

**J.B. INSTITUTE OF ENGINEERING & TECHNOLOGY**

(AUTONOMOUS)

*Department of Computer Science and Engineering*



***DATA MINING & DATA WAREHOUSING***


**COURSE PLAN**

**ACADEMIC YEAR**

**2015-16**

***G.SREENIVASULU***

*Associate Professor*


	<b>COURSE PLAN</b>	2015-16
		Regulation: R11

#### FACULTY DETAILS:

Name of the Faculty:: G Sreenivasulu  
 Designation: Associate Professor  
 Department:: Computer Science & Engineering

#### COURSE DETAILS

Name Of The Programme:: Lesson Plan	Batch:: 2012-2016
Designation:: Assistant Prof	
Year	Semester III-II
Department:: Computer Science & Engineering	
Title of The Subject DATA MINING & DATA WAREHOUSING	Subject Code 6756055
No of Students 84	

	COURSE PLAN	2015-16
		Regulation: R11

FACULTY DETAILS:

Name of the Faculty:: G Sreenivasulu  
 Designation: Associate Professor  
 Department:: Computer Science & Engineering

1. TARGET

a) Percentage Pass: 100

b) Percentage I class: 90

2. COURSE PLAN

(Please write how you intend to cover the contents: i.e., coverage of Units by lectures, guest lectures, design exercises, solving numerical problems, demonstration of models, model preparation, or by assignments, etc.)

3. METHOD OF EVALUATION

3.1. ☐ Continuous Assessment Examinations (CAE 1, CAE 2)

3.2. ☐ Assignments / Seminars

3.3. ☐ Mini Projects

3.4. ☐ Quiz


3.5. ☐ Term End Examination

3.6. ☐ Others

4. List out any new topic(s) or any innovation you would like to introduce in teaching the subject in this Semester.

Signature of HOD  
 Date:

Signature of Faculty  
 Date:

	<b>GUIDELINES TO STUDY THE SUBJECT</b>	2015-16
		Regulation: R11

**FACULTY DETAILS:**

Name of the Faculty:: G Sreenivasulu

Designation: Associate Professor

Department:: Computer Science & Engineering

Guidelines for Preparing the Course:

**Course Description:**

In this subject the students are going to learn about the how data is collected from various data bases and how it will be transform to understand by search engine and according to the users query, how that query is processed by the warehouse and according to the query the pattern will get as an output.

**Course Objectives:**

1. To introduce students to the basic concepts and techniques of Data Mining
2. To develop skills of using recent data mining software for solving practical problems.
3. To gain experience of doing independent study and research.
4. To study the methodology of engineering legacy databases for data warehousing and data mining to derive business rules for decision support systems
5. Develop and apply critical thinking, problem-solving, and decision-making skills.
6. Develop and apply enthusiasm for learning. Class participation is encouraged in this course. Enriching
7. Classroom discussions and learning by communicating interest, suggestions for improvements, additional readings and Internet resources, is a major goal. Express diligence, enthusiasm, patience, and thoroughness in dealing with complicated analysis and procedures and less-than-perfect-constantly evolving technology.

Learning Outcomes:
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1. Understand data mining principles and techniques: Introduce DM as a cutting edge business intelligence method and acquaint the students with the DM techniques for building competitive advantage through proactive analysis, predictive modelling, and identifying new trends and behaviours. Learning objectives include:

a. Building basic terminology.

b. Learning how to gather and analyze large sets of data to gain useful business understanding.

c. Learning how to produce a quantitative analysis report/memo with the necessary information to make decisions.

d. Describing and demonstrating basic data mining algorithms, methods, and tools

e. Identifying business applications of data mining

f. Overview of the developing areas - web mining, text mining, and ethical aspects of data mining.



## COURSE OBJECTIVES

2015-16

Regulation: R11

### FACULTY DETAILS:


Name of the Faculty:: G Sreenivasulu  
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Department:: Computer Science & Engineering

On completion of this Subject / Course the student shall be able to:

S.No.	Objectives	Outcomes
1.	To understand and implement classical models and algorithms in data warehousing and data mining	Understand algorithms
2.	To analyze the data, identify the problems, and choose the relevant models and algorithms to apply.	Understand analysing of a model
3.	To compare and contrast different conceptions of data mining	Understand data mining concepts
4.	To characterize the kinds of patterns that can be discovered by association rule mining, classification and clustering	Understand about the association rules

Signature of Faculty  
Date:

Note: For each of the OBJECTIVE indicate the appropriate OUTCOMES to be achieved.  
Kindly refer Page 16, to know the illustrative verbs that can be used to state the objectives.

