

DEPARTMENT OF COMPUTER SCIENCE AND APPLICATIONS
SCHEME AND SYLLABUS OF EXAMINATION FOR
Bachelor (Honours/Honours with Research) of Physical Science / Bachelor of Arts
Duration 4 Years (8 Semesters) w.e.f. Academic Session 2023-24

Semester-V Scheme A										
Course Code	Course Title	Credit	L:T:P:CH	Internal Marks		External Marks		Total Marks		
				Th	Pr	Th	Pr	Min	Max	
Major/Core Courses										
B23-CC-A5		4								
B23-CC-B5		4								
B23-CC-C5	Web Technologies	4	3:0:1:5	20	10	50	20	40	100	
Minor/Vocational Courses										
B23-CC-M5 (V)	Data Communication and Networking	4	3:0:1:5	20	10	50	20	40	100	
B23-CC-M5-1 (V)	Software Engineering	4	3:0:1:5	20	10	50	20	40	100	
Multidisciplinary Courses										
Ability Enhancement Courses										
Skill Enhancement Courses										
B23-SEC9	Internship	4		0	50	0	50	40	100	
Value Added Courses										
Total		20								400

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Semester-VI Scheme A										
Course Code	Course Title	Credit	L:T:P:CH	Internal Marks		External Marks		Total Marks		
				Th	Pr	Th	Pr	Min	Max	
Major/Core Courses										
B23-CC-A6		4								
B23-CC-B6		4								
B23-CC-C6	Operating System	4	3:0:1:5	20	10	50	20	40	100	
Minor/Vocational Courses										
B23-CC-M6	Web Designing	4	3:0:1:5	20	10	50	20	40	100	
B23-CC-M7 (V)	AI in Day to Day Life	4	3:0:1:5	20	10	50	20	40	100	
Multidisciplinary Courses										
Ability Enhancement Courses										
Skill Enhancement Courses										
Value Added Courses										
Total										
		20	20							400

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B23-CC-C6
Operating System

Max. Marks:100
Min. Pass Marks:40

Internal Assessment Marks :30[Theory(20) + Practical(10)]
External End Term Exam Marks:70[Theory(50)+Practical(20)]

Time: Theory(3Hours),Practical(3Hours)

Credit:4

Course Objectives:

1. Understand the basic concepts of operating systems and its services along with process management.
2. Understand concept of process scheduling and acquire knowledge of process synchronization.
3. Learn about memory management and virtual memory concepts.
4. Learn to work with directory structure and security aspects.
5. To implement the programs based on operating system.

Examiner Note: Examiner will set a total of NINE questions. Out of which FIRST question will be compulsory and the remaining EIGHT questions will be set from four units selecting two questions from each unit. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus. Candidate will have to attempt FIVE questions in all, selecting one question from each unit. Examination will be of three-hour duration.

Practicum will be evaluated by an external and an internal examiner. Examination will be of three-hour duration.

UNIT-I

Introductory Concepts: Operating System, Functions and Characteristics, Historical Evolution of Operating Systems, Operating System Structure.

Types of Operating System: Real time, Multiprogramming, Multiprocessing, Batch processing.

Operating System Services, Operating System Interface, Service System Calls, System Programs. Process Management: Process Concepts, Operations on Processes, Process States and Process Control Block. Inter- Process Communication.

UNIT-II

CPU Scheduling: Scheduling Criteria, Levels of Scheduling, Scheduling Algorithms, Multiple Processor Scheduling, Algorithm Evaluation.

Synchronization: Critical Section Problem, Semaphores, Classical Problem of Synchronization, Monitors.

Deadlocks: Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery.

UNIT-III

Memory Management Strategies: Memory Management of Single-User and Multiuser Operating System. Partitioning, Swapping, Contiguous Memory Allocation, Paging and Segmentation; Virtual Memory Management: Demand Paging, Page Replacement Algorithms, Thrashing.

UNIT-IV

Implementing File System: File System Structure, File System Implantation, file operations, Type of Files, Directory Implementation, Allocation Methods, and Free Space Management.

Disk Scheduling algorithm- SSTF, Scan, C- Scan, Look, C-Look. SSD Management.

