



# St. Mary's Group of Institutions Guntur

(Formerly St.Mary's Engineering College, St.Mary's P.G. Centre & St.Mary's College of Pharmacy)

(Approved by AICTE & PCI, Permitted by Govt. of A.P., Affiliated to JNTUK & SBTET)

Chebrolu (Village & Mandal), Guntur (Dt.) - 522 212, A.P., INDIA. Website : [www.stmarysguntur.com](http://www.stmarysguntur.com)

Phone : 08644-254477, 88, Mobile : 9030235630, 96667 77091, 99483 99402, 99514 28677, Fax : 040-66809093

## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

### Computer Organization

#### Course Outcomes(co):

Course code	Course outcome	Taxonomy	Level
C215.1	Formulate various Binary codes Representation and procedures for Arithmetic Operations.	Create	Level-6
C215.2	Develop different computing processors, instruction-codes, and Bus Routing procedures	Applying	Level-3
C215.3	Classify various architectures and functionality of central processing unit.	Analyze	Level-4
C215.4	Knowledge on various kinds of interrupts, Memory's operations.	Understanding	Level-2
C215.5	Evaluate Data transfers and Interprocessor communications.	Evaluate	Level-5



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## CO – PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C215.1	3			2	3							2
C215.2	1		2		3							2
C215.3									2	3	2	1
C215.4						1		3				
C215.5					2					2		2
<b>C215</b>	<b>** Exp ressi on is fault y **</b>		<b>0</b>	<b>0</b>	<b>** Exp ressi on is fault y **</b>	<b>0</b>		<b>0</b>	<b>0</b>	<b>** Exp ressio n is fault y **</b>	<b>0</b>	<b>** Exp ressio n is fault y **</b>

\*\* 1 - Slightly

2 - Moderate

3 - Highly

## CO – PSO Mapping

CO/PSO	PSO1	PSO2	PSO3
C215.1	2		
C215.2	1		3
C215.3		2	
C215.4		2	
C215.5			3
<b>C215</b>	<b>** Expres sion is faulty **</b>	<b>** Expressi on is faulty **</b>	<b>** Expres sion is faulty **</b>



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**Name of Faculty: Dr. BULLI BABU R**

**Class: III CSE I, II & III**

**Name of Course: Database Management Systems**

**Course Code: RT31034**

**Academic Year: 2020-21**

## **Course Outcomes:**

**After Completion of the course the student is able to**

**C314.1:** Illustrate the need of Data Bases in Real World and also explain 3-Level

Architecture Database Management System along with its Users.

**Level –II (Understanding)**

**C314.2:** Design an E-R Model and Relational Model for an Enterprise Data Apply various

Relational Algebra Operators on Relations.

**Level-VI (Creating) & Level III (Applying)**

**C314.3:** Explain Various Structured Query Language (SQL) Commands and they can make

use of those commands for various operations on Relations.

**Level II (Understanding) & Level III (Applying)**

**C314.4:** Define the Purpose of Schema Refinement/Normalization and various Normal

Forms in RDBMS and can construct normalized Databases to solve Anomalies.

**Level II (Understanding) & Level 6(Creating)**

**C314.5:** Outline the Properties of a Transaction and summarize various types of Concurrency

Methods used in RDBMS.

**Level II (Understanding)**

**C314.6:** Analyse and categorize various types of File Organizations methods and Indexing

Techniques used in RDBMS.

