

**LAKKIREDDY BALI REDDY COLLEGE OF ENGINEERING**  
**DEPARTMENT OF ELECTRONICS AND COMMUNICATION 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** : B.Tech., IV-Sem., CSE  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : DATABASE MANAGEMENT SYSTEMS-S180  
**L-T-P STRUCTURE** : 3-1-2  
**COURSE CREDITS** : 3  
**COURSE INSTRUCTOR** : S.Govindu  
**COURSE COORDINATOR** : G. Balunarasimha Rao

**PRE-REQUISITE:** Elementary set theory, concepts of relations and functions, propositional logic data structures (trees, Graphs, dictionaries) & File Concepts.

**COURSE OBJECTIVE:**

This course enables the students to know about

- ✓ DBMS basic concepts, Database Languages.
- ✓ Data base Design.
- ✓ Normalization process and Transaction processing.
- ✓ Indexing.

**COURSE OUTCOMES (CO)**

CO1: Understand DBMS concepts, architecture & Data model.

CO2: Apply the concepts of relational algebra, calculus, and also SQL.

CO3: Apply the normalization process for data base design.

CO4: Understand the issues in transaction processing and Analyze different Concurrency and recovery strategies of DBMS

CO5: Analyze different file organization techniques & Indexing Techniques.

**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	1	2	-	-	-	-	-	-	-	-	-	-	3	-
CO2	3	3	-	-	1	-	-	-	-	-	-	-	2	3	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	2	3	-
CO4	2	1	2	-	-	-	-	-	-	-	-	-	1	3	-
CO5	2	1	2	-	-	-	-	-	-	-	-	-	1	3	-

**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** “Database Concepts”, Korth, Silbertz, Sudarshan, McGraw Hill.**T2** “Fundamentals Of Database Systems”, Elmasri, Navathe, Addison Wesley.**BOS APPROVED REFERENCE BOOKS:****R1** “Database Management System”, Raghu Ramakrishna, McGraw Hill**R2** “DBMS: Complete Practical Approach”, Maheshwari Jain, Firewall Media, New Delhi.**R3** “An Introduction to Database System”, Date C J, Addison Wesley.**COURSE DELIVERY PLAN (LESSON PLAN): Section-A****UNIT –I: Introduction & Data modeling using the Entity Relationship Model**

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, An overview of database management system	1	27-11-17		<b>TLM1</b>	CO1	T1,T2,R1	
2.	Database system Vs file system	1	29-11-17		<b>TLM1</b>	CO1	T1,T2,R1	
3.	Database system concepts and architecture	1	30-11-17		<b>TLM1</b>	CO1	T1,T2,R1	
4.	Data models schema and instances	1	02-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
5.	Data independence and data base language and interfaces	1	04-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
6.	Data definitions language, DML, Overall Database Structure	1	06-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
7.	ER model concepts- notation for ER diagram	1	07-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
8.	Mapping constraints, keys	1	09-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
9.	Concepts of Super Key, candidate key, primary key	1	11-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
10.	Generalization, aggregation	1	13-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
11.	Reduction of an ER diagrams to tables, Extended ER model	1	14-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
12.	Relationships of higher degree	1	16-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
13.	Tutorial – I	1	18-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
No. of classes required to complete UNIT-I		13			No. of classes taken:			

**UNIT –II: Relational data Model and Language & Introduction to SQL**

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
14.	Relational data model concepts	1	20-12-17		TLM1	CO2	T1,T2,R1	
15.	Integrity constraints: entity integrity, referential integrity	1	21-12-17		TLM1	CO2	T1,T2,R1	
16.	Keys constraints, Domain constraints	1	23-12-17		TLM1	CO2	T1,T2,R1	
17.	Relational algebra	1	27-12-17		TLM1	CO2	T1,T2,R1	
18.	Characteristics of SQL, Advantage of SQL	1	28-12-17		TLM1	CO2	T1,T2,R1	
19.	SQL data types and literals, Types of SQL commands	1	30-12-17		TLM1	CO2	T1,T2,R1	
20.	SQL operators and their procedure	1	03-1-18		TLM1	CO2	T1,T2,R1	
21.	Tables, views and indexes,	1	04-1-18		TLM1	CO2	T1,T2,R1	
22.	Queries and sub queries, Aggregate functions	1	06-1-18		TLM1	CO2	T1,T2,R1	
23.	Insert, update and delete operations	1	08-1-18		TLM1	CO2	T1,T2,R1	
24.	Unions, Intersection, Minus, Cursors in SQL	1	10-1-18		TLM1	CO2	T1,T2,R1	
25.	Tutorial – II	1	11-1-18		TLM1	CO2	T1,T2,R1	
No. of classes required to complete UNIT-2		12			No. of classes taken:			

**UNIT –III: Normalization**

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
26.	Functional Dependencies	1	22-01-18		TLM1	CO3	T1,T2,R1	
27.	Normal Forms: First, Second	1	24-01-18		TLM1	CO3	T1,T2,R1	
28.	Third Normal Forms	1	25-01-18		TLM1	CO3	T1,T2,R1	
29.	BCNF, Inclusion Dependences	1	27-01-18		TLM1	CO3	T1,T2,R1	
30.	Loss Less Join Decompositions	1	29-01-18		TLM1	CO3	T1,T2,R1	
31.	Tutorial – III	1	31-01-18		TLM3			
32.	Normalization Using FD,MVD	1	01-02-18		TLM1	CO3	T1,T2,R1	
33.	Normalization Using JD	1	03-02-18		TLM1	CO3	T1,T2,R1	
34.	Alternative Approaches To Database Design	1	05-02-18		TLM1	CO3	T1,T2,R1	
35.	Tutorial – IV	1	07-02-18		TLM3			
No. of classes required to complete UNIT-3		10			No. of classes taken:			

**UNIT –IV: Transaction Processing Concepts & Concurrency Control techniques**

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	
36.	Transaction System	1	08-02-18		TLM1	CO4	T1,T2,R1		
37.	Testing Of Serializability	1	14-02-18		TLM1	CO4	T1,T2,R1		
38.	Serializability Of Schedules	1	15-02-18		TLM1	CO4	T1,T2,R1		
39.	Conflict & View Serializable Schedule	1	17-02-18		TLM1	CO4	T1,T2,R1		
40.	Recoverability, Log Based Recovery, Checkpoints,	1	19-02-18		TLM1	CO4	T1,T2,R1		
41.	ARIES Algorithm, Deadlock Handling	1	21-02-18		TLM1	CO4	T1,T2,R1		
42.	Tutorial –V	1	22-02-18		TLM3				
43.	Concurrency Control	1	24-02-18		TLM1	CO4	T1,T2,R1		
44.	Techniques For Concurrency Control	1	26-02-18		TLM1	CO4	T1,T2,R1		
45.	Time Stamping Protocols For Concurrency Control	1	28-02-18		TLM1	CO4	T1,T2,R1		
46.	Locking, Validation Based Protocol	1	01-03-18		TLM1	CO4	T1,T2,R1		
47.	Multiple Granularity	1	03-03-18		TLM1	CO4	T1,T2,R1		
48.	Recovery With Concurrent Transactions	1	05-03-18		TLM1	CO4	T1,T2,R1		
No. of classes required to complete UNIT-4		13			No. of classes taken:				

**UNIT-V: Storage and Indexing**

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
49.	RAID Levels	1	07-03-18		TLM1	CO5	T1,T2,R1	
50.	RAID Levels	1	08-03-18		TLM1	CO5	T1,T2,R1	
51.	Page Formats	1	12-03-18		TLM1	CO5	T1,T2,R1	
52.	Record Formats	1	14-03-18		TLM1	CO5	T1,T2,R1	
53.	File Types And Organization	1	15-03-18		TLM1	CO5	T1,T2,R1	
54.	File Types And Organization	1	17-03-18		TLM1	CO5	T1,T2,R1	
55.	Isam	1	19-03-18		TLM1	CO5	T1,T2,R1	



56.	B-Tree	1	21-03-18		<b>TLM1</b>	CO5	T1,T2,R1	
57.	B+-Tree, B+-Tree.	1	22-03-18		<b>TLM1</b>	CO5	T1,T2,R1	
58.	Tutorial – VI	1	24-03-18		<b>TLM3</b>			
No. of classes required to complete UNIT-5		10			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
59.	CODD RULES	2			<b>TLM1</b>	CO1-CO5	T1,T2,R1	

### 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

### ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1			
Sankranthi Holidays			
I Mid Examinations			
II Phase of Instructions			
II Mid Examinations			
Preparation and Practicals			
Semester End Examinations			

### EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\% \text{ of Max}(B1,B2)+25\% \text{ of Min}(B1,B2)$	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	1,2,3,4,5	A+B=25
Semester End Examinations	1,2,3,4,5	C=75
Total Marks: A+B+C	1,2,3,4,5	100

Course Instructor

Course Coordinator

Module Coordinator

HOD



## COURSE HANDOUT

**PROGRAM** : B.Tech. IV-Sem., CSE  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : S284 - JAVA PROGRAMMING  
**L-T-P STRUCTURE** : 3-1-0  
**COURSE CREDITS** : 3  
**COURSE INSTRUCTOR** : A.S.R.C.Murthy  
**COURSE COORDINATOR** : A.S.R.C.Murthy  
**PRE-REQUISITE:** C++

**COURSE OBJECTIVE** : This course provides the knowledge on Concentrates on the methodological and technical aspects of software design and programming based on OOP. Know about the importance of GUI based applications and the development of those applications through JAVA.

### **COURSE OUTCOMES (CO)**

**CO 1:** Identify Object Oriented concepts through constructs of JAVA.

**CO 2:** Analyze the role of Packages, Interfaces and implement Exception handling in program design using JAVA.

**CO 3:** Explore the concept of Multithreading and Develop GUI based applications using Applet class using JAVA.

**CO 4:** Design some examples of GUI based applications using AWT controls and explore the concept of Event handling using JAVA.

**CO 5:** Analyze the basic concepts of JDBC and networking to develop network based applications.

### **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
<b>CO1</b>													3		1
<b>CO2</b>					1								3		
<b>CO3</b>	1												3		
<b>CO4</b>			2										3		
<b>CO5</b>			1										3	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** Herbert schildt, Java: the complete reference, TMH Publications,5th edition.**T2** -**BOS APPROVED REFERENCE BOOKS:****R1** E. Balaguruswamy, ‘Programming with JAVA’, TMH Publications, 2nd Edition.**R2** Patrick Niemeyer & Jonathan Knudsen, Learning Java, O’Reilly P.**COURSE DELIVERY PLAN (LESSON PLAN): Section-A****UNIT-I : Java Language & Introducing classes**

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.	History of Java	1	27-11-17		TLM1	CO1	T1	
2.	The Byte code, Java Buzzwords	1	28-11-17		TLM1	CO1	T1	
3.	Arrays: 1-D and 2-D Arrays, Multidimensional Arrays with Example Programs	1	29-11-2017		TLM1	CO1	T1	
4.	Type conversion and casting, Simple java programs	1	30-11-17		TLM5	CO1	T1	
5.	Class fundamentals, declaring objects, Access control	1	05-12-17		TLM1	CO1	T1	
6.	Constructors, Constructor Overloading, Methods, Method Overloading	1	06-12-17		TLM1	CO1	T1	
7.	Introduction to garbage collection, String class and it’s methods	1	07-12-17		TLM1	CO1	T1	
8.	StringBuffer class and it’s methods, Example programs on String and StringBuffer class	1	11-12-17		TLM5	CO1	T1	
9.	Wrapper classes and it’s basics,methods.	1	12-12-17		TLM1	CO1	T1	
10.	<b>Tutorial – I</b>	1	13-12-17		TLM3	CO1		
11.	Assignment/Quiz-1	1	13-12-17		TLM6	CO1		
No. of classes required to complete UNIT-I		11			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
12.	Defining a package, Accessing a package, Understanding the CLASSPATH	1	14-12-17		TLM1	CO2	T1	
13.	Importing packages, Exploring java.util.package: StringTokenizer class	1	18-12-17		TLM1	CO2	T1	
14.	Date class, Defining an interface, applying interfaces	1	19-12-17		TLM1	CO2	T1	
15.	Variables in interfaces and extending interfaces	1	20-12-17		TLM1	CO2	T1	
16.	Abstract classes, Differences between interfaces and classes, Object serialization	1	21-12-17		TLM1	CO2	T1	
17.	Exception handling fundamentals, Exception types and examples	1	26-12-17		TLM5	CO2	T1	
18.	Usage of try, catch, Throw & throws keywords	1	27-12-17		TLM1	CO2	T1	
19.	Finally keyword and example programs, Java's built in exceptions	1	28-12-17		TLM5	CO2	T1	
20.	Creating own exception sub classes	1	2-01-18		TLM1	CO2	T1	
21.	<b>Tutorial – II</b>	1	03-01-18		TLM3	CO2		
22.	Assignment/Quiz-2	1	04-01-18		TLM6	CO2		
No. of classes required to complete UNIT-II		11			No. of classes taken:			

**UNIT-III: Multithreading, Applet class**

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
23.	Differences between multi-threading and multitasking	1	08-01-18		TLM1	CO3	T1	
24.	Java thread model	1	09-01-18		TLM1	CO3	T1	
25.	Creating threads	1	10-01-18		TLM5	CO3	T1	
26.	Creating threads	1	11-01-18		TLM5	CO3	T1	

27.	Multiple threads	1	22-01-18		TLM5	CO3	T1	
28.	Synchronizing threads	1	23-01-18		TLM5	CO3	T1	
29.	Concepts of Applets	1	24-01-18		TLM1	CO3	T1	
30.	<b>Tutorial – III</b>	1	25-01-18		TLM1	CO3	T1	
31.	Differences between applets and applications	1	29-01-18		TLM1	CO3	T1	
32.	Applet architecture, skeleton	1	30-01-18		TLM1	CO3	T1	
33.	Creating applets, passing parameters to applets	1	31-01-18		TLM1	CO3	T1	
34.	Creating applets, passing parameters to applets	1	01-02-18		TLM1	CO3	T1	
35.	Working with graphics class	1	05-02-18		TLM5	CO3	T1	
36.	Working with graphics class	1	06-02-18		TLM5	CO3	T1	
37.	<b>Tutorial – IV</b>	1	07-02-18		TLM3	CO3		
38.	Assignment/Quiz-3	1	08-02-18		TLM6	CO3		
No. of classes required to complete UNIT-III		17			No. of classes taken:			

#### UNIT-IV: Event Handling, AWT controls

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
39.	Events handling mechanisms, Delegation event model	1	12-02-18		TLM1	CO4	T1	
40.	Events, Event sources, Event classes	1	13-02-018		TLM1	CO4	T1	
41.	Event Listeners interfaces	1	14-02-18		TLM1	CO4	T1	
42.	Handling mouse events	1	15-02-18		TLM5	CO4	T1	
43.	Handling keyboard events	1	19-02-18		TLM5	CO4	T1	
44.	Adapter classes, inner classes.	1	20-02-18		TLM1	CO4	T1	
45.	AWT: label, button, Example program using labels and buttons	1	21-02-18		TLM1	CO4	T1	
46.	Scrollbars, text components, Example program using scrollbars and text components	1	22-02-18		TLM1	CO4	T1	
47.	Check box, check box groups	1	26-02-18		TLM1	CO4	T1	
48.	Choices controls, lists	1	27-02-18		TLM1	CO4	T1	

49.	Scrollbar, text field	1	28-02-18		TLM1	CO4	T1	
50.	layout managers – border, grid	1	01-03-18		TLM1	CO4	T1	
51.	Flow, card, Containers	1	05-03-18		TLM1	CO4	T1	
52.	Example program using components and different layout managers	1	06-03-18		TLM5	CO4	T1	
53.	TUTORIAL-4	1	07-03-18		TLM3	CO4		
54.	Assignment/Quiz-4	1	08-03-18		TLM6	CO4		
No. of classes required to complete UNIT-IV		16			No. of classes taken:			

### UNIT-V: JDBC, Networking

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
55.	JDBC Introduction, Types of Drivers	1	12-03-18		TLM1	CO5	T1	
56.	Procedure to establish a connection between java applications and database	1	13-03-18		TLM1	CO5	T1	
57.	Types of statements	1	14-03-18		TLM5	CO5	T1	
58.	Types of statements	1	15-03-18		TLM5	CO5	T1	
59.	Result set types	1	19-03-18		TLM1	CO5	T1	
60.	Networking basics, Network Address, Network ports, Sockets	1	20-03-18		TLM1	CO5	T1	
61.	TUTORIAL-5	1	21-03-18		TLM3	CO5		
62.	Assignment/Quiz-5	1	22-03-18		TLM6	CO5		
No. of classes required to complete UNIT-V		9			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
63.	SWINGS	1	23-03-18		TLM1	CO4	T1	
64.	java.util package	1	24-03-18		TLM1	CO3	T1	

### Teaching Learning Methods

<b>TLM1</b>	Chalk and Talk	<b>TLM4</b>	Problem Solving	<b>TLM7</b>	Seminars or GD
<b>TLM2</b>	PPT	<b>TLM5</b>	Programming	<b>TLM8</b>	Lab Demo
<b>TLM3</b>	Tutorial	<b>TLM6</b>	Assignment or Quiz	<b>TLM9</b>	Case Study

## EVALUATION PROCESS:

<b>Evaluation Task</b>	<b>COs</b>	<b>Marks</b>
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\%$ of $\text{Max}(B1,B2)+25\%$ of $\text{Min}(B1,B2)$	1,2,3,4,5	B=20
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

## PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO I: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

## PROGRAM OUTCOMES

### Engineering Graduates will be able to:

- 1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.



