4	**Supervised learning** **Supervised learning:** Linear Regression: Model representation for single variable, Single variable Cost Function, Gradient Decent for Linear Regression, Multivariable model representation, Multivariable cost function, Gradient Decent in practice, Normal Equation and non-invertibility **Logistic Regression:** Classification, Hypothesis Representation, Decision Boundary, Cost function, Advanced Optimization, Multi-classification (One vs. All), Problem of Over fitting, Regularization **Classification Problems:** Support Vector Machines: Optimization Objective, Large Margin Classifiers, Kernels, SVM practical considerations, Decision Tree classifier	9
5	**Neural Networks and Unsupervised learning** **Neural Networks:** Non-linear Hypothesis, Biological Neurons, Model representation, Intuition for Neural Networks, Multiclass classification, Cost Function, Back Propagation Algorithm, Back Propagation Intuition, Weights initialization, Neural Network Training **Unsupervised learning:** Unsupervised learning introduction, Types of clustering algorithms, k-Means clustering Algorithm, Optimization objective, Random Initialization, Choosing number of clusters.	9

Lab Assignments

Sr No.	Contents	Workload in Hrs
		Lab
1	Write a Program to Implement Breadth First Search / Depth First Search	2
2	Write a Program to Implement A* Algorithm for 8 puzzle problem	4
3	Study of Prolog programming language and Its function. Write Simple Facts for the statements using PROLOG	2
4	Write a program to implement a logistic regression for a given dataset, e. g. titanic dataset / pima Indian diabetes database	2
5	Write a program to implement SVM classifier, compare with decision tree algorithm	4
6	Write a program to implement Naïve Bayes classifier / neural network classifier	4
7	Write a program to implement anyone clustering algorithm such as k-means clustering algorithm on a given data	4
8	Mini Project	4

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COURSE STRUCTURE

Course Code	CET4032B			
Course Category	Program Core			
Course Title	Security Management and Cyber Laws			
Teaching Scheme and Credits	Lecture	Tutorial	Laboratory	Credits
Weekly load hrs.	03 hrs/ week	01 hr /week	-	03+01=04

Pre-requisites:
- Software Engineering and Testing
- Information and Cybersecurity

Course Objectives:

1. Knowledge (i) To understand the basics of security management.
(ii) To introduce security management models.

2. Skills (i) To understand the importance of security planning and contingencies.
(ii) To learn about the legal frameworks.

3. Attitude (i) To explore critical understanding of cyber law for Cyber-crimes.

Course Outcomes

After completion of this course students will be able to-

1. Describe and identify security policy framework, legal and moral implication and best practices in security management
2. Describe the need for and development of information security policies, and identify guidelines and models for writing policies
3. Design detailed enterprise wide security auditing plans and processes
4. Demonstrate a critical understanding of the Cyber law with respect to Indian IT/Act 2008

Course Contents:

- Introduction to Security Management
- Planning for Security and Contingencies
- Implementing Security Management
- Legal Framework
- Cyber law for Cyber Crimes

Learning Resources:

Here are some text and reference books that will be recommended for the course.

Text Books

1. Principles of Information Security, Michael E. Whitman, Herbert J. Mattord
2. Cyber Security, understanding cybercrimes, computer forensics and legal perspectives by Nina Godbole, and Sunit Belapure, WILEY Publication (2011), ISBN: 9788126521791.

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Reference Books

1. Sennewald, C., and Baillie, C. (2011). Effective Security Management. Elsevier Publication.
2. Handbook of Information Security Management, Micki Krause, Harold F. Tipton, Isc2 Press.
3. Information Security Policies, Procedures, and Standards - A Practitioner's Reference by Douglas Landoll. CRC Press, 2016 ISBN: 1482-24589-2
4. Cyber Crime Manual by Bibhas Chatterjee, Lawman Publication
5. Jonthan Rosenoer, Cyber Law, Springer, New York, (1997)

Supplementary Reading

1. Power Point Slides
2. Case Study
3. Practice Assignments

Web Resources

1. http://www.iso.org/iso/home/standards/management-standards/iso27001.htm
2. http://csrc.nist.gov/publications/nistpubs/800-55-Rev1/SP800-55-rev1.pdf

Pedagogy:

- PPTs
- Practical Demos
- Videos
- Expert lectures
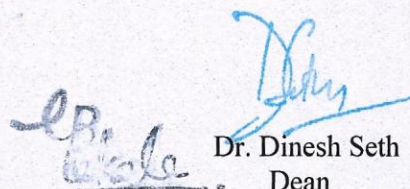- Workshop/Audit reports
- Co Teacher Scheme

Assessment Scheme

Class Continuous Assessment: 60 Marks

Midterm Exam	Component 1	Component 2	Component 3
15 Marks	15 Marks	15 Marks	15 Marks

Lab Continuous Assessment (LCA) : NA

Term End Examination: 40 marks

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