**Level –IV (Analyzing)**

SNO	Course Outcome	Blooms	Justification
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		Taxonomy Level	
1	CO 1: Illustrate the need of Data Bases in Real World and also explain 3-Level Architecture Database Management System along with its Users.	Level –II (Understanding)	The Understanding level mainly <b>demonstrate</b> understanding of facts and ideas. As said in CO1, after completion of the first unit the student can demonstrate the need of Database and its applications. They can also explain various users of DBMs and also learns 3- level Architecture of DBMS. Hence the defined CO1 is in Understanding Level of Blooms Taxonomy. That is Level –II.
2	CO2: Design an E-R Model and Relational Model for an Enterprise Data Apply various Relational Algebra Operators on Relations.	Level-VI (Creating) & Level – III(Applying)	Here the students can create an E-R Model as well as Relational Model for a Real World Problem, Creating or designing any new thing defines the Blooms taxonomy level –VI (Creating). After completion of this chapter the student can have the ability to apply various Relational Algebra operations on Relations. Application of anything is a property of Blooms Taxonomy Level -III
3	Explain Various Structured Query Language (SQL) Commands and they can make use of those commands for various operations on Relations	Level II (Understanding)& Level III (Applying)	Here the student can clearly understand various SQL commands and apply these commands on Relations for various operations on Relations such as creation, deletion, updation, selection of Relations. Understanding of SQL commands is Blooms Taxonomy level-II and Application of SQL defines Blooms Taxonomy Level- III that is



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			Applying
4	CO4: Discuss the Purpose of Normalization and various Normal Forms used in RDBMS and can construct normalized Databases to solve Anomalies that occurred through bad structure.	Level II (Understanding ) & Level 6(Creating)	Here After understanding of Various Normal Forms and its Purpose the student can construct Normalized tables from given un-normalized tables. Thus First part specifies the Blooms Taxonomy Level –II (Understanding) and the Second part that is designing new tables from old specifies the Blooms Taxonomy level -VI that is Creating.
5	CO5: Outline the Properties of a Transaction and summarize various types of Concurrency Methods used in RDBMS.	Level II (Understanding)	Here students learn and understand properties of a Transaction and also understand various types of Concurrency Methods, So after completion of this unit the student learn about the concepts. Hence this CO is in Blooms Taxonomy Level-II Understanding.
6	CO6: Analyse and categorize various types of File Organizations methods and Indexing Techniques used in RDBMS.	Level –IV (Analyzing)	After completion of this Unit the student can Analyse and categorize various types of File Organization Methods such as Primary, secondary, Clustered etc., They also analyse and compare various Indexing methods such as Hashing, B-Tree, Clustered etc. Hence Analysis and Categorization specify the Blooms Taxonomy Level –IV(Analyzing)



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### 3. Mapping of Course Outcomes to Program Outcomes (POs) with brief explanation.

SNO	Course Outcome	POS	Justification
1	CO 1: Illustrate the need of Data Bases in Real World and also explain 3-Level Architecture Database Management System along with its Users.	PO-2:Problem analysis:	Here the Student Clearly Analyse the need of Databases in Real World Hence it is mapped with PO-2.
2	CO2: Design an E-R Model and Relational Model for an Enterprise Data Apply various Relational Algebra Operators on Relations.	PO-3: Design/development of solutions PO-4:Conduct investigations of complex problems PO-6: The engineer and society: PO-9Individual and team work:	Here the student can Design Entity Relational Model and Relational Model after Identifying entities, attributes, relationships between them for a Real World problem. This maps with PO-3 and PO-6. Even they can design Complex Databases after learning this unit individually are in groups. These features map with PO-4 and PO-9
3	CO-3: Explain Various Structured Query Language (SQL) Commands and they can make use of those commands for various operations on Relations	PO-3: Design/development of solutions PO-5:Modern tool usage:	Here the student can Create databases using a Software that is Oracle. Which is mapped with PO-5. After learning this unit the student can create, delete, update, and alter Databases. Hence which is mapped with PO-3
4	CO4: Discuss the Purpose of	PO- 2:Problem	



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	Normalization and various Normal Forms used in RDBMS and can construct normalized Databases to solve Anomalies that occurred through bad structure.	analysis  PO-3: Design and Development of Solutions	Here the student is clearly analysing the need of Normalization and also various Normal Forms such as 1NF, 2NF, 3NF, 4NF etc. This feature is mapped with PO-2 and the student can restructure databases to prevent anomalies. Hence this feature is mapped with
5	CO5: Outline the Properties of a Transaction and summarize various types of Concurrency Methods used in RDBMS.	PO-1:Engineering knowledge  PO-2:Problem analysis	Here the student Learn properties of Transaction – so he acquire the basic engineering knowledge of Database Transactions. Hence which is mapped with PO-1. He can learn and clearly Analyse various locking methods using for concurrency Control. Hence which is mapped with PO-2
6	CO6: Analyse and categorize various types of File Organizations methods and Indexing Techniques used in RDBMS.	PO-1:Engineering knowledge  PO-2:Problem analysis	Here the students acquire the basic knowledge of File organization and Indexing methods and also acquire clear analysis on File organization and various methods of Indexing. Hence this Co is mapped with PO-1 and PO-2

