G Witten D(springer)
- 2. AI and Machine Learning: Was Rahman SAGE Publishing India

## Journals:

- 1. Monostori, L. (2003). Al and machine learning techniques for managing complexity, changes and uncertainties in manufacturing. *Engineering applications of artificial intelligence*, *16*(4), 277-291.
- 2. Cioffi, R., Travaglioni, M., Piscitelli, G., Petrillo, A., & De Felice, F. (2020). Artificial intelligence and machine learning applications in smart production: Progress, trends, and directions. *Sustainability*, *12*(2), 492.