5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the **engineering and management principles and apply these to one's own work, as a member and** leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## **PROGRAM SPECIFIC OUTCOMES**

### **1. Programming Paradigms:**

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

### **2. Data Engineering:**

To inculcate an ability to Analyse, Design and implement data driven applications into the students.

### **3. Software Engineering:**

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products

A.S.R.C.Murthy



## COURSE HANDOUT

**PROGRAM** : B.Tech., IV-Sem., CSE – A/S

**ACADEMIC YEAR** : 2017-18

**COURSE NAME & CODE** : Computer Graphics – S-167

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

**COURSE CREDITS** : 3

**COURSE INSTRUCTOR** : V SIVA KRISHNA

**COURSE COORDINATOR** : T UDAYA KUMAR

**PRE-REQUISITE:** Knowledge of coordinate system in mathematics.

**COURSE OBJECTIVE:** This course provides knowledge on the history and evolution of computer graphics, both hardware and software. This course gives an understanding of 2D graphics and algorithms which includes line drawing, polygon filling, clipping, and transformations. Gives an understanding of the concepts & techniques used in 3D computer graphics, including viewing transformations, hierarchical modeling, color, lighting and texture mapping.

### **COURSE OUTCOMES (CO)**

**CO1:** Understand the various applications of graphics and interactive input and output devices.

**CO2:** Design and Implement the algorithms to draw the line, circle and ellipse.

**CO3:** Apply different geometrical transformations such as translation, scaling, rotation, reflection and shear in 2D

**CO4:** Understand 2D Coordinate transformation, viewing functions and various clipping algorithms

**CO5:** Understand the various display methods, geometrical & coordinate transformations in 3D.

### **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
<b>CO1</b>	2		1										3		
<b>CO2</b>	2	1											3		
<b>CO3</b>	2	1											3		
<b>CO4</b>	2	1											3		
<b>CO5</b>	2	1											3		

**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** Donald Hearn & M. Pauline Baker, "Computer Graphics C Version", Pearson Education, New Delhi, 2004 (Chapters 1 to 12 except 10-9 to 10-22 of the Text book)

**BOS APPROVED REFERENCE BOOKS:**

**R1** David F. Rogers; "Procedural Elements for Computer Graphics" TMH Publications.

**R2** J. D. Foley, S. K Feiner, A Van Dam F. H John; "Computer Graphics: Principles & Practice in C"; Pearson.

**R3** Francis S Hill Jr; "Computer Graphics using Open GL"; Pearson Education, 2004.

**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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to Subject, Course Outcomes	1		28-11-2017		<b>TLM2</b>	CO1	Donald Hearn & M. Pauline Baker, "Computer Graphics C Version", Pearson Education, New Delhi, 2004	
2.	CAD, Presentation Graphics	1		30-11-2017		<b>TLM2</b>	CO1		
3.	Computer Art, Entertainment	1		01-12-2017		<b>TLM2</b>	CO1		
4.	Education & Training , Image processing	1		02-12-2017		<b>TLM2</b>	CO1		
5.	Visualization, GUI	1		05-12-2017		<b>TLM2</b>	CO1		
6.	<b>Assignment Tutorial-1</b> \	1		07-12-2017		<b>TLM3/6</b>	CO1		
7.	CRT, Raster Scan Display	1		08-12-2017		<b>TLM2</b>	CO1		
8.	Random scan Display, DVST	1		09-12-2017		<b>TLM2</b>	CO1		
9.	Flat panel displays, refresh CRT	1		12-12-2017		<b>TLM2</b>	CO1		
10.	Raster scan systems 2	1		14-12-2017		<b>TLM2</b>	CO1		
11.	Random scan system	1		15-12-2017		<b>TLM2</b>	CO1		
12.	Workstations, Graphics Monitors	1		16-12-2017		<b>TLM2</b>	CO1		
13.	Input Devices	1		19-12-2017		<b>TLM2</b>	CO1		

No. of classes required to complete UNIT-I	13			No. of classes taken:
--	----	--	--	-----------------------

## UNIT-II : Output primitives

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
14.	Points and lines	1	21-12-2017		<b>TLM1</b>	CO2	Donald Hearn & M. Pauline Baker, "Computer Graphics C Version", Pearson Education, New Delhi, 2004	
15.	DDA line drawing algorithm	1	22-12-2017		<b>TLM1</b>	CO2		
16.	DDA-Example	1	23-12-2017		<b>TLM1</b>	CO2		
17.	Bresenham Algorithm for slope $0 < m < 1$	1	26-12-2017		<b>TLM1</b>	CO2		
18.	Parallel line drawing algorithm	1	28-12-2017		<b>TLM1</b>	CO2		
19.	Mid point circle algorithm	1	29-12-2017		<b>TLM6</b>	CO2		
20.	Ellipse Drawing Algorithm	1	30-12-2017		<b>TLM1</b>	CO2		
21.	Example - Ellipse Drawing Algorithm	1	02-01-2018		<b>TLM1</b>	CO2		
22.	Loading the Frame Buffer, Line Functions, Parallel Curve algorithms	1	04-01-2018		<b>TLM1</b>	CO2		
23.	Other Curves, Pixel Addressing, Filled Area Primitives	1	05-01-2018		<b>TLM1</b>	CO2		
24.	Scan Line Polygon Fill Algorithm	1	06-01-2018		<b>TLM1</b>	CO2		
25.	Inside-Outside Test, Boundary Fill	1	09-01-2018		<b>TLM1</b>	CO2		
26.	Flood Fill Algorithm and Filled Area Functions	1	11-01-2018		<b>TLM1</b>	CO2		
27.	Bresenham Example	1	12-01-2018		<b>TLM1</b>	CO2		
28.	<b>Assignment \ Tutorial-2</b>	1	13-01-2018		<b>TLM1</b>	CO2		

No. of classes required to complete UNIT-II	15		No. of classes taken:
---	----	--	-----------------------

### UNIT-III : Two Dimensional Geometric Transformations

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
29.	Basic Transformations (translation, rotation, scaling)	1	23-01-2018		<b>TLM1</b>	CO3	Donald Hearn & M. Pauline Baker, "Computer Graphics C Version", Pearson Education, New Delhi, 2004	
30.	Matrix Representations	1	25-01-2018		<b>TLM1</b>	CO3		
31.	Homogeneous Coordinates	1	26-01-2018		<b>TLM1</b>	CO3		
32.	Composite Transformations	1	27-01-2018		<b>TLM1</b>	CO3		
33.	Composite Transformations	1	30-01-2018		<b>TLM1</b>	CO3		
34.	General pivot point rotation, Fixed point scaling	1	01-02-2018		<b>TLM1</b>	CO3		
35.	Other Transformations (reflection, shear)	1	02-02-2018		<b>TLM1</b>	CO3		
36.	Transformations between Coordinate Systems	1	03-02-2018		<b>TLM1</b>	CO3		
37.	Affine Transformations	1	06-02-2018		<b>TLM1</b>	CO3		
38.	Transformation Functions	1	08-02-2018		<b>TLM1</b>	CO3		
39.	Raster methods for Transformation	1	09-02-2018		<b>TLM1</b>	CO3		
40.	<b>Assignment \ Tutorial-3</b>	1	10-02-2018		<b>TLM6</b>	CO3		

No. of classes required to complete UNIT-III	12			No. of classes taken:
--	----	--	--	-----------------------

### UNIT-IV : Two Dimensional Viewing

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
41.	The viewing Pipeline Viewing Coordinate Reference Frame	1	13-02-2018		<b>TLM1</b>	CO4	Donald Hearn & M. Pauline Baker, "Computer Graphics C Version", Pearson Education, New Delhi, 2004	
42.	Window-to-Viewport Coordinate Transformation, Two Dimensional Viewing Functions	1	15-02-2018		<b>TLM1</b>	CO4		
43.	Point Clipping, Line Clipping introduction	1	16-02-2018		<b>TLM1</b>	CO4		
44.	Cohen-sutherland line clipping	1	17-02-2018		<b>TLM1</b>	CO4		
45.	Cyrus-Beck Line Clipping	1	20-02-2018		<b>TLM1</b>	CO4		
46.	Liang –Barsky Line Clipping	1	22-02-2018		<b>TLM1</b>	CO4		
47.	Sutherland-Hodgeman polygon clipping	1	23-02-2018		<b>TLM1</b>	CO4		
48.	Sutherland-hodgmen polygon clipping	1	24-02-2018		<b>TLM1</b>	CO4		
49.	Weiler- Atherton Polygon Clipping	1	27-02-2018		<b>TLM1</b>	CO4		
50.	<b>Assignment \ Tutorial-4</b>	1	01-03-2018		<b>TLM6</b>	CO4		

No. of classes required to complete UNIT-IV	10			No. of classes taken:
---	----	--	--	-----------------------

### UNIT-V : Three Dimensional Concepts and Object representations

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
51.	3D display methods (parallel, perspective projections)	1	02-03-2018		<b>TLM1</b>	CO5	Donald Hearn & M. Pauline Baker, "Computer Graphics C Version", Pearson Education, New Delhi, 2004	
52.	Depth Queuing, visible line and surface, identification	1	03-03-2018		<b>TLM1</b>	CO5		
53.	Surface rendering, Exploded and cutaway views, stereoscopic views	1	06-03-2018		<b>TLM1</b>	CO5		
54.	Polygon Surfaces, Polygon Tables	1	08-03-2018		<b>TLM1</b>	CO5		
55.	Curved Lines and Surfaces, Quadratic Surfaces	1	09-03-2018		<b>TLM1</b>	CO5		
56.	Translation	1	10-03-2018		<b>TLM1</b>	CO5		
57.	Rotation	1	13-03-2018		<b>TLM1</b>	CO5		
58.	scaling	1	15-03-2018		<b>TLM1</b>	CO5		
59.	Composite transformations	1	16-03-2018		<b>TLM1</b>	CO5		
60.	Coordinate Axes Rotation, General 3DRotation	1	17-03-2018		<b>TLM1</b>	CO5		
61.	Other Transformations (reflection, shear)	1	20-03-2018		<b>TLM1</b>	CO5		



62.	3D Transformation Functions, Modeling & Coordinate Transformations	1	22-03-2018		<b>TLM1</b>	CO5		
63.	<b>Assignment \ Tutorial-5</b>	1	23-03-2018		<b>TLM3/6</b>	CO5		
No. of classes required to complete UNIT-V		13			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
64.	Programs to display graphic images to given specifications.	1	24-03-2018		<b>TLM2</b>			

### Teaching Learning Methods

<b>TLM1</b>	Chalk and Talk	<b>TLM4</b>	Problem Solving	<b>TLM7</b>	Seminars or GD
<b>TLM2</b>	PPT	<b>TLM5</b>	Programming	<b>TLM8</b>	Lab Demo
<b>TLM3</b>	Tutorial	<b>TLM6</b>	Assignment or Quiz	<b>TLM9</b>	Case Study

### EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\% \text{ of Max}(B1,B2)+25\% \text{ of Min}(B1,B2)$	1,2,3,4,5	B=20
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

### PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

**PEO I:** To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

**PEO II:** To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

**PEO III:** Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

**PEO IV:** To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

**PROGRAMME OUTCOMES (POs):**

**Engineering Graduates will be able to:**

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## **PROGRAMME SPECIFIC OUTCOMES (PSOs):**

### **1. Programming Paradigms:**

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

### **2. Data Engineering:**

To inculcate an ability to Analyze, Design and implement data driven applications into the students.

### **3. Software Engineering:**

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

**Course Instructor**

**Course Coordinator**

**Module Coordinator**

**HOD**

## COURSE HANDOUT

### Part-A

**PROGRAM** : B.Tech., IV-Sem., CSE (A)  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : PROBABILITY AND STATISTICS - S 351  
**L-T-P STRUCTURE** : 3-1-0  
**COURSE CREDITS** : 3  
**COURSE INSTRUCTOR** : M.RAMI REDDY  
**COURSE COORDINATOR** : M.RAMI REDDY  
**PRE-REQUISITES:** None

**COURSE EDUCATIONAL OBJECTIVES (CEOs)** : In this course the students are able to understand the applications of probability distributions. They also learn various sample tests in testing the hypothesis and correlation, regression of a bi-variate data.

**COURSE OUTCOMES (COs):** At the end of the course, the student will be able to

- CO1: Predict various probabilistic situations based on various laws of probability and random variables.  
CO2: Distinguish among the criteria of selection and application of Binomial, Poisson, Normal and Gamma distributions.  
CO3: Estimate the point and interval estimators of mean, variance and proportion for the given Sample data.  
CO4: Apply various sample tests like Z-test, t-test, F-test and  $\chi^2$  -test for decision making regarding the population based on sample data.  
CO5: Estimate the level of correlation, the linear relationship for the given bivariate data and the best fit curve of the given data by the method of least squares.

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	2	-	-	-	-	-	-	-	2	-	-	-
CO2	3	2	2	3	-	-	-	-	-	-	-	2	-	-	-
CO3	3	2	2	2	-	-	-	-	-	-	-	2	-	-	-
CO4	3	3	3	3	-	-	-	-	-	-	-	2	-	-	-
CO5	3	2	2	3	-	-	-	-	-	-	-	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** Miller & Freund's "Probability and Statistics for Engineers" Prentice Hall of India, New Delhi, 8th edition. 2011.
- T2** William W. Hines "Probability and Statistics in Engineering" John Wiley & Sons, 4th edition.2002.

**BOS APPROVED REFERENCE BOOKS:**

- R1** Jay L.Devore "Probability and Statistics for engineering and the sciences." Cengage Learning india, 8th edition, 2012.
- R2** S.C.Gupta&V.K.Kapoor "Fundamentals of Mathematical Statistics" Sultan Chand and sons, New Delhi. 11thedition 2002.