Signature of the Faculty

Signature of the HOD



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**Name of Faculty:** Mr. SUBHANI SHAIK

**Class:** II/IV-II - SEM

**Name of Course:** FLAT

**Course Code:** CS2204

## COURSE OBJECTIVES:

- To learn fundamentals of Regular and Context Free Grammars and Languages
- To understand the relation between Regular Language and Finite Automata and machines
- To learn how to design Automata's and machines as Acceptors, Verifiers and Translators
- To understand the relation between Contexts free Languages, PDA and TM
- To learn how to design PDA as acceptor and TM as Calculators

**CE423.1:** CE125.1: Understand the difference between object oriented programming and procedural programming.

CE125.2: Be able to build C++ classes using encapsulation and design principles.

CE125.3: Be able to develop C++ classes using appropriate inheritance and polymorphism, operator overloads.

CE125.4: Be able to program using more advanced C++ features such as generic programming and exception handling, STL

CE125.5: Be able to design solutions for the problems in Operating system, Computer networks and real world problems.

C

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CS2204.4													
CS2204.5													
CS2204													

**Note:** 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

**Head of the Department**

**Name of Faculty:** Mr. SUBHANI SHAIK

**Class:** II/IV-II - SEM

**Name of Course:** FLAT

**Course Code:** CS2204

## MAPPING OF Cos WITH PSO's

PSO/CO NO:	PSO1	PSO2	PSO3
CS2204.1	2		2



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CS2204.2	3		
CS2204.3	2		
CS2204.4	2		2
CS2204.5			

**Note:** 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

**Head of the Department**



## Mathematical Foundations of Computer Science(R19)

### Course Objectives:

**CS2101.1:** To introduce the students to the topics and techniques of discrete methods and combinatorial reasoning.

**CS2101.2:** To introduce wide variety of applications. The algorithmic approach to the solution of problems is fundamental in discrete mathematics, and this approach reinforces the close ties between this discipline and the area of computer science.

### Course Out Comes:

Course Code	Course Outcome	Taxonomy Level
C211.1	Demonstrate skills in solving mathematical problems.	TL2: Understand
C211.2	Comprehend mathematical principles and logic.	TL3: Application
C211.3	Demonstrate knowledge of mathematical modelling and proficiency in using mathematical software	TL2: Understand
C211.4	Manipulate and analyze data numerically and/or graphically using appropriate software	TL4: Analysis
C211.5	Communicate effectively mathematical ideas/results verbally or in writing.	TL6: Creation

Signature of the Faculty

Head of the Department of CSE



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## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

### Operating Systems

#### AY: 2020-21 sem (1)

#### Course Outcomes (CO)

Course Code	Course Outcome	Level	Bloom's Taxonomy
C315.1	Memorize the concepts of operating systems such as types, services and system calls.	L1	Remember
C315.2	Implement the process concepts on different processes by using scheduling algorithms.	L3	Apply
C315.3	Analyze different memory management techniques and gives optimal solutions.	L4	Analyze
C315.4	Identify the principals of concurrency and apply algorithms for deadlock problems.		Understand & Apply
C315.5	Implement file system concepts and storage structures.	L3	Apply
C315.6	Recall the basic concepts of Linux system and Android system platform.	L1	Remember

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## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

### CO – PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C315.1	2				1							1
C315.2		2	3		3				2			
C315.3		3	2	2	3				2			
C315.4		2	3		3				2			
C315.5			3		3				2			
C315.6	2				2							
<b>C315</b>	<b>2</b>	<b>2.3</b>	<b>2.7</b>	<b>2</b>	<b>2.5</b>				<b>2</b>			<b>1</b>

