Second Semester 2020-2021 COURSE HANDOUT (PART II)

Date: 17/01/2021

In addition to Part-I (general handout for all courses appended to this time table) this portion gives further details pertaining to the course.

Course No.: CS F415 Course Title: Data Mining

Instructor-in-charge: YASHVARDHAN SHARMA (yash@pilani.bits-pilani.ac.in)

Lab Instructor: Divya Bharadwaj (p20180013@pilani.bits-pilani.ac.in)

1. Objective and Scope

The course explores the concepts and techniques of data mining, a promising and flourishing frontier in database systems. Data Mining is automated extraction of patterns representing knowledge implicitly stored in large databases, data warehouses, and other massive information repositories. It is a decision support tool that addresses unique decision support problems that cannot be solved by other data analysis tools such as Online Analytical Processing (OLAP). The course covers data mining tasks like constructing decision trees, finding association rules, classification, and clustering. The course is designed to provide students with a broad understanding in the design and use of data mining algorithms. The course also aims at providing a holistic view of data mining. It will have database, statistical, algorithmic and application perspectives of data mining.

2. Text Book

Tan P. N., Steinbach M & Kumar V. "Introduction to Data Mining" Pearson Education, 2016.

3. Reference Books

- i) Han J & Kamber M, "*Data Mining: Concepts and Techniques*", Morgan Kaufmann Publishers, Third Edition, 2012
- ii) Zaki MJ & Wagner M JR, "*Data Mining and Analysis-Fundamental Concepts and Algorithms*" Cameridge Univ Press, 2014.
- iii) Dunhum M.H. & Sridhar S. "Data Mining-Introductory and Advanced Topics", Pearson Education, 2006.

4. Course Plan

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|----------------|---|--|----------------------|
| Lecture No. | Learning Objective | Topic(s) | Chapter Reference |
| 1-2 | To understand the definition and applications of Data Mining | Introduction to Data Mining Motivation What is Data Mining? Data Mining Tasks Issues in Data Mining Applications | 1+Class Notes |
| 3-5 | To understand types of data and to improve the quality of data and efficiency and the ease of the mining process. | Data Preprocessing Types of data Data Quality Data preprocessing Similarity and Dissimilarity Measures | 2 |
| 6 | To study how to investigate the data | Data Exploration Data Set & its Statistics Visualization OLAP & Multidimensional Data Analysis | 3 Self Study |







BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, Pilani Pilani Campus AUGS/ AGSR Division

| Classification and its applications Classification and its applications Decision Tree based Algorithms Model Over-fitting Performance Evaluation of a Classifier Companing Classifiers Classification Classification Algorithms Cluster Evaluation Clustering Algorithms Cluster Evaluation Clustering Algorithms Clustering Algorithms Clustering Algorithms Clustering Algorithms Clustering Algorithms Classification Perliminaries Scalable Clustering Scalable Clustering Scalable Clustering Proximity based Outlier Detection Clustering Based Techniques Advanced Topics Class Notes | 7-10 | To understand | Classification | 4+Class |
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| Stream Data Mining | | | | |







5. Evaluation Schedule

| Component | Duration | Weightage(%) | Date & Time | Venue | Remarks |
|-----------------------------|----------|--------------|-------------|-------|---------|
| Mid Sem Exam | 90 Mins. | 30 | To be | | Closed |
| | | | announced | | Book |
| Labs/OnlineTest/Assignments | | 30 | To be | | |
| | | | announced | | |
| Comprehensive | 3 Hours | 40 | 4/5 FN | | Partly |
| | | | | | open |

7. Labs

Two hour lab will be conducted every week. Students will be applying the concepts of data mining on the problems Python Programming and IBM SPSS Modeler. Students will also be exposed to modeling of the problems.

8. Assignments

Assignment(s) (programming/reading) will be given to the students. This will immensely help the students in gaining a better understanding of the subject.

9. Chamber Consultation Hours

To be announced in the class.

10. Make-up Policy: Prior Permission is must and Make-up shall be granted only in genuine cases based on individual's need and circumstances.

11. Notices

All the notices concerning this course will be displayed on the CSIS Notice Board or course website.

Instructor-in-charge