	<b>COURSE OUTCOMES</b>	2015-16
		Regulation: R11

**FACULTY DETAILS:**

Name of the Faculty:: G Sreenivasulu  
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**The expected outcomes of the Course / Subject are:**

S.No.	General Categories of Outcomes	Specific Outcomes of the Course
A.	An ability to apply knowledge of mathematics, science, and engineering	Yes
B.	An ability to design and conduct experiments, as well as to analyze and interpret data	Yes
C.	An ability to design a system, component, or process to meet desired needs within realistic Constraints such as economic, environmental, social, political, ethical, health and safety, Manufacturability and sustainability	Yes
D.	An ability to function on multi-disciplinary teams	Yes
E.	An ability to identify, formulate, and solve engineering problems	Yes
F.	An understanding of professional and ethical responsibility	Yes
G.	An ability to communicate effectively	Yes
H.	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	Yes
I.	A recognition of the need for, and an ability to engage in life-long learning	Yes
J.	A knowledge of contemporary issues	Yes
K.	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Yes

**Objectives – Outcome Relationship Matrix** (Indicate the relationships by **X** mark).

Outcomes/Objectives	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>	<b>K</b>
1	X	X	X	X	X	X	X	X	X	X	X
2	X	X	X	X	X	X	X	X	X	X	X
3	X	X	X	X	X	X	X	X	X	X	X
4	X	X	X	X	X	X	X	X	X	X	X
5	X	X	X	X	X	X	X	X	X	X	X
6	X	X	X	X	X	X	X	X	X	X	X
7	X	X	X	X	X	X	X	X	X	X	X
8	X	X	X	X	X	X	X	X	X	X	X
9	X	X	X	X	X	X	X	X	X	X	X
10	X	X	X	X	X	X	X	X	X	X	X





## COURSE SCHEDULE

2015-16

Regulation: R11

### FACULTY DETAILS:


Name of the Faculty:: G Sreenivasulu  
 Designation: Associate Professor  
 Department:: Computer Science & Engineering

The Schedule for the whole Course / Subject is::

S. No.	Description	Duration (Date)		Total No. of Periods
		From	To	
1.	<b>Introduction:</b> Fundamentals of data mining, Data mining Functionalities, Classification of Data Mining Systems, <b>Data Mining Task Primitives</b> , Integration of data mining system with a database or data warehouse system, Major issues in Data Mining.  <b>Data Preprocessing:</b> Needs Preprocessing the data, Data cleaning, Data integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation.			<b>15</b>
2.	Data Warehouse and OLAP Technology for Data Mining and Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Ware house Implementation, Further Development of Data Cube Technology, From Data Ware housing to Data Mining			<b>11</b>
3.	Mining Frequent patterns, Associations and Correlations: Basic concepts, Efficient and scalable frequent item set mining methods, Mining various kinds of association rules, from association mining to correlation analysis, Constraint-Based association mining			<b>05</b>
4.	<b>Classification and Prediction:</b> Issues regarding Classification and Prediction, Classification by Decision			<b>08</b>

	Tree Induction, Bayesian Classification, Rule based classification, Classification by Back propagation, Support vector machines, Associative classification, Lazy learners, Other classification methods, Prediction, Accuracy and Error measures, Evaluating the accuracy of a classifier or a Predictor, Ensemble methods			
5.	<b>Cluster Analysis Introduction:</b> Types of data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Density-Based Methods, Grid-Based Methods, Model-Based Methods, clustering high dimensional data, Constraint-Based cluster analysis, Outlier Analysis.			09
6.	Mining Streams, Time Series and Sequence data: Mining data streams, Mining Time series data, Mining Sequence patterns in Transactional databases, Mining sequence patterns in Biological data, Graph mining, social network analysis and multirelational data mining.			07
7	<b>Mining Objects, Spatial, Multimedia, Text and Web Data:</b> Multidimensional Analysis and Descriptive Mining of Complex, Data Objects, Mining Spatial Data mining, Mining Multimedia Data, Mining Text Data, Mining the world Wide Web			08
8	Applications and Trends in Data Mining: Data Mining applications, Data Mining system products and Research Prototype, additional Themes on data mining and social impacts of data mining.			05