**Part-B****COURSE DELIVERY PLAN (LESSON PLAN): Section-A****UNIT-I : Probability**

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, course outcomes	1	28-11-17		TLM1	---	---	
2.	Introduction to probability	1	29-11-17		TLM1	CO1	T1	
3.	Basic definitions, simple problems	1	02-12-17		TLM1	CO1	T1	
4.	Problem on addition theorem	1	05-12-17		TLM1	CO1	T1, ,T2	
5.	Conditional probability	1	06-12-17		TLM1	CO1	T1	
6.	Multiplication theorem, examples	1	08-12-17		TLM1	CO1	T1	
7.	Independent events, theorems	1	09-12-17		TLM1	CO1	T1	
8.	Problems on multiplication theorem	1	12-12-17		TLM1	CO1	T1, ,T2	
9.	Baye's theorem	1	13-12-17		TLM1	CO1	T1	
10.	Problems on baye's theorem	1	15-12-17		TLM1	CO1	T1, ,T2	
11.	Random variables, Mathematical Expections	1	16-12-17		TLM1	CO1	T1	
12.	Problems on PMF	1	20-12-17		TLM1	CO1	T1,T2	
13.	Problems on PDF	1	22-12-17		TLM1	CO1	T1,T2	
14.	Tutorial -1	1	23-12-17		TLM3	CO1	T1	
No. of classes required to complete UNIT-I		14				No. of classes taken:		

**UNIT-II : Probability Distributions**

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	
15.	Binomial Distribution : mean and variance	1	26-12-17		TLM1	CO2	T1		
16.	Problems on Binomial distribution	1	27-12-17		TLM1	CO2	T1,T2		
17.	Fitting of binomial distribution	1	29-12-17		TLM1	CO2	T1,T2		
18.	Poisson distribution, mean and variance	1	30-12-17		TLM1	CO2	T1		
19.	Problems on Poisson distribution	1	02-01-18		TLM1	CO2	T1,T2		
20.	Fitting of poisson distributions	1	03-01-18		TLM1	CO2	T1,T2		
21.	Normal distribution	1	05-01-18		TLM1	CO2	T1		
22.	Problems on Normal Distribution	1	06-01-18		TLM1	CO2	T1,T2		
23.	Problems on Normal Distribution	1	09-01-18		TLM1	CO2	T1,T2		
24.	Gamma distribution, simple applications	1	10-01-18		TLM1	CO2	T1,T2		
25.	Tutorial-2	1	12-01-18		TLM3	CO2	T1,T2		
No. of classes required to complete UNIT-II		11			No. of classes taken:				

**UNIT-III : Sampling Distribution & Estimation**

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	
26.	Sampling distribution ,definitions	1	23-01-18		TLM1	CO3	T1		
27.	Sampling distribution of mean	1	24-01-18		TLM1	CO3	T1		
28.	problems	1	27-01-18		TLM1	CO3	T1,T2		
29.	Problems on central limit theorem	2	31-01-18		TLM1	CO3	T1,T2		
30.	Estimation	1	02-02-18		TLM1	CO3	T1		
31.	Point and interval estimation	1	03-02-18		TLM1	CO3	T1		
32.	Interval estimation of mean	1	06-02-18		TLM1	CO3	T1,T2		
33.	Interval estimation of proportion	1	07-02-18		TLM1	CO3	T1,T2		
34.	Tutorial-3	1	09-02-18		TLM3	CO3	T1,T2		
No. of classes required to complete UNIT-III		10			No. of classes taken:				

### UNIT-IV : Testing of Hypothesis

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
35.	Testing of Hypothesis , definitions	1	14-02-18		TLM1	CO4	T1	
36.	Z-test for single mean	1	16-02-18		TLM1	CO4	T1	
37.	Z-test for difference of means	1	17-02-18		TLM1	CO4	T1	
38.	Z-test for single proportion	1	20-02-18		TLM1	CO4	T1	
39.	Z-test for difference of proportions	1	21-02-18		TLM1	CO4	T1	
40.	t-test for single mean	1	23-02-18		TLM1	CO4	T1	
41.	t-test for difference of means	1	24-02-18		TLM1	CO4	T1	
42.	F-test for population variances	1	27-02-18		TLM1	CO4	T1	
43.	$\chi^2$ test for goodness of fit	1	28-02-18		TLM1	CO4	T1	
44.	$\chi^2$ test for independence of attributes	1	03-03-18		TLM1	CO4	T1	
45.	Tutorial-4	1	06-03-18		TLM3	CO4	T1	
No. of classes required to complete UNIT-IV		11			No. of classes taken:			

### UNIT-V : Correlation & Curve Fitting

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
46.	Simple Bi-variate Correlation	1	07-03-18		TLM1	CO5	T1	
47.	Problems on Pearson's Correlation	1	09-03-18		TLM1	CO5	T1,T2	
48.	Regression lines	1	13-03-18		TLM1	CO5	T1	
49.	Problems on Regression lines	1	14-03-18		TLM1	CO5	T1,T2	
50.	Problems on Regression coefficients	1	16-03-18		TLM1	CO5	T1,T2	
51.	Problems on rank Correlation	1	17-03-18		TLM1	CO5	T1,T2	
52.	Problems on repeated ranks	1	20-03-18		TLM1	CO5	T1,T2	
53.	Fitting a straight line, Second degree	1	21-03-18		TLM1	CO5	T1	
54.	Fitting of exponential and other curves	1	23-03-18		TLM1	CO5	T1	
55.	Tutorial-5	1	24-03-18		TLM3	CO5	T1,T2	
No. of classes required to complete UNIT-V		10			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
56.	Axioms of probability, results	1	05-12-17		TLM1	CO1	T1	
57.	Bivariate correlation	1	10-03-18		TLM1	CO1	T1	

### Teaching Learning Methods

<b>TLM1</b>	Chalk and Talk	<b>TLM4</b>	Demonstration (Lab/Field Visit)
<b>TLM2</b>	PPT	<b>TLM5</b>	ICT (NPTEL/Swayam Prabha/MOOCs)
<b>TLM3</b>	Tutorial	<b>TLM6</b>	Group Discussion/Project

### Part - C

### EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\% \text{ of Max}(B1,B2)+25\% \text{ of Min}(B1,B2)$	1,2,3,4,5	B=20
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

### PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

### PROGRAMME OUTCOMES (POs)

### PSOs

Course Instructor	Course Coordinator	Module Coordinator	HOD



## COURSE HANDOUT

**PROGRAM** : B.Tech., IV-Sem., CSE (SECTION A)  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : S355: PROFESSIONAL ETHICS & HUMAN VALUES  
**L-T-P STRUCTURE** : 3-0-0  
**COURSE CREDITS** : 0  
**COURSE INSTRUCTOR** : N SAMBASIVA RAO  
**COURSE COORDINATOR** : D KALYANI

**PRE-REQUISITE:**

- **COURSE OBJECTIVE** : To create an awareness on engineering ethics and human values
- To elucidate the importance of the social responsibility of an Engineer.
- To eliminate Ethical Dilemma and to develop autonomous nature in Engineers while discharging duties in professional life.

**COURSE OUTCOMES(CO)**

At the end of the course, the student

- Acquires and understanding of the basic concepts of Professional ethics and human values & Students also gain the practical implication of ethical theories
- Knows the duties and rights towards the society in an engineering profession
- Learns about dilemmas and moral issues and be able to apply these concepts to solve various Professional problems.
- Students also gain the practical implication of evacuation from risk & maintaining confidentiality.
- Meets the challenges and develop the skill as 'risk bearer'.
- Understands the importance of risk evacuation system in reality

**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
<b>CO1</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CO2</b>	-	-	L	-	-	-	-	S	-	-	-	-	-	-	-
<b>CO3</b>	-	L	M	-	-	-	-	-	M	-	-	-	-	-	-
<b>CO4</b>	-	-	-	L		M	-	-	L	-	-	-	-	-	-
<b>CO5</b>	-	-	-	-	-	L	M	-	-	-	-	L	-	-	-

**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** R.S.Nagarajan, a Textbook on “Professional Ethics and Human Values”, New Age Publishers – 2006.

**T2** Mike Martin and Roland Schinzinger, "Ethics in engineering", McGraw Hill, New York 1996.

**BOS APPROVED REFERENCE BOOKS:**

**R1** Govindarajan M, Natarajan S, Senthil Kumar V. S, “ Engineering Ethics”, Prentice Hall of India, New Delhi, 2004.

**R2** Charles D. Fleddermann, "Engineering Ethics", Pearson Education/ Prentice Hall, New Jersey,2004 ( Indian Reprint now available )

**COURSE DELIVERY PLAN (LESSON PLAN):**

**UNIT-I : ETHICS**

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	01	29-11-2017		<b>TLM1</b>			
2.	Course Outcomes	01	01-12-2017		<b>TLM1</b>			
3.	Introduction to UNIT-I	01	02-12-2017		<b>TLM1</b>			
4.	Senses of 'Engineering Ethics' -	01	06-12-2017		<b>TLM1</b>			
5.	Variety of moral issues -	01	08-12-2017		<b>TLM1</b>			
6.	Types of inquiry, Moral dilemmas Moral autonomy -	01	13-12-2017		<b>TLM1</b>			
7.	Consensus and controversy — Kohlberg's theory Gilligan's theory	01	15-12-2017		<b>TLM2</b>			
8.	Models of Professional Roles	01	16-12-2017		<b>TLM1</b>			
9.	Theories about right action- Self interest Customs and religion, Uses of Ethical theories.	01	20-12-2017		<b>TLM2</b>			
10.	TUTORIAL-1	01	22-12-2017		<b>TLM3</b>			
11.	Assignment/Quiz – 1	01	23-12-2017		<b>TLM6</b>			
No. of classes required to complete UNIT-I					No. of classes taken:			

**UNIT-II : HUMAN VALUES**

S.No.	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	Learning Outcome	Text Book	HOD Sign
-------	----------------------	----------------	-------------------	----------------	-------------------	------------------	-----------	----------

		Required	Completion	Completion	Methods	COs	followed	Weekly
12.	Introduction to UNIT-II	01	27-12-2017		<b>TLM1</b>			
13.	Morals, Values and Ethics –	01	29-12-2017		<b>TLM1</b>			
14.	Integrity – Work Ethic –	01	30-12-2017		<b>TLM2</b>			
15.	Service Learning - Civic Virtue – Respect for Others –	01	03-01-2018		<b>TLM1</b>			
16.	Living Peacefully – Caring – Sharing -	01	05-01-2018		<b>TLM2</b>			
17.	Honesty – Courage– Valuing Time - Cooperation – Commitment –	01	06-01-2018		<b>TLM1</b>			
18.	Empathy – Self Confidence – Character – Spirituality	01	10-01-2018		<b>TLM1</b>			
19.	TUTORIAL-2	01	12-01-2018		<b>TLM3</b>			
20.	Assignment/Quiz – 2	01	24-01-2018		<b>TLM6</b>			
No. of classes required to complete UNIT-II					No. of classes taken:			

### UNIT-III : ENGINEERING AS SOCIAL EXPERIMENTATION

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
21.	Introduction to UNIT-III	01	26-01-2018		<b>TLM1</b>			
22.	Engineering as experimentation -	01	27-01-2018		<b>TLM1</b>			
23.	Engineering Projects VS. Standard Experiments - Engineers as responsible experimenters	01	31-01-2018		<b>TLM2</b>			
24.	Codes of ethics - Industrial Standards - A balanced outlook on law-	01	02-02-2018		<b>TLM1</b>			
25.	The challenger case study. TUTORIAL-3	01	03-02-2018		<b>TLM3, TLM9</b>			
26.	Assignment/Quiz – 3	01	07-02-2018		<b>TLM6</b>			
No. of classes required to complete UNIT-III					No. of classes taken:			

### UNIT-IV : SAFETY, RESPONSIBILITIES AND RIGHTS

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
27.	Introduction to UNIT-IV	01	09-02-2018		<b>TLM1</b>			
28.	Safety and risk-	01	14-02-2018		<b>TLM1</b>			

29.	Assessment of safety and risk-	01	16-02-2018		<b>TLM1</b>			
30.	Risk benefit analysis and reducing risk-	01	17-02-2018		<b>TLM1</b>			
31.	Three Mile Island and Chernobyl case study - Collegiality and loyalty - Respect for authority -	01	21-02-2018		<b>TLM9</b>			
32.	Collective bargaining – Confidentiality-	01	23-02-2018		<b>TLM1</b>			
33.	Conflicts of interest - Occupational crime - Professional Rights- Employee rights-	01	24-02-2018		<b>TLM2</b>			
34.	Intellectual Property Rights (IPR) discrimination.	01	28-02-2018		<b>TLM1</b>			
35.	TUTORIAL-4	01	03-03-2018		<b>TLM3</b>			
36.	Assignment/Quiz – 4	01	07-03-2018		<b>TLM6</b>			
No. of classes required to complete UNIT-IV					No. of classes taken:			

#### UNIT-V : GLOBAL ISSUES

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
37.	Introduction to UNIT-V	01	09-03-2018		<b>TLM1</b>			
38.	Multinational Corporation's - Environmental ethics- computer ethics -weapons development	01	14-03-2018		<b>TLM1</b>			
39.	Engineers as managers - consulting engineers-	01	16-03-2018		<b>TLM2</b>			
40.	engineers as expert witnesses and advisors, Moral leadership -	01	17-03-2018		<b>TLM1</b>			
41.	sample code of Ethics (Specific to a particular Engineering Discipline).	01	21-03-2018		<b>TLM1</b>			
42.	TUTORIAL-5	01	23-03-2018		<b>TLM3</b>			
43.	Assignment/Quiz – 5	01	24-03-2018		<b>TLM6</b>			
No. of classes required to complete UNIT-V					No. of classes taken:			

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

### **EVALUATION PROCESS:**

<b>Evaluation Task</b>	<b>COs</b>	<b>Marks</b>
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\%$ of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

### **PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):**

**PEO I:** To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

**PEO II:** To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

**PEO III:** Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

**PEO IV:** To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

### **PROGRAMME OUTCOMES (POs):**

**Engineering Graduates will be able to:**

- 1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the **engineering and management principles and apply these to one's own work, as a member and leader** in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

#### **PROGRAMME SPECIFIC OUTCOMES (PSOs):**

##### **1. Programming Paradigms:**

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

##### **2. Data Engineering:**

To inculcate an ability to Analyze, Design and implement data driven applications into the students.

##### **3. Software Engineering:**

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

**Course Instructor**

**Course Coordinator**

**Module Coordinator**

**HOD**

## COURSE HANDOUT

**PROGRAM** : B.Tech., IV-Sem., C.S.E.  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : Principles of Programming Languages - **S350**  
**L-T-P STRUCTURE** : 3-1-0  
**COURSE CREDITS** : 3  
**COURSE INSTRUCTOR** : **R Chandra Sekharam**  
**COURSE COORDINATOR** : **R Chandra Sekharam**  
**PRE-REQUISITE: Knowledge of at least one Programming Language**

**COURSE OBJECTIVE:** This course provides the knowledge of syntax and semantics of different types of Programming Languages and their corresponding Design and Implementation issues.

**COURSE OUTCOMES (CO):**

CO1: Compare various categories of programming languages and their implementation methods.

CO2: Represent the programming languages syntax using BNF, EBNF and semantics using runtime environments.

CO3: Explore semantic issues of variables in different programming languages.

CO4: Analyze expression evaluation with reference to operator precedence & associativity.

CO5: Explore the design issues of Subprograms.

**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
<b>CO1</b>	3	1												3	
<b>CO2</b>	3	1												3	
<b>CO3</b>	3	1												3	
<b>CO4</b>	3	1												3	
<b>CO5</b>	3	1												3	

**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** Robert .W. Sebesta - Concepts of Programming Languages Pearson Education,6th edition.



**BOS APPROVED REFERENCE BOOKS:****R1** Ghezzi , Programming languages, John Wiley,3rd edition.**R2** Pratt and Zelkowitz - Programming Languages Design and Implementation PHI/Pearson Education,4th edition.**COURSE DELIVERY PLAN (LESSON PLAN): Section-A****UNIT-I : Preliminary Concepts**

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 and Clarification of Course Outcomes.	1	27/11/2017		<b>TLM1</b>	CO1 to CO5	-	
2.	Reasons for studying concepts of programming languages,	1	28/11/2017		<b>TLM1</b>	CO1	T1	
3.	Programming domains, Language Evaluation Criteria	1	29/11/2017		<b>TLM1</b>	CO1	T1	
4.	Tutorial-I	1	4/12/2017		<b>TLM3, TLM6</b>	CO1	T1	
5.	influences on Language design, Language categories	1	5/12/2017		<b>TLM1</b>	CO1	T1	
6.	Programming Paradigms – Imperative, Object Oriented	1	6/12/2017		<b>TLM1</b>	CO1	T1	
7.	Tutorial-II	1	8/12/2017		<b>TLM3, TLM6</b>	CO1	T1	
8.	functional Programming, Logic Programming, Programming Language Implementation	1	11/12/2017		<b>TLM1</b>	CO1	T1	
9.	Compilation, Virtual Machines, programming Environments	1	12/12/2017		<b>TLM1</b>	CO1	T1	
No. of classes required to complete UNIT-I					No. of classes taken:			

**UNIT-II: Syntax and Semantics**

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
10.	general Problem of describing Syntax and Semantics	1	13/12/2017		<b>TLM1</b>	CO2	T1	

11.	Tutorial-III	1	15/12/2017		<b>TLM3, TLM6</b>	CO2	T1	
12.	formal methods of describing syntax – BNF	1	18/12/2017		<b>TLM1</b>	CO2	T1	
13.	formal methods of describing syntax – BNF, EBNF for common programming languages features	1	19/12/2017		<b>TLM1</b>	CO2	T1	
14.	parse trees	1	20/12/2017		<b>TLM1</b>	CO2	T1	
15.	Tutorial-IV	1	22/12/2017		<b>TLM3, TLM6</b>	CO2	T1	
16.	ambiguous grammars	1	26/12/2017		<b>TLM1</b>	CO2	T1	
17.	attribute grammars	1	27/12/2017		<b>TLM1</b>	CO2	T1	
18.	Tutorial-V	1	29/12/2017		<b>TLM3, TLM6</b>	CO2	T1	
19.	Names, Bindings, and Scopes Introduction	1	1/1/2018		<b>TLM1</b>	CO2	T1	
20.	Names, Variables	1	2/1/2018		<b>TLM1</b>	CO2	T1	
21.	The Concept of Binding, Scope and Lifetime	1	3/1/2018		<b>TLM1</b>	CO2	T1	
22.	Tutorial-VI	1	5/1/2018		<b>TLM3, TLM6</b>	CO2	T1	
No. of classes required to complete UNIT-II					No. of classes taken:			

### UNIT-III: Data types

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
23.	Introduction	1	8/1/2018		<b>TLM1</b>	CO3	T1	
24.	primitive, character, user defined	1	9/1/2018		<b>TLM1</b>	CO3	T1	
25.	array, associative	1	10/1/2018		<b>TLM1</b>	CO3	T1	
26.	Tutorial-VII	1	12/1/2018		<b>TLM3, TLM6</b>	CO3	T1	
27.	record, union	1	22/1/2018		<b>TLM1</b>	CO3	T1	
28.	Names, Variable, concept of binding	1	23/1/2018		<b>TLM1</b>	CO3	T1	
29.	type checking, strong typing, type compatibility	1	24/1/2018		<b>TLM1</b>	CO3	T1	