\*\* 1 – Slightly

2 - Moderate

3 - Highly

### CO – PSO Mapping

CO/PSO	PSO1	PSO2	PSO3
C315.1	2		
C315.2	2		
C315.3	2		
C315.4	2		
C315.5	2		
C315.6	2		
<b>C315</b>	<b>2</b>		

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## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

### CO with PO Justification

CO	PO	Justification
C315. 1	PO1	Students learn the basic knowledge of operating systems types, services and system calls.
	PO5	While memorizing these specified concepts students apply only system calls concepts in lab using putty as a tool and knows its detailed working.
	PO12	Always it was the life long process, because students need to update their knowledge towards new features of various operating systems.
C315. 2	PO2	To implement different algorithms on processes first students identify the algorithm to apply on process.
	PO3	Develop solutions for different processes that enter the system by applying different algorithms with user needs.
	PO5	While developing solutions for processes students use turbo c as a tool in laboratory.
	PO9	Students can develop solutions as an individual or as a team in single discipline.
C315. 3	PO2	Students analyze different memory management techniques like first fit, best fit, and worst fit and provide the best solution of memory allocation.
	PO3	Develop solutions for different virtual memory management concepts, mainly for page replacement algorithms.
	PO4	Conduct study on different page replacement algorithms and find the optimal algorithm for processing on pages.
	PO5	While developing solutions for placement of pages in frames students use turbo c as a tool in laboratory.
	PO9	Students can develop solutions as an individual or as a team in single discipline.
C315. 4	PO2	Identify one of the concurrency concepts which is critical section problem from race condition situation of process synchronization and identify a deadlock in process resource graph.
	PO3	Develop solutions for critical section problem using semaphores and deadlock avoidance using banker's algorithm.
	PO5	Students implement solution for critical section problem using semaphores and banker's algorithm for deadlock avoidance in laboratory using putty as a tool.
	PO9	Students can develop solutions as an individual or as a team in single discipline.
C315. 5	PO3	Design of different file allocation strategies can be done by applying file allocation methods such as sequential, linked and indexed.
	PO5	For designing file allocation strategies students apply c structures in turbo c as a tool.





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	PO9	Students can develop solutions as an individual or as a team in single discipline.
C315. 6	PO1	Students will gain basic knowledge on the concepts of Linux and android platforms.
	PO5	Students get current version of android os and linux os for easily understanding the concepts of both the platforms in laboratory.

## CO with PSO Justification

CO	PSO	Justification
C315. 1	PSO1	To develop any solution to the real time problems students should have the basic knowledge of operating system concepts like system calls.
C315. 2	PSO1	While developing solutions to the real time applications students should know which cpu scheduling algorithm to use.
C315. 3	PSO1	While developing solutions to the real time applications students should know which is the optimal memory management algorithm to apply.
C315. 4	PSO1	Students need to develop solutions in a deadlock free manner.
C315. 5	PSO1	Students need to know how to structure their developed application in the system with the help of different disk and file structure concepts.
C315. 6	PSO1	Students implement their applications by using any of the different operating systems like linux, android, windows. etc.,
	PSO3	Students should able to identify the changes in the operating system, because any os always update with new features.

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## DEPARTMENT OF BASIC SCIENCES & HUMANITIES

Course Name: Probability & Statistics

Year/SEM: II/II

Name of the Faculty: Farzana Shaik

Academic Year: 2020-2021

Branch: CSE

### COURSE OUTCOMES

Course Code	Course Outcome	Taxonomy Level
BS2201.1	Understand the concepts of data science and find the values of various measures of central tendencies	Understand (TL2)
BS2201.2	Interpret the association of characteristics and through correlation and regression tools.	Application ( TL3)
BS2201.3	Apply basic principles of probability and sample spaces, Bay'es theorem. And apply the concepts of discrete, continuous random variable to solve the problems of probability using Binomial, Poison and Normal distributions.	Application ( TL3)
BS2201.4	Estimate the value of a population parameter, computation of point and its interval.	Evaluation (TL5)
BS2201.5	Infer the statistical methods based on small and large sampling tests.	Understand (TL2)

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## DEPARTMENT OF BASIC SCIENCES & HUMANITIES