Total No. of Instructional periods available for the course:    Hours / Periods

	<b>SCHEDULE OF INSTRUCTIONS</b>  <b>UNIT - I</b>	2015-16
		Regulation: R11

FACULTY DETAILS:


Name of the Faculty:: G Sreenivasulu  
Designation: Associate Professor  
Department:: Computer Science & Engineering

The Schedule for the whole Course / Subject is::

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1		1	Introduction to Data Mining		T1
2		2	Fundamentals of Data Mining, KDD process		T1
3		1	Classification of Data Mining System		T1
4		4	<b>Data Mining Task Primitives</b> , Integration of data mining system with a database or data warehouse system, Major issues in Data Mining.  Major issues in Data Mining		T1
5		1	<b>Data Preprocessing</b> : Needs Preprocessing the data,		T1
6		1	Data cleaning,		T1
7		2	Data integration and Transformation		T1
8		1	Data Reduction		T1
9		2	Discretization and Concept Hierarchy Generation.		T1

Signature of Faculty  
Date

- Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.  
2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.  
3. MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	<b>SCHEDULE OF INSTRUCTIONS</b>  <b>UNIT - II</b>	2015-16
		Regulation: R11

**FACULTY DETAILS:**

Name of the Faculty:: G Sreenivasulu

Designation: Associate Professor

Department:: Computer Science & Engineering

The Schedule for the whole Course / Subject is:: DATA MINING & DATA WAREHOUSING

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1		3	Data Warehouse and OLAP Technology for Data Mining Data Warehouse		T1
2		2	Multidimensional Data Model		T1
3		3	Data Warehouse implementation, Data Warehouse Architecture		T1
4		2	Further Development of data cube technology		T1
5		1	From data warehousing to data mining		T1


**T1.** Data Mining: Concepts and Techniques, 3rd Edition. Jiawei Han, Micheline Kamber, Jian Pei.  
Database Modeling and Design: Logical Design, 5th Edition

Signature of Faculty  
Date

**Note:** 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.

2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.

MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	<b>SCHEDULE OF INSTRUCTIONS</b>  <b>UNIT - III</b>	2015-16
		Regulation: R11

**FACULTY DETAILS:**

Name of the Faculty:: G Sreenivasulu  
Designation: Associate Professor  
Department:: Computer Science & Engineering

The Schedule for the whole Course / Subject is::

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1		1	Mining Frequent patterns, Mining		T1
2		1	Associations and Correlations: Basic concepts,		T1
3		2	Efficient and scalable frequent item set mining methods, various kinds of association rules,		T1
4		2	from association mining to correlation analysis, Constraint-Based association mining		T1


**T1.** Data Mining: Concepts and Techniques, 3rd Edition. Jiawei Han, Micheline Kamber, Jian Pei.  
Database Modeling and Design: Logical Design, 5th Edition

Signature of Faculty  
Date

**Note:** 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.

2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.

MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	<b>SCHEDULE OF INSTRUCTIONS</b>  <b>UNIT - IV</b>	2015-16
		Regulation: R11

**FACULTY DETAILS:**

Name of the Faculty:: G Sreenivasulu  
Designation: Associate Professor  
Department:: Computer Science & Engineering

The Schedule for the whole Course / Subject is::

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1		1	<b>Classification and Prediction:</b> Issues regarding Classification and Prediction, , Other classification methods, ,		T1
2		1	Classification by Decision Tree Induction,		T1
3		2	Bayesian Classification, Rule based classification,		T1
4		2	Support vector machines, Associative classification,		T1
5		1	Classification by Back propagation, Lazy learners		T1
6		1	Prediction, Accuracy and Error measures		T1
7		1	Evaluating the accuracy of a classifier or a Predictor, Ensemble methods		T1


**T1.** Data Mining: Concepts and Techniques, 3rd Edition. Jiawei Han, Micheline Kamber, Jian Pei.  
Database Modeling and Design: Logical Design, 5th Edition

Signature of Faculty  
Date

**Note:** 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.

2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.

MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	<b>SCHEDULE OF INSTRUCTIONS</b>  <b>UNIT - V</b>	2015-16
		Regulation: R11

**FACULTY DETAILS:**

Name of the Faculty:: G Sreenivasulu  
Designation: Associate Professor  
Department:: Computer Science & Engineering


The Schedule for the whole Course / Subject is::

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ____ to ____
1		1	<b>Cluster Analysis Introduction:</b> Types of data in Cluster Analysis, -		T1
2		1	A Categorization of Major Clustering Methods		T1
3		2	Partitioning Methods, Density-Based Methods,		T1
4		1	Grid-Based Methods,		T1
5		1	, Model-Based Methods,		T1
6		1	Clustering high dimensional data,		T1
7		1	Constraint Based cluster analysis,		T1
8		1	Outlier Analysis.		T1

**T1.** Data Mining: Concepts and Techniques, 3rd Edition. Jiawei Han, Micheline Kamber, Jian Pei.  
Database Modeling and Design: Logical Design, 5th Edition

Signature of Faculty  
Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.  
2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.  
MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	<b>SCHEDULE OF INSTRUCTIONS</b>  <b>UNIT - VI</b>	2015-16
		Regulation: R11

**FACULTY DETAILS:**

Name of the Faculty:: G Sreenivasulu  
Designation: Associate Professor  
Department:: Computer Science & Engineering

The Schedule for the whole Course / Subject is::

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1		1	Mining Streams,		T1
2		1	Time Series and Sequence data: Mining data streams,		T1
3		1	Mining Time series data, Mining Sequence patterns in Transactional databases		T1
4		1	Mining sequence patterns in Biological data,.		T1
5		1	Graph mining,		T1
6		1	social network analysis and multirelational data mining		T1

**T1.** Data Mining: Concepts and Techniques, 3rd Edition. Jiawei Han, Micheline Kamber, Jian Pei.  
Database Modeling and Design: Logical Design, 5th Edition


Signature of Faculty  
Date

**Note:** 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.

2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.

MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.



	<b>SCHEDULE OF INSTRUCTIONS</b>  <b>UNIT - VII</b>	2015-16
		Regulation: R11

**FACULTY DETAILS:**

Name of the Faculty:: G Sreenivasulu  
Designation: Associate Professor  
Department:: Computer Science & Engineering


The Schedule for the whole Course / Subject is::

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1		2	<b>Mining Objects, Spatial, Multimedia,</b>		T1
2		1	<b>Text and Web Data:</b> Multidimensional Analysis and		T1
3		1	Descriptive Mining of Complex,		T1
4		1	Data Objects, Mining Spatial Data mining,		T1
5		1	Mining Multimedia Data, Mining Text Data, Mining the world Wide Web		T1

**T1.** Data Mining: Concepts and Techniques, 3rd Edition. Jiawei Han, Micheline Kamber, Jian Pei.  
Database Modeling and Design: Logical Design, 5th Edition

Signature of Faculty  
Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.  
2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.  
MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	<b>SCHEDULE OF INSTRUCTIONS</b>  <b>UNIT - VIII</b>	2015-16
		Regulation: R11

**FACULTY DETAILS:**

Name of the Faculty:: G Sreenivasulu  
Designation: Associate Professor  
Department:: Computer Science & Engineering

The Schedule for the whole Course / Subject is::

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1		1	Applications and Trends in Data Mining: Data Mining applications,		T1
2		1	Data Mining system products and Research Prototype,		T1
3		1	additional Themes on data mining and		T1
4		1	social impacts of data mining.		T1

Signature of Faculty  
Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.

2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.

MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	<b>COURSE COMPLETION STATUS</b>	2015-16
		Regulation: R11

**FACULTY DETAILS:**

Name of the Faculty:: G Sreenivasulu

Subject:: Associate Professor

Subject Code: 6756055

Department:: Computer Science & Engineering

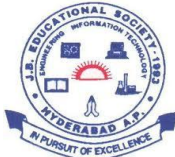
Actual Date of Completion & Remarks, if any

Units	Remarks	Nos. of Objectives Achieved
Unit 1	No	10
Unit 2	No	8
Unit 3	No	6
Unit 4	No	8
Unit 5	No	9
Unit 6	No	6
Unit 7	No	5
Unit 8	No	4

**Signature of Dean of School**  
Date:

**Signature of Faculty**  
Date:

NOTE: AFTER THE COMPLETION OF EACH UNIT MENTION THE NUMBER OF OBJECTIVES ACHIEVED.