30.	Named constants, variable initialization.	1	29/1/2018		<b>TLM1</b>	CO3	T1	
31.	<b>Abstract Data types:</b> Abstractions and encapsulation	1	30/1/2018		<b>TLM1</b>	CO3	T1	
32.	introductions to data abstraction, design issues, language examples	1	31/1/2018		<b>TLM1</b>	CO3	T1	
33.	Tutorial-VIII	1	2/2/2018		<b>TLM3, TLM6</b>	CO3	T1	
34.	C++ parameterized ADT	1	5/2/2018		<b>TLM1</b>	CO3	T1	
35.	object oriented programming in small talk, C++, Java	1	6/2/2018		<b>TLM1</b>	CO3	T1	
No. of classes required to complete UNIT-III					No. of classes taken:			

#### UNIT-IV: Expressions and Statements

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
36.	<b>Expressions and Statements:</b>	1	7/2/2018		<b>TLM1</b>	CO4	T1	
37.	Tutorial-IX	1	9/2/2018		<b>TLM3, TLM6</b>	CO4	T1	
38.	Arithmetic, relational and Boolean expressions	1	12/2/2018		<b>TLM1</b>	CO4	T1	
39.	Arithmetic, relational and Boolean expressions	1	14/2/2018		<b>TLM1</b>	CO4	T1	
40.	Tutorial-X	1	16/2/2018		<b>TLM3, TLM6</b>	CO4	T1	
41.	Short circuit evaluation	1	19/2/2018		<b>TLM1</b>	CO4	T1	
42.	mixed mode assignment, Assignment Statements	1	20/2/2018		<b>TLM1</b>	CO4	T1	
43.	Control Structures – Statement Level	1	21/2/2018		<b>TLM1</b>	CO4	T1	
44.	Tutorial-XI	1	23/2/2018		<b>TLM3, TLM6</b>	CO4	T1	
45.	Compound Statements	1	26/2/2018		<b>TLM1</b>	CO4	T1	
46.	Selection, Iteration	1	27/2/2018		<b>TLM1</b>	CO4	T1	
47.	Unconditional Statements, guarded commands		28/2/2018		<b>TLM1</b>		T1	
No. of classes required to complete					No. of classes taken:			

UNIT-IV				
---------	--	--	--	--

### UNIT-V : Subprograms and Blocks

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.	<b>Subprograms and Blocks:</b> Fundamentals of sub-programs	1	5/3/2018		<b>TLM1</b>	CO5	T1	
49.	Scope and lifetime of variable, static and dynamic scope	1	6/3/2018		<b>TLM1</b>	CO5	T1	
50.	Design issues of subprograms and operations	1	7/3/2018		<b>TLM1</b>	CO5	T1	
51.	Tutorial-XII	1	9/3/2018		<b>TLM3, TLM6</b>	CO5	T1	
52.	local referencing environments	1	12/3/2018		<b>TLM1</b>	CO5	T1	
53.	parameter passing methods	1	13/3/2018		<b>TLM1</b>	CO5	T1	
54.	parameters that are sub-program names	1	14/3/2018		<b>TLM1</b>	CO5	T1	
55.	Tutorial-XIII	1	16/3/2018		<b>TLM3, TLM6</b>	CO5	T1	
56.	design issues for functions	1	19/3/2018		<b>TLM1</b>	CO5	T1	
57.	user defined overloaded operators	1	20/3/2018		<b>TLM1</b>	CO5	T1	
58.	Synchronization, Concurrency concepts.	1	21/3/2018		<b>TLM1</b>	CO5	T1	
59.	Tutorial-XIV	1	23/3/2018		<b>TLM3, TLM6</b>	CO5	T1	
No. of classes required to complete UNIT-V					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
60.								
61.								
62.								

### Teaching Learning Methods

<b>TLM1</b>	Chalk and Talk	<b>TLM4</b>	Problem Solving	<b>TLM7</b>	Seminars or GD
<b>TLM2</b>	PPT	<b>TLM5</b>	Programming	<b>TLM8</b>	Lab Demo
<b>TLM3</b>	Tutorial	<b>TLM6</b>	Assignment or Quiz	<b>TLM9</b>	Case Study

### ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	27-11-2017	13-01-2018	7W
Sankranthi Holidays			
I Mid Examinations	16-01-2018	20-01-2018	1W
II Phase of Instructions	22-01-2018	24-03-2018	9W
II Mid Examinations	26-03-2018	31-03-2018	1W
Preparation and Practicals	02-04-2018	14-04-2018	2W
Semester End Examinations	16-04-2018	28-04-2018	2W

### EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\% \text{ of Max}(B1,B2)+25\% \text{ of Min}(B1,B2)$	1,2,3,4,5	B=20
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

Course Instructor

Course Coordinator

Module Coordinator

HOD

## **COURSE HANDOUT**

**PROGRAM** : B.Tech., IV-Sem., CSE  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : Software Engineering - S 381  
**L-T-P STRUCTURE** : 3-1-0  
**COURSE CREDITS** : 3  
**COURSE INSTRUCTOR** : Dr Ch Venkata Narayana  
**COURSE COORDINATOR** : Dr Ch Venkata Narayana  
**PRE-REQUISITE:** c programming, Database Management Systems.

**COURSE OBJECTIVE:** This course provides the knowledge on importance of software engineering and software development process concepts and learn about different software development process models and how to choose an appropriate model for a project in specific domain.

### **COURSE OUTCOMES (CO)**

CO1: Outline the fundamentals of software engineering concepts and software process standards  
CO2: Demonstrate appropriate process model and software engineering practices  
CO3: Analyze requirements of software system and explore all requirements gathering approaches  
CO4: Creating an architectural design using design engineering process  
CO5: Apply software strategies and software testing tactics for testing real time projects effectively

### **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
<b>CO1</b>	1	1									2				3
<b>CO2</b>	1	1	3							1	2				3
<b>CO3</b>	1	2								1	2				3
<b>CO4</b>	1		3	2			1			1					3
<b>CO5</b>	1			2											3

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

### **BOS APPROVED TEXT BOOKS:**

**T1** Roger S.Pressman, Software engineering- A practitioner's Approach, TMH International Edition, 6th edition, 2005

**BOS APPROVED REFERENCE BOOKS:**

- R1** Ian Sommerville, Software engineering, Pearson education, 8th edition, 2008.
- R2** Ali Behforooz and Frederick J Hudson, “Software Engineering Fundamentals”, Oxford University Press, New Delhi, 1996.
- R3** Stephan Schach, Software Engineering, TMH Publications, 2007.
- R4** Pfleeger and Lawrence Software Engineering: Theory and Practice, Pearson education, 2001, 1995, PHI, 2<sup>nd</sup> edition.

**COURSE DELIVERY PLAN (LESSON PLAN): Section-B****UNIT-I: Introduction to Software Engineering**

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 Software Engineering	1	28/11/17		<b>TLM1</b>	CO1	T1	
2.	Evolving role of Software	1	29/11/17		<b>TLM1</b>	CO1	T1	
3.	Software Definition and Characteristics	1	01/12/17		<b>TLM1</b>	CO1	T1	
4.	Changing nature of Software	1	02/12/17		<b>TLM1</b>	CO1	T1	
5.	Software Myths	1	05/12/17		<b>TLM1</b>	CO1	T1	
6.	Software Engineering – A layered technology	1	06/12/17		<b>TLM2</b>	CO1	T1	
7.	Process Framework – Generic Framework Activities	1	08/12/17		<b>TLM2</b>	CO1	R1	
8.	Umbrella Activities	1	09/12/17		<b>TLM2</b>	CO1	T1	
9.	CMMI Model	1	12/12/17		<b>TLM1</b>	CO1	T1	
10.	Process Patterns	1	13/12/17		<b>TLM1</b>	CO1	T1	
11.	Process Assessment and Approaches	1	15/12/17		<b>TLM1</b>	CO1	T1	

12.	Software Process Models	1	16/12/17		<b>TLM1</b>	CO1	T1	
13.	Process Technology & Product and Process	1	19/12/17		<b>TLM1</b>	CO1	T1	
14.	TUTORIAL-1	1	20/12/17		<b>TLM3</b>	CO1		
15.	Assignment/Quiz-1	1	22/12/17		<b>TLM6</b>	CO1		
No. of classes required to complete UNIT-I		15			No. of classes taken:			

### UNIT-II: Process Models

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
16.	Introduction to UNIT-II	1	23/12/17		<b>TLM1</b>	CO2	T1	
17.	Process Models: Prescriptive Models	1	26/12/17		<b>TLM1</b>	CO2	T1	
18.	Waterfall Model	1	27/12/17		<b>TLM1</b>	CO2	T1	
19.	Incremental Model	1	29/12/17		<b>TLM1</b>	CO2	T1	
20.	RAD Model	1	30/12/17		<b>TLM1</b>	CO2	T1	
21.	Evolutionary Process Models	1	2/01/18		<b>TLM2</b>	CO2	T1	
22.	Specialized Process Models	1	5/01/18		<b>TLM2</b>	CO2	T1	
23.	Unified Process	1	6/01/18		<b>TLM2</b>	CO2	T1	
24.	Software Engineering Practices	1	9/01/18		<b>TLM2</b>	CO2	T1	
25.	Tutorial 2	1	10/01/18		<b>TLM3</b>	CO2		
26.	Assignment/Quiz-2	1	12/01/18		<b>TLM6</b>	CO2		
No. of classes required to complete UNIT-II		11			No. of classes taken:			

### UNIT-III: Requirements Engineering

S.No .	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome	Text Book followed	HOD Sign Weekly
--------	----------------------	-------------------------	------------------------------	---------------------------	---------------------------	------------------	--------------------	-----------------



					Method s	COs		
27.	Introduction to UNIT-III	1	13/01/18		<b>TLM1</b>	CO3	T1	
28.	Requirements Engineering: Description	1	23/01/18		<b>TLM1</b>	CO3	T1	
29.	RE Tasks, Initiating the RE Process	1	24/01/18		<b>TLM1</b>	CO3	T1	
30.	Eliciting Requirements	1	27/01/18		<b>TLM1</b>	CO3	T1	
31.	Developing Use- Cases	1	30/01/18		<b>TLM2</b>	CO3	T1	
32.	Building the Analysis Models	1	31/01/18		<b>TLM2</b>	CO3	T1	
33.	Negotiating and Validating Requirements	1	2/02/18		<b>TLM2</b>	CO3	T1	
34.	Building the Analysis Model: Requirements Analysis	1	03/02/18		<b>TLM1</b>	CO3	T1	
35.	Analysis Modeling Approaches and Data Modeling	1	6/02/18		<b>TLM1</b>	CO3	T1	
36.	Object Oriented Analysis, Creating a Behavioral Model	1	7/02/18		<b>TLM1</b>	CO3	T1	
37.	Scenario Based Modeling, Flow Oriented Modeling	1	9/02/18		<b>TLM1</b>	CO3	T1	
38.	Tutorial 3	1	10/02/18		<b>TLM3</b>	CO3	T1	
39.	Assignment/Qui z-3	1	16/2/17		<b>TLM6</b>	CO3	T1	
No. of classes required to complete UNIT-III		13			No. of classes taken:			

#### **UNIT-IV: Design Engineering**

S.No .	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teachin g	Learnin g	Text Book	HOD Sign
-----------	-------------------------	-------------------	----------------------	-------------------	--------------	--------------	--------------	-------------

		Required	Completion	Completion	Learning Methods	Outcome COs	followed	Weekly
40.	Design Engineering: Design within context of Software Engineering	1	17/02/18		<b>TLM1</b>	CO4	T1	
41.	Design Process and Design Quality	1	20/2/18		<b>TLM1</b>	CO4	T1	
42.	Design Concepts, Design Model	1	21/2/18		<b>TLM1</b>	CO4	T1	
43.	Pattern Based Software Design	1	23/2/18		<b>TLM1</b>	CO4	T1	
44.	Software Architecture and Data Design	1	24/2/18		<b>TLM2</b>	CO4	T1	
45.	Architectural Styles and Patterns , Architectural Design	1	27/2/18		<b>TLM1</b>	CO4	T1	
46.	TUTORIAL-4	1	28/2/18		<b>TLM3</b>	CO4		
47.	Assignment/Quiz-4	1	2/3/18		<b>TLM6</b>	CO4		
No. of classes required to complete UNIT-IV		12			No. of classes taken:			

### UNIT-V: Testing Strategies

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.	A Strategic Approach to Software Testing, Strategic Issues	1	3/3/18		<b>TLM2</b>	CO5	T1	
49.	Test Strategies for Conventional Software	1	6/3/18		<b>TLM2</b>	CO5	T1	

50.	Test Strategies for Object Oriented Software	1	7/3/17		<b>TLM2</b>	CO5	T1	
51.	Validation Testing, System Testing	1	9/3/18		<b>TLM2</b>	CO5	T1	
52.	The art of Debugging	1	10/3/18		<b>TLM2</b>	CO5	T1	
53.	Software Testing Fundamentals	1	13/3/18		<b>TLM2</b>	CO5	T1	
54.	White Box Testing & Basis Path Testing	1	14/3/17		<b>TLM2</b>	CO5	T1	
55.	Control Structure and Black Box Testing	1	16/3/18		<b>TLM2</b>	CO5	T1	
56.	Black Box Testing and OO Testing	1	17/3/18		<b>TLM2</b>	CO5	T1	
57.	Tutorial 5	1	20/3/18		<b>TLM3</b>	CO5		
58.	Assignment 5/Quiz	1	21/3/17		<b>TLM6</b>	CO5		
No. of classes required to complete UNIT-V		14			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
59.	Code-Reading Tools	2	23/3/18			CO3		
60.	Documentation and Visualization	1	24/3/18			CO5		

### Teaching Learning Methods

<b>TLM1</b>	Chalk and Talk	<b>TLM4</b>	Problem Solving	<b>TLM7</b>	Seminars or GD
<b>TLM2</b>	PPT	<b>TLM5</b>	Programming	<b>TLM8</b>	Lab Demo
<b>TLM3</b>	Tutorial	<b>TLM6</b>	Assignment or Quiz	<b>TLM9</b>	Case Study

**ACADEMIC CALENDAR:**

<b>Description</b>	<b>From</b>	<b>To</b>	<b>Weeks</b>
I Phase of Instructions-1	27-11-2017	13-01-2018	7W
I Mid Examinations	16-01-2018	20-01-2018	1W
II Phase of Instructions	22-01-2018	24-03-2018	9W
II Mid Examinations	26-03-2018	31-03-2018	1W
Preparation and Practicals	02-4-2018	14-04-2018	2W
Semester End Examinations	16-04-2018	28-04-2018	2W

**EVALUATION PROCESS:**

<b>Evaluation Task</b>	<b>COs</b>	<b>Marks</b>
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\% \text{ of Max}(B1,B2)+25\% \text{ of Min}(B1,B2)$	1,2,3,4,5	B=20
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

Course Instructor

Course Coordinator

Module Coordinator

HOD

## COURSE HANDOUT

**PROGRAM** : B.Tech., IV-Sem., CSE  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : DATABASE MANAGEMENT SYSTEMS-S180  
**L-T-P STRUCTURE** : 3-1-2  
**COURSE CREDITS** : 3  
**COURSE INSTRUCTOR** : G BALU NARASIMHARAO  
**COURSE COORDINATOR** :

**PRE-REQUISITE:** Elementary set theory, concepts of relations and functions, propositional logic data structures (trees, Graphs, dictionaries) & File Concepts.

### **COURSE OBJECTIVE:**

This course enables the students to know about

- ✓ DBMS basic concepts, Database Languages.
- ✓ Data base Design.
- ✓ Normalization process and Transaction processing.
- ✓ Indexing.

### **COURSE OUTCOMES (CO)**

CO1: Understand DBMS concepts, architecture & Data model.

CO2: Apply the concepts of relational algebra, calculus, and also SQL.

CO3: Apply the normalization process for data base design.

CO4: Understand the issues in transaction processing and Analyze different Concurrency and recovery strategies of DBMS

CO5: Analyze different file organization techniques & Indexing Techniques.