Course Name: Probability & Statistics

Year/SEM: II/II

Name of the Faculty: Farzana Shaik

Academic Year: 2020-2021

Branch: CSE

### CO-PO MAPPING

COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
BS2201.1	3	2										2
BS2201.2	3	2										2
BS2201.3	3	2										2
BS2201.4	3	2										2
BS2201.5	3	2										2
AVG	3	2										2

Signature of the Faculty

Head of the Department of CSE



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## R16 OPERATING SYSTEMS CO-PO MAPPING

### Course Outcomes (CO)

Course Code	Course Outcome	Level	Bloom's Taxonomy
CS202.1	Memorize the concepts of operating systems such as types, services and system calls.	L1	Remember
CS202.2	Implement the process concepts on different processes by using scheduling algorithms.	L3	Apply
CS202.3	Analyze different memory management techniques and gives optimal solutions.	L4	Analyze
CS202.4	Identify the principals of concurrency and apply algorithms for deadlock problems.	L2 & L3	Understand & Apply
CS202.5	Implement file system concepts and storage structures.	L3	Apply
CS202.6	Memorize the concepts of System protection & security	L1	Remember

### CO – PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS202.1	2				1							1
CS202.2		2	3		3				2			
CS202.3		3	2	2	3				2			
CS202.4		2	3		3				2			
CS202.5			3		3				2			
CS202.6	2				2							
<b>CS2202</b>	<b>2</b>	<b>2.3</b>	<b>2.7</b>	<b>2</b>	<b>2.5</b>				<b>2</b>			<b>1</b>

\*\* 1 – Slightly

2 - Moderate

3 - Highly



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## CO – PSO Mapping

CO/PSO	PSO1	PSO2	PSO3
CS202.1	2		
CS202.2	2		
CS202.3	2		
CS202.4	2		
CS202.5	2		
CS202.6	2		
<b>CS2202</b>	<b>2</b>		



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## SOFTWARE ENGINEERING

### (R19 Regulation -B.Tech-II Year - I Sem- CSE Branch )

**Course Objectives:** This course is designed to:

- Give exposure to phases of Software Development, common process models including Waterfall, and the Unified Process, and hands-on experience with elements of the agile process
- Give exposure to a variety of Software Engineering practices such as requirements analysis and specification, code analysis, code debugging, testing, traceability, and version control
- Give exposure to Software Design techniques

### Course Outcomes

CO.No	Description	Bloom's Taxonomy Level
C212.1	Students will be able to decompose the given project in various phases of a lifecycle.	Knowledge, Understand (Level1, Level2)
C212.2	Students will be able to choose appropriate process model depending on the user requirements.	Apply, Create (Level 2)
C212.3	Students will be able perform various life cycle activities like Analysis, Design, Implementation, Testing and Maintenance.	Evaluate (Level 3)
C212.4	Students will be able to know various processes used in all the phases of the product.	Analyze (Level 3)
C212.5	Students can apply the knowledge, techniques, and skills in the development of a software product.	Apply (Level 3)

	Program Outcomes												Program Specific Outcomes		
	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
C212.1	-	-	√	-	-	-	-	-	-	-	-	-	√	-	-
C212.2	√	√	-	-	-	-	-	-	-	-	-	-	√	√	-
C212.3	√	-	√	-	√	-	-	√	-	-	-	-	√	-	-
C212.4	√	√	-	√	-	√	-	√	-	-	√	√	-	-	-
C212.5	√	√	-	-	-	-	-	-	-	-	-	√	√	-	-



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## STM 20-21 II SEM

### COURSE OUTCOMES:

**C324.1:** Define software testing and identify the basic testing procedures. (**Remember-1, Understand-2**)

**C324.2:** Illustrate transaction flow testing and data flow testing techniques. (**Understand-2, Apply-3**)

**C324.3:** Discuss about domain testing and apply reduction procedure to path testing. (**Understand-2, Apply-3**)

**C324.4:** Apply syntax testing for grammar and analyze decision tables using logic based testing techniques. (**Apply-3, Analyze-4**)

**C324.5:** Summarize State Graphs, Graph Matrices and their Applications. (**Understand-2, Apply-3**)

**C324.6:** Select testing tools and generate test cases to resolve the problems in Real time environment. (**Analyze -4, Evaluate-5**)

### MAPPING OF CO's WITH PO's

PO/CO NO:	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C324.1	2	3	2	3				2	2			
C324.2			3	2								
C324.3	2		3	2								
C324.4		3	2									
C324.5	2		2									
C324.6		3	2	2	3							
C324	2	3	2.3	2.25	3			2	2			





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## PROGRAM SPECIFIC OUTCOMES:

### **PSO1: Application Development**

Able to develop the business solutions through Latest Software Techniques and tools for real time Applications.

