LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)
Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : CH.Srinivasa Rao
Course Name & Code : Adhoc Networks & 17CO05
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : M.Tech., CSE.,I-Sem., Sections- A A.Y : 2018-19

Pre-requisites: Fundamentals of Computer Networks

Course Objectives:

- To enable student to understand fundamentals of networks, types and challenges of adhoc networks.
- To understand various adhoc routing protocols
- To understand multicast routing in adhoc networks
- To understand the transport layer issues and security protocols
- To understand issues in providing QoS.

1. **Course Outcomes (COs):**At the end of the course, the student will be able to :

CO1:	understand the state -of-the art in network protocols,architectures and applications
CO2:	alyze existing network protocols and networks
CO3:	velop new protocols in networking
CO4:	understand how networking researching is done
CO5:	To investigate novel ideas in the area of networking via term-long research projects

COURSE ARTICULATION MATRIX (Correlation between COs&POs,PSOs):

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	-	-	2	-	-	1	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
CO3	-	-	3	-	2	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	2	-	2	-	-	-	-	-	-	-	-	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**

1- Slight (Low), **2 -** Moderate (Medium), **3 -** Substantial (High).

BOS APPROVED TEXT BOOKS:

T1 C. Siva Ram Murthy and B.S.Manoj,"Ad Hoc Wireless Networks Architectures and Protocols"Prentice Hall, PTR 1904.

BOS APPROVED REFERENCE:

R1 C .K. Toh,"Ad Hoc Wireless Networks Protocols andSystems",Prentice Hall, PTR 1901.

R2 Charles E Perkins, "Ad Hoc Networking", Addison Wesley 1902.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Discussion of Cos and CEOs of the course	1	23/9/18		**TLM1**	CO1	T1	
2.	Introduction to Ad Hoc wireless Networks	1	25/9/18		**TLM1**	CO1	T1	
3.	Fundamentals of Wireless communication Technology	1	26/9/18		**TLM1**	CO1	T1	
4.	The Electromagnetic Spectrum	1	30/9/18		**TLM1**	CO1	T1	
5.	Radio Propagation Mechanisms	1	02/10/18		**TLM1**	CO1	T1	
6.	Characteristics of the Wireless Channel	1	03/10/18		**TLM1**	CO1	T1	
7.	IEEE 802.11a–b Standard	1	03/10/18		**TLM1**	CO1	T1	
8.	Origin of Ad hoc Packet Radio Networks	1	07/10/18		**TLM1**	CO1	T1	
9.	Technical Challenges	1	09/10/18		**TLM1**	CO1	T1	
10.	Components of Packet Radios.	1	10/10/18		**TLM1**	CO1	T1	
11.	What is an Ad Hoc Network? Heterogeneity in Mobile Devices	1	14/10/18		**TLM1**	CO1	T1	
12.	Wireless Sensor Networks, Guide Transmission Media: Magnetic Media	1	16/10/18		**TLM1**	CO1	T1	
13.	Traffic Profiles – Types of Ad Hoc Mobile Communications	1	17/10/18		**TLM1**	CO1		
14.	Types of Mobile Host Movements	1	17/10/18		**TLM1**	CO1		
15.	Challenges Facing Ad hoc Mobile Networks	1	21/10/18		**TLM1**	CO1		
16.	Ad hoc wireless Internet.	1	21/10/18		**TLM1**	CO1		
17.	**Tutorial-1**		21/10/18		**TLM3**	CO1		
18.	**Assignment Test-1**		21/10/18		**TLM6**	CO1	T1	
No. of classes required to complete UNIT-I		16			No. of classes taken:			

UNIT-II:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
19.	Introduction to Ad Hoc routing protocols	1	23/10/18		**TLM1**	CO2	T1	
20.	Issues in Designing a Routing Protocol for Ad Hoc Wireless Networks	1	24/10/18		**TLM1**	CO2	T1	
21.	Classifications of Routing Protocols	1	24/10/18		**TLM1**	CO2	T1	
22.	Table–Driven Routing Protocols,	1	30/10/18		**TLM1**	CO2	T1	
23.	Destination Sequenced Distance Vector (DSDV)	1	31/10/18		**TLM1**	CO2	T1	
24.	Wireless Routing Protocol (WRP)	1	31/10/18		**TLM1**	CO2	T1	
25.	Cluster Switch Gateway Routing (CSGR)	1	04/11/18		**TLM1**	CO2	T1	
26.	Ad hoc On–Demand Distance Vector Routing (AODV)	1	06/11/18		**TLM1**	CO2	T1	
27.	Ad hoc On–Demand Distance Vector Routing (AODV)	1	07/11/18		**TLM1**	CO2	T1	
28.	Temporally Ordered Routing Algorithm ((TORA)	1	07/11/18		**TLM1**	CO2	T1	
29.	Signal Stability Routing (SSR)	1	11/11/18		**TLM1**	CO2	T1	
30.	Location–Aided Routing (LAR)	1	13/11/18		**TLM1**	CO2	T1	
31.	Power–Aware Routing (PAR) , Zone Routing Protocol (ZRP).	1	14/11/18			CO2	T1	
32.	**Tutorial-2**		14/11/18		**TLM3**	CO2	T1	
33.	**Assignment Test-2**		14/11/18		**TLM6**		T1	
No. of classes required to complete UNIT-II		13			No. of classes taken:			