UNIT-V(PRACTICUM)

Practicum:

In practical component the teacher concerned / instructor will ensure minimum 15 programs / case studies execution based on Scheduling Algorithms, Memory Management and File System during the laboratory work.

Suggested Evaluation Methods:

Internal Assessment:	Theory	Practicum	End Term Examination:
Class Participation	5	5	A three hour exam for both Theory and Practicum
Seminar/presentation/assignment/quiz/class test etc	5	-	
Seminar/Demonstration/Viva-voce/Lab record etc..:	-	5	
Mid-Term Exam	10	-	
Total	20	10	

Suggested Readings:

- Silberschatz A., Galvin P.B., and Gagne G., Operating System Concepts, John Wiley & Sons.
- Godbole, A.S., Operating Systems, Tata McGraw-Hill Publishing Company, New Delhi.
- Deitel, H.M., Operating Systems, Addison- Wesley Publishing Company, New York.
- Tanenbaum, A.S., Operating System- Design and Implementation, Prentice Hall of India, New Delhi.



B23-CC-M5-1 (v)
Software Engineering

Max.Marks:100
Min.PassMarks:40

InternalAssessmentMarks:30[Theory(20)+Practical(10)]
ExternalEndTermExamMarks:70[Theory(50)+Practical(20)]

Time: Theory(3Hours),Practical(3Hours)

Credit:4

Course Objectives:

After completing this course, the learner will be able to:

1. Learn the various models for software development.
2. Understand how to analyze software.
3. Plan a software design and the risks associated with software.
4. Test and validate software.

Examiner Note: The examiner will set a total of nine questions. Out of which FIRST question will be compulsory and the remaining EIGHT questions will be set from four units, selecting two questions from each unit. All questions will carry equal marks. The first question will consist of short-answer type questions covering the entire syllabus. The candidate will have to attempt FIVE questions in, selecting one question from each unit. The examination will be of a three-hour duration.

Practicum will be evaluated by an external and an internal examiner. The examination will be of a three-hour duration.

UNIT-I

Introduction: Program vs. Software, Software Engineering, Programming paradigms, Software Crisis – problem and causes, Phases in Software development: Requirement Analysis, Software Design, Coding, Testing, Maintenance.

UNIT-II

Software Development Process Models: Waterfall, Prototype, Agile and Spiral models.
Feasibility Study, Software Requirement Analysis and Specifications: SRS, Need for SRS, Characteristics of an SRS, Components of an SRS.

UNIT-III

Software Project Planning: Project scheduling, Staffing, and personnel planning, team structure.
Software Design: Design fundamentals, problem partitioning, and abstraction, design methodology, Cohesion & Coupling.

UNIT-IV

Software testing strategies: unit testing, integration testing, Validation testing, System testing, Alpha and Beta testing. Software Maintenance: Type of maintenance, Management of Maintenance, Maintenance Process maintenance characteristics.

UNIT-V (PRACTICUM)

Practicum:

In Practical component the teacher concerned/ instructor will ensure minimum 15 programs/case studies execution based on software development models, requirement analysis, feasibility study, software design, testing during the laboratory work.

Internal Assessment:	Theory	Practicum	End Term Examination:
Class Participation	5	5	A three-hour exam for both Theory and Practicum
Seminar/presentation/assignment/quiz/class test etc.	5	-	
Seminar/Demonstration/Viva-voce/Lab records etc.:	-	5	
Mid-Term Exam	10	-	
Total	20	10	

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uggested Readings:

- Pressman R. S., "Software Engineering – A Practitioner's Approach", Tata McGraw Hill.
- Jalote P., "An Integrated Approach to Software Engineering", Narosa.
- Sommerville, "Software Engineering", Addison Wesley.
- Fairley R., "Software Engineering Concepts", Tata McGraw Hill.
- James Peter, W Pedrycz, "Software Engineering", John Wiley & Sons.

A handwritten signature in blue ink, appearing to read 'Zamir Jey', with a long horizontal flourish extending to the right.