	<b>TUTORIAL SHEETS - I</b>	2015-16
		Regulation: R11

**FACULTY DETAILS:**

Name of the Faculty:: G Sreenivasulu  
 Designation: Associate Professor  
 Department:: Computer Science & Engineering  
 The Schedule for the whole Course / Subject is:: DATA MINING & DATA WAREHOUSING

Date:11/2/13

This Tutorial corresponds to Unit Nos.1, 2, 3&4

Time:2:40

Q1. What is Data Mining? Explain the steps in Knowledge Discovery?

Q2. Explain in detail about the data mining functionalities.

Q3. With a neat sketch explain the architecture of a data warehouse

Q4. Explain the apriori algorithm with an example for finding frequent item sets.

Q5. Explain with an example the various steps in Decision tree induction.

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the objectives to which these questions / Problems are related.

**Signature of Dean of School**  
**Date:**

**Signature of Faculty**  
**Date:**



## TUTORIAL SHEETS - II

2015-16

Regulation: R11

### FACULTY DETAILS:

Name of the Faculty:: G Sreenivasulu  
Designation: Associate Professor  
Department:: Computer Science & Engineering  
The Schedule for the whole Course / Subject is:: DATA MINING & DATA WAREHOUSING

ate:

This Tutorial corresponds to Unit Nos.5,6,7&8

Time:

1. With a neat sketch explain the architecture of a data warehouse ?
2. Explain mapping the data warehouse to a multi-processor Architecture ?
3. Explain various methods of data cleaning in detail ?
4. Discuss in detail about Bitmapped Indexing ?
5. Explain about OLAP in detail ?
6. Discuss about the Reporting and query tools and applications ?
7. Discuss about the OLAP tools and the Internet ?
8. Explain Multidimensional Data model ?
9. Discuss how computations can be performed efficiently on data cubes ?
10. With relevant examples discuss multidimensional online analytical processing and multi-relational online analytical processing ?
11. How data mining system are classified? Discuss each classification with an example ?
12. Describe in detail about Interestingness of patterns ?
13. Discuss about different types of data and functionalities ?
14. How data mining system can be integrated with a data warehouse? Discuss with an example. ?
15. Describe the multi-dimensional association rule, giving a suitable example ?
16. Develop an algorithm for classification using Bayesian classification. Illustrate the algorithm with a relevant example. ?
17. Write and explain the algorithm for mining frequent item sets without candidate generation. Give relevant example ?
18. Discuss the approaches for mining multi-level association rules from the transactional databases. Give relevant example ?
19. Explain the various clustering methods in detail ?
20. What is a multimedia database? Explain the methods of mining multimedia database? ?

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the objectives to which these questions / Problems are related.

Signature of Dean of School  
Date:

Signature of Faculty  
Date:



## TUTORIAL SHEETS - II

2015-16

	<b>ILLUSTRATIVE VERBS FOR STATING INSTRUCTIONAL OBJECTIVES</b>	2015-16
		Regulation: R11

*These verbs can also be used while framing questions for Continuous Assessment Examinations as well as for End – Semester (final) Examinations.*

#### ILLUSTRATIVE VERBS FOR STATING GENERAL OBJECTIVES


Know Comprehend	Understand Apply	Analyze Design	Generate Evaluate
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#### ILLUSTRATIVE VERBS FOR STATING SPECIFIC OBJECTIVES:

##### **A. Cognitive Domain**

1	2	3	4	5	6
Knowledge	Comprehension Understanding	Application of knowledge & comprehension	Analysis of whole w.r.t. its constituents	Synthesis combination of ideas/constituents	Evaluation judgement
Define Identify Label List Match Reproduce Select State	Convert Defend Describe (a procedure) Distinguish Estimate Explain why/how Extend Generalize Give examples Illustrate Infer Summarize	Change Compute Demonstrate Deduce Manipulate Modify Predict Prepare Relate Show Solve	Breakdown Differentiate Discriminate Distinguish Separate Subdivide	Categorize Combine Compile Compose Create Devise Design Generate Organize Plan Rearrange Reconstruct Reorganize Revise	Appraise Compare Conclude Contrast Criticize Justify Interpret Support