UNIT-III:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
34.	Introduction to Multicasting routing protocols	1	14/11/18		**TLM1**	CO3	T1	
35.	Issues in Designing	1	25/11/18		**TLM1**	CO3	T1	

	a Multicast Routing Protocols							
36.	Operation of Multicast Routing Protocols	1	27/11/18		**TLM1**	CO3	T1	
37.	An Architecture Reference Model for multicast Routing Protocols	1	28/11/18		**TLM1**	CO3	T1	
38.	Classifications of Multicast Routing Protocols	1	28/11/18		**TLM1**	CO3	T1	
39.	Tree–Based Multicast Routing Protocols	1	02/12/18		**TLM1**	CO3	T1	
40.	Mesh–Based Multicast Routing Protocols	1	04/12/18		**TLM1**	CO3	T1	
41.	Summary of Tree and Mesh based Protocol.	1	05/12/18		**TLM1**	CO3	T1	
42.	Energy–Efficient Multicasting.	1	05/12/18		**TLM1**	CO3	T1	
43.	Multicasting with Quality of Service Guarantees.	1	09/12/18		**TLM1**	CO3	T1	
44.	Application – dependent Multicast Routing.	1	11/12/18		**TLM1**	CO3	T1	
45.	Comparisons of Multicast Routing Protocols.	1	12/12/18		**TLM1**	CO3	T1	
46.	**Tutorial-3**		12/12/18		**TLM3**	CO3	T1	
47.	**Assignment Test-3**		12/12/18		**TLM6**	CO3	T1	
No. of classes required to complete UNIT-III		12			No. of classes taken:			

UNIT-IV:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
48.	Introduction – Issues in Designing a Transport Layer Protocol for Ad hoc Networks.	1	16/12/18		**TLM1**	CO4	T1	
49.	Design Goals of a Transport Layer Protocol for Ad hoc Wireless Networks	1	18/12/18		**TLM1**	CO4	T1	
50.	Classification of Transport Layer Solutions	2	18/12/18		**TLM1**	CO4	T1	
51.	TCP over Ad hoc Wireless Networks	1	18/12/18		**TLM1**	CO4	T1	

52.	Other Transport Layer Protocols for Ad hoc Wireless Networks	1	23/12/18		**TLM1**	CO4	T1	
53.	Security in Ad Hoc Wireless Networks	1	26/12/18		**TLM1**	CO4	T1	
54.	Network Security requirements	1	30/12/18		**TLM1**	CO4	T1	
55.	Issues and Challenges in Security provisions.	1	02/01/19		**TLM1**	CO4	T1	
56.	Network Security Attacks.	1	02/01/19		**TLM1**	CO4	T1	
57.	Secure Routing in Ad hoc Wireless Networks.	1	06/01/19		**TLM1**	CO4	T1	
58.	**Tutorial-4**		08/01/19		**TLM3**	CO4	T1	
59.	**Assignment Test-4**		08/01/19		**TLM6**	CO4	T1	
No. of classes required to complete UNIT-IV		10			No. of classes taken:			

UNIT-V:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
60.	Introduction to QoS	1	09/01/19		**TLM1**	CO5	T1	
61.	Issues and Challenges in Providing QoS.	1	09/01/19		**TLM1**	CO5	T1	
62.	MAC Layer Solutions	1	17/01/19		**TLM1**	CO5	T1	
63.	Classifications of QoS,Network Solutions	1	17/01/19		**TLM1**	CO5	T1	
64.	Networks Energy Management in Ad hoc Wireless Networks	1	19/01/19		**TLM1**	CO5	T1	
65.	Need for Energy Management in Ad hoc Wireless Network security	1	22/01/19		**TLM1**	CO5	T1	
66.	Classification of Energy Management Schemes, Battery Management Schemes	1	23/01/19		**TLM1**	CO5	T1	
67.	System-Power Management Schemes	1	23/01/19		**TLM1**	CO5	T1	
68.	**Tutorial-5**		24/01/19		**TLM3**	CO5	T1	
69.	**Assignment Test-5**		24/01/19		**TLM6**	CO5		
No. of classes required to complete UNIT-V		8			No. of classes taken:			

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
7	IP address classes	1	25/01/19		**TLM1**			
7	VLSM in IP addressing	1	25/01/19		**TLM1**			
7	HSRP protocol	1	25/01/19		**TLM1**			

Teaching Learning Methods					
TLM1	Chalk and Talk	**TLM4**	Problem Solving	**TLM7**	Seminars or GD
TLM2	PPT	**TLM5**	Programming	**TLM8**	Lab Demo
TLM3	Tutorial	**TLM6**	Assignment or Quiz	**TLM9**	Case Study

LESSON PLAN

Department: CSE **Program: M.Tech.**
Course: - Android Technologies
SEM: I **Academic Year: 2018-19**

1. **Pre-requisites:** Object Oriented Programming

2. **Course Educational Objectives (CEOs):**

   - This course introduces mobile application development on the Android platform. Students will be imparted with the skills for creating and deploying Android applications, with particular emphasis on components and concepts that define the Android platform.