### **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	1	2	-	-	-	-	-	-	-	-	-	-	3	-
CO2	3	3	-	-	1	-	-	-	-	-	-	-	2	3	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	2	3	-
CO4	2	1	2	-	-	-	-	-	-	-	-	-	1	3	-
CO5	2	1	2	-	-	-	-	-	-	-	-	-	1	3	-

**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** “Database Concepts”, Korth, Silbertz, Sudarshan, McGraw Hill.**T2** “Fundamentals Of Database Systems”, Elmasri, Navathe, Addison Wesley.**BOS APPROVED REFERENCE BOOKS:****R1** “Database Management System”, Raghu Ramakrishna, McGraw Hill**R2** “DBMS: Complete Practical Approach”, Maheshwari Jain, Firewall Media, New Delhi.**R3** “An Introduction to Database System”, Date C J, Addison Wesley.**COURSE DELIVERY PLAN (LESSON PLAN): Section-A****UNIT –I: Introduction & Data modeling using the Entity Relationship Model**

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, An overview of database management system	1	27-11-17		<b>TLM1</b>	CO1	T1,T2,R1	
2.	Database system Vs file system	1	28-11-17		<b>TLM1</b>	CO1	T1,T2,R1	
3.	Database system concepts and architecture	1	30-11-17		<b>TLM1</b>	CO1	T1,T2,R1	
4.	Data models schema and instances	1	02-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
5.	Data independence and data base language and interfaces	1	04-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
6.	Data definitions language, DML, Overall Database Structure	1	05-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
7.	ER model concepts-notation for ER diagram	1	07-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
8.	Mapping constraints, keys	1	09-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
9.	Concepts of Super Key, candidate key, primary key	1	11-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
10.	Generalization, aggregation	1	12-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
11.	Reduction of an ER diagrams to tables, Extended ER model	1	14-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
12.	Relationships of higher degree	1	18-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
13.	Tutorial – I	1	19-12-17		<b>TLM1</b>	CO1	T1,T2,R1	
No. of classes required to complete UNIT-I		13			No. of classes taken:			

**UNIT –II: Relational data Model and Language & Introduction to SQL**

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
14.	Relational data model concepts	1	21-12-17		TLM1	CO2	T1,T2,R1	
15.	Integrity constraints: entity integrity, referential integrity	1	23-12-17		TLM1	CO2	T1,T2,R1	
16.	Keys constraints, Domain constraints	1	25-12-17		TLM1	CO2	T1,T2,R1	
17.	Relational algebra	1	26-12-17		TLM1	CO2	T1,T2,R1	
18.	Characteristics of SQL, Advantage of SQL	1	28-12-17		TLM1	CO2	T1,T2,R1	
19.	SQL data types and literals, Types of SQL commands	1	30-12-17		TLM1	CO2	T1,T2,R1	
20.	SQL operators and their procedure	1	02-1-18		TLM1	CO2	T1,T2,R1	
21.	Tables, views and indexes,	1	04-1-18		TLM1	CO2	T1,T2,R1	
22.	Queries and sub queries, Aggregate functions	1	06-1-18		TLM1	CO2	T1,T2,R1	
23.	Insert, update and delete operations	1	08-1-18		TLM1	CO2	T1,T2,R1	
24.	Unions, Intersection, Minus, Cursors in SQL	1	09-1-18		TLM1	CO2	T1,T2,R1	
25.	Tutorial – II	1	11-1-18		TLM1	CO2	T1,T2,R1	
No. of classes required to complete UNIT-2		12			No. of classes taken:			

**UNIT –III: Normalization**

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
26.	Functional Dependencies	1	22-01-18		TLM1	CO3	T1,T2,R1	
27.	Normal Forms: First, Second	1	23-01-18		TLM1	CO3	T1,T2,R1	
28.	Third Normal Forms	1	25-01-18		TLM1	CO3	T1,T2,R1	
29.	BCNF, Inclusion Dependences	1	27-01-18		TLM1	CO3	T1,T2,R1	
30.	Loss Less Join Decompositions	1	29-01-18		TLM1	CO3	T1,T2,R1	
31.	Tutorial – III	1	30-01-18		TLM3			
32.	Normalization Using FD,MVD	1	01-02-18		TLM1	CO3	T1,T2,R1	
33.	Normalization Using JD	1	03-02-18		TLM1	CO3	T1,T2,R1	
34.	Alternative Approaches To Database Design	1	05-02-18		TLM1	CO3	T1,T2,R1	
35.	Tutorial – IV	1	06-02-18		TLM3			
No. of classes required to complete UNIT-3		10			No. of classes taken:			

**UNIT –IV: Transaction Processing Concepts & Concurrency Control techniques**

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	
36.	Transaction System	1	08-02-18		TLM1	CO4	T1,T2,R1		
37.	Testing Of Serializability	1	13-02-18		TLM1	CO4	T1,T2,R1		
38.	Serializability Of Schedules	1	15-02-18		TLM1	CO4	T1,T2,R1		
39.	Conflict & View Serializable Schedule	1	17-02-18		TLM1	CO4	T1,T2,R1		
40.	Recoverability, Log Based Recovery, Checkpoints,	1	19-02-18		TLM1	CO4	T1,T2,R1		
41.	ARIES Algorithm, Deadlock Handling	1	20-02-18		TLM1	CO4	T1,T2,R1		
42.	Tutorial –V	1	22-02-18		TLM3				
43.	Concurrency Control	1	24-02-18		TLM1	CO4	T1,T2,R1		
44.	Techniques For Concurrency Control	1	26-02-18		TLM1	CO4	T1,T2,R1		
45.	Time Stamping Protocols For Concurrency Control	1	27-02-18		TLM1	CO4	T1,T2,R1		
46.	Locking, Validation Based Protocol	1	01-03-18		TLM1	CO4	T1,T2,R1		
47.	Multiple Granularity	1	03-03-18		TLM1	CO4	T1,T2,R1		
48.	Recovery With Concurrent Transactions	1	05-03-18		TLM1	CO4	T1,T2,R1		
No. of classes required to complete UNIT-4		13			No. of classes taken:				

**UNIT-V: Storage and Indexing**

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
49.	RAID Levels	1	06-03-18		TLM1	CO5	T1,T2,R1	
50.	RAID Levels	1	08-03-18		TLM1	CO5	T1,T2,R1	
51.	Page Formats	1	12-03-18		TLM1	CO5	T1,T2,R1	
52.	Record Formats	1	13-03-18		TLM1	CO5	T1,T2,R1	
53.	File Types And Organization	1	15-03-18		TLM1	CO5	T1,T2,R1	
54.	File Types And Organization	1	17-03-18		TLM1	CO5	T1,T2,R1	
55.	Isam	1	19-03-18		TLM1	CO5	T1,T2,R1	



56.	B-Tree	1	20-03-218		<b>TLM1</b>	CO5	T1,T2,R1	
57.	B+-Tree, B+-Tree.	1	22-03-214		<b>TLM1</b>	CO5	T1,T2,R1	
58.	Tutorial – VI	1	24-03-18		<b>TLM3</b>			
No. of classes required to complete UNIT-5		10			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
59.	CODD RULES	2			<b>TLM1</b>	CO1-CO5	T1,T2,R1	

### 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

### ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1			
Sankranthi Holidays			
I Phase of Instructions-II			
I Mid Examinations			
II Phase of Instructions			
II Mid Examinations			
Preparation and Practicals			
Semester End Examinations			

### EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\%$ of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	1,2,3,4,5	A+B=25
Semester End Examinations	1,2,3,4,5	C=75
Total Marks: A+B+C	1,2,3,4,5	100

## **PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):**

**PEO I:** To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

**PEO II:** To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

**PEO III:** Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

**PEO IV:** To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

## **PROGRAMME OUTCOMES (POs):**

### **Engineering Graduates will be able to:**

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the **engineering and management principles and apply these to one's own work, as a member and leader** in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## **PROGRAMME SPECIFIC OUTCOMES (PSOs):**

### **1. Programming Paradigms:**

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

### **2. Data Engineering:**

To inculcate an ability to Analyze, Design and implement data driven applications into the students.

### **3. Software Engineering:**

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

**Course Instructor**

**Course Coordinator**

**Module Coordinator**

**HOD**



**COURSE HANDOUT**

**Part-A**

**PROGRAM** : B.Tech., IV-Sem., CSE  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : **Java Programming – S284**  
**L-T-P STRUCTURE** : 4-1-0  
**COURSE CREDITS** : 3  
**COURSE INSTRUCTOR** : **A.RAJAGOPAL**  
**COURSE COORDINATOR:** **A. Raja Gopal**

**PRE-REQUISITE:** The basic knowledge of Object oriented programming methodology and Graphical User Interface components.

**COURSE OBJECTIVE / COURSE EDUCATIONAL OBJECTIVES:**

This course provides the knowledge on the methodological and technical aspects of software design and programming based on OOP. The course will explore the basic knowledge and skills necessary to implement object-oriented programming techniques in software development through JAVA. The course will highlight the importance of GUI based applications and the development of those applications through JAVA and provides sufficient knowledge to enter the job market related to Web development.

**COURSE OUTCOMES(CO)**

*After completion of this course student should be able to,*

**CO1:** Understand & learn the history, Buzz words and the basic constructs of Java as per OOP concepts.

**CO2:** Understand the importance of Packages, Interfaces, Exception handling and have the ability to implement them as per real time scenarios.

**CO3:** Understand and analyse how Applet class & Multithreading are implemented in Java.

**CO4:** Analyse the importance of GUI, Event Handling and Implement GUI based applications using AWT.

**CO5:** Learn the basic concepts of JDBC and networking and to develop applications on Database Connectivity.

**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	-	-	-	-	-	-	-	-	-	-	-	-	3	-	1
CO2	-	-	-	-	1	-	-	-	-	-	-	-	3	-	-
CO3	1	-	-	-	-	-	-	-	-	-	-	-	3	-	-
CO4	-	-	2	-	-	-	-	-	-	-	-	-	3	-	-
CO5	-	-	1	-	-	-	-	-	-	-	-	-	3	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** Herbert schildt, Java: the complete reference, TMH Publications,5th edition.

**BOS APPROVED REFERENCE BOOKS:**

**R1** E. Balaguruswamy, 'Programming with JAVA', TMH Publications, 2nd Edition.

**R2** N.B.Venkateswarlu, E.V.Prasad, OOP through java, S chand 2010.

**Part-B****COURSE DELIVERY PLAN (LESSON PLAN): Section-B****UNIT-I : Java Language & Introducing classes**

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.	History of Java, The Byte code, Java Buzzwords	1	27-11-2017		TLM1	CO1	T1,R1	
2.	Arrays Introduction, 1-D and 2-D Arrays	1	29-11-2017		TLM1	CO1	T1,R1	
3.	Multidimensional Arrays with Example Programs	1	30-11-2017		TLM1	CO1	T1,R1	
4.	Type conversion and casting, Simple java programs	1	01-12-2017		TLM1	CO1	T1,R1,R2	
5.	Class fundamentals,	1	04-12-2017		TLM1	CO1	T1,R1	

	declaring objects							
6.	Access control, Constructors, Constructor Overloading	1	06-12-2017		<b>TLM1</b>	CO1	T1,R1	
7.	Methods ,Static methods, Method Overloading	1	07-12-2017		<b>TLM1</b>	CO1	T1,R1	
8.	Introduction to garbage collection,	1	08-12-2017		<b>TLM1</b>	CO1	T1,R1	
9.	String class and it's methods	1	11-12-2017		<b>TLM1</b>	CO1	T1,R1,R2	
10.	StringBuffer class and it's methods, example programs on String and StringBuffer class	1	13-12-2017		<b>TLM1, TLM5</b>	CO1	T1,R1,R2	
11.	Wrapper classes and it's basics, Methods in Wrapper classes	1	14-12-2017		<b>TLM1</b>	CO1	T1,R1	
12.	Assignment / Tutorial -1	1	15-12-2017		<b>TLM3, TLM6</b>	CO1		
No. of classes required to complete UNIT-I		12			No. of classes taken:			

### UNIT-II : Packages and Interfaces, Exception handling

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
13.	Accessing a package, Defining a package,	1	18-12-2017		<b>TLM1</b>	CO1	T1,R1	
14.	Understanding the CLASSPATH, Importing Packages	1	20-12-2017		<b>TLM1</b>	CO1	T1,R1	

15.	Exploring java.util.package: StringTokenizer class, Date class	1	21-12-2017		<b>TLM1</b>	CO2	T1,R1	
16.	Exploring java.util.package: StringTokenizer class, Date class	1	22-12-2017		<b>TLM1</b>	CO2	T1,R1,R2	
17.	Defining an interface, applying interfaces	1	27-12-2017		<b>TLM1</b>	CO2	T1,R1	
18.	Variables in interfaces and extending interfaces , Abstract classes	1	28-12-2017		<b>TLM1</b>	CO2	T1,R1	
19.	Differences between interfaces and classes	1	29-12-2017		<b>TLM1</b>	CO2	T1,R1	
20.	Object serialization	1	03-01-2018		<b>TLM1</b>	CO2	T1,R1	
21.	Exception handling fundamentals	1	04-01-2018		<b>TLM1</b>	CO2	T1,R1,R2	
22.	Exception types and examples	1	05-01-2018		<b>TLM1, TLM5</b>	CO2	T1,R1,R2	
23.	Usage of try & catch, Throw, throws keywords,	1	08-01-2018		<b>TLM1</b>	CO2	T1,R1,R2	
24.	Finally keyword and example programs	1	10-01-2018		<b>TLM1, TLM5</b>	CO2	T1,R1	
25.	Java's built in exceptions	1	11-01-2018		<b>TLM1</b>	CO2	T1,R1	
26.	Creating own exception sub classes	1	12-01-2018		<b>TLM1</b>	CO2	T1,R1	
27.	Assignment /	1	13-01-2018		<b>TLM3, TLM6</b>	CO2		



	Tutorial -2							
28.	<b>MID – I EXAMS</b>		16-01-2018			CO1 & CO2		
29.			17-01-2018					
30.			18-01-2018					
31.			17-01-2018					
32.			18-01-2018					
33.			20-01-2018					
No. of classes required to complete UNIT-II		15			No. of classes taken:			

### UNIT-III : Multithreading, Applet class

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.	Differences between multi threading and multitasking	1	22-01-2018		<b>TLM1</b>	CO3	T1,R1,R2	
35.	Java thread model, Creating thread	1	24-01-2018		<b>TLM1</b>	CO3	T1,R1,R2	
36.	Sample Programs	1	25-01-2018		<b>TLM4, TLM5</b>	CO3	T1,R1	
37.	Multiple threads	1	29-01-2018		<b>TLM1</b>	CO3	T1,R1	
38.	Synchronizing threads	1	31-01-2018		<b>TLM1</b>	CO3	T1,R1,R2	
39.	Sample Programs	1	01-02-2018		<b>TLM4, TLM5</b>	CO3	T1,R1	
40.	Concepts of Applets	1	02-02-2018		<b>TLM1</b>	CO3	T1,R1,R2	
41.	Differences between applets and applications	1	05-02-2018		<b>TLM1</b>	CO3	T1,R1	
42.	Applet architecture, skeleton	1	07-02-2018		<b>TLM1</b>	CO3	T1,R1,R2	
43.	Creating applets,	1	08-02-2018		<b>TLM1</b>	CO3	T1,R1,R2	

	passing parameters to applets							
44.	Working with graphics class	1	09-02-2018		<b>TLM1</b>	CO3	T1,R1,R2	
45.	Sample Programs	1	12-02-2018		<b>TLM4, TLM5</b>	CO3	T1,R1	
46.	Sample Programs	1	14-02-2018		<b>TLM4, TLM5</b>	CO3	T1,R1	
47.	Assignment / Tutorial-3	1	15-02-2018		<b>TLM3, TLM6</b>	CO3		
No. of classes required to complete UNIT-III		14			No. of classes taken:			

#### UNIT-IV : Event Handling, AWT controls

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.	Events handling mechanisms, Events, Event sources	1	16-02-2018		<b>TLM1, TLM2</b>	CO4	T1,R1,R2	
49.	Event classes, Event Listeners interfaces	1	19-02-2018		<b>TLM1, TLM2</b>	CO4	T1,R1,R2	
50.	Delegation event model	1	21-02-2018		<b>TLM1</b>	CO4	T1,R1,R2	
51.	Handling mouse and keyboard events	1	22-02-2018		<b>TLM1, TLM2</b>	CO4	T1,R1,R2	
52.	Adapter classes, inner classes.	1	23-02-2018		<b>TLM1, TLM2</b>	CO4	T1,R1,R2	
53.	label, button	1	26-02-2018		<b>TLM1, TLM2</b>	CO4	T1,R1,R2	
54.	Scrollbars, text components	1	28-02-2018		<b>TLM1, TLM2</b>	CO4	T1,R1,R2	
55.	Check box, check box groups,	1	01-03-2018		<b>TLM1, TLM2</b>	CO4	T1,R1,R2	

	Choices controls, lists							
56.	Scrollbar, text field	1	02-03-2018		<b>TLM1</b>	CO4	T1,R1,R2	
57.	layout managers – border, grid	1	05-03-2018		<b>TLM1</b>	CO4	T1,R1	
58.	Flow, card, Containers	1	07-03-2018		<b>TLM1</b>	CO4	T1,R1	
59.	Sample Programs	1	08-03-2018		<b>TLM5</b>	CO4	T1,R1	
60.	Assignment/ Tutorial-4	1	09-03-2018		<b>TLM3, TLM6</b>	CO4	T1,R1	
No. of classes required to complete UNIT-IV		13			No. of classes taken:			

#### UNIT-V : JDBC, Networking

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
61.	JDBC Introduction, Types of Drivers	1	12-03-2018		<b>TLM1, TLM2</b>	CO5	T1,R1	
62.	Procedure to establish a connection between java applications and database	1	14-03-2018		<b>TLM1, TLM2</b>	CO5	T1,R1	
63.	Types of statements, Result set types.	1	15-03-2018		<b>TLM1, TLM2</b>	CO5	T1,R1	
64.	Networking basics	1	16-03-2018		<b>TLM1</b>	CO5	T1,R1	
65.	Address, ports, Sockets	1	19-03-2018		<b>TLM1</b>	CO5	T1,R1	
66.	Sample Programs	1	21-03-2018		<b>TLM4, TLM5</b>	CO5	T1,R1	
67.	Sample	1	22-03-2018		<b>TLM4, TLM5</b>	CO5	T1,R1	

	Programs							
68.	Sample Programs	1	23-03-2018		<b>TLM4, TLM5</b>	CO5	T1,R1	
69.	Assignment/ Tutorial-5	1	24-03-2018		<b>TLM3, TLM6, TLM9</b>	CO5		
70.	<b>MID-II EXAMS</b>		26-03-2018			CO3,		
71.			27-03-2018					
72.			28-03-2018				CO4,	
73.			29-03-2018			CO5		
74.			30-01-2018					
75.			31-03-2018					
No. of classes required to complete UNIT-V		9			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
76.								
77.								
78.								