B. Affective Domain		C. Psychomotor Domain (skill development)				
Adhere	Resolve	Bend	Dissect	Insert	Perform	Straighten
Assist	Select	Calibrate	Draw	Keep	Prepare	Strengthen
Attend	Serve	Compress	Extend	Elongate	Remove	Time
Change	Share	Conduct	Feed	Limit	Replace	Transfer
Develop		Connect	File	Manipulate	Report	Type
Help		Convert	Grow	Move precisely	Reset	Weigh
Influence		Decrease	Handle	Operate	Run	
Initiate		Demonstrate	Increase	Paint	Set	

	<b>LESSON PLAN</b> <b>Unit-1</b>	2015-16
		Regulation: R11

Name of the Faculty: G Sreenivasulu

Subject DATA MINING & DATA WAREHOUSING

Subject Code 6756055

Unit I

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Introduction to Data Mining	50min	T1,RB1	Black board
2,3	Fundamentals of Data Mining, KDD process	100min	T1,RB1	Black board
4	Classification of Data Mining System	50min	T1,RB1	Black board
5,6	<b>Data Mining Task Primitives</b> , Integration of data mining system with a database or data warehouse system,	100min	T1,RB1	Black board
7,8	Major issues in Data Mining.	100min	T1,RB1	Black board
9	<b>Data Preprocessing:</b> Needs Preprocessing the data,	50min	T1,RB1	Black board
10	Data cleaning,	50min	T1,RB1	Black board
11,12	Data integration and Transformation	100min	T1,RB1	Black board
13	Data Reduction	50min	T1,RB1	Black board
14,15	Discretization and Concept Hierarchy Generation.	100min	T1,RB1	Black board

On completion of this lesson the student shall be able to(Outcomes)

1. Learn the concepts of database technology evolutionary path which has led to the need for data mining and its applications
2. Examine the types of the data to be mined and present a general classification of tasks and primitives to integrate a data mining system
3. Apply preprocessing statistical methods for any given raw data





**ASSIGNMENT**  
**Unit-I**

2015-16


Regulation: R11

**Assignment / Questions**

1. What are the steps involved in KDD process?
2. What is the purpose of Data mining Technique
3. List the different coupling schemes used in a data mining system

**Signature of Faculty**

Note: Mention for each question the relevant objectives and outcomes.

	<b>LESSON PLAN</b> <b>Unit-II</b>	2015-16
		Regulation: R11

Name of the Faculty: G Sreenivasulu

Subject DATA MINING & DATA WAREHOUSING

Subject Code 6756055


**Unit II**

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
18	Data Warehouse and OLAP Technology for Data Mining Data Warehouse	150min	T1,RB1	Black board
20	Multidimensional Data Model	100min	T1,RB1	Black board
23	Data Warehouse implementation, Data Warehouse Architecture	150min	T1,RB1	Black board
25	Further Development of data cube technology	100min	T1,RB1	Black board
26	From data warehousing to data mining	50min	T1,RB1	Black board

On completion of this lesson the student shall be able to

1. Explore DWH
2. Explain OLAP and devise efficient & cost effective methods for maintaining DWHs.


	<b>ASSIGNMENT</b> <b>Unit-II</b>	2015-16
		Regulation: R11

### Assignment / Questions

1. Draw and explain the architecture of typical data mining system.
2. List out the differences between OLTP and OLAP.
3. Explain the design and construction of a data warehouse.
4. Explain the three-tier data warehouse architecture

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Note: Mention for each question the relevant objectives and outcomes.

	<b>LESSON PLAN</b> <b>Unit-III</b>	2015-16
		Regulation: R11

Name of the Faculty: G Sreenivasulu

Subject DATA MINING & DATA WAREHOUSING

Subject Code 6756055


**Unit III**

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
27	Mining Frequent patterns, Mining	50min	T1,RB1	Black board
28	Associations and Correlations: Basic concepts,	50min	T1,RB1	Black board
30	Efficient and scalable frequent item set mining methods, various kinds of association rules,	100min	T1,RB1	Black board
32	from association mining to correlation analysis, Constraint-Based association mining	100min	T1,RB1	Black board

On completion of this lesson the student shall be able to(Outcomes)

1. Discover interesting patterns from large amounts of data to analyze and extract patterns to solve problems , make predictions of outcomes.
2. Comprehend the roles that data mining plays in various fields and manipulate different data mining techniques
3. Select and apply proper data mining algorithms to build analytical applications.