3. **Course Outcomes (COs):** At the end of the course, the student will be able to:

   - To develop basic android applications
   - To develop moderate android applications
   - To develop android applications that interact with SQLite databas

4. **Course Delivery Plan:**

S.NO	TOPIC TO BE COVERED	No.of Classes		Date	DM
		As per the	Taken		
Unit-1 Introduction to Android Operating System:					
1	Develop an application that uses GUI components, Font and Colors. Develop an application that uses Layout Managers and event listeners.	1			5
2	Develop a native calculator application.	1			5
3	Write an application that draws basic graphical primitives on the screen.	1			5
4	Develop an application that makes use of database.	1			5
5	Develop an application that makes use of RSS Feed.	1			5
6	Implement an application that implements Multi-threading.	1			5
7	Develop a native application that uses GPS location information.	1			5
8	Implement an application that writes data to the SD card.	1			5

9	Implement an application that creates an alert upon receiving a message.	**1**			5
10	Write a mobile application that creates alarm clock	**1**			5
11	Internal Test-1				4
Number of classes		**11**			

Delivery Methods (DM):

1. Chalk & Talk 2. ICT Tools 3. Tutorial 4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Signature				
Name of the Faculty				

PRINCIPAL

	LESSON PLAN
	Department: CSE **Program: M.Tech.** **Course:** - Android Technologies **SEM: I** **Academic Year: 2018-19**

1. **Pre-requisites:** Object Oriented Programming

2. **Course Educational Objectives (CEOs):**

   - This course introduces mobile application development on the Android platform. Students will be imparted with the skills for creating and deploying Android applications, with particular emphasis on components and concepts that define the Android platform.

3. **Course Outcomes (COs):** At the end of the course, the student will be able to:

   - CO1: To express their understanding of the fundamentals of Android Platform
   - CO2: To apply their skills of User Interface Components to develop basic UI for Android Apps
   - CO3: To distinguish important components of Android Platform
   - CO4: To develop android applications that interacts with SQLite Database
   - CO5: To understand the advanced concepts in Android Platform

4. **Course Delivery Plan:**

S.NO	TOPIC TO BE COVERED	No.of Classes		Date	DM
		As per the	Taken		
Unit-1 Introduction to Android Operating System:					
1	Android OS design and Features - Android development framework, SDK features, Installing and running applications on Eclipse	1			1,2
2	Creating AVDs, Types of Android applications, Best practices in Android	1			1,2
3	Android tools Android application components - Android Manifest file, Externalizing resources like values, themes, layouts, Menus etc.,	1			1,2
4	Resources for different devices and languages,	1			1,2
5	Runtime Configuration Changes	1			1,2
6	Application Lifecycle - Activities, Activity lifecycle,	1			1,2

7	activity states, monitoring state changes	1			1,2
8	Tutorial-1	1			3
9	Class Test-1	1			4
Number of classes		9			
Unit-II Android User Interface:					
10	Device and pixel density independent measuring units Layouts	1			1,2
11	-Linear, Relative, Grid and Table Layout	1			1,2
12	User Interface (UI) Components - Editable and non-editable Text Views, Buttons, Radio and Toggle Buttons, Checkboxes, Spinners, Dialog and pickers	1			1,2
13	Event Handling - Handling clicks or changes of various UI components	1			1,2
14	Fragments - Creating fragments, Lifecycle of fragments, Fragment states, Adding fragments to Activity,	1			1,2
15	adding, removing and replacing fragments with fragment transactions,	1			1,2
16	interfacing between fragments and Activities, Multi-screen Activities	1			1,2
17	Tutorial-2	1			3
18	Class Test-2	1			4
Number of classes		**9**			
Unit -III Intents and Broadcasts:					
19	Using intents to launch Activities, Explicitly starting new Activity, Implicit Intents,	1			1,2
20	Passing data to Intents, Getting results from Activities, Native Actions,	1			1,2
21	using Intent to dial a number or to send SMS	1			1,2
22	Broadcast Receivers - Using Intent filters to service implicit Intents,	1			1,2
23	Resolving Intent filters, finding and using Intents received within an Activity	1			1,2
24	Notifications - Creating and Displaying notifications, Displaying Toasts.	1			1,2
25	Tutorial-3	1			3

26	Class Test-3	1			4
Number of classes		8			
Unit - IV Persistent Storage:					
27	Files - Using application specific folders and files, creating files,	1			1,2
28	reading data from files, reading data from files	1			1,2
29	Shared Preferences - Creating shared preferences, saving and retrieving data using Shared Preference	1			1,2
30	Database - Introduction to SQLite database, creating and opening a database	1			1,2
31	creating tables, inserting, retrieving and deleting data,	1			1,2
32	Registering Content Providers	1			1,2
33	Using content Providers (insert, delete, retrieve and update)	1			1,2
34	Tutorial-4	1			3
35	Class Test-4	1			4
Number of classes		9			
Unit - V Advanced Topics:					
36	Alarms - Creating and using alarms	1			1,2
37	Using Internet Resources - Connecting to internet resource, using download manager,	1			1,2
38	Location Based Services - Finding Current Location and showing location on the Map,	1			1,2
39	updating location	1			1,2
40	Tutorial-5	1			3
41	Class Test-5	1			4
Number of classes		6			
Total Number of classes		**41**			

Delivery Methods (DM):

1. Chalk & Talk 2. ICT Tools 3. Tutorial 4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

	Course Instructor	Course Coordinator	Module Coordinator	HOD
Signature				
Name of the Faculty				

PRINCIPAL

COURSE HANDOUT

Part-A

PROGRAM : **M**.Tech., I-Sem., CSE

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : Seminar

L-T-P STRUCTURE : 3-1-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : **B. Sivaramakrishna**

COURSE COORDINATOR :

PRE-REQUISITES:

COURSE EDUCATIONAL OBJECTIVES (CEOs) : This course provides the knowledge on understand cloud environment with Improved background to understand complex business environments and Increased ability to learn new technology (like fog computing.) so student can Better understanding of storage and access of information both locally and remotely, and Better use of technologies that are already known(like GRID COMPUTING, AUTONOMIC COMPUTING.)