#### Teaching Learning Methods

<b>TLM1</b>	Chalk and Talk	<b>TLM4</b>	Problem Solving	<b>TLM7</b>	Seminars or GD
<b>TLM2</b>	PPT	<b>TLM5</b>	Programming	<b>TLM8</b>	Lab Demo
<b>TLM3</b>	Tutorial	<b>TLM6</b>	Assignment or Quiz	<b>TLM9</b>	Case Study

#### ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	27-11-2017	13-01-2018	7
I Mid Examinations	16-01-2018	20-01-2018	1
II Phase of Instructions	22-01-2018	24-03-2018	9
II Mid Examinations	26-03-2018	31-03-2018	1
Preparation and Practicals	02-04-2018	14-04-2018	2
Semester End Examinations	16-04-2018	28-04-2018	2

## Part - C

### EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\%$ of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

### PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO I: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

### PROGRAM OUTCOMES

#### Engineering Graduates will be able to:

- Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## **PROGRAM SPECIFIC OUTCOMES**

### **1. Programming Paradigms:**

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

### **2. Data Engineering:**

To inculcate an ability to Analyse, Design and implement data driven applications into the students.

### **3. Software Engineering:**

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

**Course  
Instructor**

**Course Coordinator**

**Module Coordinator**

**HOD**

## COURSE HANDOUT

**PROGRAM** : B.Tech., IV-Sem., CSE – B/S

**ACADEMIC YEAR** : 2017-18

**COURSE NAME & CODE** : Computer Graphics – S-167

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

**COURSE CREDITS** : 3

**COURSE INSTRUCTOR** : T UDAYA KUMAR

**COURSE COORDINATOR** : T UDAYA KUMAR

**PRE-REQUISITE:** Knowledge of coordinate system in mathematics.

**COURSE OBJECTIVE:** This course provides knowledge on the history and evolution of computer graphics, both hardware and software. This course gives an understanding of 2D graphics and algorithms which includes line drawing, polygon filling, clipping, and transformations. Gives an understanding of the concepts & techniques used in 3D computer graphics, including viewing transformations, hierarchical modeling, color, lighting and texture mapping.

### **COURSE OUTCOMES (CO)**

**CO1:** Understand the various applications of graphics and interactive input and output devices.

**CO2:** Design and Implement the algorithms to draw the line, circle and ellipse.

**CO3:** Apply different geometrical transformations such as translation, scaling, rotation, reflection and shear in 2D

**CO4:** Understand 2D Coordinate transformation, viewing functions and various clipping algorithms

**CO5:** Understand the various display methods, geometrical & coordinate transformations in 3D.

### **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
<b>CO1</b>	2		1										3		
<b>CO2</b>	2	1											3		
<b>CO3</b>	2	1											3		
<b>CO4</b>	2	1											3		
<b>CO5</b>	2	1											3		

**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** Donald Hearn & M. Pauline Baker, "Computer Graphics C Version", Pearson Education, New Delhi, 2004 (Chapters 1 to 12 except 10-9 to 10-22 of the Text book)

**BOS APPROVED REFERENCE BOOKS:**

**R1** David F. Rogers; "Procedural Elements for Computer Graphics" TMH Publications.

**R2** J. D. Foley, S. K Feiner, A Van Dam F. H John; "Computer Graphics: Principles & Practice in C"; Pearson.

**R3** Francis S Hill Jr; "Computer Graphics using Open GL"; Pearson Education, 2004.

**COURSE DELIVERY PLAN (LESSON PLAN): Section-B****UNIT-I : Introduction**

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, Course Outcomes	1	28-11-2017		<b>TLM2</b>	CO1	Donald Hearn & M. Pauline Baker, "Computer Graphics C Version", Pearson Education, New Delhi, 2004	
2.	CAD, Presentation Graphics	1	29-11-2017		<b>TLM2</b>	CO1		
3.	Computer Art, Entertainment	1	30-11-2017		<b>TLM2</b>	CO1		
4.	Education & Training , Image processing	1	02-12-2017		<b>TLM2</b>	CO1		
5.	Visualization, GUI	1	05-12-2017		<b>TLM2</b>	CO1		
6.	<b>Assignment \ Tutorial-1</b>	1	06-12-2017		<b>TLM3/6</b>	CO1		
7.	CRT, Raster Scan Display	1	07-12-2017		<b>TLM2</b>	CO1		
8.	Random scan Display, DVST	1	09-12-2017		<b>TLM2</b>	CO1		
9.	Flat panel displays, refresh CRT	1	12-12-2017		<b>TLM2</b>	CO1		
10.	Raster scan systems 2	1	13-12-2017		<b>TLM2</b>	CO1		
11.	Random scan system	1	14-12-2017		<b>TLM2</b>	CO1		
12.	Workstations, Graphics Monitors	1	16-12-2017		<b>TLM2</b>	CO1		
13.	Input Devices	1	19-12-2017		<b>TLM2</b>	CO1		
No. of classes required to complete UNIT-I		13			No. of classes taken:			



## UNIT-II : Output primitives

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
14.	Points and lines	1	20-12-2017		<b>TLM1</b>	CO2	Donald Hearn & M. Pauline Baker, "Computer Graphics C Version", Pearson Education, New Delhi, 2004	
15.	DDA line drawing algorithm	1	21-12-2017		<b>TLM1</b>	CO2		
16.	DDA-Example	1	23-12-2017		<b>TLM1</b>	CO2		
17.	Bresenham Algorithm for slope $0 < m < 1$	1	26-12-2017		<b>TLM1</b>	CO2		
18.	Parallel line drawing algorithm	1	27-12-2017		<b>TLM1</b>	CO2		
19.	Mid point circle algorithm	1	28-12-2017		<b>TLM6</b>	CO2		
20.	Ellipse Drawing Algorithm	1	30-12-2017		<b>TLM1</b>	CO2		
21.	Example - Ellipse Drawing Algorithm	1	02-01-2018		<b>TLM1</b>	CO2		
22.	Loading the Frame Buffer, Line Functions, Parallel Curve algorithms	1	03-01-2018		<b>TLM1</b>	CO2		
23.	Other Curves, Pixel Addressing, Filled Area Primitives	1	04-01-2018		<b>TLM1</b>	CO2		
24.	Scan Line Polygon Fill Algorithm	1	06-01-2018		<b>TLM1</b>	CO2		
25.	Inside-Outside Test, Boundary Fill	1	09-01-2018		<b>TLM1</b>	CO2		
26.	Flood Fill Algorithm and Filled Area Functions	1	10-01-2018		<b>TLM1</b>	CO2		
27.	Bresenham Example	1	11-01-2018		<b>TLM1</b>	CO2		
28.	<b>Assignment \ Tutorial-2</b>	1	13-01-2018		<b>TLM1</b>	CO2		
No. of classes required to complete UNIT-II		15			No. of classes taken:			

### UNIT-III : Two Dimensional Geometric Transformations

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
29.	Basic Transformations (translation, rotation, scaling)	1	23-01-2018		<b>TLM1</b>	CO3	Donald Hearn & M. Pauline Baker, "Computer Graphics C Version", Pearson Education, New Delhi, 2004	
30.	Matrix Representations	1	24-01-2018		<b>TLM1</b>	CO3		
31.	Homogeneous Coordinates	1	25-01-2018		<b>TLM1</b>	CO3		
32.	Composite Transformations	1	27-01-2018		<b>TLM1</b>	CO3		
33.	Composite Transformations	1	30-01-2018		<b>TLM1</b>	CO3		
34.	General pivot point rotation, Fixed point scaling	1	31-01-2018		<b>TLM1</b>	CO3		
35.	Other Transformations (reflection, shear)	1	01-02-2018		<b>TLM1</b>	CO3		
36.	Transformations between Coordinate Systems	1	03-02-2018		<b>TLM1</b>	CO3		
37.	Affine Transformations	1	06-02-2018		<b>TLM1</b>	CO3		
38.	Transformation Functions	1	07-02-2018		<b>TLM1</b>	CO3		
39.	Raster methods for Transformation	1	08-02-2018		<b>TLM1</b>	CO3		
40.	<b>Assignment \ Tutorial-3</b>	1	10-02-2018		<b>TLM6</b>	CO3		
No. of classes required to complete UNIT-III		12			No. of classes taken:			

### UNIT-IV : Two Dimensional Viewing

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
41.	The viewing Pipeline Viewing Coordinate Reference Frame	1	13-02-2018		<b>TLM1</b>	CO4	Donald Hearn & M. Pauline Baker, "Computer Graphics C Version", Pearson Education, New Delhi, 2004	
42.	Window-to-Viewport Coordinate Transformation, Two Dimensional Viewing Functions	1	14-02-2018		<b>TLM1</b>	CO4		
43.	Point Clipping, Line Clipping introduction	1	15-02-2018		<b>TLM1</b>	CO4		
44.	Cohen-sutherland line clipping	1	17-02-2018		<b>TLM1</b>	CO4		
45.	Cyrus-Beck Line Clipping	1	20-02-2018		<b>TLM1</b>	CO4		
46.	Liang –Barsky Line Clipping	1	21-02-2018		<b>TLM1</b>	CO4		
47.	Sutherland-Hodgeman polygon clipping	1	22-02-2018		<b>TLM1</b>	CO4		
48.	Sutherland-hodgmen polygon clipping	1	24-02-2018		<b>TLM1</b>	CO4		
49.	Weiler- Atherton Polygon Clipping	1	27-02-2018		<b>TLM1</b>	CO4		
50.	<b>Assignment \ Tutorial-4</b>	1	28-02-2018		<b>TLM6</b>	CO4		
No. of classes required to complete UNIT-IV		10			No. of classes taken:			

### UNIT-V : Three Dimensional Concepts and Object representations

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
51.	3D display methods (parallel, perspective projections)	1	01-03-2018		<b>TLM1</b>	CO5	Donald Hearn & M. Pauline Baker, "Computer Graphics C Version", Pearson Education, New Delhi, 2004	
52.	Depth Queuing, visible line and surface, identification	1	03-03-2018		<b>TLM1</b>	CO5		
53.	Surface rendering, Exploded and cutaway views, stereoscopic views	1	06-03-2018		<b>TLM1</b>	CO5		
54.	Polygon Surfaces, Polygon Tables	1	07-03-2018		<b>TLM1</b>	CO5		
55.	Curved Lines and Surfaces, Quadratic Surfaces	1	08-03-2018		<b>TLM1</b>	CO5		
56.	Translation	1	10-03-2018		<b>TLM1</b>	CO5		
57.	Rotation	1	13-03-2018		<b>TLM1</b>	CO5		
58.	scaling	1	14-03-2018		<b>TLM1</b>	CO5		
59.	Composite transformations	1	15-03-2018		<b>TLM1</b>	CO5		
60.	Coordinate Axes Rotation, General 3DRotation	1	17-03-2018		<b>TLM1</b>	CO5		
61.	Other Transformations (reflection, shear)	1	20-03-2018		<b>TLM1</b>	CO5		
62.	3D Transformation Functions, Modeling & Coordinate Transformations	1	21-03-2018		<b>TLM1</b>	CO5		
63.	<b>Assignment \ Tutorial-5</b>	1	22-03-2018		<b>TLM3/6</b>	CO5		
No. of classes required to complete UNIT-V		13			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
64.	Programs to display graphic images to given specifications.	1	24-03-2018		TLM2			

### Teaching Learning Methods

<b>TLM1</b>	Chalk and Talk	<b>TLM4</b>	Problem Solving	<b>TLM7</b>	Seminars or GD
<b>TLM2</b>	PPT	<b>TLM5</b>	Programming	<b>TLM8</b>	Lab Demo
<b>TLM3</b>	Tutorial	<b>TLM6</b>	Assignment or Quiz	<b>TLM9</b>	Case Study

### ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions	27-11-200147	13-01-2018	7W
Sankranthi Holidays	14-01-2018	15-01-2018	2D
I Mid Examinations	16-01-2018	20-01-2018	1W
II Phase of Instructions	22-012018	24-03-20018	9W
II Mid Examinations	26-03-20158	31-03-2018	1W
Preparation and Practicals	02-04-2018	14-04-2018	2W
Semester End Examinations	16-04-2018	28-04-2018	2W

### EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\% \text{ of Max}(B1,B2)+25\% \text{ of Min}(B1,B2)$	1,2,3,4,5	B=20
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

### PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

**PEO I:** To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

**PEO II:** To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

**PEO III:** Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

**PEO IV:** To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

**PROGRAMME OUTCOMES (POs):**

**Engineering Graduates will be able to:**

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## **PROGRAMME SPECIFIC OUTCOMES (PSOs):**

### **1. Programming Paradigms:**

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

### **2. Data Engineering:**

To inculcate an ability to Analyze, Design and implement data driven applications into the students.

### **3. Software Engineering:**

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

**Course Instructor**

**Course Coordinator**

**Module Coordinator**

**HOD**

## COURSE HANDOUT

### Part-A

**PROGRAM** : B.Tech., IV-Sem., CSE - B  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : PROBABILITY AND STATISTICS - S 351  
**L-T-P STRUCTURE** : 3-1-0  
**COURSE CREDITS** : 3  
**COURSE INSTRUCTOR** : Y.P.C.S. ANIL KUMAR  
**COURSE COORDINATOR** : M.RAMI REDDY  
**PRE-REQUISITES:** None

**COURSE EDUCATIONAL OBJECTIVES (CEOs)** : In this course the students are able to understand the applications of probability distributions. They also learn various sample tests in testing the hypothesis and correlation, regression of a bi-variate data.

**COURSE OUTCOMES (COs):** At the end of the course, the student will be able to

- CO1: Predict various probabilistic situations based on various laws of probability and random variables.  
CO2: Distinguish among the criteria of selection and application of Binomial, Poisson, Normal and Gamma distributions.  
CO3: Estimate the point and interval estimators of mean, variance and proportion for the given Sample data.  
CO4: Apply various sample tests like Z-test, t-test, F-test and  $\chi^2$  -test for decision making regarding the population based on sample data.  
CO5: Estimate the level of correlation, the linear relationship for the given bivariate data and the best fit curve of the given data by the method of least squares.

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	2	-	-	-	-	-	-	-	2	-	-	-
CO2	3	2	2	3	-	-	-	-	-	-	-	2	-	-	-
CO3	3	2	2	2	-	-	-	-	-	-	-	2	-	-	-
CO4	3	3	3	3	-	-	-	-	-	-	-	2	-	-	-
CO5	3	2	2	3	-	-	-	-	-	-	-	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** Miller & Freund's "Probability and Statistics for Engineers" Prentice Hall of India, New Delhi, 8th edition. 2011.
- T2** William W. Hines "Probability and Statistics in Engineering" John Wiley & Sons, 4th edition.2002.

**BOS APPROVED REFERENCE BOOKS:**

- R1** Jay L.Devore "Probability and Statistics for engineering and the sciences." Cengage Learning india, 8th edition, 2012.
- R2** S.C.Gupta&V.K.Kapoor "Fundamentals of Mathematical Statistics" Sultan Chand and sons, New Delhi. 11thedition 2002.