	<b>ASSIGNMENT</b> <b>Unit-III</b>	2015-16
		Regulation: R11

### Assignment / Questions

1. Compare and Contrast the differences between mining multilevel association rules from transaction databases and relational databases.
2. What is meant by constraint-based association mining? Explain in brief.
3. How are association rules mined from large databases? Explain

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Note: Mention for each question the relevant objectives and outcomes.

	<b>LESSON PLAN</b> <b>Unit-IV</b>	2015-16
		Regulation: R11

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Subject DATA MINING & DATA WAREHOUSING  
Unit IV


Subject Code 6756055

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
33	<b>Classification and Prediction:</b> Issues regarding Classification and Prediction, , Other classification methods, ,	50min	T1,RB1	Black board
34	Classification by Decision Tree Induction,	50min	T1,RB1	Black board
36	Bayesian Classification, Rule based classification,	100min	T1,RB1	Black board
38	Support vector machines, Associative classification,	100min	T1,RB1	Black board
39	Classification by Back propagation, Lazy learners	50min	T1,RB1	Black board
40	Prediction, Accuracy and Error measures	50min	T1,RB1	Black board
41	Evaluating the accuracy of a classifier or a Predictor, Ensemble methods	50min	T1,RB1	Black board

On completion of this lesson the student shall be able to (Outcomes)

1. classification and regression trees, the C4.5 algorithm, logistic Regression, *k*-nearest neighbor, multiple regression, and neural networks
2. Evaluate systematically supervised and unsupervised models and algorithms w.r.t their accuracy.
3. Develop practical work of DM techniques and design hypotheses based on the analysis to conceptualize a DM solution to a practical problem.

	<b>ASSIGNMENT</b> <b>Unit-IV</b>	2015-16
		Regulation: R11

### Assignment / Questions

1. What are the issues regarding classification and prediction
2. How scalable is decision tree induction? Explain
3. Discuss the various measures available to judge a classifier.
4. Give a note on naive Bayesian classifier
5. Explain the classification method by back propagation

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Note: Mention for each question the relevant objectives and outcomes.

	<b>LESSON PLAN</b> <b>Unit-V</b>	2015-16
		Regulation: R11

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Subject DATA MINING & DATA WAREHOUSING

Subject Code 6756055

Unit V

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
42	<b>Cluster Analysis Introduction:</b> Types of data in Cluster Analysis, -	50min	T1,RB1	Black board
43	A Categorization of Major Clustering Methods	50min	T1,RB1	Black board
45	Partitioning Methods, Density-Based Methods,	100min	T1,RB1	Black board
46	Grid-Based Methods,	50min	T1,RB1	Black board
47	, Model-Based Methods,	50min	T1,RB1	Black board
48	Clustering high dimensional data,	50min	T1,RB1	Black board
49	Constraint Based cluster analysis,	50min	T1,RB1	Black board
50	Outlier Analysis.	50min	T1,RB1	Black board


On completion of this lesson the student shall be able to (Outcomes)

1. Understand and apply a wide range of clustering, estimation, prediction, and classification algorithms, including *k*-means clustering, BIRCH clustering
2. Define the following terms: divisive; agglomerative, monothetic, polythetic, distance.
3. Explain the difference between a hierarchical and a non-hierarchical classification.
4. Choose an appropriate distance measure.
5. Decide if data should be standardized before measuring distance.
6. Explain the differences between cluster algorithms based on averages, distances, similarity and variance.
7. Interpret the relationships between cases from a dendrogram.
8. Judge the quality of a classification.
9. Select alternative clustering solutions that are likely to improve the usefulness of an analysis.

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	<b>ASSIGNMENT</b> <b>Unit-V</b>	2015-16
		Regulation: R11

### Assignment / Questions

1. What is meant by cluster analysis? Describe the major clustering methods.
2. Explain competitive learning and self organizing feature maps methods to clustering.
3. Discuss in detail BIRCH algorithm.

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Note: Mention for each question the relevant objectives and outcomes.