COURSE OUTCOMES (COs)

After completion of the course, the student will be able to

CO 1: Analyze various delivery and deployment models
CO 2: Analyze the virtual machine provisioning and virtualized storage strategies
CO 3: Explore the PAAS and SAAS Services
CO 4: Identify the issues in monitoring and management in cloud environment for Achieving Quality of Service (QOS)
CO 5: Identify the components necessary for deployment of applications on the cloud

COURSE ARTICULATION MATRIX (Correlation between COs&POs,PSOs):

		po	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO 1	Ananlyze various delivery and deployment models.																
CO 2	Analyze the virtual machine provisioning and virtualized storage strategies.																
CO 3	Explore the PAAS Services.																
CO 4	Explore the SAAS Services.																
CO 5	Identify the issues in monitoring and management in cloud environment and also identifying the components for deployment of applications on the cloud.																

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 -** Moderate (Medium), **3 -** Substantial (High).

BOS APPROVED TEXT BOOKS:

T1 "Cloud Computing: principles and Paradigms", Raj Kumar Bunya, James Bromberg, Andrej Kosciusko, Wiley, New York, USA

Part-B

COURSE DELIVERY PLAN (LESSON PLAN:

UNIT-I :Foundations

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1	Introduction to Subject	1	20/9		1	1	1	
2	Course Outcomes	1	21/9		1	1	1	
3	Foundation : Importance of cloud computing	1	22/9		1	1	1	
4	Introduction to cloud computing	1	25/9		1	1	1	
5	Importance of migration	1	27/9		1	1	1	
6	Migration into a cloud	1	28/9		1,2	1	1	
7	Enriching Integration As a Service	1	29/9		1,2	1	1	
8	Cloud computing services	1	4/10		1,2	1	1	
9	Roots of cloud computing	1	5/10		1,2	1	1	
10	Challenges of Migration	1	6/10		1	1	1	
11	Paradigm for the cloud era	1	11/10		1	1	1	
12	Integration with public, homogeneous and heterogeneous	1	12/10		1	1	1	
13	Jitter bit in Integration and .NET service Bus,ISB	1	13/10		1,2	1	1	

14	Cloud computing for enterprise applications	1	18/10		1,2	1	1	
No. of classes required to complete UNIT-I					No. of classes taken:			

UNIT-II : Infrastructure as a Service(IaaS)

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1	Virtual Machines Provisioning	**1**	19/10		1	2	1	
2	Migration services	1	20/10		1	2	1	
3	On the management of Virtual Machines for cloud infrastructure	1	25/10		1,2	2	1	
4	On the management of Virtual Machines for cloud infrastructure12	1	26/10		1,2	2	1	
5	Enhancing cloud computing environments using cluster as a service	1	27/10		1,2	2	1	
6	Secured distributed data storage in cloud computing	1	1/11		1,2	2	1	
7	Secured distributed data storage in cloud computing	1	2/11		1	2	1	
8	Revision	1	3/11		1	2	1	
9	Tutorial - II	**1**	8/11		3	2	1	
10	Virtual Machines Provisioning	**1**	9/11		1,2	2	1	
1.	**I mid examinations from 13-11 to 18-11**							
No. of classes required to complete UNIT-II					No. of classes taken:			

UNIT-III : Platform and Software as a Service

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
2.	Platform and software as a Service	1	22/11		1	3	1	
3.	Aneka	1	23/11		1	3	1	
4.	Aneka	1	24/11		1,2	3	1	
5.	Integration of private and public clouds	1	29/11		1,2	3	1	
6.	Comet cloud	1	30/11		1,2	3	1	
7.	Comet cloud	1	1/12		1,2	3	1	
8.	An autonomic cloud engine	1	6/12		1,2	3	1	
9.	T-systems	1	7/12		1	3	1	
10.	T-systems	1	8/12		1,2	3	1	
11.	Cloud based solutions for business applications	1	13/12		1,2	3	1	
12.	Cloud based solutions for business applications	1	14/12		1,2	3	1	
13.	Work flow engines for clouds	1	15/12		1,2	3	1	
No. of classes required to complete UNIT-III					No. of classes taken:			

UNIT-V : Monitoring and Management

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1	Monitoring and management	1	15/12		1,2	5	1	
2	An architecture for federated cloud computing	1	20/12		1,2	5	1	
3	SLA management in cloud computing	1	21/12		1,2	5	1	

4	A service providers perspective	1	22/12		1,2	5	1	
5	Introduction on applications	1	27/12		1,5	5	1	
6	Architecting applications for the Amazon Cloud	1	28/12		1,2	5	1	
7	Massively multiplayer Online Game hosting on Cloud resources	1	29/12		1,2	5	1	
8	Building Content delivery networks	1	3/01		1,2	5	1	
9	Building Content delivery networks	1	11/01		1,2	5	1	
No. of classes required to complete UNIT-IV					No. of classes taken:			