Subject	COMPUTER SCIENCE		
Semester	VI		
Name of the Course	DATA WAREHOUSING AND MINING		
Course Code	B23-VOC-605		
Course Type: (CC/MCC/MDC/CC- M/DSEC/VOC/DSE/PC/AEC/ VAC)	VOC		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: <ol style="list-style-type: none"> 1. Understand the concept of OLTP system 2. Acquire knowledge of various tools and methodology of data warehouse 3. Learn the basic fundamentals of data mining 4. Learn processes the data for mining applications 		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100(70(T)+30(P)) Internal Assessment Marks:30(20(T)+10(P)) End Term Exam Marks: 70(50(T)+20(P))		Time: 3 Hrs.(T), 3Hrs.(P)	
Part B- Contents of the Course			
<u>Instructions for Paper- Setter</u>			
Unit	Topics		Contact Hours
I	Introduction to Data Warehouse: OLTP Systems, Differences between OLTP Systems and Data Warehouse, Characteristics of Data Warehouse, Functionality of Data Warehouse, Advantages and Applications of Data Warehouse		10
II	Top-Down and Bottom-Up Development Methodology, Tools for data warehouse development, Data Warehouse Types, Data Warehouse Architecture, Components of Data Warehouse Architecture, Introduction to Federated Data Warehouse Architecture		10
III	Fundamentals of Data Mining, Data Mining Functionalities, Classification of Data Mining Systems, Data Mining Task Primitives, Integration of a Data Mining System with a Database or a Data Warehouse System, Major Issues in Data Mining		10

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IV	Data Preprocessing: Introduction to Data Preprocessing, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization, Concept Hierarchy Generation	10
Suggested Evaluation Methods		
Internal Assessment: > Theory <ul style="list-style-type: none"> • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 > Practicum <ul style="list-style-type: none"> • Class Participation: 5 • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam: NA 		End Term Examination: A three hour exam for both theory and practicum.
Part C-Learning Resources		
Recommended Books/e-resources/LMS: Text Book Jiawei Han & Micheline Kamber – Data Mining: Concepts and Techniques, Morgan Kaufmann Publishers Reference Books Anahory & Dennis Murray – Data Warehousing in the Real World, Pearson Education Pang-Ning Tan, Michael Steinbach & Vipin Kumar – Introduction to Data Mining, Pearson Education Paulraj Ponniah – Data Warehousing Fundamentals, Wiley Student Edition		

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Subject	COMPUTER SCIENCE		
Semester	VI		
Name of the Course	PHP AND MYSQL		
Course Code	B23-VOC-606		
Course Type: (CC/MCC/MDC/CC- M/DSEC/VOC/DSE/PC/AEC/ VAC)	VOC		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: <ol style="list-style-type: none"> 1. To create dynamic websites and apply skills for: 2. Content management 3. User registration systems 4. Dynamic web applications 		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100(70(T)+30(P)) Internal Assessment Marks:30(20(T)+10(P)) End Term Exam Marks: 70(50(T)+20(P))		Time: 3 Hrs.(T), 3Hrs.(P)	
Part B- Contents of the Course			
<u>Instructions for Paper- Setter</u>			
Unit	Topics		Contact Hours
I	Introduction & advantages of PHP, HTML relationship, Variables, data types, constants, Operators (arithmetic, logical, comparison, ternary, etc.), Control statements (if, loops, switch, jump)		10
II	Arrays (indexed, associative, multidimensional), Array functions, Functions (arguments, recursion, math functions), String operations:read/replace/find substring, trim whitespace, case change, comparison		10

30/10/20

	Class, Object, Constructor, Destructor, Inheritance, Overriding, Access modifiers (public/private/protected), Abstract class, Interface, Form processing, GET & POST, Form handling, Validation (client/server side), File uploading, Working with directories	10
IV	PHP-MySQL DB connection, CRUD operations (Insert, Delete, Update, Select), Queries: Parameterized queries, Joins (inner, outer, self, cross), Aggregate functions (sum, avg, count), Cookies & Sessions, Start/end sessions, Session handling	10

Suggested Evaluation Methods

Internal Assessment: > Theory <ul style="list-style-type: none"> • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 > Practicum <ul style="list-style-type: none"> • Class Participation: 5 • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam: NA 	End Term Examination: A three hour exam for both theory and practicum.
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Part C-Learning Resources

Recommended Books/e-resources/LMS:

Text:

- Robert W. Sebesta – PHP Programming
- Joel Murach – Murach's PHP and MySQL

Reference:

- Steven Holzner – PHP Complete Reference
- Mario Lurig – PHP Beginner to Intermediate

Signature