	<b>LESSON PLAN</b> <b>Unit-VI</b>	2015-16
		Regulation: R11

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Subject DATA MINING & DATA WAREHOUSING

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**Unit VI**

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
51	Mining Streams,	50min	T1,RB1	Black board
52	Time Series and Sequence data: Mining data streams,	50min	T1,RB1	Black board
53	Mining Time series data, Mining Sequence patterns in Transactional databases	50min	T1,RB1	Black board
54	Mining sequence patterns in Biological data,.	50min	T1,RB1	Black board
55	Graph mining,	50min	T1,RB1	Black board
56	social network analysis and multi relational data mining	50min	T1,RB1	Black board

On completion of this lesson the student shall be able to (Outcomes)

1. plan an investigation
2. be able to display time series data
3. discuss the components and features of time series distributions
4. compare features of different time series distributions
5. report the results of a statistical investigation concisely and coherently

	<b>ASSIGNMENT</b> <b>Unit-VI</b>	2015-16
		Regulation: R11

### Assignment / Questions

#### 1. Define The following:

- a. Time series
- b. Sequence data

#### 2. a. Explain the sequence patterns in Transactional database


- b. Explain the sequence patterns in Biological databases

#### 3. Differentiates the following:

- a. Graph mining
- b. Social network analysis
- c. Multirelational data mining

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Note: Mention for each question the relevant objectives and outcomes.

	<b>LESSON PLAN</b> <b>Unit-VII</b>	2015-16
		Regulation: R11

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Unit VII

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
58	<b>Mining Objects, Spatial, Multimedia,</b>	<b>100min</b>	<b>RB1,T1</b>	Black board
59	<b>Text and Web Data:</b> Multidimensional Analysis and	<b>50min</b>	<b>RB1,T1</b>	Black board
60	Descriptive Mining of Complex,	<b>50min</b>	<b>RB1,T1</b>	Black board
61	Data Objects, Mining Spatial Data mining,	<b>50min</b>	<b>RB1,T1</b>	Black board
62	Mining Multimedia Data, Mining Text Data, Mining the world Wide Web	<b>50min</b>	<b>RB1,T1</b>	Black board

On completion of this lesson the student shall be able to

1. Knowing the principles and requirements underlying spatial data and the management of such data in different application domains (e.g., geography, biology, cosmology) •
2. Knowing the concepts and applications related to geographic information systems
3. Be able to apply concepts and techniques for modelling spatial data
4. Be familiar with the management and querying spatial data using a spatial database management system (e.g., PostGIS)
5. Knowing fundamental methods of computational geometry
6. Knowing important index structures for spatial data such as the grid-file, kd-tree, Quad-tree, and R-tree.
7. Be familiar with multimedia data types and the conversion between analogue and digital forms.
8. Have gained experience in the use of multimedia systems and the ability to manipulate multimedia data programmatically.
9. Have gained an understanding of the issues that arise when multimedia communication is attempted across the Internet.
10. Understand the issues that arise when designing and building multimedia systems.

	<b>ASSIGNMENT</b> <b>Unit-VII</b>	2015-16
		Regulation: R11

### Assignment / Questions

1. Write short notes on the following:
  - a. Spatial data
  - b. Multimedia data
  - c. Text data
  - d: WWW

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Note: Mention for each question the relevant objectives and outcomes.

	<b>LESSON PLAN</b> <b>Unit-VIII</b>	2015-16
		Regulation: R11

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Subject DATA MINING & DATA WAREHOUSING

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**Unit VIII**

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
63	Applications and Trends in Data Mining: Data Mining applications,	50min	RB1,T1	Black board
65	Data Mining system products and Research Prototype,	100min	RB1,T1	Black board
66	additional Themes on data mining and	50min	RB1,T1	Black board
67	social impacts of data mining.	50min	RB1,T1	Black board

On completion of this lesson the student shall be able to

1. Understand and apply the most current data mining techniques and applications, such as text mining, mining genomics data, and other current issues
2. Understand and apply the most current data mining techniques and trends for future

	<b>ASSIGNMENT</b> <b>Unit-VIII</b>	2015-16
		Regulation: R11

### Assignment / Questions

1. What are the applications in data mining? Explain with example
2. Discuss various ways to estimate the trend
3. Explain the additional themes and social impacts on data mining.

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Note: Mention for each question the relevant objectives and outcomes.