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
14.	Grid computing	1	12/01		1,3,6	1	1	
15.	Fog computing	1	17/01		1,3,6	1	1	

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

Course Instructor	Course Coordinator	Module Coordinator	HOD

LAKKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi, NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

PROGRAM : M.Tech, I-Sem., CSE
ACADEMIC YEAR : 2018-19
COURSE NAME& CODE : Fundamentals of Data Science (S137)
L-T-P STRUCTURE : 3-1-0
COURSE CREDITS 3
COURSE INSTRUCTOR : G V Suresh
COURSE COORDINATOR :
PRE-REQUISITE : **P**rogramming skills, Discrete mathematics

COURSE OBJECTIVE : The objective of the course is to present an overview of artificial intelligence (AI) principles and approaches. Develop a basic understanding of the building blocks of AI as presented in terms of intelligent agents: Search, Knowledge representation, inference, logic, and learning.

COURSE OUTCOMES(CO)

CO1: Wrangle data including: selecting, uploading, cleaning up and transforming the data into a format suitable for a data science pipeline.

CO2: Extract an interpretation of data using exploratory data analysis and manipulate data by creating new features, reducing dimensionality, and by handling outliers in the data

CO3: Apply simple machine learning tools to the data and visualize and plot graphical representations of data

COURSE ARTICULATION MATRIX (Correlation between COs&POs,PSOs):

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	1		3			1							1	3	1
CO2	3				2								1	3	1
CO3	2		3					1					1	2	1

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight(Low), **2 -** Moderate(Medium), **3 -** Substantial (High).

BOS APPROVED TEXT BOOKS:

T1 Big Data Analytics with R and Hadoop"-Vignesh Prajapati-2013 Packet Publishing

T2 R and Data Mining: Examples and Case Studies" -Yanchang Zhao- 2012 Elsevier

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Experiment -I Introduction to R	6	27/09 01/10		TLM8	
2.	Experiment-II Basic Statistics and Visualization	6	04/10 11/10		TLM8	
3.	Experiment-III K-Means Clustering	6	18/10 25/10		TLM8	
4.	Experiment-IV Association Rules	6	01/11 08/11		TLM8	
5.	Experiment -V Linear Regression	6	15/11 22/11		TLM8	
6.	Experiment -VI Logistic Regression	6	29/11 06/12		TLM8	
7.	Experiment-VII Naive Bayesian Classifier	6	13/12 20/12		TLM8	
8.	Experiment-VIII Decision Trees	6	27/12 03/01		TLM8	
9.	Experiment-IX Simulate Principal Component analysis	3	10/01		TLM8	
10.	Experiment-X Simulate Singular Value Decomposition	3	17/01		TLM8	

Teaching Learning Methods					
TLM1	Chalk and Talk	**TLM4**	Problem Solving	**TLM7**	Seminars or GD
TLM2	PPT	**TLM5**	Programming	**TLM8**	Lab Demo
TLM3	Tutorial	**TLM6**	Assignment or Quiz	**TLM9**	Case Study

Course Instructor **Course Coordinator** **Module Coordinator** **HOD**

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COURSE OUTCOMES(CO)

CO1: Students will apply data science concepts and methods to solve problems in real-world contexts.

CO2: Students will demonstrate proficiency with statistical analysis of data.

CO3: Students will demonstrate skill in Data Modeling

CO4: Students will have a good understanding of the relationship between a specific problem and the methods used to solve the problem.

CO5: Students will demonstrate the ability to translate time series data into clear, actionable insights.

COURSE ARTICULATION MATRIX (Correlation between COs&POs,PSOs):

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	**1**	**2**	**3**			**1**							**1**	**3**	**1**
CO2	**3**	**2**	**2**		**2**			**2**					**1**	**3**	**1**
CO3	**2**		**3**		**2**			**1**					**1**	**2**	**1**
CO4	**2**	**1**	**3**	**1**			**2**						**1**	**1**	**1**
CO5	**1**		**2**	**2**									**1**	**2**	**1**

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight(Low), **2 -** Moderate(Medium), **3 -** Substantial (High).

BOS APPROVED TEXT BOOKS:

T1 The Art of Data Science: A Guide for Anyone Who Works with Data, Roger D.Peng, Elizabeth Matsui, Lean Pub, 2015

T2 Doing Data Science, Straight Talk from The Frontline, Cathy O'Neil and Rachel Schutt. O'Reilly. 2014

BOS APPROVED REFERENCE BOOKS:

R1 Data Science for Business: What You Need to Know about Data Mining and Data-analytic Thinking, Foster Provost and Tom Fawcett. 2013

R2 Elements of Statistical Learning, Trevor Hastie, Robert Tibshirani and Jerome Friedman, Springer, 2009

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT-I : Introduction

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Text Book followed	HOD Sign Weekly
1.	Introduction	1	20/9			T1	
2.	What is Data Science?	1	21/9			T1	
3.	What roles exist in Data Science	1	22/9			T1	
4.	Current landscape of perspectives	1	25/9			T1	
5.	Define the workflow	1	27/9			T1	
6.	Tools and approaches data scientists use to analyze data	2	28/9 29/9			T1,T2	
7.	Define a problem and identify appropriate data sets using the data science workflow	2	4/10 5/10			T1,T2	
8.	Walk through the data science workflow using a case study	1	6/10			T1	
No. of classes required to complete UNIT-I				10			
No. of classes taken:				10			