**Part-B****COURSE DELIVERY PLAN (LESSON PLAN): Section-B****UNIT-I : Probability**

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, course outcomes	1	27-11-17		TLM1	---	---	
2.	Introduction to probability	1	28-11-17		TLM1	CO1	T1	
3.	Basic definitions, simple problems	1	30-11-17		TLM1	CO1	T1	
4.	Problem on addition theorem	1	01-12-17		TLM1	CO1	T1, ,T2	
5.	Conditional probability	1	04-12-17		TLM1	CO1	T1	
6.	Multiplication theorem, examples	1	05-12-17		TLM1	CO1	T1	
7.	Independent events, theorems	1	07-12-17		TLM1	CO1	T1	
8.	Problems on multiplication theorem	1	08-12-17		TLM1	CO1	T1, ,T2	
9.	Baye's theorem	1	11-12-17		TLM1	CO1	T1	
10.	Problems on baye's theorem	1	12-12-17		TLM1	CO1	T1, ,T2	
11.	Random variables, Mathematical Expectations	1	14-12-17		TLM1	CO1	T1	
12.	Problems on PMF	1	15-12-17		TLM1	CO1	T1,T2	
13.	Problems on PDF	2	18-12-17		TLM1	CO1	T1,T2	
14.	Tutorial -1	1	19-12-17		TLM3	CO1	T1	
No. of classes required to complete UNIT-I		15			No. of classes taken:			

### UNIT-II : Probability Distributions

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	
15.	Binomial Distribution : mean and variance	1	21-12-17		TLM1	CO2	T1		
16.	Problems on Binomial distribution	1	26-12-17		TLM1	CO2	T1,T2		
17.	Fitting of binomial distribution	1	28-12-17		TLM1	CO2	T1,T2		
18.	Poisson distribution, mean and variance	1	29-12-17		TLM1	CO2	T1		
19.	Problems on Poisson distribution	1	02-01-18		TLM1	CO2	T1,T2		
20.	Fitting of poisson distributions	1	04-01-18		TLM1	CO2	T1,T2		
21.	Normal distribution	1	05-01-18		TLM1	CO2	T1		
22.	Problems on Normal Distribution	1	08-01-18		TLM1	CO2	T1,T2		
23.	Problems on Normal Distribution	1	09-01-18		TLM1	CO2	T1,T2		
24.	Gamma distribution, simple applications	1	11-01-18		TLM1	CO2	T1,T2		
25.	Tutorial-2	1	12-01-18		TLM3	CO2	T1,T2		
No. of classes required to complete UNIT-II		11			No. of classes taken:				

### UNIT-III : Sampling Distribution & Estimation

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	
26.	Sampling distribution ,definitions	1	22-01-18		TLM1	CO3	T1		
27.	Sampling distribution of mean	1	23-01-18		TLM1	CO3	T1		
28.	problems	1	25-01-18		TLM1	CO3	T1,T2		
29.	Problems on central limit theorem	2	29-01-18		TLM1	CO3	T1,T2		
30.	Estimation	1	30-01-18		TLM1	CO3	T1		
31.	Point and interval estimation	1	01-02-18		TLM1	CO3	T1		
32.	Interval estimation of mean	1	02-02-18		TLM1	CO3	T1,T2		
33.	Interval estimation of proportion	1	05-02-18		TLM1	CO3	T1,T2		
34.	Tutorial-3	1	06-02-18		TLM3	CO3	T1,T2		
No. of classes required to complete UNIT-III		10			No. of classes taken:				

### UNIT-IV : Testing of Hypothesis

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
35.	Testing of Hypothesis , definitions	1	08-02-18		TLM1	CO4	T1	
36.	Z-test for single mean	1	09-02-18		TLM1	CO4	T1	
37.	Z-test for difference of means	1	12-02-18		TLM1	CO4	T1	
38.	Z-test for single proportion	1	15-02-18		TLM1	CO4	T1	
39.	Z-test for difference of proportions	1	16-02-18		TLM1	CO4	T1	
40.	t-test for single mean	1	19-02-18		TLM1	CO4	T1	
41.	t-test for difference of means	1	20-02-18		TLM1	CO4	T1	
42.	F-test for population variances	1	22-02-18		TLM1	CO4	T1	
43.	$\chi^2$ test for goodness of fit	1	23-02-18		TLM1	CO4	T1	
44.	$\chi^2$ test for independence of attributes	1	26-03-18		TLM1	CO4	T1	
45.	Tutorial-4	1	27-03-18		TLM3	CO4	T1	
No. of classes required to complete UNIT-IV		11			No. of classes taken:			

### UNIT-V : Correlation & Curve Fitting

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
46.	Simple Bi-variate Correlation	1	01-03-18		TLM1	CO5	T1	
47.	Problems on Pearson's Correlation	1	05-03-18		TLM1	CO5	T1,T2	
48.	Problems	1	06-03-18					
49.	Regression lines	1	08-03-18		TLM1	CO5	T1	
50.	Problems on Regression lines	1	09-03-18		TLM1	CO5	T1,T2	
51.	Problems on Regression coefficients	1	12-03-18		TLM1	CO5	T1,T2	
52.	Problems on rank Correlation	1	13-03-18		TLM1	CO5	T1,T2	
53.	Problems on repeated ranks	1	15-03-18		TLM1	CO5	T1,T2	
54.	Fitting a straight line, Second degree	1	19-03-18		TLM1	CO5	T1	
55.	Fitting of exponential and other curves	1	20-03-18		TLM1	CO5	T1	
56.	Fitting of exponential and other curves	1	23-03-18		TLM1	CO5	T1	
57.	Tutorial-5	1	24-03-18		TLM3	CO5	T1,T2	
					No. of classes taken:			

No. of classes required to complete UNIT-V	12	
--	----	--

### 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
58.	Axioms of probability, results	1	05-12-17		TLM1	CO1	T1	
59.	Bivariate correlation	1	10-03-18		TLM1	CO1	T1	

### Teaching Learning Methods

<b>TLM1</b>	Chalk and Talk	<b>TLM4</b>	Demonstration (Lab/Field Visit)
<b>TLM2</b>	PPT	<b>TLM5</b>	ICT (NPTEL/Swayam Prabha/MOOCs)
<b>TLM3</b>	Tutorial	<b>TLM6</b>	Group Discussion/Project

### Part - C

### EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\% \text{ of Max}(B1,B2)+25\% \text{ of Min}(B1,B2)$	1,2,3,4,5	B=20
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

### PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

### PROGRAMME OUTCOMES (POs)

### PSOs

Y.P.C.S. Anil Kumar	M. Rami Reddy	Dr. A. Rami Reddy	Dr. A. Rami Reddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

## COURSE HANDOUT

**PROGRAM** : B.Tech., IV-Sem., CSE  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : S355: PROFESSIONAL ETHICS & HUMAN VALUES  
**L-T-P STRUCTURE** : 3-0-0  
**COURSE CREDITS** : 0  
**COURSE INSTRUCTOR** : N SAMBASIVA RAO  
**COURSE COORDINATOR** : D KALYANI

**PRE-REQUISITE:**

- **COURSE OBJECTIVE** : To create an awareness on engineering ethics and human values
- To elucidate the importance of the social responsibility of an Engineer.
- To eliminate Ethical Dilemma and to develop autonomous nature in Engineers while discharging duties in professional life.

**COURSE OUTCOMES(CO)**

At the end of the course, the student

- Acquires and understanding of the basic concepts of Professional ethics and human values & Students also gain the practical implication of ethical theories
- Knows the duties and rights towards the society in an engineering profession
- Learns about dilemmas and moral issues and be able to apply these concepts to solve various Professional problems.
- Students also gain the practical implication of evacuation from risk & maintaining confidentiality.
- Meets the challenges and develop the skill as 'risk bearer'.
- Understands the importance of risk evacuation system in reality

**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
<b>CO1</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CO2</b>	-	-	L	-	-	-	-	S	-	-	-	-	-	-	-
<b>CO3</b>	-	L	M	-	-	-	-	-	M	-	-	-	-	-	-
<b>CO4</b>	-	-	-	L		M	-	-	L	-	-	-	-	-	-
<b>CO5</b>	-	-	-	-	-	L	M	-	-	-	-	L	-	-	-

**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** R.S.Nagarajan, a Textbook on “Professional Ethics and Human Values”, New Age Publishers – 2006.

**T2** Mike Martin and Roland Schinzinger, "Ethics in engineering", McGraw Hill, New York 1996.

**BOS APPROVED REFERENCE BOOKS:**

**R1** Govindarajan M, Natarajan S, Senthil Kumar V. S, “ Engineering Ethics”, Prentice Hall of India, New Delhi, 2004.

**R2** Charles D. Fleddermann, "Engineering Ethics", Pearson Education/ Prentice Hall, New Jersey,2004 ( Indian Reprint now available )

**COURSE DELIVERY PLAN (LESSON PLAN):**

**UNIT-I : ETHICS**

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	01	27-11-2017		<b>TLM1</b>			
2.	Course Outcomes	01	30-11-2017		<b>TLM1</b>			
3.	Introduction to UNIT-I	01	02-12-2017		<b>TLM1</b>			
4.	Senses of 'Engineering Ethics' -	01	04-12-2017		<b>TLM1</b>			
5.	Variety of moral issues -	01	07-12-2017		<b>TLM1</b>			
6.	Types of inquiry, Moral dilemmas Moral autonomy -	01	11-12-2017		<b>TLM1</b>			
7.	Consensus and controversy — Kohlberg's theory Gilligan's theory	01	14-12-2017		<b>TLM2</b>			
8.	Models of Professional Roles	01	16-12-2017		<b>TLM1</b>			
9.	Theories about right action- Self interest Customs and religion, Uses of Ethical theories.	01	18-12-2017		<b>TLM2</b>			
10.	TUTORIAL-1	01	21-12-2017		<b>TLM3</b>			
11.	Assignment/Quiz – 1	01	23-12-2017		<b>TLM6</b>			
No. of classes required to complete UNIT-I					No. of classes taken:			

**UNIT-II : HUMAN VALUES**

S.No.	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	Learning Outcome	Text Book	HOD Sign
-------	----------------------	----------------	-------------------	----------------	-------------------	------------------	-----------	----------

		Required	Completion	Completion	Methods	COs	followed	Weekly
12.	Introduction to UNIT-II	01	25-12-2017		<b>TLM1</b>			
13.	Morals, Values and Ethics –	01	28-12-2017		<b>TLM1</b>			
14.	Integrity – Work Ethic –	01	30-12-2017		<b>TLM2</b>			
15.	Service Learning - Civic Virtue – Respect for Others –	01	04-01-2018		<b>TLM1</b>			
16.	Living Peacefully – Caring – Sharing -	01	06-01-2018		<b>TLM2</b>			
17.	Honesty – Courage– Valuing Time - Cooperation – Commitment –	01	08-01-2018		<b>TLM1</b>			
18.	Empathy – Self Confidence – Character – Spirituality	01	11-01-2018		<b>TLM1</b>			
19.	TUTORIAL-2	01	15-01-2018		<b>TLM3</b>			
20.	Assignment/Quiz – 2	01	22-01-2018		<b>TLM6</b>			
No. of classes required to complete UNIT-II					No. of classes taken:			

### UNIT-III : ENGINEERING AS SOCIAL EXPERIMENTATION

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
21.	Introduction to UNIT-III	01	25-01-2018		<b>TLM1</b>			
22.	Engineering as experimentation -	01	27-01-2018		<b>TLM1</b>			
23.	Engineering Projects VS. Standard Experiments - Engineers as responsible experimenters	01	29-01-2018		<b>TLM2</b>			
24.	Codes of ethics - Industrial Standards - A balanced outlook on law-	01	01-02-2018		<b>TLM1</b>			
25.	The challenger case study. TUTORIAL-3	01	03-02-2018		<b>TLM3, TLM9</b>			
26.	Assignment/Quiz – 3	01	05-02-2018		<b>TLM6</b>			
No. of classes required to complete UNIT-III					No. of classes taken:			

### UNIT-IV : SAFETY, RESPONSIBILITIES AND RIGHTS

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
27.	Introduction to UNIT-IV	01			<b>TLM1</b>			
28.	Safety and risk-	01			<b>TLM1</b>			

29.	Assessment of safety and risk-	01	08-02-2018		<b>TLM1</b>			
30.	Risk benefit analysis and reducing risk-	01	12-02-2018		<b>TLM1</b>			
31.	Three Mile Island and Chernobyl case study - Collegiality and loyalty - Respect for authority -	01	15-02-2018		<b>TLM9</b>			
32.	Collective bargaining – Confidentiality-	01	17-02-2018		<b>TLM1</b>			
33.	Conflicts of interest - Occupational crime - Professional Rights- Employee rights-	01	19-02-2018		<b>TLM2</b>			
34.	Intellectual Property Rights (IPR) discrimination.	01	22-02-2018		<b>TLM1</b>			
35.	TUTORIAL-4	01	24-02-2018		<b>TLM3</b>			
36.	Assignment/Quiz – 4	01	26-02-2018		<b>TLM6</b>			
No. of classes required to complete UNIT-IV					No. of classes taken:			

#### UNIT-V : GLOBAL ISSUES

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
37.	Introduction to UNIT-V	01	03-03-2018		<b>TLM1</b>			
38.	Multinational Corporation's - Environmental ethics- computer ethics -weapons development	01	05-03-2018		<b>TLM1</b>			
39.	Engineers as managers - consulting engineers-	01	08-03-2018		<b>TLM2</b>			
40.	engineers as expert witnesses and advisors, Moral leadership -	01	12-03-2018		<b>TLM1</b>			
41.	sample code of Ethics (Specific to a particular Engineering Discipline).	01	15-03-2018		<b>TLM1</b>			
42.	TUTORIAL-5	01	17-03-2018		<b>TLM3</b>			
43.	Assignment/Quiz – 5	01	19-03-2018		<b>TLM6</b>			
No. of classes required to complete UNIT-V					No. of classes taken:			



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

### **EVALUATION PROCESS:**

<b>Evaluation Task</b>	<b>COs</b>	<b>Marks</b>
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\%$ of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

### **PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):**

**PEO I:** To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

**PEO II:** To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

**PEO III:** Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

**PEO IV:** To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

### **PROGRAMME OUTCOMES (POs):**

**Engineering Graduates will be able to:**

- Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

#### **PROGRAMME SPECIFIC OUTCOMES (PSOs):**

##### **1. Programming Paradigms:**

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

##### **2. Data Engineering:**

To inculcate an ability to Analyze, Design and implement data driven applications into the students.

##### **3. Software Engineering:**

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

Course Instructor

Course Coordinator

Module Coordinator

HOD

## COURSE HANDOUT

**PROGRAM** : B.Tech., IV-Sem., C.S.E.  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : Principles of Programming Languages - **S350**  
**L-T-P STRUCTURE** : 3-1-0  
**COURSE CREDITS** : 3  
**COURSE INSTRUCTOR** : **K N Prasanthi**  
**COURSE COORDINATOR** : **R Chandra Sekharam**  
**PRE-REQUISITE: Knowledge of at least one Programming Language**

**COURSE OBJECTIVE:** This course provides the knowledge of syntax and semantics of different types of Programming Languages and their corresponding Design and Implementation issues.

**COURSE OUTCOMES (CO):**

- CO1: Compare various categories of programming languages and their implementation methods.  
CO2: Represent the programming languages syntax using BNF, EBNF and semantics using runtime environments.  
CO3: Explore semantic issues of variables in different programming languages.  
CO4: Analyze expression evaluation with reference to operator precedence & associativity.  
CO5: Explore the design issues of Subprograms.

**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
<b>CO1</b>	3	1												3	
<b>CO2</b>	3	1												3	
<b>CO3</b>	3	1												3	
<b>CO4</b>	3	1												3	
<b>CO5</b>	3	1												3	

**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** Robert .W. Sebesta - Concepts of Programming Languages Pearson Education,6th edition.

