Text Books:

1. *Goodfellow L., Bengio Y. and Courville A., Deep Learning, MIT Press (2016).*
2. *Patterson J. and Gibson A., Deep Learning: A Practitioner's Approach, O'Reilly (2017), 1st ed.*

Reference Books:

1. *Haykin S., Neural Network and Machine Learning, Prentice Hall Pearson (2009), 3rd ed.*
2. *Geron A., Hands-on Machine Learning with Sci-kit and TensorFlow, O'Reilly Media (2017)*

Course Code: BTCS 705-18	**Course Title: Deep Learning Lab**	**L:0;T:0; 2P:**	**Credits;1**

Detailed List of Tasks:

- Creating a basic network and analyze its performance
- Deploy the Confusion matrix and simulate for Overfitting
- Visualizing a neural network
- Demo: Object Detection with pre-trained RetinaNet with Keras
- Neural Recommender Systems with Explicit Feedback
- Backpropagation in Neural Networks using Numpy
- Neural Recommender Systems with Implicit Feedback and the Triplet Loss
- Fully Convolutional Neural Networks
- ConvNets for Classification and Localization
- Text Classification and Word Vectors
- Character Level Language Model (GPU required)

Suggested Tools Python/R/MATLAB

Course Code: BTCS706-18	**Course Title:** Distributed Databases	**3L: 0T: 0P**	**Credits: 3**

Detailed Contents:

Unit 1:

INTRODUCTION: Distributed data processing; What is a DDBS; Advantages and disadvantages of DDBS; Problem areas; Overview of database and computer network concepts

DISTRIBUTED DATABASE MANAGEMENT SYSTEM ARCHITECTURE: Transparencies in a distributed DBMS; Distributed DBMS architecture; Global directory issues.

6 hrs., CO1

Unit 2:

DISTRIBUTED DATABASE DESIGN: Alternative design strategies; Distributed design issues; Fragmentation; Data allocation.

SEMANTICS DATA CONTROL: View management; Data security; Semantic Integrity Control.

QUERY PROCESSING ISSUES: Objectives of query processing; Characterization of query processors; Layers of query processing; Query decomposition; Localization of distributed data. **10 hrs., CO1**

Unit 3:

DISTRIBUTED QUERY OPTIMIZATION: Factors governing query optimization; Centralized query optimization; Ordering of fragment queries; Distributed query optimization algorithms.

TRANSACTION MANAGEMENT: The transaction concept; Goals of transaction management; Characteristics of transactions; Taxonomy of transaction models.

CONCURRENCY CONTROL: Concurrency control in centralized database systems; Concurrency control in DDBSs; Distributed concurrency control algorithms; Deadlock management. **10 hrs., CO2**

Unit 4:

RELIABILITY:Reliability issues in DDBSs; Types of failures; Reliability techniques; Commit protocols; Recovery protocols.

PARALLEL DATABASE SYSTEMS : Parallel architectures; parallel query processing and optimization; load balancing.

ADVANCED TOPICS: Databases, Distributed Object Management, Multi-databases. **10 hrs., CO2,3**

COURSE OUTCOMES

After completion of course, students would be able to:

CO1: Design trends in distributed systems.

CO2: Apply network virtualization in distributed environment.

CO3: Apply remote method invocation and objects.

References:

1. Principles of Distributed Database Systems, M.T. Ozsu and P. Valduriez, Prentice-Hall, 1991.
2. Distributed Database Systems, D. Bell and J. Grimson, Addison-Wesley, 1992.

Course Code: BTCS707-18	**Course Title:** Distributed Databases lab	**L: T: 2P**	**Credits: 1**