UNIT-II : Statistics Fundamentals

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Text Book followed	HOD Sign Weekly
9.	Statistics Fundamentals	1	11/10			T2	
10.	Exploratory Data Analysis	1	12/10			T2	
11.	Data Science Process	1	13/10			T2	
12.	Analyze datasets using basic summary statistics	1	18/10			T2	
13.	Mean, Median, Mode	1	19/10			T2	
14.	Max, Min, Quartile	1	20/10			T2	
15.	Inter-Quartile, Range, Variance, Standard Deviation and Correlation	1	25/10			T2	
16.	Data Visualization	1	26/10			T2	
17.	Scatter plots, Scatter matrix	1	1/11			T2	

18.	Line Graph, Box Blots, and Histograms	1	2/11			T2	
19.	Identify a normal distribution within a dataset using summary statistics and visualization	1	3/11			T2	
20.	Causation Vs Correlation	1	8/11			T2	
21.	Test a hypothesis within a sample case study	1	9/11			T2	
22.	Validate your findings using statistical analysis	1	10/11			T2	
No. of classes required to complete UNIT-II							
No. of classes taken:							

UNIT-III : Foundations of Data Modeling

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Text Book followed	HOD Sign Weekly
23.	Foundations of Data Modeling	1	22/11			T1,T2	
24.	Introduction Regression	1	23/11			T1,T2	
25.	Data Modeling and Linear Regression	1	24/11			T1,T2	
26.	Categorical variables versus Continuous variables	1	29/11			T1,T2	
27.	Build the linear regression/logistic regression model using a dataset	1	30/11			T1,T2	
28.	Fit model – regularization, bias and error metrics	1	1/12			T1,T2	
29.	Evaluate model fit using loss functions	1	6/12			T1,T2	
30.	MSE(Mean Square Error)	1	**7**/12			T1,T2	
31.	RMSE (Root MSE), Mean Absolute Error(MAE)	1	8/12			T1,T2	
32.	Apply different regression models based on fit and complexity	1	13/12			T1,T2	
33.	Evaluate model using metrics such as accuracy/error	1	14/12			T1,T2	
34.	Confusion matrix	1	15/12			T1,T2	
35.	ROC curve and Cross Validation	1	20/12			T1,T2	
No. of classes required to complete UNIT-III							
No. of classes taken:							

UNIT-IV : Data Science in the Real World

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Text Book followed	HOD Sign Weekly
36.	Dimensionality Reduction	1	21/12			T1,T2	
37.	perform dimensionality reduction using topic models such as PCA and SVD	1	22/12			T1,T2	
38.	Refine and extract data/information from sample datasets	1	27/12			T1,T2	
39.	Define Classification Model	1	28/12			T1,T2	
40.	Apply k-NN, Naïve Classifier and Decision trees	1	29/12			T1,T2	
41.	Build the classification model using a dataset and evaluate	1	3/01			T1,T2	
No. of classes required to complete UNIT-IV							
No. of classes taken:							

UNIT-V : Working with Time Series Data

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Text Book followed	HOD Sign Weekly
42.	Working with Time Series Data	1	4/01			T1,T2	
43.	Introduction	1	5/01			T1,T2	
44.	Observations, Sub Setting Data	1	10/01			T1,T2	
45.	Selecting Observations	1	11/01			T1,T2	
46.	Linear Phase Characteristics	1	12/01			T1,T2	
47.	Time Series Periodicity	1	17/01			T1,T2	
48.	Time Intervals	1	18/01			T1,T2	
49.	Plotting Time series	1	19/01			T1,T2	
No. of classes required to complete UNIT-V							
No. of classes taken:							

Teaching Learning Methods					
TLM1	Chalk and Talk	**TLM4**	Problem Solving	**TLM7**	Seminars or GD
TLM2	PPT	**TLM5**	Programming	**TLM8**	Lab Demo
TLM3	Tutorial	**TLM6**	Assignment or Quiz	**TLM9**	Case Study

Course Instructor **Course Coordinator** **Module Coordinator** **HOD**

LESSON PLAN

Department: CSE **Programme:** B.Tech
Course Name: S253 FREE OPEN SOURCE SOFTWARE
SEM: III A-Section **Academic Year :2018-19**

1. Pre-requisites: Computer Architecture, Operating Systems

2. Course Educational Objectives (CEOs):

To provide knowledge on high performance computing systems in science and engineering, expose the features of modern processors that effect performance. To design, implement, optimize and adapt high-performance software to different platforms. Learn the concepts of parallel processing and the techniques to analyze the performance of programs and their interaction with the underlying hardware.

3. Course Outcomes (COs):

Upon successful completion of the course the student will able to

CO1: Demonstrate memory hierarchies, processor types and techniques in high performance computing.

CO2: Analyze the execution of parallel programs on high performance computing resources using parallel programming paradigms such as MPI

CO3: Outline the fundamentals of Internet of Things (IoT), Big Data and Analytics and the High Performance approaches like Cluster computing, Grid computing, Cloud computing and Heterogeneous computing.

CO4: Design the network infrastructure for High-Performance Big Data Analytics Storage and Storage Area Networks.