### **PSO2: Professional and Leadership**

Able to practice the profession with ethical leadership as an entrepreneur through participation in various events like Ideathon, Hackathon, project expos and workshops.

### **PSO3: Computing Paradigms**

Ability to identify the evolutionary changes in computing using Data Sciences, Apps, Cloud computing and IoT

## CO – PSO Mapping

CO/PSO	PSO1	PSO2	PSO3
C324.1	2		2
C324.2	2		2
C324.3	2		2
C324.4	2		2
C324.5			1
C324.6	2		2
<b>C324</b>	<b>2</b>		<b>2</b>

\*\* 1 – Slightly      2 - Moderate      3 – Highly

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**



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## CO with PO Justification

CO	PO	Justification
C324.1	PO1	Students learn the basic knowledge of operating systems types, services and system calls.
	PO5	While memorizing these specified concepts students apply only system calls concepts in lab using putty as a tool and knows its detailed working.
	PO12	Always it was the life long process, because students need to update their knowledge towards new features of various operating systems.
C324.2	PO2	To implement different algorithms on processes first students identify the algorithm to apply on process.
	PO3	Develop solutions for different processes that enter the system by applying different algorithms with user needs.
	PO5	While developing solutions for processes students use turbo c as a tool in laboratory.
	PO9	Students can develop solutions as an individual or as a team in single discipline.
C324.3	PO2	Students analyze different memory management techniques like first fit, best fit, and worst fit and provide the best solution of memory allocation.
	PO3	Develop solutions for different virtual memory management concepts, mainly for page replacement algorithms.
	PO4	Conduct study on different page replacement algorithms and find the optimal algorithm for processing on pages.
	PO5	While developing solutions for placement of pages in frames students use turbo c as a tool in laboratory.
	PO9	Students can develop solutions as an individual or as a team in single discipline.



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C324.4	PO2	Identify one of the concurrency concepts which is critical section problem from race condition situation of process synchronization and identify a deadlock in process resource graph.
	PO3	Develop solutions for critical section problem using semaphores and deadlock avoidance using banker's algorithm.
	PO5	Students implement solution for critical section problem using semaphores and banker's algorithm for deadlock avoidance in laboratory using putty as a tool.
	PO9	Students can develop solutions as an individual or as a team in single discipline.
C324.5	PO3	Design of different file allocation strategies can be done by applying file allocation methods such as sequential, linked and indexed.
	PO5	For designing file allocation strategies students apply c structures in turbo c as a tool.
	PO9	Students can develop solutions as an individual or as a team in single discipline.
C324.6	PO1	Students will gain basic knowledge on the concepts of Linux and android platforms.
	PO5	Students get current version of android os and linux os for easily understanding the concepts of both the platforms in laboratory.



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## CO with PSO Justification

C	PSO	Justification
C315. 1	PSO1	To develop any solution to the real time problems students should have the basic knowledge of operating system concepts like system calls.
C315. 2	PSO1	While developing solutions to the real time applications students should know which cpu scheduling algorithm to use.
C315. 3	PSO1	While developing solutions to the real time applications students should know which is the optimal memory management algorithm to apply.
C315. 4	PSO1	Students need to develop solutions in a deadlock free manner.
C315. 5	PSO1	Students need to know how to structure their developed application in the system with the help of different disk and file structure concepts.
C315. 6	PSO1	Students implement their applications by using any of the different operating systems like linux, android, windows. etc.,
	PSO3	Students should able to identify the changes in the operating system, because any os always update with new features.

Signature of the Faculty

HOD

Signature of the



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## Program Outcomes:

- 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, 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.



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**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.