**BOS APPROVED REFERENCE BOOKS:****R1** Ghezzi , Programming languages, John Wiley,3rd edition.**R2** Pratt and Zelkowitz - Programming Languages Design and Implementation PHI/Pearson Education,4th edition.**COURSE DELIVERY PLAN (LESSON PLAN): Section-B****UNIT-I : Preliminary Concepts**

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 and Clarification of Course Outcomes.	1	28/11/2017		<b>TLM1</b>	CO1 to CO5	-	
2.	Reasons for studying concepts of programming languages,	1	29/11/2017		<b>TLM1</b>	CO1	T1	
3.	Programming domains, Language Evaluation Criteria	1	2/12/2017		<b>TLM1</b>	CO1	T1	
4.	Tutorial-I	1	5/12/2017		<b>TLM3, TLM6</b>	CO1	T1	
5.	influences on Language design, Language categories	1	6/12/2017		<b>TLM1</b>	CO1	T1	
6.	Programming Paradigms – Imperative, Object Oriented	1	8/12/2017		<b>TLM1</b>	CO1	T1	
7.	Tutorial-II	1	12/12/2017		<b>TLM3, TLM6</b>	CO1	T1	
8.	functional Programming, Logic Programming, Programming Language Implementation	1	13/12/2017		<b>TLM1</b>	CO1	T1	
9.	Compilation, Virtual Machines, programming Environments	1	15/12/2017		<b>TLM1</b>	CO1	T1	
No. of classes required to complete UNIT-I					No. of classes taken:			

**UNIT-II: Syntax and Semantics**

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
10.	General Problem of describing Syntax and Semantics	1	16/12/2017		<b>TLM1</b>	CO2	T1	
11.	Tutorial-III	1	19/12/2017		<b>TLM3, TLM6</b>	CO2	T1	
12.	Formal methods of describing syntax – BNF	1	20/12/2017		<b>TLM1</b>	CO2	T1	
13.	formal methods of describing syntax – BNF, EBNF for common programming languages features	1	22/12/2017		<b>TLM1</b>	CO2	T1	
14.	parse trees	1	23/12/2017		<b>TLM1</b>	CO2	T1	
15.	Tutorial-IV	1	26/12/2017		<b>TLM3, TLM6</b>	CO2	T1	
16.	ambiguous grammars	1	27/12/2017		<b>TLM1</b>	CO2	T1	
17.	attribute grammars	1	29/12/2017		<b>TLM1</b>	CO2	T1	
18.	Names, Bindings, and Scopes Introduction	1	30/12/2017		<b>TLM1</b>	CO2	T1	
19.	Tutorial-V	1	2/1/2018		<b>TLM3, TLM6</b>	CO2	T1	
20.	Names, Variables	1	3/1/2018		<b>TLM1</b>	CO2	T1	
21.	The Concept of Binding, Scope and Lifetime	1	5/1/2018		<b>TLM1</b>	CO2	T1	
No. of classes required to complete UNIT-II					No. of classes taken:			

**UNIT-III: Data types**

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
22.	Introduction	1	6/1/2018		<b>TLM1</b>	CO3	T1	
23.	primitive, character, user defined	1	9/1/2018		<b>TLM1</b>	CO3	T1	
24.	array, associative	1	10/1/2018		<b>TLM1</b>	CO3	T1	
25.	record, union	1	12/1/2018		<b>TLM1</b>	CO3	T1	

26.	Tutorial-VI	1	16/1/2018		<b>TLM3, TLM6</b>	CO3	T1	
27.	Names, Variable, concept of binding	1	23/1/2018		<b>TLM1</b>	CO3	T1	
28.	type checking, strong typing, type compatibility	1	24/1/2018		<b>TLM1</b>	CO3	T1	
29.	Named constants, variable initialization.	1	27/1/2018		<b>TLM1</b>	CO3	T1	
30.	Tutorial-VII	1	30/1/2018		<b>TLM3, TLM6</b>	CO3	T1	
31.	<b>Abstract Data types:</b> Abstractions and encapsulation	1	31/1/2018		<b>TLM1</b>	CO3	T1	
32.	introductions to data abstraction, design issues, language examples	1	2/2/2018		<b>TLM1</b>	CO3	T1	
33.	C++ parameterized ADT	1	3/2/2018		<b>TLM1</b>	CO3	T1	
34.	Tutorial-VIII	1	6/2/2018		<b>TLM1</b>	CO3	T1	
35.	object oriented programming in small talk, C++, Java	1	7/2/2018		<b>TLM1</b>		T1	
No. of classes required to complete UNIT-III					No. of classes taken:			

#### UNIT-IV: Expressions and Statements

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
36.	<b>Expressions and Statements:</b>	1	9/2/2018		<b>TLM1</b>	CO4	T1	
37.	Arithmetic, relational and Boolean expressions	1	10/2/2018		<b>TLM1</b>	CO4	T1	
38.	Tutorial-IX	1	14/2/2018		<b>TLM3, TLM6</b>	CO4	T1	
39.	Arithmetic, relational and Boolean expressions	1	16/2/2018		<b>TLM1</b>	CO4	T1	
40.	Short circuit evaluation	1	17/2/2018		<b>TLM1</b>	CO4	T1	

41.	Tutorial-X	1	20/2/2018		<b>TLM3, TLM6</b>	CO4	T1	
42.	mixed mode assignment, Assignment Statements	1	21/2/2018		<b>TLM1</b>	CO4	T1	
43.	Control Structures – Statement Level	1	23/2/2018		<b>TLM1</b>	CO4	T1	
44.	Compound Statements	1	24/2/2018		<b>TLM1</b>	CO4	T1	
45.	Tutorial-XI	1	27/2/2018		<b>TLM3, TLM6</b>	CO4	T1	
46.	Selection, Iteration	1	28/2/2018		<b>TLM1</b>	CO4	T1	
47.	Unconditional Statements, guarded commands	1	3/3/2018		<b>TLM1</b>		T1	
No. of classes required to complete UNIT-IV					No. of classes taken:			

#### UNIT-V : Subprograms and Blocks

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.	Tutorial-XII	1	6/3/2018		<b>TLM3, TLM6</b>	CO5	T1	
49.	<b>Subprograms and Blocks:</b> Fundamentals of sub-programs	1	7/3/2018		<b>TLM1</b>	CO5	T1	
50.	Scope and lifetime of variable, static and dynamic scope	1	9/3/2018		<b>TLM1</b>	CO5	T1	
51.	Design issues of subprograms and operations	1	10/3/2018		<b>TLM1</b>	CO5	T1	
52.	Tutorial-XIII	1	13/3/2018		<b>TLM3, TLM6</b>	CO5	T1	
53.	local referencing environments	1	14/3/2018		<b>TLM1</b>	CO5	T1	
54.	parameter passing methods	1	16/3/2018		<b>TLM1</b>	CO5	T1	
55.	parameters that are sub-program names	1	17/3/2018		<b>TLM1</b>	CO5	T1	
56.	Tutorial-XIV	1	20/3/2018		<b>TLM3, TLM6</b>	CO5	T1	
57.	design issues for functions	1	21/3/2018		<b>TLM1</b>	CO5	T1	

58.	user defined overloaded operators	1	23/3/2018		<b>TLM1</b>	CO5	T1	
59.	Synchronization, Concurrency concepts.	1	24/3/2018		<b>TLM1</b>	CO5	T1	
No. of classes required to complete UNIT-V					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
60.								
61.								
62.								

### Teaching Learning Methods

<b>TLM1</b>	Chalk and Talk	<b>TLM4</b>	Problem Solving	<b>TLM7</b>	Seminars or GD
<b>TLM2</b>	PPT	<b>TLM5</b>	Programming	<b>TLM8</b>	Lab Demo
<b>TLM3</b>	Tutorial	<b>TLM6</b>	Assignment or Quiz	<b>TLM9</b>	Case Study

### ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	27-11-2017	13-01-2018	7W
Sankranthi Holidays			
I Mid Examinations	16-01-2018	20-01-2018	1W
II Phase of Instructions	22-01-2018	24-03-2018	9W
II Mid Examinations	26-03-2018	31-03-2018	1W
Preparation and Practicals	02-04-2018	14-04-2018	2W
Semester End Examinations	16-04-2018	28-04-2018	2W

### EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz - 1	1	A1=5
Assignment/Quiz - 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz - 3	3	A3=5
Assignment/Quiz - 4	4	A4=5
Assignment/Quiz - 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\% \text{ of Max}(B1,B2)+25\% \text{ of Min}(B1,B2)$	1,2,3,4,5	B=20
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>



<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>
---------------------------	------------------	------------

**Course Instructor**

**Course Coordinator**

**Module Coordinator**

**HOD**

## **COURSE HANDOUT**

**PROGRAM** : B.Tech., IV-Sem., CSE  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : Software Engineering - S 381  
**L-T-P STRUCTURE** : 3-1-0  
**COURSE CREDITS** : 3  
**COURSE INSTRUCTOR** : Mr.N V NAIK  
**COURSE COORDINATOR** : Dr Ch Venkata Narayana  
**PRE-REQUISITE:** c programming, Database Management Systems.

1. **COURSE OBJECTIVE:** This course provides the knowledge on importance of software engineering and software process concepts and learn about different software development process models and how to choose an appropriate one for project.

### **COURSE OUTCOMES (CO)**

CO1: Outline the fundamentals of software engineering concepts and software process standards  
CO2: Demonstrate appropriate process model and software engineering practices  
CO3: Analyze requirements of software system and explore all requirements gathering approaches  
CO4: Creating an architectural design using design engineering process  
CO5: Apply software strategies and software testing tactics for testing real time projects effectively

### **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
<b>CO1</b>	1	1									2				3
<b>CO2</b>	1	1	3							1	2				3
<b>CO3</b>	1	2								1	2				3
<b>CO4</b>	1		3	2			1			1					3
<b>CO5</b>	1			2											3

**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** Roger S.Pressman, Software engineering- A practitioner's Approach, TMH International Edition, 6th edition, 2005

**BOS APPROVED REFERENCE BOOKS:****R1** Ian Sommerville, Software engineering, Pearson education, 8th edition, 2008.**R2** Ali Behforooz and Frederick J Hudson, "Software Engineering Fundamentals", Oxford University Press, New Delhi, 1996.**R3** Stephan Schach, Software Engineering, TMH Publications, 2007.**R4** Pfleeger and Lawrence Software Engineering: Theory and Practice, Pearson education, 2001,1995, PHI,2ndedition.**COURSE DELIVERY PLAN (LESSON PLAN): Section-B****UNIT-I : Introduction to Software Engineering**

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 Software Engineering	1	27/11/17		<b>TLM1</b>	CO1	T1	
2.	Evolving role of Software	1	28/11/17		<b>TLM1</b>	CO1	T1	
3.	Software Definition and Characteristics	1	01/12/17		<b>TLM1</b>	CO1	T1	
4.	Changing nature of Software	1	02/12/17		<b>TLM1</b>	CO1	T1	
5.	Software Myths	1	04/12/17		<b>TLM1</b>	CO1	T1	
6.	Software Engineering – A layered technology	1	05/12/17		<b>TLM2</b>	CO1	T1	
7.	Process Framework – Generic Framework Activities	1	08/12/17		<b>TLM2</b>	CO1	R1	
8.	Umbrella Activities	1	10/12/17		<b>TLM2</b>	CO1	T1	
9.	CMMI Model	1	11/12/17		<b>TLM1</b>	CO1	T1	
10.	Process Patterns	1	12/12/17		<b>TLM1</b>	CO1	T1	
11.	Process Assessment an Approaches	1	15/12/17		<b>TLM1</b>	CO1	T1	
12.	Software Process Models	1	16/12/17		<b>TLM1</b>	CO1	T1	
13.	Process Technology & Product and Process	1	18/12/17		<b>TLM1</b>	CO1	T1	
14.	TUTORIAL-1	1	19/12/17		<b>TLM3</b>			
15.	Assignment/Quiz-1	1	22/12/17		<b>TLM6</b>			
No. of classes required to complete UNIT-I		15			No. of classes taken:			

### UNIT-II: Process Models

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
16.	Introduction to UNIT-II	1	23/12/17		<b>TLM1</b>	CO2	T1	
17.	Process Models: Prescriptive Models	1	26/12/17		<b>TLM1</b>	CO2	T1	
18.	Waterfall Model	1	29/12/17		<b>TLM1</b>	CO2	T1	
19.	Incremental Model	1	30/12/17		<b>TLM1</b>	CO2	T1	
20.	RAD Model	1	2/01/18		<b>TLM1</b>	CO2	T1	
21.	Evolutionary Process Models	1	5/01/18		<b>TLM2</b>	CO2	T1	
22.	Specialized Process Models	1	6/01/18		<b>TLM2</b>	CO2	T1	
23.	Unified Process	1	8/01/18		<b>TLM2</b>	CO2	T1	
24.	Software Engineering Practices	1	9/01/18		<b>TLM2</b>	CO2	T1	
25.	Tutorial 2	1	12/01/18		<b>TLM3</b>			
26.	Assignment/Quiz-2	1	13/01/18		<b>TLM6</b>			
No. of classes required to complete UNIT-II		11			No. of classes taken:			

### UNIT-III: Requirements Engineering

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
27.	Introduction to UNIT-III	1	22/01/18		<b>TLM1</b>	CO3	T1	
28.	Requirements Engineering: Description	1	23/01/18		<b>TLM1</b>	CO3	T1	
29.	RE Tasks, Initiating the RE Process	1	27/01/18		<b>TLM1</b>	CO3	T1	
30.	Eliciting Requirements	1	29/01/18		<b>TLM1</b>	CO3	T1	
31.	Developing Use-Cases	1	30/01/18		<b>TLM2</b>	CO3	T1	
32.	Building the Analysis Models	1	02/02/18		<b>TLM2</b>	CO3	T1	
33.	Negotiating and Validating Requirements	1	3/02/18		<b>TLM2</b>	CO3	T1	
34.	Building the Analysis Model: Requirements Analysis	1	5/02/18		<b>TLM1</b>	CO3	T1	
35.	Analysis Modeling Approaches and Data Modeling	1	6/02/18		<b>TLM1</b>	CO3	T1	
36.	Object Oriented Analysis, Creating a Behavioral Model	1	9/02/18		<b>TLM1</b>	CO3	T1	

37.	Scenario Based Modeling, Flow Oriented Modeling	1	12/02/18		<b>TLM1</b>	CO3	T1	
38.	Tutorial 3	1	16/02/18		<b>TLM3</b>	CO3	T1	
39.	Assignment/Quiz-3	1			<b>TLM6</b>		T1	
No. of classes required to complete UNIT-III		13			No. of classes taken:			

#### UNIT-IV: Design Engineering

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
40.	Design Engineering: Design within context of Software Engineering	1	17/02/18		<b>TLM1</b>	CO4	T1	
41.	Design Process and Design Quality	1	19/02/18		<b>TLM1</b>	CO4	T1	
42.	Design Concepts, Design Model	1	20/2/18		<b>TLM1</b>	CO4	T1	
43.	Pattern Based Software Design	1	23/2/18		<b>TLM1</b>	CO4	T1	
44.	Software Architecture and Data Design	1	24/2/18		<b>TLM2</b>	CO4	T1	
45.	Architectural Styles and Patterns , Architectural Design	1	26/2/18		<b>TLM1</b>	CO4	T1	
46.	TUTORIAL-4	1	27/2/18		<b>TLM3</b>			
47.	Assignment/Quiz-4	1	2/3/18		<b>TLM6</b>			
No. of classes required to complete UNIT-IV		12			No. of classes taken:			

#### UNIT-V: Testing Strategies

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.	A Strategic Approach to Software Testing, Strategic Issues	1	3/3/18		<b>TLM2</b>	CO5	T1	
49.	Test Strategies for Conventional Software	1	5/3/18		<b>TLM2</b>	CO5	T1	
50.	Test Strategies for Object Oriented Software	1	6/3/18		<b>TLM2</b>	CO5	T1	
51.	Validation Testing, System Testing	1	9/3/18		<b>TLM2</b>	CO5	T1	
52.	The art of Debugging	1	10/3/18		<b>TLM2</b>	CO5	T1	
53.	Software Testing Fundamentals	1	12/3/18		<b>TLM2</b>	CO5	T1	
54.	White Box Testing & Basis Path Testing	1	13/3/18		<b>TLM2</b>	CO5	T1	
55.	Control Structure and Black Box Testing	1	16/3/18		<b>TLM2</b>	CO5	T1	
56.	Black Box Testing and OO Testing	1	17/3/18		<b>TLM2</b>	CO5	T1	

57.	Tutorial 5	1	19/3/18		<b>TLM3</b>			
58.	Assignment 5/Quiz	1	20/3/18		<b>TLM6</b>			
No. of classes required to complete UNIT-V		14			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
59.	Code-Reading Tools	2	21/3/18			CO3		
60.	Maintainability	1	23/3/18			CO4		
61.	Documentation and Visualization	1	24/3/18			CO5		

### Teaching Learning Methods

<b>TLM1</b>	Chalk and Talk	<b>TLM4</b>	Problem Solving	<b>TLM7</b>	Seminars or GD
<b>TLM2</b>	PPT	<b>TLM5</b>	Programming	<b>TLM8</b>	Lab Demo
<b>TLM3</b>	Tutorial	<b>TLM6</b>	Assignment or Quiz	<b>TLM9</b>	Case Study

### EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\% \text{ of Max}(B1,B2)+25\% \text{ of Min}(B1,B2)$	1,2,3,4,5	B=20
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

### PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

**PEO I:** To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

**PEO II:** To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

**PEO III:** Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

**PEO IV:** To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

## **PROGRAMME OUTCOMES (POs):**

### **Engineering Graduates will be able to:**

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological

change.

## **PROGRAMME SPECIFIC OUTCOMES (PSOs):**

### **1. Programming Paradigms:**

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

### **2. Data Engineering:**

To inculcate an ability to Analyze, Design and implement data driven applications into the students.

### **3. Software Engineering:**

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

**Course Instructor**

**Course Coordinator**

**Module Coordinator**

**HOD**