CO5: Analyze the techniques for Real-time Analytics, General Parallel File System (GPFS) and High- performance Computing (HPC) Paradigms

4. Course Articulation Matrix:

		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**PSO 1**	**PSO 2**	**PSO 3**
	CO1	2		3									2			
	CO2		3		2					2						
	CO3	1			2	3										
	CO4		3													
	CO5				3											

3 Strong(100%) 2 Moderate(66%) 1Agree(33%)

LESSON PLAN

Department: CSE **Programme:** B.Tech
Course Name: S253 FREE OPEN SOURCE SOFTWARE
SEM: III A-Section **Academic Year :2018-19**

5. Course Delivery Plan:

S.No.	TOPIC TO BE COVERED	No. of Classes		Date	DM
		As per the Schedule	Taken		
UNIT-I: Modern Processors					
1.	Stored-program computer architecture, General-purpose cache-based microprocessor architecture	1			1
2.	Memory hierarchies	1			1
3.	Multicore processors	1			1
4.	multithreaded processors, Vector processors	1			1
5.	Basic Optimization Techniques	1			1
6.	Scalar profiling	1			1
7.	Common sense optimizations	1			1
8.	Simple measures, large impact	1			1
9.	the role of compilers C++ optimizations Data	1			1
10.	Balance analysis and light-speed estimates	1			1
11.	Assignment/Test	1			4
No. of Classes		11			
UNIT-II: Parallel Computers					
12.	Taxonomy of parallel computing paradigms	1			1
13.	Shared-memory computers,	1			1
14.	Distributed-memory computers	1			1
15.	Hierarchical (hybrid) systems	1			1
16.	Networks Basics of Parallelization	1			1
17.	Parallelism, Parallel scalability	1			1
18.	Shared-Memory Parallel Programming with OpenMP	1			1
19.	Shared-Memory Parallel Programming with OpenMP	1			1
20.	Short introduction to OpenMP	1			1
21.	Assignment/Test	1			4
No. of Classes		10			
UNIT-III: The brewing trends and transformations in the IT landscape					
22.	Introduction,The Emerging IT Trends,	1			1
23.	The Internet of Things (IoT)/Internet of Everything (IoE)	1			1
24.	Apache Hadoop for Big Data and Analytics, Big Data into Big Insights and Actions Conclusions	1			1
25.	Introduction, The Emergence of Big Data Analytics(BDA) Discipline	1			1
26.	The Strategic Implications of Big Data, The Big Data Analytics Challenges	1			1

27.	The high-Performance Computing(HPC)Paradigms for fast and BDA,TheHighPerformance Approaches Through parallelism	1			1
28.	Cluster computing, Grid computing, Cloud computing	1			1

29.	Heterogeneous computing, Main Frames for High-performance Computing	1			1
30.	Supercomputing for Big data Analytics	1			1
31.	Assignment/Test	1			4
No. of Classes		10			
UNIT-IV: Network infrastructure for High –Performance					
32.	Introduction	1			1
33.	Network Infrastructure for High performance Computing	1			1
34.	Limitations of Present-Day Networks	1			1
35.	Approaches for the Design of Network	1			1
36.	Infrastructure for High-Performance	1			1
37.	Infrastructure for Big Data Analytics	1			1
38.	Storage Infrastructure for High-Performance Big Data Analytics	1			1
39.	Storage Area Networks	1			1
40.	Storage Infrastructure for storing big data	1			1
41.	Assignment/Test	1			4
No. of Classes		10			
UNIT-V : Real –Time Analytics Using High-Performance Computing					
42.	Introduction	1			1
43.	Technologies That support Real-time Analytics	1			1
44.	Processing in Memory(PIM), In-Database Analytics	1			1
45.	Massive Online Analysis	1			1
46.	General Parallel File System (GPFS)	1			1
47.	High-performance Computing (HPC) Paradigms	1			1
48.	need of Mainframes	1			1
49.	Cost-An Important Factor for HPC	1			1
50.	Cloud Computing Centralized HPC	1			
51.	Assignment/Test	1			4
No. of Classes		10			
Total number of classes		51			

Delivery Methods (DM):

1.Chalk & Talk 2. ICT Tools 3. Tutorial 4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Signature				
Name of the Faculty				

PRINCIPAL

	LESSON PLAN	
	Department: CSE **Course :** -Machine Learning I7 **SEM:** I	**Program: IM.Tech I sem** **Academic Year : 2018-19**

1. **Pre-requisites:** Basic knowledge in probability and learning techniques.

COURSE EDUCATIONAL OBJECTIVES:

1. This course is used to understand the basic concepts of learning and decision trees.
2. This course is used to learn the main concepts of neural networks and genetic algorithms.
3. This course is used to learn the importance of Bayesian techniques.
4. Used to learn the techniques of the instance based learning.
5. To learn and understand the analytical learning and reinforced learning.

COURSE OBJECTIVES

1. Identify various approaches in learning like concept learning and decision tree learning etc.
2. Analyze different types of neural networks as multi layer and back propagation networks and genetic algorithms.
3. Identify different topic s in Bayesian and computational learning as bayes theorem, gibbs algorithm and Bayesian belief networks.
4. Analyze different types of learning and learning set of rules such as case based reasoning and learning first order rules.
5. Summarize various concepts of analytical learning and reinforcement learning in terms of FOCL algorithm and Q learning.

Machine Learning

Lecture	**: 4 Periods/week**	**Internal Marks**	**40**
Tutorial	**: 1 Period/Week**	**External Marks**	**60**
Credits	**: 3**	**External Examination**	**: 3 Hrs**

Syllabus for Machine learning

UNIT I:INTRODUCTION, CONCEPT LEARNING AND DECISION TREES
Learning Problems – Designing Learning systems, Perspectives and Issues – Concept Learning – Version Spaces and Candidate Elimination Algorithm – Inductive bias – Decision Tree learning.

UNIT II : **NEURAL NETWORKS AND GENETIC ALGORITHMS** Neural Network Representation – Problems – Perceptrons – Multilayer Networks and Back Propagation Algorithms – Advanced Topics – Genetic Algorithms – Hypothesis Space Search – Genetic Programming.

UNIT III : BAYESIAN AND COMPUTATIONAL LEARNING Bayes Theorem – Concept Learning – Maximum Likelihood – Minimum Description Length Principle – Bayes Optimal Classifier – Gibbs Algorithm – Naïve Bayes Classifier – Bayesian Belief Network – EM Algorithm.

UNIT IV : INSTANT BASED LEARNING AND LEARNING SET OF RULES K-Nearest Neighbour Learning – Case-Based Reasoning – Sequential Covering Algorithms – Learning Rule Sets – Learning First Order Rules .

UNIT V: ANALYTICAL LEARNING AND REINFORCED LEARNING Perfect Domain Theories – Explanation Based Learning – Inductive-Analytical Approaches - FOCL Algorithm – Reinforcement Learning – Task – Q-Learning.

TEXT BOOK:

1. Tom M. Mitchell, "Machine Learning", McGraw-Hill Education (INDIAN EDITION), 2013.

REFERENCES:

2. EthemAlpaydin, "Introduction to Machine Learning", 2nd Ed., PHI Learning Pvt. Ltd., 2013.
3. T. Hastie, R. Tibshirani, J. H. Friedman, "The Elements of Statistical Learning", Springer; 1st edition, 2001.

2. Course Delivery Plan:

S.NO	TOPIC TO BE COVERED	No.of Classes		Date	DM
		As per the Schedule	Taken		
Unit-1					
1	Learning Problems	1		20/9	1
2	Designing Learning systems	1		21/9	1,2
3	Designing Learning systems	1		22/9	1,2,1
4	Perspectives and Issues	1		25/9	1,2,3
5	Concept Learning	1		27/9	1
6	Version Spaces	1		28/9	1,2
7	Candidate Elimination Algorithm	1		29/9	1,2,1
8	Candidate Elimination Algorithm	1		4/10	1,2,3
9	Inductive bias	1		5/10	1
10	Decision Tree learning	1		6/10	1,2
Unit-1					
11	Introduction to neural networks	1		11/10	1
12	Neural Network Representation	1		12/10	1,2
13	Problems and issues	1		13/10	1,2,1
14	Perceptrons ANNs	1		18/10	1,2,3
15	Perceptrons ANNs	1		19/10	1,2,3
16	Multilayer Networks	1		20/10	1
17	Back Propagation Algorithms	1		25/10	1,2
18	Back Propagation Algorithms	1		26/10	1,2
19	Advanced Topics	1		27/10	1,2,1

20	Genetic Algorithms	1		1/11	1,2,3
21	Genetic Algorithms	1		2/11	1
22	Hypothesis Space Search	1		3/11	1,2
23	Hypothesis Space Search	1		8/11	1,2,1
24	Genetic Programming	1		9/11	1,2,3
25	Genetic Programming	1		10/11	1,2,3
I mid examinations from 13-11-2017 to 18-11-2017					
UNIT-3					
	Bayes and computational learning introduction	1		22/11	1
	Bayes theorem	1		23/11	1,2
	Concept Learning	1		24/11	1,2,1
	Maximum Likelihood	1		29/11	1,2,3
	Minimum Description Length Principle	1		30/11	1
	Bayes Optimal Classifier	1		1/11	1,2
	Gibbs Algorithm	1		6/12	1,2,1
	Naïve Bayes Classifier	1		**7**/12	1,2,3
	Bayesian Belief Network	1		8/12	1
	Bayesian Belief Network	1		13/12	1,2
	EM Algorithm	1		14/12	1,2,1
	EM Algorithm	1		15/12	1,2,3
UNIT -4					
	Instance based learning and learning set of rules introduction	1		20/12	1
	K- Nearest Neighbour Learning	1		21/12	1,2
	Case-Based Reasoning	1		22/12	1,2,1
	Sequential Covering Algorithms	1		27/12	1,2,3
	Learning Rule Sets	1		28/12	1
	algorithms	1		29/12	1,2
	Learning First Order Rules	1		3/01	1,2,1
UNIT -5					
	Analytical learning and	1		4/01	1,2,3
	Perfect Domain Theories	1		5/01	1
	Explanation Based Learning	1		10/01	1,2
	Inductive-Analytical Approaches	1		11/01	1,2,1
	FOCL Algorithm	1		12/01	1,2,3
	Reinforcement Learning	1		17/01	1
	Task – Q-Learning	1		18/01	1,2
	Revision	1		19/01	1,2,1
II mid examinations from 22-10					

Total Number of classes				

Delivery Methods (DM):

1.Chalk & Talk 2. ICT Tools 3. Tutorial 4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Signature				
Name of the Faculty	M.sri bala			

PRINCIPAL